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CASE HISTORY

Auth: C.G. ATSC

Initials: CNT

of the

Date: 30 OCTOBER 1945

V-1650 ENGINE

The V-1650 engine was a liquid cooled, 12-cylinder sixty degree Vee-type with a straight spur reduction gear, two-speed, two-stage supercharger equipped with an aftercooler. The engine was modeled after the Rolls-Royce Merlin 61 engine.

Documents in this case history were obtained from the files of Air Technical Service Command, Wright Field, and Headquarters, Army Air Forces, Washington, D.C.

Classified documents are included herein, and therefore, compliance with pertinent sections of AR-380-5 is necessary.

Compiled by  
Historical Office  
Air Technical Service Command  
Wright Field  
December 1945

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W-61348-3  
PART I

0790



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SUMMARY

U. S. GOVERNMENT PRINTING OFFICE: 1969 O - 348-000

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## THE V-1650 ENGINE

- Late in 1938 and in the early months of 1939, some correspondence was exchanged by Mr. John J. McManus, President of Rolls-Royce, Inc. of New York, and officials of the Air Corps concerning the possibility of manufacturing, "under agreeable conditions," Rolls-Royce engines in this country. Mr. McManus pointed out that Rolls-Royce engines had been made in the United States in 1917. The first decision rendered by the Air Corps was that there was "no necessity for the United States to procure engines abroad, nor for the United States to secure licenses to manufacture foreign engines in the United States." About a year later, however, when it seemed likely that the Allison engine would not match the potential horsepower of foreign models, negotiations with Rolls-Royce were resumed. Rolls-Royce at this time exhibited considerable reluctance to allow the Air Corps to obtain a Merlin engine for investigation and testing, but in March 1940 the U. S. Military Attache', London, was able to procure two engines from the British Air Ministry. The following June a letter was obtained from the British Ambassador granting patent rights to manufacture the Rolls-Royce Merlin 20. Col. O. P. Echols, Assistant Chief, Materiel Division, Wright Field, was designated the responsible agent for all contractual and technical matters relating to the Merlin 20, with instructions to make drawings, specifications, and a sample engine available to the Packard Motor Car Company, Detroit.
- (1) (2) (4) (5) (7) (8) (13) (9)
- A cost-plus-fixed-fee contract (W535ac-15678, approved 13 September 1940) was issued to Packard, providing for 3000 Merlin 20 engines. At the same time Britain contracted for 6000 engines. A lease (Defense Plant Corporation Flancor No. 1) was concluded between the United States government, the British government, and Packard, of which \$8,000,000, or approximately one third, was chargeable to the United States and the remainder to Britain. In return for financial assistance, Packard was to pay the Defense Plant Corporation a rental of \$1500 for each engine actually delivered. During the next six months, increases in Defense Plant Corporation funds of \$1,833,333, \$766,777, and \$786,720 were approved, chiefly for the purchase of machinery and tools.
- (12) (16) (11) (61)
- In response to queries as to whether or not the Air Corps was being misled by the British in sponsoring "under the greatest secrecy" a "second best" engine while the British themselves were developing a 2000 horsepower engine, Brig. Gen. O. P. Echols, Chief, Materiel Division, Washington, stated in January 1941 that the Merlin 20, being already a production engine with full specifications available, was a more logical choice for immediate manufacture in this country than the 2000 horsepower Napier Lion Sabre, which was still in the service test development stage. However, a Sabre engine had been requested by the United States and would be studied by Air Corps engineers. In August 1941, Gen. Echols was still of the opinion that the Sabre engine was too complicated to be put in production by people other than those familiar with it., but believed that the Merlin 50 and 51 were similar enough to the Merlin 20 to warrant trial by an American manufacturer.
- (14) (15) (34)

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Meanwhile, Packard was experiencing considerable difficulty in converting English drawings to American standards, making the drawings conform to the engine, and establishing tooling requirements. They predicted that full production could not be achieved before January 1942. In January 1942, although Packard had shipped fewer than four percent of the engines scheduled in its basic contract, the British were planning to requisition 14,000 more and desired an expansion of Packard's capacity to accommodate 1400 a month. On 9 February, the Materiel Division, Wright Field, received instructions to take action to put this proposal in effect. In order to enable Packard to get the required tools on order in time to keep their priority, a preliminary Appendix "A" was rushed to completion and a letter of intent, dated 26 February 1942 was issued to cover the supplies. The take-out letter for expansion of facilities under Projects 43B and 43B-1, which was signed 7 May 1942, was for \$23,905,232. The cost of these projects was chargeable entirely to the United States government, since the one-to-two distribution of costs between the United States and Britain had been suspended. Just prior to the issuing of this take-out letter (15 April 1942) an amendatory agreement was executed which increased Plancor 1 by \$262,240 for additional tool room facilities. Project 45B-2, providing for an aluminum forge shop, was processed separately by the Aluminum and Magnesium Branch, War Production Board, Washington.

During the first year and a half of production of Merlin engines, the personnel at the Packard plant had undergone some changes. On 8 January 1942, the Central Procurement District Resident Representative at Detroit had charged Packard with delays on account of lack of proper supervision, inadequate training of personnel, lack of quality control, improper allotment of floor space, and lack of coordination between departments. On 18 March, an Air Corps investigator reported that changes in organization were being reflected in improvements on the production line. He recommended that the Air Corps personnel at the plant be exchanged for men of more experience and diplomacy.

In the fall of 1942, Packard engineers had developed an improvement on the Rolls-Royce Merlin 60, or V-1650 as it had been designated in the United States, which incorporated a two-speed, two-stage supercharger, resulting in higher power at greater altitude. This adaptation was called the V-1650-3. Conferences were held in Washington regarding conversion to the improved model and expansion necessary to put it in production. A schedule was arranged, beginning with one engine per day in March 1943, five per day in April, and eight per day in May. Great emphasis was laid on getting machinery to Packard, which had complained of difficulty in getting clearances. Expansion was planned to provide a capacity of 2000 engines per month, of which 225 would be V-1650-3's. On 30 September 1942, a take-out letter for Industrial Planning Section Project 43B-3, in the amount of \$2,347,856 was signed.

Further conversion of V-1650-1's to -3's was handled under Projects 43B-4 and B-5. The former consisted of reallocating \$1,872,171 of unused balance from previous projects to altering 375 engines a month; B-5 consisted of an additional sum of \$2,705,690 for converting 800 engines a month.

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(97) On 12 November 1942, a proposal was presented to the Joint Aircraft  
 (98) Committee for an increase of 1000 - 1200 Merlin engines a month from  
 Packard. Since the British were requesting, at that time, that all  
 engines for export be equipped with superchargers, a study was also made  
 of the possibilities of increasing supercharger production. Expansion was  
 particularly desirable because of British demands for spare parts. In  
 (99) December, Packard submitted a schedule which started with 1024 single-  
 (103) stage and 26 two-stage engines in March 1943 and culminated with 2700  
 two-stage engines starting in June 1944. By November 1943, all production  
 would be of the two-stage type. (This schedule was revised in February  
 to include 3500 single-stage engines at the request of the British, who  
 were disturbed at the prospect of quick conversion decreasing total pro-  
 (119) duction in the next few months.) No additional facility was contemplated  
 because all engines in excess of 1600 per month would be fabricated by  
 (103) subcontractors and merely assembled at the Packard plant. However,  
 employment would be increased from 16,000 to 27,200, and 641 new machines  
 (106) would be required. On 26 April 1943, approval was obtained of the Under  
 Secretary of War for the sum of \$7,419,431, a like sum to be chargeable  
 (131) to the British.

During the fall of 1942 and the following winter, production of spare  
 parts for Merlin engines fell considerably short of requirements. In  
 March 1943, 29 overseas projects calling for Packard units were incom-  
 plete because of shortages of numerous items. However, in spite of  
 protests from the Supply Division, Air Service Command, Packard stated  
 that, since all its facilities were being utilized for the production of  
 engines on its original contract, additional parts could be produced  
 only "when, and if, fractions of machines and tail ends of materials  
 (120) were available." In an attempt to improve the situation, Wright Field  
 proposed on 4 March that an order for \$14,000,000 worth of spare parts  
 be placed with Packard, which would necessitate a loss to the British of  
 (121) (124) 1200 engines within the next four months. The Air Service Command in-  
 sisted that delivery of spare parts for 3000 V-1650-1's be completed by  
 May, at whatever risk to new production. While it was the opinion of  
 Lt. Col. W. G. Bain, Production Control Section, Materiel Center, Wright  
 Field, that the loss to the British would be only a paper loss, since  
 he believed that Packard had not "the machine tools and equipment to  
 (124) build 800 engines a month with complete spares, although their schedule calls  
 for 1100 this month (March)," the British Aircraft Commission would author-  
 ize a cutback of not more than 600 engines without the advice of the  
 (125) (127) Ministry of Aircraft Production.  
 (128)

At any rate, any cutback would have to be reached through Joint Aircraft  
 (122) (123) Committee channels. Although questioning the "emergency" nature of  
 Air Service Command's request for \$14,000,000 worth of spare parts (Brig.  
 Gen. K. B. Wolfe, Chief, Production Division, Wright Field, believed  
 Air Service Command's parts list was an old retroactive list on the  
 original 3000 engines), Materiel Command agreed to present the Joint  
 Aircraft Committee a case based on 600 engines' worth of spares, and on  
 (129) (130) 10 June a new schedule was drawn up accordingly.

On 24 June 1943, Packard notified Wright Field that they would be unable to  
 meet the current schedule for the reason that conversion to the two-stage



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- engine had placed an additional load on its aluminum casting department. Packard blamed the War Production Board for not permitting allocation of subcontracting to experienced sources of supply and limiting the field to inexperienced sources which could not possibly manufacture acceptable parts in time to meet the schedule. Far from being well on the way toward production of 2700 engines a month, they were equipped to produce no more than 1300. Fearful of the effect of Packard's delinquency on P-51 and British aircraft schedules, the Joint Aircraft Committee, on 1 July, directed that a survey be made of Packard's production possibilities. Production Branch, Materiel Division, Washington, was of the opinion that the aluminum casting difficulties were caused by lack of technical knowledge rather than by lack of facilities. It recommended that a new facility should be considered if requirements were raised above the 2700 peak. On the other hand, the Technical Executive, Materiel Command, Wright Field, believed that the installation of new facilities to expedite the Packard program would be useless, since a new facility would not be able to produce for twelve months.
- (136)
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- (140)

- On 15 July 1943, the Joint Aircraft Committee approved a production schedule identical to that of 10 June except for a redistribution of one-stage and two-stage engines, and Packard was notified that no further change would be made for eight months. The opinion that was held in some quarters that Packard would not meet the schedule was disturbing to the British representatives in the United States, who, along with Gen. B. W. Meyers, Deputy Assistant Chief of Air Staff, M&D, Washington, vigorously asserted that a monthly output of 2700 Merlin engines was most essential. Gen. Echols, Assistant Chief of Air Staff, M&D, Washington, recommended Continental Aviation and Engine Corporation as a source of supply for 1350 additional engines per month. At a conference held 6 August, it was agreed that Continental would be asked to produce at this rate plus 38.5 percent spare parts. To warrant this production, the British agreed to requisition an additional 15,000 engines, a move which caused Col. J. W. Jessums, Chief, Production Branch, Materiel, Maintenance, and Distribution, Washington, to write, "Let's not go to sleep and let all the engines get earmarked for UK."
- (141) (142)
- (143)
- (143) (144)
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- (145) (146)
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- (148) (146)
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- Plans were made to shift Continental's current programs (the R-1340 and R-975) in order to release its Muskegon, Michigan, plant to the V-1650. Packard was directed to furnish engineering data and sample engines. On 18 August 1943, Contract W-33-038-ac-415 was issued to Continental for production of 8400 engines and 27 per cent spares. Initial output was to start in March 1944, and peak production of 1350 per month was to be reached by April 1945. Defense Plant Corporation lease agreement for \$15,317,035 and Resources Control Section Project 145C for \$11,770,400 were granted for expansion of facilities. Resources Control Section admitted at the time these arrangements were made that they were probably inadequate. In fact, on 3 November Continental requested another \$28,921,752 in order to place orders for machine tools.
- (153)
- (161)
- (162)

- By November, it was believed that the spare parts problem was working itself out. A piece-by-piece compilation of spare parts for both current and back log items revealed that "considerably more Packard parts were . . . in existence than previously had been supposed." However, a comparison of British requirements and production progress at Packard indicated that Packard's entire production plus 325 engines per month from Continental were necessary to meet British schedules. Packard's
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- (166) delivery schedule was in arrears (320 engines on 1 October), and a serious situation would exist if Continental should not be able to start in July. The original hoped-for date had been March.
- (168) In spite of serious doubts on the part of Materiel Command, Wright Field, that Continental would be able to produce as planned, Gen. Nichols approved negotiations for expanding Continental's facilities. On 14 December 1943, a take-out letter in amount of \$40,000,000 was signed.
- (171) This sum included the \$11,770,400 allocated under Project 1450. The Ranger Engine Company was authorized as Continental's subcontractor for supercharger, wheel case, and propeller shaft parts, and the Lycoming plant for gears, pump assemblies, and other parts.
- (170) (178) (174) (176) (180)
- (187) During the winter and spring of 1944, the two principal difficulties encountered were a continued shortage of aluminum castings and delays in starting production in the plants of Continental's subcontractors. Delays in installing foundry and pattern equipment in new sources of supply for castings necessitated the establishment of a committee to coordinate production in the foundries and centralize inspection and salvage operations. It was felt that Packard was not taking aggressive action in placing necessary orders with foundries, and that both prime contractors were at fault in refusing to go outside the Detroit area for engine patterns. Packard's delay in delivering blueprints was blamed to a large extent for the difficulties experienced by Ranger and Lycoming. In April 1944, it was reported that Ranger was making excellent progress on four difficult assemblies, but Lycoming was still having a hard time. The first pilot line at Continental for the V-1650 was fired 11 June.
- (189) (185) (188) (193) (193) (195)
- (197) A meeting was held on 14 July 1944 of representatives of a special Air Forces - War Production Board committee and the manufacturers of V-1650's to determine the exact status of the program. It was revealed that Ranger had mistakenly understood that Continental, as prime contractor, had on order most of the necessary machine tools, tooling, and materials. The members of the committee concluded that lack of adequate coordination among the manufacturers had constituted a major obstacle to production. An ad hoc committee, set up by the Deputy Assistant Chief of Air Staff, Materiel, Maintenance, and Distribution, Washington, to assess the capacity of Packard, Continental, and their subcontractors, made an extensive investigation and reported that the principal obstacles had been (1) inexperienced and distant subcontractors, (2) shortages of materials, (3) engineering changes, (4) delays in tool and pattern deliveries, and (5) constant demand for spare parts. Still another investigating group, this time from Resources Control Section, revealed evidence that Packard would not reach peak production of 2700 engines per month until early 1945. This committee believed that Packard's schedule should be cut to 2400 and Continental's to 800.
- (198) (199)
- (203) By November 1944, Continental had delivered only 17 engines against a schedule of 70, and these engines were composed largely of Packard parts. Resources Control Section estimated that in order to bring Continental's output up to 800, Packard's would have to be cut to 1000. Rather than do this, and since British requirements had been reduced drastically, Resources Control Section recommended that all V-1650 production be concentrated at Packard, which was producing at the rate of 2000 per month.

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However, the Air Technical Service Command established a schedule which called for 200 engines a month from Continental from May 1945 to April 1946, all of which would be used in American P-51's; and between (204) (205) 1800 and 2000 a month from Packard, all for the British.

- (209) In January 1945, Packard submitted a forecast of funds considered necessary to carry on the V-1650 program. The Defense Plant Corporation refused to permit further expenditures unless covered by the "Continuing Capital Expenditures Program." An Appendix "A", covering, under this (210) (211) arrangement, \$77,543, was submitted, but Resources Control Section, on (215) 19 April, temporarily suspended Project 43A-4, Plancor No. 1.
- (217) On 31 May 1945, the V-1650 program at Continental was terminated. Production at Packard to satisfy British Lend Lease was contemplated for extension beyond June 1946, at the rate of 1000 engines a month, subject (216) to approval by the Joint Aircraft Committee.

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Date: 20 OCTOBER 1945

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CMT  
30 OCTOBER 1945

BY CHAR. G. SMITH, EXTEN. NEWS, U. S. A.  
BY THE BUREAU OF THE ARMY, WASHINGTON, D. C.  
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PART I

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1. (U) 2nd Ind. (Wrapper)  
14 Feb. 1939  
Fr: Col. F. E. Kennedy  
Exec., Mat. Div., WF  
To: Chief, AC, Wash.  
(File: CF, AAF)

Vast aero armament publicity preceeding Dec. 1938 prompted John Mc Manus, Pres. of Rolls-Royce, Inc. (N.Y.) to attempt to advance the 1000 H. P. Rolls-Royce "Merlin" of British make. He felt, under agreeable conditions, the procurement of this water-cooled airplane engine by the United States government, would eliminate foreign manufacture. The matter was investigated by Mat. Div., (WF) who felt the production of the Rolls-Royce engine should not be encouraged in this country as it was known to be more complicated from a production view point than the equivalent Allison liquid cooled engine. Accordingly, in Feb. 1939 the Chief, AC (Wash.) informed the Chief, Mat. Div. (WF) "It is believed that at the present time there is no necessity for the United States to procure engines abroad, nor for the United States to secure licenses to manufacture foreign engines in the United States."
2. (U) RAR 26 April 1939  
Fr: Maj. Gen. H. H. Arnold  
Chief, AC, Wash.  
To: Chief, Supply Div.  
OCAC, Wash.  
(File: CF, AAF)

In April 1939, the Chief, AC (Wash.) requested from the Supply Div., OCAC (Wash.) a comparison of the salient features of the Allison and Rolls-Royce engines. On 11 Sept. 1939 he forwarded this data by letter (attached) to Wm. Knudsen, Pres., General Motors Corp. (Detroit, Mich.), and pointed out unless intensive development work was immediately undertaken by the Allison Engineering Company, there was little possibility of the Allison engine matching the potential horsepower in any of the more powerful current engines.
3. (U) Ltr. 24 Nov. 1939  
Fr: Maj. Gen. H. H. Arnold  
Chief, AC, Wash.  
To: W. M. Gilman, Pres.  
Packard Motor Car Company  
Detroit, Mich.  
(File: CF, AAF)

Since the Air Corps was interested in obtaining additional sources of supply for high powered aircraft engines, it welcomed the Packard Motor Car Company (Detroit, Mich.) (hereinafter referred to as Packard) letter of inquiry (attached) dated 30 Oct. 1939, as to the possibilities of becoming a governmental source of supply on aircraft engines. Packard was directed to visit Lt. Col. Echols, Ass't Chief, Mat. Div., (WF) to discuss this project in detail.

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4. (U) Ltr. 12 Jan. 1940  
Fr: Brig. Gen. G. H. Brett  
Chief, Mat. Div., Wash.  
To: Rolls-Royce Company, Inc.  
New York, N.Y.  
(File: CF, AAF)
- The Mat. Div. (Wash.) gained the impression that the Rolls-Royce Company was averse to making an American enterprise of its latest engine. The Chief, Mat. Div. (Wash.) requested information from the Pres., Rolls-Royce (N.Y.), as to the company's reaction to any application the Government might make for an engine.
5. (U) IOM 2 Feb. 1940  
Fr: Lt. Col. O. P. Echols  
Ass't Chief, Mat. Div., WF  
To: Brig. Gen. G. H. Brett  
Chief, Mat. Div., Wash.  
(File: CF, AAF)
- Lt. Col. Echols, Ass't Chief, Mat. Div. (WF), reported to Brig. Gen. Brett, Chief, Mat. Div. (Wash.) concerning negotiations under way to secure for Wright Field, two British Merlin engines. The Rolls-Royce people were "fussy" about selling their engine which might be taken apart. Col. Echols had discussed the possibility of Bell Aircraft Corporation buying an airplane containing the engine and selling it to the Air Corps. The attached letter from Bell's Chief Design Engineer explained the difficulties involved. Col. Echols concluded that Mr. Morgenthau, Sec'y of Treasury, should facilitate the transaction by using the trading power he possessed because of the volume of material this country was selling the British.
6. (U) B&R 3 Feb. 1940  
Fr: Chief, Mat. Div. Wash.  
To: Chief, AC, Wash.  
(File: CF, AAF)
- The Chief, AC (Wash.) suggested that the Military Attache attempt securing a Merlin engine in view of Mat. Div.'s (Wash.) extreme interest in having tests performed on its highly efficient supercharger.
7. (U) Paraphrase of  
Code Cablegram  
6 March 1940  
Fr: London Military Attache  
To: WD, USA  
(File: CF, AAF)
- In response to the request (attached) that the London Military Attache purchase two Rolls-Royce engines, the WD, (USA) was informed that British governmental restrictions and unfilled firm orders precluded further orders. Negotiations were under way with the Air Ministry for the purchase of engines in stock.
8. (U) B&R 29 March 1940  
Fr: Chief, Inform. Div.  
CCAC, Wash.  
To: Chief & Exec., Mat. Div.  
Wash.  
(File: CF, AAF)
- By March 1940 two Merlin engines were on the water enroute to the United States for direct shipment to Wright Field, Dayton.



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9. (U) Memo 25 June 1940  
Fr: Maj. Gen. H. H. Arnold  
Chief, AC, Wash.  
To: Ass't Secy. War Wash.  
(File: CF, AAF)
- Gen. Arnold, Chief, AC, recommended to the Ass't Secy. War that Col. O. P. Echols, Ass't Chief, Mat. Div. (WF) be designated as the responsible agent and source of contact for all contractual and technical matters applicable to the Merlin 20 engine to alleviate complications arising in the negotiations with the Ford Motor Car Company. Attached letter, 27 June 1940, from Gen. Brett, Chief Mat. Div., Wash. and accompanying enclosure informed Col. Echols of this designation and action under way to make available to Packard, all drawings, specifications and the sample engine that had been in Ford's possession. Packard had signified its willingness to undertake the contract for the Merlin 20 engines.
10. (U) TWX 26 July 1940  
Fr: Packard Motor Car Co.  
Detroit, Mich.  
To: Col. O. P. Echols  
Ass't Chief, Mat. Div., WF  
(File: Contr. Files)
- Packard requested an audience at WF to expedite a final contract on the Merlin engine in July 1940. Since no cost experience had been established in the U.S. on this engine, Packard asked for a cost plus a fixed fee contract with a negotiated price after the first 15,000 engines.
11. (U) Ltr. 4 Sept. 1940  
Fr: Maj. F. P. Shaw  
Judge Advocate, WF.  
To: Chief, Contr. Sect. WF  
(File: Contr. Files)
- An analysis of a proposed contract for the production of 3,000 aircraft engines by Packard was prepared for Chief, Contr. Sect. (WF) by Maj. Shaw, Judge Advocate (WF). This contract was the instrument of a major and combined under-taking which involved at least four separate contracts: (first) a contract between Packard and a third party for 6,000 engines and a provision of further production, (second) a contract between Packard and the U.S. Government for 3,000 engines and a provision of further production, (third) a contract whereby the Reconstruction Finance Corporation would lend the Defense Plant Corporation money for facilities which the latter would lend Packard for use in manufacturing the engine, (fourth) a rental of \$1,500 per engine would be paid by Packard to the Defense Plant Corporation for the use of facilities acquired.
12. (U) Contract W535 ac-15678  
13 Sept. 1940  
(File: Contr. Files)
- Contract W535 ac-15678 for the production of 3,000 aircraft engines and data by Packard was approved by the Sec'y of War, 13 September 1940.

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13. (U) Memo 13 Sept. 1940  
Fr: Robert P. Patterson  
Ass't Secy. War, Wash.  
To: Brig. Gen. G. H. Brett  
Chief, Mat. Div. Wash.  
(File: CF, AAF)
- A facsimile of the letter signed by the British Ambassador covering the patents and right to manufacture the Rolls-Royce Merlin 20 engine was attached to the Packard contract. This permission was supplied the United States 13 June 1940. (letter attached)
14. (C) Memo 13 Jan. 1941  
Fr: Maj. Gen. H. H. Arnold  
Chief, AC, Wash.  
To: Col. O. Ward  
Office, Chief of Staff,  
Wash.  
(File: M&S)
- Maj. Gen. Arnold, Chief AC, (Wash.) asked the Air Corps for a statement as to the exact status of the Rolls-Royce engine at Packard. He questioned the statement from the Office, Chief of Staff (Wash.) that the British had exacted from the United States the promise of secrecy on manufacture of a 1,000 H.P. engine while they were in production on a Merlin of 2,000 H.P.
15. (C) Memo 21 Jan. 1941  
Fr: Brig. Gen. O. P. Echols  
Chief, Mat. Div., Wash.  
To: Brig. Gen. G. H. Brett  
Ass't Chief, AC, Wash.  
(File: M&S)
- Gen. Echols, Chief, Mat. Div. (Wash.) reviewed the exact status of the Rolls-Royce engine at Packard as requested by Gen. Arnold. The first flight test Merlin 20 was scheduled for delivery in March 1941. Extreme engineering difficulties were experienced by Packard due to conversion from English to American standards. Although construction and rework of facilities progressed on schedule, the delivery of raw materials, particularly aluminum castings, was questionable and machine tools were critical items.
- The Rolls-Royce Merlin 20 engine was an improved Rolls-Royce 10 with a two speed supercharger. In production in England, this engine was operating effectively in the Spitfire II airplanes. The 2000 HP Napier Lion Sabre engine, distinctly in service test development stage in Jan. '41, was enroute to the U.S. Gen. Echols recommended that these two engines be handled as separate projects by the AC.
16. (U) Reference Notes for Files  
31 Jan. 1941  
By: Lt. Col. P. Schneeberger  
Chief, Ind. Plan. Sect.  
WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- A lease had been concluded between the Gov't and the Packard Motor Car Company, Detroit, Mich. (hereinafter referred to as Packard). One-third of the value of the lease, or \$8,000,000, was chargeable to the U.S. and the remaining two-thirds to Britain. Mr. J. H. Marks (Packard Vice Pres.) stated that economic developments required a further increase of this lease for the U.S. Gov't in the amount of \$1,153,000. Col. P. Schneeberger, Chief, Ind. Plan. Sect. (WF) advised that a summary of data applying to this proposed expansion should be referred to the Prod. Eng. Sect. (WF) for analysis.

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17. (U) Reference Notes for File  
3 Feb. 1941  
By: Lt. Col. P. Schneeberger  
Chief, Ind. Plan. Sect., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Packard representatives visited the Ind. Plan. Sect. (WF) 3 Feb. 1941 to negotiate increases to apply to the Defense Plant Corporation (hereinafter referred to as DPC) lease between that company and the DPC 3 Sept. 1940 for production of Rolls-Royce Merlin 20 Airc. engines. The expansion requested consisted largely of increased costs of machinery, plant equipment, and increases in labor costs. Packard's estimate, based on the acquisition of buildings, machinery, and equipment, showed an increase of \$1,183,333 over the \$8,000,000 amount allocated by DPC. By this date, 50% of the building phase had been completed with an approximate 100% acquisition of machinery and 50% of the manufacturing tools.
18. (U) Reference Notes for Files  
6 Feb. 1941  
By: Lt. Col. P. Schneeberger,  
Chief, Ind. Plant. Sect., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Col. Schneeberger informed Mr. Marks in a telephone conversation that Washington had advised the Ind. Plan. Sect. (WF) that its analysis had shown the Packard project to be in good shape. However, the Ind. Plan. Sect. still lacked a letter from Packard indicating the British had carried their share of the increased costs. Upon receipt of this letter this proposed increase would be processed to Washington.
19. (U) Ltr. 6 Feb. 1941  
Fr: J. H. Marks, Vice Pres.,  
Packard Motor Car Co.  
Detroit, Mich.  
To: Lt. Col. P. Schneeberger  
Chief, Ind. Plan. Sect., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The proposed cost increase on the Rolls-Royce (Merlin) program showed a DPC increase of \$1,183,333, above the original contract provision of \$8,000,000, as compared to the British Purchasing Commission (hereinafter referred to as BPC) increase of \$3,700,000, over their original contract provision of \$13,333,333.
20. (U) TT 7 Feb. 1941  
Fr: Tech. Exec., Mat. Div., WF  
To: Fac. Sect., WM&D, Wash.  
(File: Ind. Ser. Br.,  
Res. Cont.)
- The Tech. Exec., Mat. Div. (WF) recommended that a letter of intent for \$1,183,333, be issued Packard applicable to DPC contract W535-ac-15678. This cost plus-a-fixed-fee contract in the amount of \$8,000,000, had been based on unsupported estimates submitted to the DPC by Packard. By Feb. 1941 Packard's experience, based on the acquisition of buildings, machinery and equipment, and rehabilitation, served as an accurate determination of costs and indicated the necessity for providing an increase of (a) machinery, equipment and facilities, \$7,433,333 (b) rehabilitation, modification and adaptation of existing facilities, \$440,000. The expanded facilities covered by the proposal were required for the production of 9,000 Rolls-Royce Merlin aircraft engines of which 3,000 were AG and 6,000 for the British. The contract had included a provision for rental cost of the expanded facilities at a rate of

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\$1,500 for each engine actually delivered by the contractor to the government.

21. (U) Memo 25 March 1941  
Fr: Brig. Gen. O. P. Echols  
Chief, Mat. Div. Wash.  
To: Maj. Gen. H. H. Arnold  
Chief, AC, Wash.  
(File: M&S)
- On 25 March '41 the Packard AC Inspector reported that delivery of the first Packard built Rolls-Royce engine would be two months late and full production could not be obtained prior to 1 Jan. 1942. Initial delays were caused by the differences between drawings and actual engine parts. Many patterns had to be reworked to change cast sections from blue print dimensions to dimensions found on the engine parts. Packard received 900 changes in March from Rolls-Royce on engine drawings initially furnished Packard which were not up-to-date.
22. (U) Ltr. 28 March 1941  
Fr: Maj. Gen. H. H. Arnold  
Chief, AC, Wash.  
To: Packard Motor Company  
Detroit, Michigan  
(File: M&S)
- Gen. Arnold advised Packard to have Packard representatives working with Rolls-Royce in England. Full advantage could thus be taken by British experience, avoiding time lost in changes.
23. (U) Ltr. 28 May 1941  
Fr: T. P. Wright  
Ass't Chief, Airc. Sect.  
OPM, Wash.  
To: Brig. Gen. O. P. Echols  
Chief, Mat. Div., Wash.  
(File: M&S)
- In the opinion of T. P. Wright, Ass't Chief, Airc. Sect. OPM (Wash.) the Merlin engine bordered so closely on obsolescence it would not be economical to spend time and money trying to improve it. Plans had been discussed in May 1941 of the improvement of the Merlin engine by the incorporation of an intercooler on a two-stage supercharger.
24. (U) Ltr. 3 June 1941  
Fr: F. D. Roosevelt, Pres.  
United States  
To: Hon. Jesse H. Jones  
Admin., Fed. Loan  
Agency Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- F. D. Roosevelt, Pres. U.S. expressed an opinion to Hon. J. H. Jones, Adm. Fed. Loan Agency (Wash.) that steps should be taken to acquire for national defense certain facilities then operating under British contracts. After completion of British orders, plants should be made available for producing supplies for the U.S. Gov't. Attached letter from J. J. McCloy, Act'g Secy. War, listed for the Adm. Fed. Loan Agency, the plants necessary to national defense which were producing articles financed by the RFC. The Packard Motor Car Company, producing airplane engines, was one of them.



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25. (S) Memo 18 June 1941  
 Fr: Maj. Gen. G. H. Brett  
 Chief, AC, Wash.  
 To: Ass't Secy. War for Air  
 Wash.  
 (File: M&S)
- Gen. Brett, Chief, AC complained to the Ass't Secy. War for Air in June '41 that the British were non-cooperative in connection with technical developments.
26. (U) Ltr. 14 July 1941  
 Fr: Packard Motor Car Co.  
 Detroit, Mich.  
 To: Ind. Plan. Sect., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont.)
- Packard submitted a letter to the Ind. Plan. Sect. (WF) based on estimates of 10 July 1941 which indicated a further need of DPC funds in the amount of \$766,777. The BPC share of the funds would be \$1,033,887.
27. (U) IOM 15 July 1941  
 Fr: Maj. A. W. Harris  
 Chief, Structure Eval.  
 Unit., WF.  
 To: Chief, Ind. Plan. Sect., WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Structures Eval. Unit, Ind. Plan. Sect. (WF) made an analysis of Appendix "A" and various accompanying exhibits, plans and specifications as submitted by Packard to cover the requested DPC increase of \$766,777. Estimates in Schedule II-a of \$266,106 to cover the cost of a new Chip Salvage and Oil Recovery Building appeared reasonable. Attention was called to such items which could not be properly estimated at that time as listed under Schedule V. With the revision of Appendix "A" these items could be set up as contingencies for rearrangement and relocation costs to the extent of \$258,078.
28. (U) Ltr. 17 July 1941  
 Fr: Packard Motor Car Co.  
 Detroit, Mich.  
 To: Chief, Ind. Plan.  
 Sect., WF.  
 (File: Ind. Serv. Br.,  
 Res. Cont. Sect.)
- Packard furnished the Ind. Plan. Sect. (WF) with a break-down of the \$2,300,330 for the expansion of facilities. Investigation disclosed that the savings accomplished by chip and oil salvage would justify an expenditure of \$58,000 for the construction of a building. Packard's original provision for test cells had been guided by English Rolls-Royce experience. However, American aircraft engine manufacturers' knowledge indicated an increase of test cells costing \$208,106 would be advisable. Allocation of \$258,078 was for rearrangement and relocation of buildings. Processing of machine methods by English standards required \$1,737,849 for machinery and equipment. Laboratory and testing equipment in the sum of \$18,297, and furniture and fixtures in the sum of \$20,000 were also needed.

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29. (U) IOM 23 July 1941  
 Fr: Lt. Col. K. B. Wolfe  
 Chief, Prod. Eng.  
 Sect., WF.  
 To: Chief, Ind. Plan.  
 Sect., WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- The Prod. Eng. Sect. believed that the list of machinery and equipment in the amount of \$1,776,146 for the expansion of facilities for Packard appeared reasonably accurate as far as costs were concerned. They suggested that miscellaneous items in Program C be itemized as the amount listed was in excess of the allowable percentage for miscellaneous equipment.
30. (U) TT 31 July 1941  
 Fr: Tech. Exec., Mat. Div., WF.  
 To: Fac. Sect., MM&D, Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- The Tech. Exec., (WF) recommended that the Fac. Sect. (Wash.) secure the approval necessary to effect an increase of \$2,300,330, of which \$766,777 was applicable to DPC contract Plancon No. 1 for the erection of a Chip Salvage building and 14 additional test cells, installation of additional machinery and rehabilitation and adaptation of certain parts of Packard.
31. (U) Ltr. 1 Aug. 1941  
 Fr: Lt. Col. F. M. Hopkins, Jr.,  
 Chief, Fac. Sect., Wash.  
 To: Chief, Ind. Plan. Sect., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- On 1 Aug. 1941 Lt. Col. F. M. Hopkins, Jr., Chief, Fac. Sect. (Wash.) informed the Chief, Ind. Plan. Sect. (WF) that the expansion for Packard under DPC for \$766,777 had been forwarded to the Under Secy. War for necessary action. The original DPC lease agreement of \$8,000,000 had already been increased by \$1,183,000 in accordance with request made in TT Ind-T-186 dated 7 Feb. 1941. No WD take-out letter had been necessary to cover this lease agreement. It had been handled by reimbursement based on engine production.
32. (U) TT 23 Aug. 1941  
 Fr: Fac. Sect., Wash.  
 To: Ind. Plan. Sect., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- DPC would issue a letter to Packard for acquisition of necessary machinery and equipment (see attach. to TT) as soon as OUSW and DPC received assurance that machinery and equipment in the amount of \$1,776,146 would be necessary and would not become available through curtailment of production in the automotive industry. Negotiations were in progress to place the original lease agreement on a one dollar a year basis.
33. (U) TT 29 Aug. 1941  
 Fr: Ind. Plan. Sect., WF.  
 To: Fac. Sect., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Ind. Plan. Sect. (WF) advised Fac. Sect. (Wash.) that an investigation of available facilities would be made at Packard.

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34. (S) R&R 30 Aug. 1941  
 Fr: Maj. Gen. O. P. Echols  
 Chief, Mat. Div., Wash.  
 To: Maj. Gen. H. H. Arnold  
 Chief, AC, Wash.  
 (File: CF, AAF)

The principal difference between the Merlin 20, a two-speed engine under production at Packard, and the Merlin 60 and 61 was that the latter models were two-speed, two stage engines. The British took exception to the American attitude toward being asked to produce an engine (the 20) not up to date; they regarded the 60 and 61 models as nebulous. Drawings for the conversion from -20 to -60 (an addition, not a change of basic type) were already in America and the -60 supercharger was being shipped to Wright Field. Complete information and data were required by the Power Plant (WF) to incorporate engine changes and determine test procedures in conjunction with Packard. From the American viewpoint the Sabre engine, also under consideration, was a complicated piece of equipment and should only be produced by the people who were familiar with it. In addition to the expansion of our engine industry and our own liquid-cooled engine developments, we had one engine at least equal to the Sabre for pursuit purposes. The heavy bomber program was subjected to the British criticism, "We hear very alarming reports from America as to the disinclination generally to indulge in the manufacture of this difficult type of aeroplane ...." Early Congressional disapproval and British antipathy had slowed the start of the bomber program. The current program was hampered not only by materials and tooling and labor problems, but also British pressure for pursuit and trainer planes.

35. (U) Reference Notes for File  
 2 Sept. 1941  
 By: Col. P. Schneeberger  
 Chief, Ind. Plan. Sect., WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

Mr. Budd, Packard representative, telephoned Col. Schneeberger, expressing a desire for an AC decision concerning the utilization of used machinery at Packard. He stated an unwillingness on the part of the AC to pay an additional rental per engine and the nature of the interest to be charged had been other factors which had delayed the Packard project.

36. (U) TT 3 Sept. 1941  
 Fr: Ind. Plan. Sect., WF.  
 To: Fac. Sect., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

Ind. Plan. Sect. (WF) requested information from the Fac. Sect. (Wash.) as to the status of the DPC lease on Plancor No. 1 with Packard since notice of approval of \$1,183,333, increase had not been received at WF.

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37. (U) IOM 13 Sept. 1941  
Fr: Maj. C.H.S. Russell  
Prod. Eng. Officer,  
Central Proc. Dist.  
Detroit, Mich.  
To: Prod. Eng. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- A conference held on 4 Sept. 1941 at Packard revealed that facilities made available through the curtailment of automotive production would approximate two percent of tools adaptable to Rolls-Royce engines. This diversion to aircraft work would prevent a minimum of automotive production.
38. (U) IOM 16 Sept. 1941  
Fr: Lt. Col. E. B. Wolfe  
Chief, Prod. Eng. Sect., WF.  
To: Chief, Ind. Plan. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Upon the basis of a careful investigation of the Packard facilities made by Maj. C. Russell, Prod. Eng. Officer, Central Proc. Dist., (WF) recommended Packard be granted the expansion it requested. This investigation revealed that facilities made available through the curtailment of automotive production had been comparatively small and could not be utilized without upsetting the production system.
39. (U) TT 20 Sept. 1941  
Fr: Ind. Plan. Sect., WF.  
To: Fac. Sect., Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Ind. Plan. Sect. (WF) requested that Fac. Sect. (Wash.) further negotiations for increases for Packard upon advice from Prod. Eng. Sect. (WF).
40. (U) Ltr. 7 Jan. 1942  
Fr: W. S. Merick,  
DPC Div. Engr.  
Detroit, Mich.  
To: W. L. Drager, Chief  
Engr. DPC, Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The DPC Div. Engr., Detroit, Mich., requested DPC (Wash.) for an approval of transfer of \$7,000 from Schedule II under Rearrangement to Schedule III under Furniture and Fixtures to provide for additional furniture and fixtures for increased personnel incident to the production program of Packard's Aircraft Division. The DPC had agreed to transfer \$14,000 from their Rearrangement Budget to total a required \$21,000. DPC, (Wash.) referred this request to WF for approval. J.R. Volmer, AC Inspector, U.S. Army at Packard believed at least a portion of the funds referred to should be made available to provide facilities for personnel already on duty.
41. (U) Ltr. 8 Jan. 1942  
Fr: Packard Motor Car Co.  
Detroit, Mich.  
To: Col. P. Schneeberger  
Chief, Ind. Plan. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Although Packard felt unable to make an accurate estimate in Jan. 1942 of the additional tools and machines required, it had definitely been determined a moderate sized space should be equipped for the manufacture of perishable tools. Col. Schneeberger felt the "manufacture of perishable tools" appeared to be a matter of maintenance and as such was not an item to be financed by DPC. The purchase of perishable tools was not acceptable for facilities as they were carried under plant overhead.

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42. (U) Ltr. 8 Jan. 1942  
Fr: Maj. J. S. Dexter  
ACRR, Detroit, Mich.  
To: Chief, Mat. Div., Wash.  
(File: M&S)
- By Jan. 1942 Packard had shipped less than 4% of the Rolls-Royce engines scheduled in its basic contract. Packard had been hampered by an early A-1-C priority and inadequate and inaccurate drawing and design data from the Rolls-Royce people in England. Packard's own delays could be attributed to: lack of proper supervision, inadequate training of personnel, lack of quality control, improper allotment of floor area, lack of coordination between purchasing, engineering, inspection and production. The parts which held up production were gears and supercharger casings. Prod. Eng., Central Proc. Dist. (Detroit) gave Packard until 8 Feb. 1942 to improve deliveries. Facilities permitted a peak delivery of 25 engines per day.
43. (U) Ltr. 14 Jan. 1942  
Fr: Packard Motor Car Co.  
Detroit, Mich.  
To: Col. F. Schneberger,  
Chief, Ind. Plan. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Packard submitted a request to the Ind. Plan. Sect. (WF) for additional loans for (a) emergency tool room equipment in the amount of \$669,936 (b) furniture and fixtures in the amount of \$116,784. Accompanying the request was a report on the investigation of tool room facilities and a statement by F. G. Chesbro of the Packard's Master Mechanics' Div., Airc. Eng. Div. He stated that 375,000 tools were required in a period of 90 days for the production of aircraft motors and that even with the proposed expansion of tool production facilities, amounting to \$669,936, machines working 20 hours per day, 25 days per month, could only produce 3% of the total requirements.
44. (U) Ltr. 23 Jan. 1942  
Fr: Packard Motor Car Co.  
Detroit, Mich.  
To: W. S. Merick, DPC Div.  
Eng. Detroit, Mich.  
(File: Ind. Serv. Br.,  
Res. Cont. Sect.)
- DPC had directed Packard to take certain steps for protection of the plant, indicating that if the cost of these improvements ran in excess of allowed DPC commitments, favorable consideration would be given to an amendment to the lease agreement. Packard stated that it did not know how to meet this expense and desired DPC to take the matter into immediate consideration. The British had already stated that they had no funds available from which this expenditure could be met.
45. (U) Ltr. 27 Jan. 1942  
Fr: T. P. Wright, Ass't Chief,  
Aircraft Br., Wash.  
To: C. R. Fairey, Dir. Gen.  
BAC, Wash.  
(File: M&S Files)
- In addition to 1,000 Merlin engines approved by JAC, 26 Jan. 1942, the BAC intended requisitioning 13,000 more engines. BAC desired a Packard monthly production rate of 1,400 engines. The probability of this increase in production was contingent on Packard's other defense orders and the handling of its labor force in congested Detroit. As soon as AC funds were made available for this increase, Packard was to be informed and requested for estimates.



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46. (U) 1st Ind. 2 Feb. 1942  
Fr: Col. K. E. Wolfe  
Chief, Prod. Eng.  
Sect., WF.  
To: Chief, Indust. Plan.  
Sect., WF.  
(File: Ind. Serv. Br.,  
Res. Cont. Sect.)
- Items listed in Appendix "A", Schedule III (D) amounting to \$116,784 were found necessary in view of the findings made by the Prod. Eng. Sect. (WF) upon request from Indust. Plan. Sect. (WF) for comments and recommendations as to the necessity of additional loans for machinery, equipment, furniture and fixtures for Packard. Central Proc. Div. had forwarded a letter 16 Jan. 1942 stating that in their opinion tool room expansion was urgently needed at once.
47. (U) Ltr. 3 Feb. 1942  
Fr: T. P. Wright, Ass't Chief  
Aircraft Br., WPB, Wash.  
To: Lt. Col. F. M. Hopkins  
OCAC, Mat. Div. Wash.  
(File: M&S)
- With the completion of the original 9,000 Packard Merlin engine order, plans were laid to achieve an increase in Packard monthly rate of production to a peak of 1400 engines per month. In the opinion of T. P. Wright, WPB (Wash.) this expansion appeared difficult. He suggested that Packard be requested to submit a study on ways and means of effecting this production.
48. (U) IDM 8 Feb. 1942  
Fr: Lt. Col. F. W. Timberlake  
OCAC, Mat. Div. Wash.  
To: Lt. Col. F. M. Hopkins  
OCAC, Mat. Div. Wash.  
(File: M&S)
- The 14,000 additional Packard Merlin engines for the British were divided between 1,000 engines requisitioned and approved on British Lend Lease and 13,000 engines in the acceleration program. Inasmuch as the OCAC was confident funds would be approved by March, plans were laid to request Packard's estimates, which involved a production increase from 900 to 1,400 per month.
49. (U) IOM 9 Feb. 1942  
Fr: Maj. F. I. Ordway, Jr.,  
Ass't Exec.  
Mat. Div., Wash.  
To: Tech. Exec., Mat. Div. WF.  
(File: M&S Files)
- Maj. Ordway, Ass't Exec., Mat. Div., (Wash.) directed the Tech. Exec., Mat. Div., (WF) to take the necessary action to get Packard started on the production of 14,000 Merlin engines.
50. (U) Immed. Act. Ltr.  
17 Feb. 1942  
Fr: Col. P. Schneeberger  
Chief, Ind. Plan. Sect., WF.  
To: Chief, Facilities Sect.  
OCAC, Wash.  
(File: Ind. Serv. Br.,  
Res. Cont. Sect.)
- Indust. Plan. Sect. (WF) submitted to chief Facilities Sect. (Wash.) an analysis of Packard's estimates covering costs of additional machinery and equipment to enable Packard to manufacture perishable tools in quantities adequate to meet emergency needs.



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51. (U) TT 19 Feb. 1942  
 Fr: Chief, Facilities Br.  
 Indust. Plan. Sect. WF  
 To: Supervisor, Central Proc.  
 Dist. Detroit, Mich.  
 (File: AES, Res. Cont.)
- Facilities Br., Indust. Plan. Sect. (WF) informed the Supervisor of the Central Proc. Dist., Detroit, Mich. that recommendations for approval for the expansion of Packard in the amount of \$786,720 had been forwarded.
52. (U) TWX 23 Feb. 1942  
 Fr: Facilities Sect.,  
 OOCAC, Wash.  
 To: Ind. Plan. Sect., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Facilities Sect. (Wash.) notified Col. Schneeberger, Ind. Plan. Sect., that Army & Navy Munitions Board had stated that orders for tools would have to be placed by 1 April or lose their urgency standing. Packard complained to Facilities Sect. (Wash.) that it was taking two months to get an "Appendix A" through Col. Schneeberger's office. Because of the stand of the Munitions Board, Facilities Sect. (Wash.) felt all matters of tool procurement should be rushed: "We must process and justify later."
53. (U) Ltr. 23 Feb. 1942  
 Fr: Col. A. E. Jones,  
 Chief, Contr. Sect., WF  
 To: Packard Motor Car Company  
 Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Authority was granted Packard in view of the Government's contemplated procurement of 14,000 additional Merlin engines to proceed with preliminary work on specification, price and delivery dates, up to the point of actual purchases. Approximately \$14,000,000, worth of additional machinery was necessary, incident to the construction of these engines in the time desired by the Government.
54. (C) Ltr. 24 Feb. 1942  
 Fr: Col. P. Schneeberger, Chief  
 Ind. Plan. Sect., WF  
 To: Supervisor, Central Proc.  
 Dist., Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Ind. Plan. Sect. (WF) requested Central Proc. Dist. Detroit, Michigan, to investigate the plant protection program at Packard, getting a statement from that company as to whether or not they would be able to defray these costs from contingency funds supplied under the pending amendment to Plancon 1, IFS project Number 43 A-3 which was processed 17 Feb. 1942;
55. (U) Ltr. 25 Feb. 1942  
 Fr: Maj. R. Shawhan  
 Ind. Plan. Sect., WF  
 To: Chief, Fac. Sect.  
 Mat. Div., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- On 25 Feb. 1942 The Ind. Plan. Sect. (WF) forwarded two copies of preliminary Appendix "A" as submitted by Packard. One copy was intended for DPG perusal.

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56. (U) IOM 25 Feb. 1942  
Fr: Col. K. B. Wolfe  
Chief, Prod. Eng. Sect.  
Mat. Div., WF  
To: Chief, GFE Br.,  
Prod. Eng. Sect.  
Mat. Div., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Prod. Eng. Sect. (WF) informed the GFE Br. of Prod. Eng. Sect. (WF) that the procurement of the 14,000 additional Packard Merlin engines would call for 15% spare parts. These parts would ultimately be requisitioned under RFDA 8967 for 1,000 engines and RFDA 9902 for 13,000 engines.
57. (U) IOM 26 Feb. 1942  
Fr: Col. K. B. Wolfe  
Chief, Prod. Eng. Sect.  
Mat. Div., WF  
To: Chief, Contr. Sect.  
Mat. Div. WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Prod. Eng. Sect. (WF) requested the Contr. Sect. (WF) to issue a letter of intent to Packard to cover the procurement of 14,000 Merlin engines, purchased for the British under lend lease, at an estimated \$20,000.00 each, plus spare parts to the value of approximately 15% of the total cost. Additional facilities were required by Packard in connection with this procurement.
58. (U) Ltr. 27 Feb. 1942  
Fr: Packard Motor Car Company  
Detroit, Mich.  
To: Ass't Chief, Mat. Div., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- One of the most serious problems Packard faced in the production of aircraft engines was the training of personnel. Early personnel training had been conducted in its Marine Engine Division. With the receipt and installation of machinery, training was transferred to the machine shop of the Aircraft Division. With production well under way, this method proved inefficient and unsatisfactory. Accordingly a detailed training program was prepared by Packard and forwarded WF for consideration and approval.
59. (U) IOM 4 March 1942  
Fr: Col. A. E. Jones  
Chief, Contr. Sect.  
Mat. Div., WF  
To: Chief, Ind. Plan. Sect.  
Mat. Div., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- By 4 March 1942 negotiations were being conducted with Packard for the procurement of 14,000 additional Merlin engines. The Letter of Intent, dated 26 Feb. 1942, had been issued to cover the supplies. It was estimated that approximately \$20,000,000, additional tools and facilities were necessary to produce these engines in the time required.
60. (U) Memo 6 March 1942  
Fr: D. C. Mac Keachie  
Chairman, Plant Site  
Board WFB, Wash.  
To: Chief, AC Wash.  
(File: M&S)
- The Plant Site WFB (Wash.) Board formally approved the expansion of Packard at an estimated cost of \$25,000,000, with the understanding the War and Navy Depts would endeavor to remove from the Detroit area, less essential plants operating there in March 1942. However, Chief, Requirements Sect. WFB (Wash.) stated 13 March 1942

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162. (R) Ltr. 3 Nov. 1943  
 Fr: Maj. P. W. Huston  
 Res. Cont. Sect.,  
 Central Proc. Dist.  
 Detroit, Mich.  
 To: Chief, Res. Cont. Sect.  
 Mat. Com., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Continental, having committed nearly all of \$10,443,400 previously allocated to Schedule III-A, requested an immediate amendment to DPC lease agreement in the amount of \$28,921,752 in order that purchase orders could be placed to insure delivery of machine tools required. Other schedule increases were also contemplated.
163. (U) Memo 4 Nov. 1943  
 Fr: Maj. F. E. Squires  
 Prod. Div., Mat. Div.  
 OAC/AS, MM&D, Wash.  
 To: Col. S. R. Brentnall  
 Prod. Div., Mat. Div.  
 OAC/AS, MM&D, Wash.  
 (File: M&S)
- By 4 Nov. 1943 a scheduling of Packard spare parts for both concurrent and back log items, piece by piece had been compiled, and considerably more Packard parts were found to be in existence than previously had been supposed. The Packard spare parts situation was working itself out, and with the addition of a few more facilities, Packard was expected to be in a satisfactory position.
164. (S) Memo 8 Nov. 1943  
 Fr: Col. S. R. Brentnall  
 Chief, Prod. Br. Mat. Div.  
 OAC/AS, MM&D, Wash.  
 To: Brig. Gen. E. E. Meyers  
 Dep. AC/AS, MM&D, Wash.  
 (File: M&S)
- The Res. Div. MM&D (Wash.) supplied Gen. Meyers, Deputy AC/AS, MM&D, Wash.) with a summary of the British Empire program requirements for Rolls-Royce engines and a summary of production progress at Packard. This summary relegated the entire Packard production (figured at 2700 engines per month, peak) and 325 engines per month from Continental, to Britain. The schedules submitted in these summaries showed a small deficit in 1943 and 1944 with a large and growing deficit in 1945. These "paper" schedules, however, allowed for only 20% spares. This allowance would possibly prove too low in view of the increasingly large operation programmed for the British Air Force for the subsequent two years. Packard, already behind schedule, was unlikely to meet current schedules, and the British still required a substantial stock of Merlin engines as an insurance during the changeover to the two-stage Lancaster in America and the two-stage Lancaster and Mosquito in Canada.
165. (U) Memo 11 Nov. 1943  
 Fr: T. P. Wright, Director  
 ARCO, MM&D, Wash.  
 To: Brig. Gen. F.M. Hopkins, Jr.  
 Chief, Res. Div.  
 MM&D, Wash.  
 (File: M&S)
- By 1 Oct. 1943 Packard's delivery schedule of British engines was 320 in arrears; however, models -33 and -38 were ahead by 174. Changeover to the -224 engines of 100 in Dec. and 100 in Jan. would not be met until Feb., and only then if the British permitted partial use of old, instead of new centrifugally cast piston rings. In addition, the planned program on the -68's

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and 69's would be delayed. Packard believed the Alum. & Mag. Div. (Wash.) was not helping the situation by the combination of casting deliveries to Continental and others from facilities Packard considered their own.

166. (U) Memo 19 Nov. 1943  
Fr: T. P. Wright, Director  
ARCO, MM&D, Wash.  
To: Brig. Gen. B. E. Meyers  
Dep. AC/AS, MM&D, Wash.  
(File: M&S)

The Packard Merlin through schedules planned in Nov. 1943 were to be carried Aug. 1944 only; starting in July negotiations would be dependant on the final outcome of Continental's schedule. The Packard situation, which was none too good at best, would be decidedly bad if Continental fell behind on its starting date of July (this had already been set back four months from the hoped-for date). The attached conference report still presented castings as a problem but production schedule hold-ups would no longer be caused from a spares standpoint. The introduction of several model changes complicated scheduling.

167. (R) Ltr. 22 Nov. 1943  
Fr: Col. W. R. Herod,  
Act'g. Chief, Res. Cont.  
Sect. Mat. Com., WF  
To: Res. Div., AC/AS  
MM&D, Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)

Inasmuch as LPC funds requested by Continental (TF RSC 16178 dated 8 Oct. 1943) would not be sufficient to complete the Continental V-1650-3 Rolls Royce engine program, RGS Project 145 C was superseded and included in RGS Project 145 C-1, in the total amount of \$53,188,959.31. The March 1944 date to commence production was retained, with peak production of 1350 engines per month planned for April 1945. Substantial commitments had already been made. Policies pertinent to the other factors of the program were confirmed.

168. (U) Ltr. 25 Nov. 1943  
Fr: Col. T. A. Sims  
Deputy C/S, Mat. Com. WF  
To: Res. Div., AC/AS  
MM&D, Wash.  
(File: M&S)

Mat. Com. (WF) forwarded two copies of the proposed Continental plant expansion known as RGS Project 1450-1 to Res. Div. MM&D (Wash.) with the request that Gen. Echols give personal attention to the situation before making a favorable endorsement. Personnel in the Proc. Dist. and Mat. Com. (WF) entertained serious doubt as to Continental's ability to produce V-1650-3 engines in accordance with requirements. In their opinion Continental's management and supervisory personnel was not adequate to handle both the V-1650-3 and 1340 engine programs.

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169. (U) IDM 27 Nov. 1943  
 Fr: Brig. Gen. F.M. Hopkins, Jr. Chief, Res. Div., MM&D, Wash.  
 To: Maj. Gen. O. P. Echols AC/AS, MM&D, Wash.  
 (File: M&S)
- Res. Div., MM&D, (Wash.) called Gen. Echols' attention to Mat. Com's (WF) reluctance to process the proposed expansion at Continental. Gen. Echols approved the negotiations for Continental's expansion inasmuch as a special committee appointed by the Airc. Prod. Board, WPB (Wash.) had investigated and in their opinion Continental could produce the engines as planned.
170. (U) Memo 28 Nov. 1943  
 Fr: Col. C.S. Irvine Ass't Chief, Res. Div., Wash.  
 To: AC/AS, MM&D, Wash.  
 (File: M&S)
- Col. Irvine, Ass't Chief, Res. Div. (Wash.) and W. B. Murphy, WPB (Wash.) checked the New York area with reference to subcontracting for Continental in Nov. 43. Preliminary agreements involved the allocation of approximately 112,000 sq. ft. of floor space at Ranger Engine Company (hereinafter referred to as Ranger) for sub-assemblies on superchargers accessory and reduction gears. Ranger appeared to have the most fully equipped laboratory of any engine company in the country, which facility might be of considerable assistance in the Rolls Royce program in event manufacturing difficulties were encountered.
171. (U) TT 30 Dec. 1943  
 Fr: Res. Div. MM&D, Wash.  
 To: Res. Cont. Sect. Mat. Com., WF  
 (File: Ind. Ser. Br., Res. Cont. Sect.)
- Takeout letter for Continental Project RCS 145C-1 in the amount of \$40,000,000 was signed 14 Dec. 1943. This was a cut in the amount requested in the original expansion.
172. (U) Ltr. 3 Jan. 1944  
 Fr: Col. C. S. Irvine Spec. Advisory Group MM&D, Wash.  
 To: AC/AS MM&D, Wash.  
 (File: M&S)
- Packard's rate of production on Rolls Royce engines were 1268 against a scheduled 1300 in Nov. '43 and 1265 engines against a required 1400 for Dec. '43. The Continental schedule which called for the delivery of five engines in July 1944 appeared possible. By Jan. 1944 it was evident that completion of the sub-contract program should be accelerated. An analysis of Continental's operational problems showed a need for close checks on castings, machine tools, and durable tools.
173. (C) Memo 7 Jan. 1944  
 Fr: T. P. Wright, Dir. Airc. Res. Cont. Office MM&D, Wash.  
 To: Col. C. S. Irvine Spec. Advisory Group MM&D, Wash.  
 (File: M&S)
- Mr. John M. Reid of the Rolls Royce Company was attached to the Office of the Deputy AC/AS, MM&D, (Wash.) to assist in the production of Rolls Royce in the U.S. in the position of Technical Consultant under the supervision of Col. Irvine, Spec. Advisory Group, MM&D (Wash.) Mr. Reid's permanent station was Detroit. General Knudsen commented that Mr. Reid had done a very useful job in assisting Packard in getting started on the Merlin.

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174. (U) Memo 8 Jan. 1944  
 Fr: G. M. Lange  
 Technical Asst.  
 War. Prod. Bd, Wash.  
 To: W. B. Murphy, Deputy  
 Vice Chairman for Prod.  
 WFB, Wash.  
 (File: M&S)
- WFB (Wash.) laid plans to make the Lycoming plant available for the production of Continental Rolls-Royce engine parts. Since the PT-13 trainer program using the R-680 Lycoming engine was not to be cancelled, attention was directed to the possible use of the Jacobs Aircraft Engine Company, at Pottstown, Pa. (hereinafter referred to as Jacobs) for the production of this engine.
175. (U) Memo 17 Jan. 1944  
 Fr: Col. C. S. Irvine  
 Special Advisory Group,  
 MM&D, Wash.  
 To: Col. J. W. Sessums,  
 Exec., MM&D, Wash.  
 Brig. Gen. B.E. Meyers,  
 Dep. AC/AS, MM&D, Wash.  
 (File: M&S)
- Continental had been unable to arrange for Lycoming to subcontract on the Rolls-Royce Merlin parts in view of the controversy that had arisen over the PT-13 airplane and R-680 spares. The Spec. Advisory Group, Office, AC/AS, MM&D. (Wash) and Prod. Div., Mat. Com. (WF) were both of the opinion that a complete release of the Lycoming R-680 plant could be made by the transfer of required R-680 spares and engines to Jacobs.
176. (U) TWX 20 Jan. 1944  
 Fr: Brig. Gen. O.R. Cook  
 Prod. Div., Mat. Com. WF  
 To: Col. C.S. Irvine  
 Special Advisory Group,  
 MM&D, Wash.  
 (File: M&S)
- Subcontracting of the Continental Merlin Program was dependent upon the availability of Jacobs to assimilate the R-680 engine load from Lycoming. The unknown factor which controlled the feasibility of such a program was the lifetime spares requirements for the Jacobs R-755 engines. A favoring factor of the entire program was the contemplated 25% reduction of the lifetime spares requirements of the R-680 engine by ASC.
177. (U) TWX 20 Jan. 1944  
 Fr: Brig. Gen. O.R. Cook  
 Prod. Div., Mat. Com., WF  
 To: Jacobs Aircraft Engine  
 Company  
 Pottstown, Pa.  
 (File: M&S)
- A Wright Field conference between Army officials and Lycoming and Jacobs representatives was planned for 26 Jan. 1944. The purpose of the conference was to arrange a satisfactory schedule for the assimilation by Jacobs of the Lycoming R-680 engine and spare parts program.
178. (R) Ltr. 21 Jan. 1944  
 Fr: Brig. Gen. R.E. Crawford  
 C/S, Mat. Com., WF  
 To: Res. Div., Wash.  
 (File: M&S)
- The Ranger Aircraft Engine Division of Fairchild Engine and Airplane Corporation with plants at Jamaica and Long Island, N.Y. (hereinafter referred to as Ranger) was authorized by the AAF to act as a subcontractor for Continental for the manufacture of supercharger sub-assemblies, wheel case subassemblies and propeller shaft reduction gears for the Packard Rolls-Royce V-1650 engines. An Appendix "A" as submitted by Ranger for additional facilities including additional land and existing building at Jamaica was recommended by the EPD. Previous expansions in the sum of \$9,481,998.51 plus an

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estimated \$181,582.00 based upon a preliminary analysis of the project would permit the production of 1350 of the required spares with an additional 25% spare parts. The labor, housing and transportation were considered adequate to meet the proposed revision.

179. (C) Ltr. 26 Jan. 1944  
Fr: W. B. Murphy, Deputy  
Vice Chairman of Prod.  
WPB, Wash.  
To: Col. C.S. Irvine  
MM&D, Wash.  
(File: M&S)

There had been wide differences of opinion in the AAF on Continental's ability to make Rolls-Royce engines. An AAF delegation to Continental in Nov. '43 was in agreement that Continental would meet its schedule. It was the unanimous opinion of the Airc. Prod. Board (Wash), on 26 Jan. '44 that Continental must produce these engines, and there was no question but that full support must be given the Continental program by the AAF and WPB.

180. (U) Memo 27 Jan. 1944  
Fr: G.W. Lange  
Tech. Ass't. WPB  
Wash.  
To: W.B. Murphy, Deputy  
Vice Chairman of Prod.  
WPB, Wash.  
(File: M&S)

At a conference held in the Prod. Eng. Sect. (WF) 26 Jan. '44, which representatives of the AAF, Continental, Lycoming, and Jacobs attended, a decision was reached regarding the use of Lycoming's facilities on the Continental Program. On the basis of R-680 cancellations, the Lycoming representative believed his company would be able to complete this program without Jacobs' assistance; this was dependant on R-680 lifetime spares. Plans were laid to get Lycoming underway on the Continental Rolls-Royce program by 1 April '44; first consideration to be given gears, pump assemblies, after cooler house, rocker arms and other miscellaneous parts.

181. (C) Excerpts from Weekly  
Airc. Prod. Board Meeting  
29 Jan. 1944  
Fr: Lt. Col. T.A. Baldwin  
Asst. Exec., MM&D, Wash.  
To: Col. C.S. Irvine  
Special Advisory Group  
MM&D, Wash.  
(File: M&S)

General Knudsen, OUSW, expressed the opinion in an Airc. Prod. Board Meeting (Wash) that Continental's V-1650 production was unsatisfactory and that far too many changes had been made in the original agreement that established the subcontractors' arrangement. Mr. Murphy, Deputy Vice-Chairman of Prod., WPB, upon request, reported the percentage of completion of sub-contracts. He pointed out that slow handling of test facilities at Ronger and indecision concerning the use of Lycoming caused some delay in the program. Other delays he attributed to the attitude of WF officials who questioned the propriety of proceeding with the V-1650 program at Continental. Combined peak production of Continental and Packard was consonant with P-51 requirements plus export to England.

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182. (U) Memo 3 Feb. 1944  
 Fr: Brig. Gen. F.M. Hopkins, Jr.  
 Chief, Res. Div.  
 MM&D, Wash.  
 To: Chief, Legal Div.  
 OUSW, Wash.  
 (File: M&S)
- On 2 Feb. 1944 the Fac. Com. WFB approved the expenditure under DFC of \$181,582.00 for improvement of Ranger facilities.
183. (U) IDC 4 Feb. 1944  
 Fr: Col. C.S. Irvine  
 Special Advisory Group  
 Office AC/AS MM&D, Wash.  
 To: Maj. Gen. O.P. Echols  
 AC/AS, MM&D, Wash.  
 (File: M&S)
- A detailed review of the aluminum casting position pertinent to the V-1650 Rolls-Royce production indicated a very definitely serious situation; deliveries of critical castings showed no improvements.
184. (U) IDC 5 Feb. 1944  
 Fr: Col. C.S. Irvine  
 Special Advisory Group  
 Office AC/AS, MM&D, Wash.  
 To: Maj. Gen. O. P. Echols  
 AC/AS, MM&D, Wash.  
 (File: M&S)
- By 1 Feb. 1944 Continental's requirements at Muskegon and major sub-contractors such as Lycoming and Ranger were either established or in a satisfactory state of progress with one exception, which was the 125,000 sq. foot area in the Hupp building to be used for Continental's pilot line and 50% of their ultimate production of crankshafts, camshafts and connecting rods. Final commitments, either to sub-contractors or Continental shop orders for finished parts approximated 60%; miscellaneous production items were 85% ordered and well on schedule. Durable tools required close following.
185. (U) Memo 7 Feb. 1944  
 Fr: G.M. Lange  
 Tech. Ass't., WFB  
 Wash.  
 To: W.B. Murphy, Deputy  
 Vice-Chairman for Prod.,  
 WFB, Wash.  
 (File: M&S)
- By 7 Feb. 1944 cancellation of the R-680 engine program had not yet been effected at Lycoming. An engineering company, hired by Lycoming to check machining operations, were hampered by being unable to secure tool drawings and process sheets from Packard. Continental was dependent upon Packard for this information.
186. (U) Memo 15 Feb. 1944  
 Fr: G.M. Lange  
 Tech. Ass't., WFB,  
 Wash.  
 To: W. B. Murphy, Deputy  
 Vice-Chairman for Prod.,  
 WFB, Wash.  
 (File: M&S)
- George Lange, Tech. Ass't., WFB (Wash.) visited Ranger 15 Feb. 1944 in the company of two AAF officers to determine the status of progress on the Continental Program which Ranger had undertaken. Inasmuch as Ranger felt the several model engines they were building would not suffer a substantial cutback, they were not planning to utilize much of their facilities for the Rolls-Royce program. Of the three assemblies

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Ranger proposed manufacturing on the Continental program, 25 of the 470 parts would be built at Ranger, the balance to be subcontracted. Ranger's immediate problem was to get some assistance on gears.

187. (U) Memo 18 Feb. 1944  
 Fr: T. P. Wright, Director  
 ARCO, MM&D, Wash.  
 To: Col. C. S. Irvine  
 Spec. Advisory Group  
 Office AC/AS, MM&D, Wash.  
 (File: M&S)

T.P. Wright, Director, ARCO, MM&D (Wash.) forwarded a report from Stanton Ballard of the Casting Section, Alus. and Mag. Div. (Wash.) to Col. Irvine, Spec. Advisory Group, Office AC/AS, MM&D (Wash.). This report attributed the shortage of castings to two main factors: (1) The delivery and installation of general foundry equipment to those sources which were either expanding their production or are new to the program and (2) the delivery of pattern equipment to all sources. The report acknowledged Mr. Reid's suggestions struck at many weak points in the entire system.

188. (U) Memo 23 Feb. 1944  
 Fr: Col. C. S. Irvine  
 Spec. Advisory Group  
 Office AC/AS, MM&D, Wash.  
 To: T. P. Wright, Director,  
 ARCO, MM&D, Wash.  
 (File: M&S)

Col. Irvine felt it was imperative to coordinate through the Airc. Prod. Board and JAC a schedule in writing for Ranger that would reduce their manufacturing to a minimum consistent with an orderly flow of production to force Ranger to rearrange machinery and make floor space, equipment and personnel available for Merlin sub-assembly production. Continental was encountering difficulties in getting jig and fixture drawings from Packard, and Ranger and Lycoming had been unable to get any such drawings at all.

189. (U) Report of Meeting  
 25 Feb. 1944  
 Between: AAF Rep. and  
 Alum-Mag. Div., WFB  
 By: Maj. E. W. Wood  
 Eng. Div., AC/AS,  
 MM&D, Wash.  
 (File: M&S)

The serious situation prevalent in securing aluminum castings for the V-1650 Rolls Royce Merlin Engine Program necessitated the establishment of a committee to coordinate production in the foundries and work toward the centralization of inspection and salvaging operations for the reclaiming of castings. Many castings were being rejected due to inconsistencies in inspection policies and a lack of proper salvaging technique. It appeared that Packard was not taking aggressive action in placing the necessary orders with the foundries to enable them to operate efficiently and step up their production. Difficulty in obtaining patterns had resulted from Packard and Continental refusal to go outside the Detroit area to have engine patterns produced.



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190. (U) Memo 4 March 1944  
 Fr: George M. Lange  
 Technical Asst., WPB  
 Wash.  
 To: W. B. Murphy  
 Deputy Vice Chairman of  
 Production, WPB, Wash.  
 (File: M&S)

Geo. M. Lange, Technical Asst., WPB (Wash.), interviewed the Ranger representatives at Continental in connection with the progress Ranger was making on the Rolls Royce engine program. Upon realization that their own program was going to be substantially reduced and their future income was dependent upon Rolls-Royce, Ranger consequently started to give earnest effort to the Rolls Royce program. All process sheets of the 450 different parts in the three assemblies Ranger would manufacture were 98% checked. Of these, 30% of the total machine tool drawings were on hand and the balance was expected to be on hand by April 1944. It was planned to station Ranger personnel temporarily at Continental headquarters to set up a purchasing office.

191. (U) IDM 20 March 1944  
 Fr: Brig. Gen. F.M. Hopkins, Jr.  
 Chief, Res. Div., MM&D,  
 Wash.  
 To: Col. C. S. Irvine  
 Spec. Advisory Group  
 Office AC/AS, MM&D, Wash.  
 (File: M&S)

Gen. Hopkins, Chief Res. Div. MM&D (Wash.), requested in March 1944 that Col. Irvine, Spec. Advisory Group, OAC/AS, MM&D, (Wash), take action to quell the unrest at the Continental plant due to the fact that the employees appeared to feel that the program on Rolls Royce engines was not firm.

192. (U) Memo 20 March 1944  
 Fr: George M. Lange  
 Technical Ass't, WPB  
 Wash.  
 To: W. B. Murphy  
 Deputy Vice Chairman of  
 Production, WPB, Wash.  
 (File: M&S)

When the Rolls Royce engine program was initiated at Continental, the WPB (Wash) attempted to utilize, as far as possible, sub-contractors familiar with aircraft engine parts manufacture. Previous funds allocated to Ranger and a reduction of their own engine schedules permitted a release of 3,000 of their total factory payroll of 4,000 for subcontract work for Continental. The cancellation of the R-630 Program at Lycoming freed about 250,000 sq. ft. of floor space, a considerable amount of machine tool equipment, and about 2500 people for the Rolls Royce program. The Oldsmobile Div., Gen. Motors Corp. (Lansing, Mich.), was also considered a source.

The originally planned shift of the R-1340 engine to Garland, Texas, was made to the Jacobs Plant (Pottstown, Pa.) making 250,000 sq. ft. of floor space and 1100 people available at Continental's Garland plant to the Rolls Royce program.



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193. (U) IOM 3 April 1944  
 Fr: Brig. Gen. B.W. Chidlaw  
 Chief, Mat. Div. Office  
 C/AS, MM&D, Wash.  
 To: Brig. Gen. B.E. Meyers  
 Dep. AC/AS, MM&D  
 Wash.  
 (File: M&S)
- Lycoming and Ranger were Continental's two chief sub-contractors. By April 1944 Ranger was making excellent progress on the four difficult assemblies of the Merlin engine. Lycoming had had a hard time getting going. Continental was still hoping for July delivery of the first engine. The chief difficulty at that time was Packard's inability to deliver prints as required. Continental was still involved in definite schedule on the R-1340 transfer to Jacobs.
194. (U) Ltr. 8 June 1944  
 Fr: Continental Aviation &  
 Engr. Corp.  
 To: W. B. Murphy, Deputy  
 Vice Chairman for Prod.  
 WFB, Wash.  
 (File: M&S)
- Continental furnished a resume' of the machine tool program for WFB on the Merlin engine program at Continental, Ranger, Lycoming, and Oldsmobile. The sum total of deliveries with respect to shipments from the source of machine tools, durable tools, inspection tools, shop equipment, production gauges and cutting tools up to 5 June 1944 was 43%. The building expansion program was delayed by a serious lack of labor. As of 27 May 1944 building expansion was 11.69% complete and test cell additions 2.90% complete. A list of subcontractors was also furnished.
195. (U) TT 12 June 1944  
 Fr: Continental Aviation &  
 Engr. Corp.  
 Detroit, Mich.  
 To: Col. C. S. Irvine  
 Spec. Advisory Group  
 Office AC/AS, MM&D, Wash.  
 (File: M&S)
- The first pilot line at Continental on Rolls Royce Merlin 1650 was fired at 7:10 Sunday morning 11 June 1944.
196. (U) IDM 17 June 1944  
 Fr: Col. J. F. Phillips  
 AC/AS, MM&D, Wash.  
 To: Col. J. W. Sessums, Exec.  
 MM&D, Wash.  
 (File: M&S)
- By 17 June 1944 approximately 24 million dollars of the 40 million dollars authorized on the Continental Merlin project had been committed. Probably limitation of Continental to the manufacture of the V-1650-9 (Packard version of the British 14SM) type was under discussion. In addition to effecting a serious upset in Continental's financial plans, Continental's two main subcontractors, Ranger and Lycoming, would suffer serious dislocation if the V-1650 program were pushed back. Both of these companies had had their own work cut and other work denied them on the strength of their participation in the Continental Merlin engine program.

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197. (U) Committee Meeting Rpt.  
14 July 1944  
By: Howell Van Gerbig  
Ranger Rep.  
Ranger Aircraft Engines  
(File: M&S)

A meeting was held 14 July 1944 between a Spec. AAF Committee, Continental and Ranger to establish the potential schedule of Packard, Continental and Ranger to determine an overall picture of the Merlin Rolls Royce Engine output. Ranger originally understood that Continental, as the prime contractor, had had on order most of the necessary machine tools, tooling and materials, particularly in respect to the pilot line requirements. Subsequently this was proven untrue. When, upon investigation, Ranger determined that the progress of the program was several months behind schedule, in order to assist Continental, Ranger attempted in every way to secure clearances and expedite materials, equipment and also the necessary facilities. The consensus of the meeting was that the apparent difficulty lay in a lack of complete coordination by Continental with Ranger relative to its requirements. JAC approval in respect to facilities for Ranger would be forthcoming upon establishment of definite Merlin Engine schedules pursuant to a survey of all contractors and subcontractors by WFE.

198. (C) Memo 20 July 1944  
The Ad Hoc Committee on  
Packard-Continental  
Production  
Fr: Dr. A.E. Lombard, Jr.  
ARCO, M&S, Wash.  
To: AC/AS, M&S, Wash.  
(File: M&S)

The Ad Hoc Committee was set up 4 July 1944, by memo of the Deputy AC/AS, MM&D (Wash.) to assess the capacity of Packard, Continental, and their sub-contractors; (a) as regarded their maximum output and buildup according to type engines required and (b) to suggest the actual loading by types of the Packard and Continental facilities so as to meet the schedule of requirements. Packard's peak capacity was to be considered potentially 2700 engines per month in March 1945, plus spares; and Continental's peak capacity was to be considered potentially 1300 engines per month in Feb. 1946, plus spares.

No investigation was made of the requirements supplied the Committee (Appendix "C") as an operating basis, in accordance with the directive. The differences in the number of engines delivered each month and those scheduled were results of unavoidable contingencies. Contractors' schedules, made up after careful study and based on the assumption sub-contractors would deliver, were not met. The necessity of placing a large volume of work with subcontractors many miles away and their lack of "know how", contributed to delay; many subcontractors had been engaged on Gov't work not of the type and character of the Merlin engine.

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Materials, such as aluminum castings, throughout the fall of '43 and the spring of '44, had dictated the engine production schedule, reducing it by many engines. Inevitable engineering changes necessitated alterations in planning and tool equipment departments. Reviews of tool and pattern shops revealed unfulfilled delivery promises, as a general rule two or three months beyond date. The Services demanded the latest types of engines, embodying many major modifications. The irritating question of spare parts was always present; the contract for the single-stage engine was never fully covered with spares.

Continental (Appendix "E"):

Continental's first pilot line was completed 11 June 1944. The first engine, largely parts from Packard and ASC had been assembled and was on test at the time of the Ad Hoc Committee's investigation. Detailed inspection of Continental revealed its weakest point to be the production of wheelcases and supercharger assemblies from Ranger. Continental was in a thoroughly satisfactory position as far as material and labor were concerned. They were well organized and had a number of skilled engineers and mechanics available. Cooperation between Packard and Continental seemed to be complete.

Ranger (Appendix "F"):

Ranger, as a subcontractor to Continental, was to produce the entire supercharger assembly, wheel case and propeller reduction gear assembly. Pilot line machines were expected to be set up between 15 Aug. and 15 Sept. 1944. Exhibit I (Appendix F) dated 1 July 1944 covered in detail, the assistance Continental gave Ranger to secure pilot line tooling, blueprints, amodising, heat treat and test equipment and other miscellaneous facilities.

Packard (Appendix "G"):

The principal controlling factor at Packard was the quantity of spares required for the life of the two-stage engine. Allocation of spares was decided to the extent of 1.2 overhauls per engine, built to cover the life of the engine; where Packard showed idle capacity beyond the 1.2, spares were to be supplied to the extent of their capacity. The Committee felt that Packard had sufficient facilities and subcontractors to eventually make their total monthly quantity of 2700 engines, and that material was available. However, Packard was faced with certain labor problems and the problem of providing more spares than could be conveniently scheduled. In view of the spares position, Packard needed to rationalize their working hours, which would place the probable peak of engines at 2,400

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per month temporarily. Engineering of the -9 model (14SM) was scheduled for completion by 15 Sept. or 1 Oct. 1944.

199. (R) Report ISB-M-632  
25 July 1944  
By: Elmer A. Burdick  
Man. Methods, Res. Cont.  
Sect. Mat. Com., WF.  
(File: M&S)

The Res. Cont. Sect., Mat. Com. (WF) investigated the production expectancy as of Oct. 1945 of Merlin V-1650 engines and the effect the introduction of new models would have on the delivery schedule. Packard had 37,000 employees and utilized 2,483,600 sq. ft. of factory space; they expected to begin producing an average of 2,700 engines per month in Sept. 1944. Direct labor presented personnel problems. Res. Cont. Sect., Mat. Com. (WF) believed peak production of 2,700 engines per month would not be reached by Packard until early in 1945. Continental was sub-contracting approximately 75% of their program and making only a partial utilization of their 3756 direct labor employees as of June 1944 due to the production control operating an inefficient basis. The Res. Cont. Sect. concurred with the opinion of the Special Committee appointed to study Merlin engine production that Continental's schedule should be reduced from 1350 engines to 800 per month; this peak expectancy to be arrived at in Sept. and Oct. of 1945. A beneficial effect on labor morale at Packard could be reached by cutting their peak production to 2,400 engines per month. An investigation was recommended to determine the merits of re-grouping the V-1650 engine program as a whole, to increase efficiency and reduce unnecessary costs.

200. (U) IOM 1 Aug. 1944  
Fr: Col. G. E. Price  
Chief, Prod. Engr. Sect.  
Mat. Com., WF.  
To: Chief, Res. Cont. Sect.  
Mat. Com. WF.  
(File: Central Files)

Prod. Engr. Sect., M&S, (WF) believed that close supervision and control of Ranger by WF was warranted to assure Ranger meeting their commitments to Continental. The machine tool and tooling picture was in anything but a healthy state.

201. (G) Ltr. 2 Sept. 1944  
Fr: Maj. Gen. O. P. Echols  
AO/AS, M&S, Wash.  
To: Maj. Gen. B. E. Meyers  
Deputy, ATSC, WF.  
(File: M&S)

The BAC agreed to a further cut in the quantity of Merlin engines to be supplied from the USA with the stipulation that the Continental schedule would not be cut. If the Continental schedule remained as established in WE-11, the British two-stage requirements would be met as well as the V-1650-7/-9 production meeting the revised P-51 and P-52 requirements.

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202. (U) TT 15 Sept. 1944  
 Fr: Maj. Gen. O.P. Echols  
 AC/AS, M&S, Wash.  
 To: Res. Cont. Sect., ATSC  
 WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

Following a discussion of Merlin problems between John Reid and Gen. Echols, the latter directed WF to accelerate the production program of the V-1650-9 at Packard and Continental. This could be accomplished by Continental and Packard mutually working out an arrangement whereby Continental, if relieved earlier of the 1340 engine load, would have floor space and personnel available to take on the manufacture of those items set up for Ranger. In view of the high cost of production, WF was to investigate the possibility of completely terminating Ranger as a subcontractor on the Merlin program.

203. (U) IOM 10 Nov. 1944  
 Fr: Lt. Col. O.E. Mohler  
 Chief, AES, Prod. Sect.  
 ATSC, WF  
 To: Brig. Gen. O.R. Cook  
 Chief, Proc. Div.  
 ATSC, WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

Due to drastic revisions of British requirement for V-1650 and Merlin type engines of U.S. production, approximately 1800 engines per month would be scheduled through 1945. DPC funds in the total amount of \$55,317,035 were approved for Continental on the basis of a production rate of 1350 V-1650 engines per month. Funds were cut to \$50,213,171.39 with the reduction to 800 engines per month. By Nov. 1944 Continental had delivered 17 engines against a schedule of 70 engines with an estimated production cost of \$16,500. To prevent a drastic upward revision of the Packard built engine (to be priced at \$12,676.50) the Res. Cont. Sect. ATSC (WF) recommended all production be concentrated at Packard; in order to maintain 800 engines at Continental, Packard would be cut to 1000 engines per month. Packard's production in Nov. 1944 was 2,000 engines per month, although capacity was available to produce in excess of 2700 engines per month.

204. (C) IOM 20 Nov. 1944  
 Fr: Col. J. F. Phillips  
 AC/AS, M&S, Wash.  
 To: Brig. Gen. E.W. Powers  
 Deputy, AC/AS  
 M&S, Wash.  
 (File: M&S)

ATSC forwarded to M&S (Wash.) their recommended schedules for Packard and Continental Merlin engine production which reflected the decreases in British one-stage requirements. Continental was to be kept in at an established peak of 800 engines per month; these engines were for AAF P-51 aircraft. This action would cut Packard's peak production from 2000 to 1000 engines per month.

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205. (R) Ltr. 9 Dec. 1944  
 Fr: Col. H. A. Shepard  
 Acting Chief, Prod. Sect.  
 Prod. Div., Mat. Com., WF  
 To: Maj. F. H. Squires  
 Plans & Sched. Sect.  
 AC/AS, M&S, Wash.  
 (File: M&S)
- A Packard-Continental engine schedule was established by ATSC, WF. Continentals schedule was to be 200 engines per month by May 1945 through April 1946. Packards' tooling would be maintained for a peak production of 1975 engines per month.
206. (C) IDM 13 Dec. 1944  
 Fr: Col. J. F. Phillips  
 AC/AS, M&S, Wash.  
 To: Maj. Gen. C. F. Echols  
 AC/AS, M&S, Wash.  
 (File: M&S)
- The decreased British one stage engine requirements and the P-51 increases were reflected in the proposed Continental Merlin schedule. Recommended engine schedules, coordinated between Packard and Continental, showed a decrease of 5465 engines for 1945. As Continental had been cut from 800 to 200 engines per month, they would absorb 76% of the reduction.
207. (R) IOM 14 Dec. 1944  
 Fr: Col. G. H. Moriarty  
 Chief, Res. Cont. Sect.  
 Proc. Div., ATSC, WF  
 To: Res. Sect., CPD  
 Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Col. Moriarty, Chief, Res. Cont. Sect., Proc. Div. (WF) submitted to Res. Sect., CPD (Detroit) information to guide their recommendations pertaining to the advisability of freezing uncommitted Packard funds. Plancor 1, with an authorized amount of \$10,212,350, considered complete, had a committed gross of \$9,155,491 and \$56,859 available. Plancor 978, with a probable completion date of 15 Jan. 1945, with an authorized amount of \$47,752,584, had a committed gross of \$36,504,196 and \$1,148,388 available. A breakdown was furnished of Plancor 995 and regarded as sponsored by the Aluminum and Magnesium Div., WFB (Wash.).
208. (C) TT 22 Dec. 1944  
 Fr: Brig. Gen. E. M. Powers  
 Deputy, AC/AS, M&S, Wash.  
 To: Director, ATSC, WF.  
 (File: M&S)
- The schedule approved by JAC for Packard Merlin engines was the schedule as submitted from ATSC dated 9 Dec. 1944. Some modifications were made on this schedule. Plans were made to facilitate the Packard program by acceleration of the speed density pump program.
209. (U) Ltr. 9 Jan. 1945  
 Fr: Packard Motor Car Company  
 Detroit, Mich.  
 To: Facilities Br., Res. Cont.  
 Sect., CPD, Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- In accordance with instructions from DPC, Packard submitted estimates in connection with the Continuing Expenditures Program for Plancors No. 1 and No. 978. Plancor 1 was to cover additional facilities and equipment while Plancor 978 covered further building alterations and machinery. Both plancors applied to the production of V-1650-9 and -11, and Merlin 300-301.

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210. (U) 1st Ind. 19 Jan. 1945  
 Fr: Lt. Col. R. Anthony  
 AAF Plant Rep. at Packard  
 Detroit, Mich.  
 To: Chief, Facilities Br.,  
 Res. Cont. Sect., CPD,  
 Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Upon the withdrawal of DPC commitments, Packard was offered the use of a continuing Capital Expenditure Fund by the submission of a supplementary Appendix "A" approved by the AAF as sponsor. A separate appendix for Plancor 1 at an estimated \$19,473.25 for the first quarter was submitted inasmuch as this Plancor contained a provision for replacement expense. Plancor 995 was included with Plancor 978 in Appendix A which called for \$526,430.75 quarterly.
211. (U) Ltr. 31 Jan. 1945  
 Fr: Packard Motor Car Company  
 Detroit, Mich.  
 To: Division Engr. of  
 Defense Plant Corporation  
 Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Packard objected to the DPC decision to permit no further expenditures under Plancor 978 unless covered by the Continuing Capital Expenditure Program. Packard stated it had cooperated with this arrangement to the extent of laying out a program for 1945 but the Army had let days pass without using this means of furnishing facilities. Unless Packard was furnished facilities its production program of new model engines could not be completed.
212. (R) Ltr. 10 Feb. 1945  
 Fr: Maj. G. Wright  
 Chief, Res. Sect.  
 Central Proc. Dist.  
 Detroit, Mich.  
 To: Res. Cont. Sect.,  
 ATSC, WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- The CPD (Detroit) forwarded an Appendix A, RCS Project 43A-4, covering Continuing Capital Expenditure Funds in the sum of \$77,893 to Res. Cont. Sect., ATSC (WF). This expenditure was covered by Lease Agreement, 19 Aug. 1940, which read in part "...should any machinery, equipment, or facilities so furnished by Defense Plant Corporation require overhaul or replacement (except when due to Packard's negligence) Defense Plant Corporation further agrees to make such replacement and pay the cost of such overhaul." No other DPC plancor contained the above provision. Central Proc. Dist. invited attention to previous expansions.
213. (U) 1 March 1945  
 Amendment #2 to Requisition  
 for Defense Articles  
 Fr: British Air Commission  
 For: Action by U.S. AAF  
 (File: M&S)
- BAC requested the reduction of the total quantity of 15,600 Packard Merlin two-stage engines by 13,935 engines. Spare parts for these engines were to remain in accordance with approved JAC scales. This reduction was designed to bring the engine requisitions in line with latest British requirements. The total number of Merlin 68's under requisition as of 1 March 1945 was as follows:

Requisition No:	
BSC 9902-A5	297
RFDA 40,291-A5	4520
RFDA 40,553-A4	393
RFDA 41,008-A2	1665
TOTAL	6875

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214. (C) Ltr. 23 March 1945  
 Fr: Maj. Gen. O. P. Echols  
 AG/AS, M&S, Wash.  
 To: CG, ATSC, WF  
 (File: M&S)
- British requirements for Packard Merlin engines submitted to ATSC indicated the combined Packard and Continental Program during 1 March 1945 through Oct. 1946 should be reduced by 4,000 engines, the total quantity of engines on schedule at Continental. WFB suggested Continental be taken out of the Merlin engine program which would require no change of Packard's schedule because criticism had been leveled at Packard for not utilizing to the fullest extent its available manpower.
215. (U) Memo 30 April 1945  
 Fr: Mr. D. H. Filbert  
 Chief, Project Control Unit  
 Res. Control Sect.  
 ATSC, WF  
 To: Maj. T. G. Walsh  
 Res. Control Sect.  
 ATSC, WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- RCS Project 43A-4, Plancor #1 "Continuing Capital Expenditures" was temporarily suspended and removed from the list of active projects 30 April 1945 pending receipt of instructions from Res. Div., M&S, (Wash.).
216. (R) IOM 10 May 1945  
 Fr: Col. H. G. Bunker  
 Chief, Airc. Proj. Br.  
 Mat. Div., Wash.  
 To: Control Office, AC/AS, M&S  
 and Mat. Div., AC/AS, M&S  
 Wash.  
 (File: M&S)
- In May 1945 production of Packard Merlin engines to satisfy British Lend Lease was contemplated for extension beyond June 1946 at the rate of 1,000 engines per month, subject to Munitions Assignment Board coordination and JAC approval.
217. (R) TT 4 May 1945  
 Fr: Maj. F. H. Squires  
 Airc. Proj. Br.  
 Mat. Div., Wash.  
 To: Brig. Gen. O. R. Cook  
 Chief, Proc. Div., ATSC, WF  
 (File: M&S)
- The production of V-1650 engines at Continental was terminated 31 May 1945.

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218. (R) Ltr. 6 Aug. 1945  
Fr: Col. G. H. Moriarty  
Chief, Res. Cont. Sect.  
Proc. Div., ATSC, WF  
To: Packard Motor Car Company  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)

In reply to Packard's request of 25 July 1945 as to the status of RCS Project 43A, Flancor #1, Col. Moriarty, Chief, Res. Cont. Sect., Proc. Div. (WF) stated that this expenditure had been deemed inadvisable as such repair, maintenance and/or replacement would constitute a direct violation of existing procurement regulations.

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(memo attached) that inasmuch as this expansion was under one million dollars, the approval of the Plant Site Board was not required. For record purposes the Requirement Sect. WPB (Wash.) approved same.

61. (U) TT 7 March 1942  
Fr: Tech. Exec. Mat. Div. WF.  
To: Facilities Sect.  
Mat. Div., Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)

The Ind. Plan. Sect. (WF) recommended by TT to Fac. Sect. (Wash.) on 7 March 1942 that whatever arrangements appropriate to current policy in regard to the financing of the Packard project be followed: Reference was made to previous Packard leases under Plancon #1.

IPS Project	Dated	W.D. Funds	British Purchasing Commission
43A	3 Sept. '40	\$8,000,000	\$16,000,000
	Amendment		
43A-1	6 Sept. '41	1,183,333	2,366,666
	Processed		
43A-2	30 July '41	766,777	1,533,554
	Processed		
43A-3	17 Feb. '42	786,720	

Further negotiations with Packard indicated the necessity for additional funds estimated at \$20,593,304, as Packard required additional facilities to increase the production of Merlin Rolls-Royce aircraft engines from 300 to 1400 per month.

62. (R) Immed. Action Ltr.  
11 March 1942  
Fr: Maj. R. Shawhan  
Ind. Plan. Sect., WF  
To: Ind. Plan. Officer  
Central Proc. Dist.  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)

The Ind. Plant. Sect. (WF) made a breakdown of Packard's proposal for additional facilities. Pertinent information was covered on the allocation of \$20,593,304, floor space, labor requirements, housing, transportation and utilities. The Central Proc. Dist. concurred by 1st Ind. (attached), dated 18 March 1942, with some exceptions.

63. (U) Ltr. 13 March 1942  
Fr: Packard Motor Car Co.  
Detroit, Mich.  
To: Maj. J. S. Dexter  
RACFR, Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)

The General Plant Engr. at Packard notified the Resident AC Representative that three fences considered as part of the plant protection program would cost \$10,000., a sum which could be carried on the contingency fund.

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64. (U) Ltr. 18 March 1942  
 Fr: Lt. Col. O. F. Carlson  
 Ass't Chief, PP Lab.  
 Exp. Eng. Sect., WF.  
 To: Chief, Mat. Div.  
 CCAC, Wash.  
 (File: M&S)
- Col. Carlson, Ass't Chief P.P. Lab., Exp. Eng. Sect. (WF), made an investigation of manufacturing methods and practices at Packard 4 March through 14 March 1942. His report to the Chief, Mat. Div. (Wash.) was as follows: Change in the Packard organization was reflected in improvements on the production line. Production and inspection personnel training was being continued, although inadequate. A change of AC inspection personnel of more experience and diplomacy was necessary. A need of tool equipment existed but the tool list as submitted 30 Jan. 1942 had been reduced approximately 50%.
65. (U) TT 21 March 1942  
 Fr: Col. R. W. Pronst  
 Ass't Chief, Ind. Plan.  
 Sect. WF.  
 To: Fac. Sect., Mat. Com., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- The British indicated to DPC that they were unwilling to pay a two thirds share of the \$786,720 for a tool room expansion at Packard. The Ind. Plan. Sect. (WF) regarded this expansion as necessary and recommended that an agreement be concluded with DPC to pay for the whole project.
66. (U) TT 21 March 1942  
 Fr: Tech. Exec., Mat.  
 Center, WF.  
 To: Facilities Sect.  
 Mat. Com., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Attention of the Fac. Sect. (Wash.) was invited by the Ind. Plan. Sect. (WF) to the fact that Project 43B submitted in TT 7 March 1942, did not include any machine tools for Packard's subcontractors, and \$3,311,928 would be required for this expansion in addition to the \$20,593,304 previously requested. The machinery and equipment covered by this proposal would enable the various subcontractors and the Forge Division of Packard to meet the increased requirements of Packard for the production of 1400 Rolls-Royce Merlin engines per month as previously outlined. This project was recommended in toto as the distribution of costs on the basis of one-thirds prorated to the U.S. Gov't and two-thirds to the British Gov't no longer existed.
67. (U) Ltr. 24 March 1942  
 Fr: Packard Motor Car Company  
 Detroit, Mich.  
 To: Ind. Plan. Sect.  
 Mat. Div., WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- In order to eliminate a situation whereby one of Packard's project buildings and equipment would be partially owned by the U.S. Gov't and Britain and located on land owned by Packard, a transfer of funds under Schedule II to Schedule III in Appendix "A" was proposed by Packard. This transfer, in the sum of \$581,125 was approved (see attached) by the Ind. Plan. Sect. (WF) 27 March 1942.

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68. (U) Ltr. 24 March 1942  
Fr: L. B. Lenhardt, Gen. Mgr.  
City of Detroit, Dept. of  
Water Supply.  
To: R. R. Rees, Gen. Plant  
Engr. Packard Motor Car  
Company, Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Although the Detroit Dept. of Water Supply conceded a 24" water main along Harper Avenue was highly essential to Packard's operation, they were without funds to build this line.
69. (U) Buck Slip 25 March 1942  
Fr: Maj. W. A. Clark  
Ind. Plan. Sect., WF  
Attached: Ltr. from  
Packard Motor Car Company  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- In reply to an inquiry from Packard, the Ind. Plan. Sect., (WF) advised that all matters (the proposed water main on Harper Avenue) be held in abeyance until official action was taken by the Detroit Water Board.
70. (U) TT 31 March 1942  
Fr: Fac. Sect., Mat.  
Con. Wash.  
To: Fac. Br., Ind. Plan.  
Sect. Mat. Center, WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- In accordance with an agreement between Aluminum & Magnesium Br., (Wash.) WPB (Wash.) and ASU (Wash.) facilities for fabricating aluminum were provided by the Aluminum & Magnesium Br. Accordingly, aluminum forging and casting at Packard was to be made the subject of a separate processing ICM transmitted to the Aluminum and Magnesium Br. These facilities were not to be included in the processing ICM for the facilities proper.
71. (C) ICM 4 April 1942  
Fr: Maj. R. Shawhan  
Ind. Plan. Sect., WF  
To: Chief, Fac. Br.,  
J. A. G. D. Contr.  
Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- It was the opinion of the Ind. Plan. Sect. (WF) that, through the instructions issued by the C.G., Mat. Center (WF) 26 Dec. '41 to the District Supervisor Central Proc. Dist. (Detroit, Mich.) the fencing desired by Packard would be permissible. The total expenditure involved would be \$16,047.
72. (C) ICM 8 April 1942  
Fr: Maj. R. C. Harmon  
Chief, Fac. Br., J.A.G.D.  
Contr. Sect., WF.  
To: Ind. Plan. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Chief of Fac. Br., Contr. Sect. (WF) believed that funds set up in the DPG Lease Agreement might be used to provide necessary plant protective measures. However, such funds could not be used for the plants owned by the British unless said plant had been taken over by DPG.

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73. (C) Ltr. 11 April 1942  
Fr: Lt. Col. Shawhan  
Ind. Plan. Sect. WF  
To: Packard Motor Car Company  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Packard was advised that only those properties that were engaged in the performance of Gov't contracts were involved in the plant protection measures, totaling \$10,000 for protective fencing and an additional sum of \$6,047 for the installation of wire guards on the main power plant.
74. (U) Ltr. 17 April 1942  
Fr: Packard Motor Car Company  
Detroit, Mich.  
To: Ind. Plan. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Since the Detroit Dept. of Water Supply had stated no funds would be available for the extension of the 24" water main, the schedule was revised. The new buildings and building installations of which the water extension was a part were to be borne by the British Purchasing Commission. This involved a total of \$501,125.
75. (U) TWX 17 April 1942  
Fr: Res. Div., Mat. Com. Wash.  
To: Fac. Br., Ind. Plan.  
Sect., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Res. Div., (Wash.) had been advised by OUSW that an item of \$478,646 for the Thompson Products Company included in Packard's program had been deleted, making the net cost of the latter \$2,833,282. Verification was requested so that OUSW and DPC might proceed with negotiations for lease agreements.
76. (U) TWX 7 May 1942  
Fr: Res. Sect., Mat. Com. Wash.  
To: Fac. Br., Ind. Plan. Sect.  
Mat. Center, WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- A takeout letter was signed for Packard IPS Projects 43B and 43B-1 in the amount of \$23,905,232. Of this sum, \$478,646 was for Thompson Products, which did not accept subcontracting.
77. (U) Ltr. 13 May 1942  
Fr: Packard Motor Car Company  
Detroit, Mich.  
To: Ind. Plan. Sect. WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Packard advised that such additional fencing as was deemed necessary by the Plant Protection Committee, consisting of representatives of AAF, DPC and Packard, would be installed and the expense borne from funds provided in Appendix "A". The matter of wire screen guards was still under consideration.
78. (R) Memo 24 June 1942  
Fr: Maj. F. T. Hammond, Jr.  
Spec. Legal & Liaison Div.  
OUSW, Wash.  
To: Col. F. M. Hopkins, Jr.  
OGAC, Mat. Div., Wash.  
(File: M&S)
- DPC and Packard executed an amendatory agreement dated 15 April 1942 providing for an increase in the amount of Planer 1 by \$262,240. This was one-third of the estimated cost of the Tool Room facilities, and Britain agreed to supply the remaining two-thirds. There was no takeout letter in connection with this project.

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79. (U) Note for File  
29 June 1942  
Fr: Maj. W. L. Winston  
Ind. Plan. Sect., WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Packard advised it was having difficulty in getting clearance on certain vitally needed items of machinery and equipment to be used for additional production of spares. Out of 1,700 machines needed to increase production from 800 to 1,400 engines per month there were 121 critical items.
80. (U) Memo for Files  
2 Sept. 1942  
Fr: Maj. J. L. Bowling  
Fac. Sect., Mat. Center, WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Air Corps conferences were held in Washington previous to Sept. 1942 regarding the Rolls-Royce Merlin engine, type V-1650-3. These proceedings, heard by JAC, were forwarded to WF. The production schedule was planned with one motor per day beginning 1 March '43, five per day beginning 1 April '43 and eight per day beginning 1 May '43, and thereafter a step up in schedule. WF officials laid plans to handle this expansion. General Wolfe and Colonel Cook insisted machinery be obtained and delivered to Packard so that production would commence not later than 1 Nov. 1942.
81. (U) TT 12 Sept. 1942  
Fr: AC/S (P) Mat. Com. Wash.  
To: Brig. Gen. K. B. Wolfe,  
Chief, Prod. Div., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- AC/S (P) requested that immediate steps be taken to straighten out Packard's tool requirements for the Merlin 61 and expansion projects. Apparently the Ind. Plan. Sect. (WF) had contacted Packard with the intention of delaying delivery of some of its machine tools on the basis that Packard was ahead of its schedule.
82. (U) Ltr. 14 Sept. 1942  
Fr: Packard Motor Car Company  
Detroit, Mich.  
To: Col. P. Schneeberger  
Chief, Ind. Plan. Sect. WF.  
(File: Ind. Plan. Br.,  
Res. Cont. Sect.)
- Packard advised that it had developed an improvement on the Merlin Rolls-Royce engine which incorporated a two-speed, two-stage supercharger, resulting in higher power at substantially greater altitude. Packard was instructed by Prod. Div., (WF) on 3 Sept. '42 to prepare a list of machine tools necessary to convert 225 engines of the current V-1650-1 type to the improved V-1650-3.
83. (U) Ltr. 16 Sept. 1942  
Fr: Packard Motor Car Company  
Detroit, Mich.  
To: Ind. Plan. Sect.  
Mat. Center, WF  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- All plans, designs and specifications approved by LFC in connection with Lease Agreement Plancor 995 (43B-2) were submitted to the Ind. Plan. Sect. (WF) together with a monthly progress report.

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84. (U) IOM 17 Sept. 1942  
Fr: Brig. Gen. K. B. Wolfe  
Chief, Prod. Div., WF.  
To: Chief, Ind. Plan.  
Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Ind. Plan. Sect. (WF) was requested by Prod. Div. (WF) to take immediate steps to process the expansion of Packard to provide for 2,000 V-1650 engines per month. This project was to be separate from the one being processed for the manufacture of 225 superchargers per month. The latter was to be processed immediately without waiting for ultimate expansion.
85. (U) IOM 17 Sept. 1942  
Fr: Col. O. R. Cook  
Chief, Prod. Eng. Sect.  
Mat. Center, WF.  
To: Chief, Ind. Plan. Sect.  
Mat. Center, WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Col. O. R. Cook, Chief, Prod. Eng. Sect. (WF) requested the Facilities Br., Ind. Plan. Sect. (WF) to expedite the delivery of machine tools necessary for Packard's V-1650-3 program. Packard indicated the rate of production as follows: 26 V-1650-3 engines the fifth month after necessary machine tools were provided, 130 the sixth month, 225 per month thereafter until completion of the proposed procurement of 2000 V-1650-3 engines per month.
86. (U) Telegram 18 Sept. 1942  
Fr: Col. P. Schneeberger  
Prod. Div. Mat. Center, WF  
To: Packard Motor Car Company  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Project 43 B-3 in the amount of \$2,347,856.00 was approved by the Prod. Div., Mat. Center, (WF) and processed to the Res. Div. Mat. Com. (Wash.) 18 Sept. 1942.
87. (U) TT 18 Sept. 1942  
Fr: Ind. Plan. Sect. WF  
To: Res. Div., Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- By Sept. 1942 Packard had acquired all the facilities necessary to manufacture the V-1650-1 Merlin Rolls-Royce 1300 HP engine. As the result of Packard and WF engineering cooperation, a type -3 motor, incorporating a two-speed, two-stage supercharger, was developed. Funds in the sum of \$2,347,856 were recommended for approval by the Ind. Plan. Sect. (WF) for machinery and equipment to produce 225 V-1650-3 engines per month; the balance of 1,400, or 1,175 engines would remain the V-1650-1 type.
88. (U) Ltr. 19 Sept. 1942  
Fr: Col. P. Schneeberger  
Chief, Ind. Plan. Sect.  
Mat. Center, WF.  
To: Packard Motor Car Company  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- On 24 July 1942 DPC Supervising Engineers were requested by DPC to discontinue the practice of submitting plans, specifications etc. on IPS Project 43 B-2 to WF until the project was completed.

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89. (U) Telegram 19 Sept. 1942  
Fr: Col. P. Schnseberger  
Prod. Div. Mat. Center, WF.  
To: Packard Motor Car Company  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Prod. Div., Mat. Center (WF) requested Packard to submit Appendix "A" covering additional facilities necessary to increase their production of V-1650 engines from 1,400 to 2,000 per month. This 600 engine per month production increase was to be the two stage supercharger type, model V-1650-3.
90. (U) Memo 28 Sept. 1942  
Fr: Brig. Gen. F. M. Hopkins  
Ass't Chief of Staff  
Mat. Com., Wash.  
To: Under Secy. War, Wash.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Gen. Hopkins, Ass't Chief of Staff, Mat. Com. (Wash.), recommended to the USW that IPS Project 43B-3 in the amount of \$2,347,856 be approved.
91. (U) TWX 1 Oct. 1942  
Fr: Res. Div., Mat. Com., Wash.  
To: Ind. Plan. Sect.  
Mat. Center, WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Takeout letter for the expansion of Packard, IPS project 43-B-3 in the amount of \$2,347,856.00 was signed 30 Sept. 1942.
92. (U) Ltr. 13 Oct. 1942  
Fr: Col. O. E. Cook  
Chief, Prod. Engr. Sect. WF.  
To: Packard Motor Car Company  
Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The Engr. Sect. (WF) emphasized that the facilities of Packard would not permit the undertaking of building parts for British manufactured Rolls-Royce engines, unless Packard's facilities were greatly expanded or higher authority decided to cut production of either AF engines or required spare parts.
93. (U) Ltr. 17 Oct. 1942  
Fr: Packard Motor Car Company  
Detroit, Mich.  
To: Ind. Plan. Sect.  
Mat. Center, WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Following the IPS Project 43B-3 increase of \$2,347,856.00 for machine tools to convert 225 V-1650-1 to -3's, a production output was authorized from 1,400 to 2,000 V-1650-3's engines per month. This necessitated a revision to Appendix "A" in the amount of \$1,872,171.00 to cover the additional 375 V-1650-3 superchargers per month.
94. (U) Note for File  
20 Oct. 1942  
Fr: Brig. Gen. B. E. Meyers  
C/S, Mat. Com. Wash.  
(File: M&S)
- The British requirements on Packard were satisfied with the currently planned production of P-51 with -61 engines. The schedule permitted sufficient -28 engines for Britain with a determining surplus of about 1200 in Jan. 1943 to about 700 at the end of 1943 based on 20% spares and Packard's maintaining its production schedule, rising to 1400 in June 1943.



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95. (U) IOM 26 Oct. 1942  
Fr: Lt. Col. G. H. Moriarty  
Chief, Plan. Br., Ind.  
Plan. Sect. WF.  
To: Chief, Fac. Br., Ind.  
Plan. Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- A request was made by Packard to use the amount of \$1,872,171 unused balance from previous projects, for the purpose of converting 375 Rolls-Royce engines per month from V-1650-1 to V-1650-3. This would constitute a monthly total of 600 V-1650-3, the difference being in the addition of two-stage superchargers. Investigation and coordination with Prod. Div. (WF) established this production as essential to the war effort and the Plan. Br. (WF) recommended favorable consideration of this project.
96. (U) Ltr. 4 Nov. 1942  
Fr: Col. E. W. Rawlings  
Chief, Ind. Plan. Sect.  
Mat. Center, WF.  
To: Packard Motor Car Company  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- The reallocation of \$1,872,171.00 from IFS Project 43B and 43B-1 to 43B-4 was considered necessary due to changing 375 V-1650-1 engines to type V-1650-3. This revision as requested by Prod. Div. (WF) 17 Sept. 1942, was listed under Plancor 978.
97. (C) Memo 24 Nov. 1942  
Fr: Deputy Recorder  
Joint Aircraft  
Committee Wash.  
To: CG, Mat. Com. Wash.  
(File: M&S)
- At a meeting of the JAC (Wash.) 12 Nov. '42 a schedule was presented by Mat. Com. (Wash.) for a contemplated increase in production of 1,000 to 1,200 additional Packard Merlin engines. A study was also being made of the possibilities of an increase in supercharger production. The British representatives requested that all engines for export to the United Kingdom be equipped with superchargers as soon as possible.
98. (U) IOM 3 Dec. 1942  
Fr: Brig. Gen. K. B. Wolfe  
Chief, Prod. Div., WF  
To: Chief, Prod. Res.  
Sect., WF.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Gen. Wolfe, Chief, Prod. Div. (WF) requested the Chief, Prod. Res. Sect. (WF) take action on the directive from the CG, Mat. Com. (Wash.) with reference to the expansion of facilities for the manufacture of Merlin engines by Packard and the expansion of facilities to supply component parts. Packard and all other manufacturers were to be contacted to effect all expansion required to meet the total demands of the United Kingdom.
99. (U) TT 16 Dec. 1942  
Fr: Prod. Engr. Sect., WF  
To: AC/S (P) Wash.  
(File: M&S)
- A tentative engine schedule submitted to the Prod. Engr. Sect. (WF) by Packard commenced in March 1943 with 1024 single stage and 26 two stage engines and culminated in June of 1944 with 2700 two stage engines per month. Prod. Engr. Sect. requested immediate approval from AC/S (P) (Wash.) for a letter of contract to Packard for 16,350 two stage engines plus 38.5% spares.

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100. (U) TT 29 Dec. 1942  
Fr: Prod. Engr. Sect., WF  
To: AC/S (P) Wash.  
(File: M&S)
- In order to confirm the official Packard production schedule, PES (WF) requested that AC/S (P) (Wash.) forward a schedule by type and month for a basis for spare procurement. An AFP for 5,550 additional V-1650-3 engines had been initiated and an authority to purchase was needed for an additional number of engines through Oct. 1944 to assist Packard in bringing sub-contractors up to a maximum production of 2700 engines per month.
101. (R) Ltr. 4 Jan. 1943  
Fr: Col. E. W. Rawlings  
Chief, Prod. Res. Sect.  
Mat. Center, WF  
To: Supervisor Central Proc.  
Dist. Detroit, Mich.  
(File: Ind. Ser. Br.,  
Res. Cont. Sect.)
- Packard submitted a proposal covering facilities in the amount of \$2,705,690, considered necessary to convert 800 Rolls-Royce Merlin engines monthly from type V-1650-1 to type V-1650-3. While no additional labor, housing or transportation were involved, re-arrangement of machinery and equipment to the amount of \$426,333 was necessary. Approximately 52,000 sq. ft. of productive floor area would be available for expansion.
102. (C) IOM 6 Jan. 1943  
Fr: Col. J. W. Seesums, Jr.  
AC/S (P) Mat. Com., Wash.  
To: Maj. Gen. O. P. Echols  
CG. Mat. Com., Wash.  
(File: M&S)
- Compared with original schedule submitted to JAC on 22 Nov. 1942, Packard's estimate of ability to rise to a rate of 2700 engines per month indicated a loss of 1525 engines by 1 Jan. 1944. However, the Packard schedule compared with P-51 airplane program in 8-L would give AAF a surplus of 508 two-stage engines by that time.
103. (C) Memo 6 Jan. 1943  
Fr: Brig. Gen. B. E. Meyers  
Chief of Staff,  
Mat. Com., Wash.  
To: Joint Aircraft Committee  
Wash.  
(File: M&S)
- On 12 Nov. 1942, JAC requested Mat. Com. (Wash.) to initiate studies regarding supercharged Packard Merlin engines for export and additional plant facilities. Results presented by Mat. Com. (Wash.) indicated two stage engine would be available for export during Sept. 1943 and by Nov. 1943 the entire Packard Merlin engine would be of the two-stage type. No additional facility was contemplated since all engines produced in excess of 1600 per month would be fabricated through subcontractors and assembled at the Packard plant.

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104. (U) Memo Rpt. 8 Jan. 1943  
 Fr: Maj. C. D. Gasser  
 PP&P Sect., Mat. Com. Wash.  
 To: Brig. Gen. E. W. Chidlaw  
 AC/S(E), Mat. Com. Wash.  
 Col. J. Seesums  
 AC/S(P) Mat. Com. Wash.  
 (File: M&S)
- A conference was held at Mat. Center (WF) on 6 Jan. 1943 regarding contractual agreement requested by the BAC, 3 Dec. 1942. At the conclusion of the conference the determination was reached to insert in the pending AAF and Packard contract, a clause by which Packard would be prohibited from making design or engineering changes, or alterations affecting quality of workmanship or material without first obtaining approval of Rolls-Royce Limited, Derby, through representatives at Packard.
105. (R) 1st Ind. 13 Jan. 1943  
 Fr: Maj. F. W. Huston  
 Chief, Prod. Res. Br.,  
 Prod. Unit, Central Proc.  
 Dist. Detroit, Mich.  
 To: Prod. Res. Sect.  
 Mat. Center, WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Investigation disclosed that several rearrangements had been started and then abandoned because of necessity of revising plans for increased production demands. The consensus was that estimates compiled by Packard were fair and reasonable. Existing facilities on Packard property were deemed adequate for peak requirements. However, water requirements were at maximum capacity of the existing 24" service main.
106. (U) Ltr. 13 Jan. 1943  
 Fr: Packard Motor Car Company  
 Detroit, Mich.  
 To: Brig. Gen. K. B. Wolfe  
 Chief, Prod. Div.  
 Mat. Com., WF  
 (File: M&S)
- Packard presented the AAF and WFB with an engine breakdown program to determine how best to reach 2700 engines per month. The current value of parts of the one-stage engine purchased on the outside amounted to approximately 50% of the engine cost. Additional major items to be purchased on the outside for the two-stage engine would amount to 64.3% of the engine cost. Employment would increase from 16,000 to a peak of 27,200 by July 1944 of whom 40% would be women. The estimated number of machines required to increase engine production from 1400 to 2700 would amount to 15% or 641 machines.
107. (R) 13 Jan. 1943  
 Fr: Col. E. W. Rawlings  
 Chief, Prod. Res. Sect.  
 Mat. Center, WF.  
 To: Chief, Res. Div.  
 Mat. Com., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Packard submitted preliminary analysis of proposal for additional facilities, following request to convert entire production from V-1650-1 to V-1650-3, the type -3 engine having a two-stage, two speed supercharger. Estimated over-all cost of proposed expansion at Detroit Packard plant would be \$2,705,640.00 financed under DPC lease agreement, Plan IV. Production in proposed facilities to begin in Sept. 1943.

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105. (U) Tel. 19 Jan. 1943  
 Fr: Col. W. R. Herod  
 Prod. Div., Mat. Center, WF.  
 To: AC/S (R) Mat. Com., Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Packard indicated preliminary estimate of proposal of expansion would involve \$2,000,000 for machinery and \$3,974,000 for miscellaneous items and plant rearrangement; total \$5,769,000. In addition, ten to fifteen test cells at approximately \$70,000 would have to be released in the near future.
109. (U) Memo 26 Jan. 1943  
 Fr: Act. Chairman  
 Fac. Clearance Board  
 WFB, Wash.  
 To: Fac. Sect., Mat. Com. Wash.  
 (File: MAS)
- Expansion of Packard in the amount of \$12,700,000 for machinery, equipment and building conversion was approved by Facility Clearance Board, WFB (Wash.)
110. (U) Ltr. 26 Jan. 1943  
 Fr: Vice Pres. & Chief Engr.  
 National Acme Co.  
 Cleveland, O.  
 To: W. B. Murphy, Aviation Div.  
 WFB, Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Div.)
- Following a request to submit proposals to Packard for manufacture of pressure and scavenger pumps, complete, for Merlin motors, National Acme (Cleveland, O.) was informed that Packard had decided to build all pumps themselves and had rearranged their manufacturing schedule accordingly.
111. (C) Memo 27 Jan. 1943  
 Fr: Maj. Gen. O. P. Echols  
 CG, Mat. Com., Wash.  
 To: Joint Aircraft Committee  
 Wash.  
 (File: MAS)
- Exhibits "A" and "B" were submitted in accordance with JAC decision 7 Jan. 1943. Exhibit "A" showed British and U.S. requirements with surplus and deficit figures. "B" showed proposed Packard engine allocation schedule with recommended allocation of Merlin engines to British and U.S.
112. (U) Immed. Act. Ltr.  
 3 Feb. 1943  
 Fr: Brig. Gen. A. E. Jones  
 Chief, Proc. Div.  
 Mat. Center, WF.  
 To: Chief, Prod. Res. Sect.  
 Mat. Center, WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- A problem was raised concerning the date to be inserted in the Facilities Escape Clause in contract. Packard requested that Prod. Res. Projects No's. 43B, 43B-1, 43B-2, 43B-3, 43B-4 and 43B-5, each covering a different portion of the program raising production from 800 to 1400 engines per month be incorporated in supplement.

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113. (R) Memo 4 Feb. 1943  
 Fr: Lt. Col. F. T. Hammond, Jr. machinery and equipment was to be provided by amend-  
 Spec. Legal & Liaison Div. ment. The lease was at a Dollar-A-Year, and the in-  
 OUSW, Wash. crease would require an additional firm commitment  
 To: Brig. Gen. F. M. Hopkins, Jr. of one-half the increase, or \$1,352,845.  
 AG/S(R) Mat. Com., Wash.  
 (File: M&S)
114. (U) Memo 6 Feb. 1943  
 Fr: Act. Chairman  
 Fac. Clearance Board  
 WPB, Wash.  
 To: Fac. Sect., Mat. Com.  
 Wash.  
 (File: M&S)
115. (U) IDC 6 Feb. 1943  
 Fr: Capt. S. A. Oviatt  
 Ind. Plan. Sect., Mat.  
 Center, WF.  
 To: Chief, Ind. Cap. Unit,  
 Ind. Plan. Sect., Mat.  
 Center, WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
116. (U) Ltr. 7 Feb. 1943  
 Fr: Brig. Gen. A. E. Jones  
 Chief, Proc. Div., WF  
 To: Packard Motor Car Co.  
 Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
117. (U) IDC 8 Feb. 1943  
 Fr: Capt. S. A. Oviatt  
 Ind. Plan. Sect.  
 Mat. Center, WF.  
 To: Chief, Ind. Res. Br.,  
 Ind. Plan. Sect.  
 Mat. Center, WF.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

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118. (R) IOM 11 Feb. 1943  
 Fr: Col. R. C. Harmon  
 Chief, Fac. Br.  
 Proc. Div., WF  
 To: Chief, Prod. Res.  
 Sect., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

Supplement No. 11 to Contract W535 ac-15678 was to include requested escape clause. In the changeover from V-1650-1 to V-1650-3 the following PRS projects were processed in the indicated amounts:

43B-3	16 Sept. '42	\$2,347,856.
43B-4	4 Nov. '42	1,572,171.
43B-5	18 Jan. '43	2,705,690.

The proposed delivery schedule called for a gradual conversion over a period of several months.

119. (U) TWX 27 Feb. 1943  
 Fr: Brig. Gen. E. E. Meyers  
 Chief of Staff,  
 Mat. Com., Wash.  
 To: Brig. Gen. K. B. Wolfe  
 Chief, Prod. Div.  
 Mat. Center, WF  
 (File: M&S)

When Packard schedule was presented to JAC, the British requested a study of the possibility of securing more single stage engines for two reasons: (a) the reduction of the total quantity of engines as the result of changing to all two-stage engines. (b) insufficient time to re-engineer their airplanes for two-stage engines. A revised schedule of two-stage engines, with an inclusion of 3500 single stage engines, had been submitted to the Engine Subcommittee of JAC on 25 Feb. 1943.

120. (U) IOM 5 March 1943  
 Fr: Capt. L. S. Bettison  
 Eng. Br., Airc. Sect.  
 Supply Div., WF  
 To: Chief, Airc. Sect.  
 Supply Div., WF  
 (File: M&S)

Numerous requests from overseas for spare parts had been presented to Packard. In conferences with company's representatives it was stated that no promises could be made as to when the spare parts would be delivered. Such parts would be produced when, and if, fractions of machines and tail ends of materials were available. All of Packard's facilities would first be utilized for the production of the 14,000 engines and the 32% spare parts. The Supply Div. recommended that immediate action be taken, even at the expense of suspending production of complete engines, to insure delivery of urgently needed spares to maintain engines in operation before these parts became obsolete.

121. (U) IOM 9 March 1943  
 Fr: Col. J. W. Sessums, Jr.  
 AC/S (P) Mat. Com., Wash.  
 To: Maj. Gen. O. P. Echols  
 CG, Mat. Com., Wash.  
 (File: M&S)

The Packard schedule that would furnish a basis for life time spare parts for 1-stage and 2-stage engines was established at a JAC meeting (document attached) on 4 March 1943 (Case No. 3484). Under this arrangement 1-stage engine production was increased by 3500 engines while 2-stage engine production was set back approximately one month. The P-51 airplane schedule was adjusted accordingly.

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122. (U) TT 9 March 1943  
 Fr: Prod. Div., Mat.  
 Center, WF.  
 To: AS/S(P) Mat.  
 Com., Wash.  
 (File: M&S)
- ASC stated it was absolutely necessary that they obtain the balance of the spare parts for 3,000 V-1650-1 engines during March through May '43. The delivery of these parts would result in a reduction of the engine schedule, effecting a reduction of engines allocated to the British. In order to direct Packard to make this reduction the approval of JAC was necessary.
123. (U) Telephone Conversation,  
 11 March 1943  
 Between:  
 Col. J.W. Sessums, Jr.  
 AC/S(P) Mat. Com., Wash.  
 Col. A.H. Johnson  
 Prod. Div., WF.  
 (File: M&S)
- In a discussion between Col. Sessums and Col. Johnson, Prod. Div. (WF), the former stated that if production were to be accomplished for the current month, a decision would have to be reached through JAC channels on the proposed engine cutback for the British.
124. (U) Telephone Conversation  
 11 March 1943  
 Between:  
 Col. J.W. Sessums, Jr.  
 AC/S (P) Mat. Com., Wash.  
 Lt. Col. W.G. Bain  
 Prod. Cont. Sect., Mat.  
 Center, WF.  
 (File: M&S)
- On 11 March 1943 Col. Bain Prod. Cont. Sect. (WF) and Col. Sessums discussed the apparent confusion that had developed regarding ASC's scheduling of spare parts. As an emergency solution Col. Sessums suggested that a 1200 engine cutback be effected on the British schedule.
125. (U) IOM 13 March 1943  
 Fr: Maj. A. W. Galletly  
 Office AC/S (P) Mat.  
 Com., Wash.  
 To: Col. J. W. Sessums, Jr.  
 AC/S (P) Mat. Com., Wash.  
 (File: M&S)
- The BAC would only authorize the cutback of 600 engines without the advice of the Ministry of Aircraft Production. (Eng.) The BAC felt that Packard's current delivery of spare parts should be maintained. They pointed out that in addition to ruining Packard's production schedule, the \$14,000,000 spare parts order was possibly more than ASC could readily absorb in view of the fact that perhaps the attrition rate had not been considered.
126. (U) IOM 13 March 1943  
 Fr: Capt. F. N. Squires  
 Plan. & Sched. Sect.  
 AS/S(P), Mat. Com., Wash.  
 To: Col. J.W. Sessums, Jr.  
 AC/S(P) Mat. Com., Wash.  
 (File: M&S)
- Packard was of the opinion that if a 1200 engine curtailment could be effected, the Co. would be able to concentrate on spare parts and attempt to:-
1. Maintain concurrency on 14,000 engine contract.
  2. Make up deficit of spare parts on original British 6,000 order.
  3. Deliver all of the \$14,000,000 order, and also make some deliveries on a \$16,000,000 order for the British, which was for the original 6,000 engine order.

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There was to be a meeting in April 1943, between British and Mat. Center representatives with Packard to split up the entire output of Packard's spare parts production.

127. (U) TM 13 March 1943  
Fr: Col. J.W. Sessums, Jr.  
AC/S (P) Mat. Com., Wash.  
To: Chief, Prod. ENR. Sect.  
Mat. Center, WF.  
(File: M&S)

The British agreed to a 600 engine reduction on the Packard schedule, pending an ASC study as to whether or not spares requirement could be met by less than a sacrifice of 1200 engines. J.A.C. approval of the above proposal was to be withheld until receipt of a new schedule of Packard's complete engine delivery.

128. (U) IOM 17 March 1943  
Fr: Col. J. W. Sessums, Jr.  
AC/AS(P) Mat. Com., Wash.  
To: Maj. Gen. O. P. Echols  
CG, Mat. Com., Wash.  
(File: M&S)

Col. Sessums, Jr. AC/S (P) (Wash.) forwarded a resume to Gen. Echols of the two pertinent Packard problems which were:-

1. Spare part requirements.
2. Packard's production schedule.

Packard admittedly could not meet the production schedule of Feb. 1943 which had the 2-stage engine commencing in March and reaching 600 per month in Aug. 1943. The British were to receive all 2-stage engines above 600 per month. A proposed new schedule initiated the 2-stage production in April with a production peak of 600 in Nov. 1943. The ASC made an urgent demand from JAG for the emergency production of \$14,000,000 worth of spare parts which were in reality life time spares for the U.S. original 3,000 engines. Any effort to get the British to accede to more than a 600 engine cutback could not be made without the advice of the Ministry of Aircraft Production. (Eng)

129. (U) Telephone Conversation  
17 March 1943  
Between:  
Col. J.W. Sessums, Jr.  
AC/AS(P) Mat. Com., Wash.  
Brig. Gen. K.B. Wolfe  
Chief, Prod. Div., WF  
(File: M&S)

Gen. Wolfe, Prod. Div., (WF) felt that no further action beyond the 600 engines already deleted from the British schedule should be made. He felt that the \$14,000,000 parts list was not an emergency spares list but the old retroactive list the ASC had been unable to secure previously.



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130. (C) Memo 18 March 1943  
 Fr: Brig. Gen. B. E. Meyers  
 Chief of Staff,  
 Mat. Com., Wash.  
 To: Joint Aircraft Committee  
 Wash.  
 (File: M&S)
- Gen. Meyers, C/S, Mat. Com. (Wash.) stated that an emergency had arisen requiring the production of spare parts needed to maintain P-40's in combat. Mat. Com. requested that Packard be authorized to delete from the schedule as submitted to JAC on 4 March 1943, a quantity of 600 engines during the months of March, April and May 1943, in order to fulfill urgent and immediate requirements as far as possible. Packard would in no case allow production of emergency spares to interfere with concurrent delivery of British spare parts.
131. (U) Memo 1 May 1943  
 Fr: Lt. Col. R. H. Tatlow  
 Chief, Prod. Ser. Br.  
 SOS, Wash.  
 To: Brig. Gen. F.M. Hopkins, Jr.  
 Chief, Res. Div.  
 MM&D, Wash.  
 (File: M&S)
- The Under Secy. of War approved the allocation of \$7,419,431 on 26 April 1943 for the additional expansion of facilities at Packard to increase the capacity of V-1650-3 Rolls-Royce Merlin engines.
132. (U) Memo 3 June 1943  
 By: T. P. Wright, Director,  
 Airc. Res. Cont.  
 Office, Wash.  
 For: M&S Files  
 (File: M&S Files)
- In a memo of 3 June 1943, T. P. Wright, Director, Airc. Res. Cont. Office (Wash.), noted British concern over the necessity of getting Packard to meet peak production of 2700 Merlin engines per month. Demand for increased Merlin installations would require an output of 3500 engines per month.
133. (U) TWX 14 June 1943  
 Fr: Maj. Gen. C. E. Branshaw  
 CG, Mat. Com., WF  
 To: Maj. Gen. O. P. Echols  
 AC/AS, MM&D, Wash.  
 (File: M&S)
- Mat. Com. (WF) was of the opinion that recent Packard schedules drawn up in Wash. were made with apparently little understanding of production problems. Of the 3,000 1-stage engines added to Packard's schedule, slated to start in March 1944, 800 were 1-stage engines and would decrease and delay the 2-stage expansion by the same amount. The new schedule which afforded a breakdown of Merlin 33 and 38 engines for the remainder of the year was too erratic for production purposes since materials and production facilities would have to be set up in different amounts for 1-stage engines. A change in schedule would seriously impair Packard's planned production. The working schedule of 10 June approved by JAC added additional Packard engine requirements to a program already in arrearage. Lack of definite design information and absence of production schedules requested by Nov., made production planning by Packard an impossibility. Any additional procurement of P-51 airplanes to be realized during

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the subsequent 18 months would require additional engine and propeller facilities which should be scheduled at once.

134. (C) Memo 14 June 1943  
 Fr: Subcommittee on  
 Production Program  
 Joint Aircraft Committee  
 Wash.  
 To: Recorder, JAC, Wash.  
 (File: M&S)

On 10 June 1943 the JAC approved another schedule for the Packard Merlin engine. This production schedule included an additional 3000 one-stage engines for the British under requisition RFDA 40553. Packard had been unable to meet the schedule as approved by JAC on 18 March 1943, because of delays in deliveries of machine tools to Packard and their vendors as well as various engineering problems in connection with the two-stage engine.

135. (C) Memo 16 June 1943  
 Fr: Lt. Col. E. G. Barber  
 Mat. Div., Office C/AS  
 MM&D, Wash.  
 To: Maj. Gen. O. P. Echols  
 AC/AS, MM&D, Wash.  
 (File: M&S)

A breakdown of the one and two-stage Packard engines was drawn up as the result of a conference held 15 June 1943 with BAC and AAF personnel. The British were no longer desirous of securing the original Packard Merlin 68 and 69 engines. Since Packard would have to make a number of design changes and as yet had not received specifications for the new British engine, Packard was left with an available capacity in two-stage engines which commenced in Feb. 1944. These engines would have to be made in V-1650-3's unless the British reverted to the original Packard Merlin 68 and 69. The BAC representative intended to ascertain from the U. K. by 20 June their realistic design and schedule requirements.

136. (U) Ltr. 24 June 1943  
 Fr: Packard Motor Car Company  
 Detroit, Mich.  
 To: Brig. Gen. A. E. Jones  
 Chief, Prod. Div., WF  
 (File: M&S)

On 24 June 1943 Packard submitted a letter to the Contr. Sect., (WF) notifying them of their failure to meet their engine delivery schedule. On 24 April 1943 Packard had filed a request in the form of Appendix A to DFC Lease 995 for a part of additional facilities necessary to increase production to 2,700 engines per month plus spares. Sources of supply for castings furnished by WFB were unable to assist Packard in meeting their expanded program. The status of the situation at that time was that Packard did not have the facilities to build 1,400 engines per month plus spares, and the schedule required deliveries at this rate to begin in Aug.; the number of castings to be produced had been increased because of the introduction of the two-stage supercharger program. At one time Packard had had facilities available for 1400 engines per month plus spares but existent facilities were theoretically capable of producing only 1,300 engines per month plus spares.

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137. (R) Memo 1 July 1943  
 Fr: Lt. Col. F. T. Hammond Jr.  
 Legal Div.  
 OUSW. Wash.  
 To: Brig. Gen. F. M. Hopkins Jr.  
 Chief, Res. Div. MM&D, Wash.  
 (File: M&S)  
 Additional increase of facilities for machinery and equipment of subcontractors (FRS 43 D) was to be provided by Amendment of Packard Plancor 978.
138. (U) TT 3 July 1943  
 Fr: Mat. Div., MM&D, Wash.  
 To: Mat. Com., WF  
 (File: M&S Files)  
 On 3 July 1943 Mat. Div. (Wash.) requested Mat. Com. (WF) to make a recommendation to the Joint Aircraft Committee as to what action the JAC should take to improve Packard's Merlin engine production.
139. (U) IOM 7 July 1943  
 Fr: Lt. Col. E. G. Barber.  
 Prod. Br., Mat. Div., Wash.  
 To: Brig. Gen. B. E. Meyers,  
 Dep. AG/AS, MM&D, Wash.  
 (File: M&S Files)  
 Prod. Br., Mat. Div. (Wash.), felt an attempt to increase the Packard schedule over the 2700 peak would warrant establishment of a new facility.
140. (U) TT 7 July 1943  
 Fr: Tech. Exec., Mat. Com.,  
 WF  
 To: AG/AS, MM&D, Wash.  
 (File: M&S Files)  
 Tech. Exec., Mat. Com. (WF), believed installation of additional facilities to expedite the Packard program would be useless. A new facility would be unable to produce Rolls Royce (Merlin) engines for at least twelve months. He advocated raising preference group ratings on P-51B airplanes or the establishment of special projects in a "preference group number one" in order to insure tool deliveries.
141. (C) JAC Report 14 July 1943  
 Fr: Subcommittee on Production  
 Program JAC, Wash.  
 To: Recorder, Joint Aircraft  
 Committee Wash.  
 (File: M&S)  
 On 15 July 1943 the JAC approved a production schedule as shown on attachment No. 1, identical to the overall schedule approved by JAC on 10 June 1943. The attached schedule provided a new distribution between 1-stage and 2-stage production beginning Jan. 1944. This revision in schedule was brought about mainly as the result of recent information made available regarding production and requirements for British Packard Merlin 2-stage engines.

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142. (U) TT 17 July 1943  
 Fr: Prod. Engr. Sect.  
 Mat. Com., WF  
 To: Prod. Br., Mat. Div.  
 MM&D, Wash.  
 (File: M&S)
- Packard was instructed to manufacture V 1653 and Merlin engines according to schedule prepared at WF 6 July 1943. Packard was to be informed that this schedule was final for the subsequent 8 months as no changes could be made in production requirements without affecting total production. WF requested that changes in British requisitions for 1-stage engines be made immediately as their requisition breakdown differed from scheduled requirements. No Merlin 68 engines could be shipped prior to Feb. 1944. V 1650-3 engines with British prop-shaft and reduction gear could only be supplies to Britain at the expense of V 1650-3 production.
143. (U) Ltr. 29 July 1943  
 Fr: Dir. Gen., British Air  
 Commission, Wash.  
 To: Maj. Gen. O. P. Echols,  
 Mat. Com., Wash.  
 (File: M&S Files)
- Dir. Gen., British Air Commission, strongly urged that Mat. Com. (Wash.) take action to increase Packard production to at least 2500 engines per month in addition to setting up supplementary facilities to avoid curtailment of the Lancaster Program. The Director based his suggestion on a comprehensive study made by the BAC of the Merlin requirements from July 1943 through June 1946.
144. (U) Ltr. 30 July 1943  
 Fr: Prof. J. Jewkes, British  
 Air Commission, Wash.  
 To: Maj. Gen. O. P. Echols,  
 Mat. Com., Wash.  
 (File: M&S Files)
- Statistical tables compiled by the British Air Commission depicted the serious necessity of a maintained output of 2700 Rolls Royce (Merlin) engines per month by Packard in an effort to prevent a cumulative deficiency in 1944.
145. (U) Memo 5 Aug. 1943  
 Fr: Maj. Gen. O. P. Echols,  
 AC/AS, MM&D, Wash.  
 To: Maj. Gen. B. M. Giles,  
 C/AS, MM&D, Wash.  
 (File: M&S Files)
- Information secured by Gen. B. E. Meyers, Dep. AC/AS (Wash.) while in England indicated a reduction in U. S. Merlin engine production for Britain would materially interfere with the British bomber program. Gen. Echols, AC/AS (Wash.), directed his attention toward the Continental Aviation and Engine Corporation (hereinafter referred to as Continental) inasmuch as an increase in Packard production was impracticable since Packard had not met its existing commitments. Gen. Echols believed that Continental as a manufacturer of aircraft engines with factory space, trained personnel and many tools could reasonably get into production quickly on additional Merlin engines. This would create a theoretical capacity of 4000 engines against a required 3500 per month.



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146. (U) Memo 6 Aug. 1943  
 Fr: Col. C. S. Irvine,  
 MM&D, Wash.  
 To: Maj. Gen. O. P. Echols,  
 AC/AS, MM&D, Wash.  
 (File: M&S Files)

A proposed peak capacity production schedule of Merlin engines showed Packard capable of 2700, and Continental, 1350 engines per month. Col. J. W. Sessums, Jr., Chief, Prod. Br., MM&D (Wash.), warned Col. E. G. Barber, Prod. Br., MM&D, (Wash.), "Let's not go to sleep and let all the engines get earmarked for UK" since the British requisitioned an additional 15000 engines. This request was predicated by Gen. Echols' desire to have the Merlin tried out in P-63 and a step-up made in the P-51-B requirements.

147. (R) Ltr. 6 Aug. 1943  
 Fr: Brig. Gen. E. W. Chidlaw  
 Chief, Mat. Div.,  
 Office C/AS  
 MM&D, Wash.  
 To: Col. T. A. Sims  
 Mat. Com., WF.  
 (File: M&S)

Gen. Chidlaw, Chief, Mat. Div., Office C/AS, MM&D, (Wash.), directed the attention of Col. Sims, Mat. Com. (WF) to a new project under consideration with Packard. During a conference on 5 Aug. 1943 in the Office, AC/AS, MM&D (Wash.) the current engine production program of Packard was discussed. A development project to be known as the Rolls-Royce 14 SM was proposed. Tremendous interest had been evidenced in higher Air Staff echelons stemming from the estimated performance figures on the North American XP-51 airplane. This proposal, covering some 5 engines and certain spares, might be considered the project of a separate organization within Packard, to carry out this "handmade" development in order to minimize interference with Packard's production program.

148. (U) Conf. Rpt. 7 Aug. 1943  
 By: Maj. A. K. Lovett, Office,  
 AC/AS, MM&D, Wash.  
 (File: M&S Files)

Conference was held in the Airc. Res. Cont. Office 6 Aug. 1943 on the subject of Packard Merlin engines. Packard believed an improved urgency rating would correct prevalent delinquencies in spare parts plus about 900 complete engines per month. Continental would begin parts production to furnish help to Packard and with tooling and experience would be required to produce at a rate of 1350 engines per month plus 38.5 per cent in spare parts. Problem of a complete engine schedule plus the spare parts percentages could only be answered by an establishment of requisitions so that both Packard and Continental could go along with increasing their production.

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149. (U) IOM 11 Aug. 1943  
 Fr: Maj. A. K. Lovett, Office  
 AC/AS, MM&D, Wash.  
 To: Col. J. W. Sessums, Jr.,  
 Chief, Prod. Br., MM&D,  
 Wash.  
 (File: M&S Files)

Two plans for the establishment of a new facility for providing additional Packard Merlin engines were given consideration. Continental's Detroit plant could accept the transfer of the R-975 engines from Dallas, enabling Dallas to handle the R-1340 engine from Muskegon. Although this would free Continental's Muskegon plant for the production of V-1650's (Merlin's), additional facility would be needed for the R-1340; the proposed facility was Jacobs (Pottstown, Pa.). Maj. A. K. Lovett, Office, AC/AS (Wash.), had been opposed to the above plan and recommended instead that the R-1340 capacity at Muskegon be shifted to Dallas and Detroit plants, forcing Continental to cease production of the R-975 type of engine. Jacobs would not have to retool to accept this production. Muskegon could then be utilized entirely for the production of the V-1650 engines.

150. (C) ET 11 Aug. 1943  
 Fr: Maj. Gen. O. P. Echols  
 AC/AS MM&D, Wash.  
 To: Maj. Gen. C. E. Branshaw  
 CG, Mat. Com. WF.  
 (File: M&S)

The possible increase after P-51 airplane and UK requirements necessitated the establishment of an additional facility for the production of the V-1650 engine. AC/AS, MM&D, (Wash.) directed Mat. Com. (WF) to issue a letter of intent to Continental to cover the quantity of engines estimated they could produce between March and June 1944. Packard was to be directed to furnish tool and engine drawings, routing sheets and all engineering data Continental would require.

151. (U) Memo 12 Aug. 1943  
 Fr: Col. C. S. Irvine, Asst.  
 Chief, Res. Div., Wash.  
 To: T. P. Wright, Director,  
 Airc. Res. Cont. Office,  
 Wash.  
 (File: M&S Files)

Res. Div., MM&D (Wash.), proposed a plan for the production of the Merlin engines by Continental. The Continental-built R-1340 engines were to be transferred from Muskegon to Dallas and Detroit plants, allowing for the utilization of the Muskegon plant for the production of the V-1650 engines at the rate of 1350 per month.

152. (U) Conf. Rpt. 12 Aug. 1943  
 By: Maj. A. K. Lovett, Office,  
 AC/AS, MM&D, Wash.  
 (File: M&S Files)

In a conference of 6 Aug. 1943, an analysis was made of the possibilities of Packard meeting the J. A. C. Merlin production schedule. Mr. Packer, Packard representative, was requested to forward a letter to AC/AS, MM&D (Wash.) covering the actual quantity of engines plus spare parts Packard could produce with its group preference rating. Col.

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Vincent, AC representative at Packard, was assigned to complete a study of the quantity of tools and modifications required for the Continental Toledo plant. Part of the conference was devoted to problems in conjunction with the development of the SM-1 engines.

153. (U) TT 12 Aug. 1943  
 Fr: Brig. Gen. B. E. Meyers  
 Dep. AC/AS, MM&D, Wash.  
 To: Brig. Gen. C. E. Branshaw  
 CG, Mat. Com., WF  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

In view of the increased P-51 Mustang airplane production necessitating the establishment of an additional facility for the manufacture of V-1650 engines, Gen. Meyers, Dep. AC/AS, MM&D, (Wash.), directed Gen. Branshaw, CG, Mat. Com. (WF), to have a letter of intent issued immediately to Continental to cover an estimated 8500 engines to be produced between the months of March 1944 and June 1945. Packard was to be directed to release required engineering data to Continental and furnish one each engine to the Muskegon and Detroit plants with a third for Continental's subcontractors.

154. (U) Memo 25 Aug. 1943  
 Fr: T. P. Wright, Director,  
 Airc. Res. Cont.  
 Office, Wash.  
 To: Recorder, Joint Aircraft  
 Committee, Wash.  
 (File: M&S Files)

Conferences had been held with representatives of Packard, the Army Air Forces, British Air Commission, and Mr. Hives of the Rolls-Royce Company concerning the scheduling of Packard's output (see document) in terms of complete engines and spare parts. A subdivision of the 38 per cent spares allotted by this schedule would be the subject of a conference to be held Aug. 26, to which the representatives involved would be invited.

155. (U) Conference Rpt. 26 Aug.  
 1943  
 By: T. P. Wright, Director  
 ARCO, Wash.  
 (File: M&S)

The Packard Merlin engine schedule of 6 Aug. 1943 was the subject of a conference in the Office of T. P. Wright, ARCO, (Wash.) in which an agreement was reached on the schedule for the remainder of the year. The 1<sup>st</sup> urgency rating for tools for the 1400 peak production had helped substantially so that the schedule could be made. Also discussed was a need for the establishment of a gear box source and the possible utilization of the Pratt and Whitney Co., Kansas City, for super-chargers. Vandykes and other information necessary to get Continental under way would be supplied by Packard.

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156. (C) TT 4 Sept. 1943  
 Fr: Col. J. W. Sessums, Jr.  
 Prod. Div., OAC/AS  
 MM&D, Wash.  
 To: Prod. Div., Mat. Com., WF  
 (File: M&S)

The Prod. Div., OAC/AS, MM&D, (Wash.) did not concur in the recommendation of Mat. Com. (WF) that the Pratt and Whitney Kansas City plant be utilized for the production of Packard Merlin engines and directed that a letter of contract covering the production of Packard Merlin engines be issued Continental.

157. (U) TT 6 Sept. 1943  
 Fr: Prod. Div., Mat. Com., WF  
 To: AC/AS, MM&D, Wash.  
 (File: M&S)

Mat Com. (WF) requested that the requirements for V-1650-3 engines be scheduled to Packard through Dec. 1944 in view of the fact Mat. Com. considered the proposed Continental schedule quite optimistic. In event the Continental schedule showed satisfactory progress by Sept. 1944, the requirements would be shifted to Continental, freeing the Packard capacity for the production of additional Merlin 68's and 69's.

158. (U) Memo for Files  
 10 Sept. 1943  
 By: Maj. P. W. Huston  
 Chief, Res. Cont.  
 Sect., CPD  
 Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)

A meeting was held at WF 7 Sept. 1943 between Continental representatives and AAF personnel from the Ind. Ser. Br., Res. Cont. Sect. (WF). In view of the transfer of the R-1340 engine to Garland, Texas, an Appendix for facilities increases at Continental on this engine was regarded obsolete. The 975 motor production was to be shifted to Jacobs (Pottstown, Pa.) Continental was requested to determine space and machine tool requirement as soon as possible; if necessary the Aviation Engine plant, Muskegon, would be completely available by Feb. 1944. A general discussion on subcontracting revealed that Continental intended subcontracting approximately 50%; the following "paper" schedule was determined:

1944 - engines		
Mar. 2	Oct.	300
Apr. 5	Nov.	425
May 15	Dec. -	550
June 30	Jan. 1945 -	700
July 50	Feb.	900
Aug. 100	March	1100
Sept. 200	Apr.	1350

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159. (U) Ltr. 22 Sept. 1943  
 Fr: Continental Aviations &  
 Engr. Corp. Detroit, Mich.  
 To: Dist. Sup., Central Proc.  
 Dist. Detroit, Mich.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Continental submitted to the Dist. Sup., Central Proc. Dist., (Detroit, Mich.) a letter dated 22 Sept. 1943 and an Appendix "A" setting forth pertinent facts regarding the V-1650-3 engine program. Continental considered that the cost of facilities to produce the V-1650-3 would considerably exceed the total of \$15,000,000 established as an arbitrary figure by WFB instructions. In addition to 20 propeller test stands suitable for testing 1650-3 engines, 250,000 sq. ft. of manufacturing, assembling and office space was required. Continental's current employment would have to be augmented by 1,756 additional employees in the Muskegon plant or a total of 1044 in addition to the 3,906 employees originally anticipated at Muskegon.
160. (U) Ltr. 23 Sept. 1943  
 Fr: Secy. of War U.S.A.  
 To: Sir R. Stafford Cripps  
 Minister of Aircraft  
 Production, England  
 (File: M&S)
- The Secy. of War informed Sir Stafford Cripps, Minister of Aircraft Production, (England) on 23 Sept. 1943 that the current Packard schedule, which would ultimately reach 2,700 engines per month, was being vigorously prosecuted, and Continental was being retooled for a production rate of 1,000 engines per month. In order to expand Ford Merlin production in England a machine tool priority was established which was (according to attached)
- 1st: Continental Pilot line.
  - 2nd: Packard, and Ford England production.
  - 3rd: Continental Production line.
  - 4th: Meteor Tank Plants.
161. (R) Ltr. 12 Oct. 1943  
 Fr: Brig. Gen. F. M. Hopkins, Jr.  
 Chief, Res. Div.,  
 OAC/AS, MM&D, Wash.  
 To: Under Secy. War, Wash.  
 (File: Ind. Ser. Br.,  
 Res. Cont. Sect.)
- Continental was selected by the AAF to manufacture, assemble and test the V-1650-3 Packard Rolls-Royce engine on prime contract W-33-038-ac-415 dated 18 Aug. 1943, which called for production of 8,400 units plus 27% spares. Initial output of the V-1650-3 was to start in March 1944; peak production of 1350 engines per month was to be reached by April 1945. Relocation of facilities for R-1340 production was to be made to Garland Texas. Res. Cont. Sect., Mat. Com. (WF), recommended approval to Res. Div. MM&D (Wash.), of \$11,770,400 to Continental for machinery, tools, and equipment for expansion for this production. This expansion, known as RGS Project 1450, was the funds in addition to the DPC lease agreement for \$15,317,035.

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Wright Field, Dayton, Ohio, Dec. 13, 1938

At present time there is no necessity for the United States to develop engines abroad, nor for the United States to purchase engines from foreign engines in the United States.

By order of the Chief of Air Corps:

L. S. Smith,  
Captain, Air Corps,  
Executive.

2nd Ind. (Wrapper)

War Dept., Air Corps, Material Division, Wright Field, Dayton, Ohio,  
February 14, 1939. To: The Chief of the Air Corps.

1. Inclosed are copies of correspondence between the Division and J. McKanus, President of Rolls Royce, Inc.
2. The data requested by the Division are essential to determine if the engine will accommodate the standard Air Corps engine accessories.
3. However, as a matter of policy it is believed that the production of the Rolls Royce engine in this country should not be encouraged, as it is known to be more complicated from a production view point than the equivalent Allison liquid cooled engine. Also it appears that present and projected designs of liquid cooled engines by manufacturers in this country are adequate.

For the Chief of the Materiel Division:

*Frank M. Kennedy*  
FRANK M. KENNEDY,  
Colonel, Air Corps,  
Executive.

Incl:

Added:  
By Ltr. 12/13/38  
" " 12/21/38  
" " 1/4/39  
" " 2/6/39

cc: Engineering

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HLW/CLT/61

February 6, 1959

Dear Mr. [Name]:

Rolls-Royce, Inc.,  
157 Avenue,  
New York, N.Y.

Attention: Mr. John J. McManus.

I am pleased to acknowledge your letter of February 4, 1959, in reply to this Division's letter of December 21, 1958. The information requested in the Division's letter is basic data that are necessary for consideration from an engineering and production view point before a final determination can be given to your proposal.

Very truly yours,  
The Chief of the Material Division:

cc: [Name]

V. Z. Tolson,  
Lt. Colonel, Air Corps,  
Chief, Procurement Section.

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## ROLLS-ROYCE

INC.  
150 BROADWAY  
NEW YORK, N. Y.

TELEPHONE RECTOR 2022

SALES AND SERVICE

February 4, 1939.

Chief of the Air Corps  
Washington, D. C.

Dear Sir:

On January 17th I wrote to Major General F. W. Andrews regarding the Rolls Royce water-cooled airplane engine.

On January 25th he wrote me as per enclosed letter.

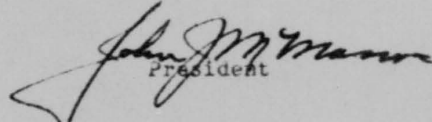
My reason for writing on this matter was that my understanding is that water-cooled engines have not been advanced as far as the air-cooled engines.

I do not believe any description of mine need be gone into concerning Rolls Royce or its performances. Even on the ground a short time ago as you undoubtedly know, in the automobile "Thunderbolt" the world's record for automobiles was broken in Utah, and the engines in that car were RR engines.

I have heard a good deal about the difficulty of having the Army adopt as part of its equipment any engine not originating in America. I can hardly believe this is the policy because the basic principal of flying cannot be claimed by any country.

My idea in writing was that possibly the matter could be referred to the proper officials, and I feel that arrangements under proper conditions, could be made with Rolls Royce for the manufacture of the engine here by a competent organization, if such water-cooled engines would be acceptable to the U. S. Government.

Very truly yours,

  
President

JJM:D  
enc.

AIR CORPS FEB 6 - 1939

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HEADQUARTERS GHO AIR FORCE  
OFFICE OF THE COMMANDING GENERAL  
LANGLEY FIELD, VIRGINIA

January  
26th  
1939

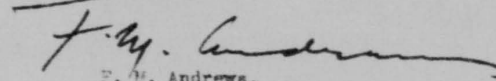
Mr. John J. McManus, President,  
Rolls-Royce, Inc.,  
150 Broadway,  
New York, New York.

My dear Mr. McManus:

I have your letter of January 17, referring to the procurement of the Rolls-Royce water-cooled airplane engine by the United States government.

The General Headquarters Air Force, which comprises all of the Air Corps tactical units in the United States, has no control over the procurement and development of materiel. That control is vested in the Chief of the Air Corps, Washington, D. C., to whom it is suggested you write.

Yours very truly,



F. H. Andrews,  
Major General, Air Corps, USA.

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F. H. H. - 11/16/1938 2

December 21, 1938

Subject: Rolls-Royce "Merlin" Engine.

To: Rolls-Royce, Inc.,  
150 Broadway,  
New York, N.Y.

1. Receipt is acknowledged of your letter of December 13, 1938, with further reference to the production of the "Merlin" engine in this country.

2. In order that this matter may be given further consideration, it is suggested that you submit to the Division, installation drawings of the engine which you propose to manufacture, showing all drives, which would permit a critical survey of the engine to be made to determine whether or not American accessories could be installed on it.

3. The Division would also be interested in receiving information relative the facilities of your company for the production of this engine in quantity.

For the Chief of the Material Division:

CC: Engineering

W. F. Volandt,  
Lt. Colonel, Air Corps,  
Chief, Procurement Section.

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copy

ROLLS-ROYCE, INC.  
150 Broadway  
New York, N.Y.

December 13, 1938

W.F. Volant, Maj.  
Lt. Colonel, Air Corps  
Chief, Procurement Section  
Wright Field  
Canton, Ohio.

Mr. Dear Lieutenant Colonel:

Thanks for your letter of December 12th, copy of which is enclosed.

My reason for writing was that in 1917 Rolls-Royce came to America with blueprints and a certain number of mechanics for the purpose of manufacturing for the American Government Rolls-Royce aero engines. Although conferences were held an agreement was never reached with the Government, but it did result in the manufacturing of the engine in this country for the British Government.

In view of the press items concerning the possibility of war, and especially the vast amount of aero armament publicity, plus the fact that it is realized there is difficulty in America with water-cooled engines, as like in writing was to receive the requirements for a water-cooled engine, with the possibility of history repeating itself and that the U.S. would again look to the Rolls-Royce engine, which under agreeable conditions could be manufactured here, and eliminating the proposition of the foreign manufacturer.

The Rolls-Royce "Merlin" engine is 1000 horsepower and is water-cooled.

Further details would gladly be supplied if it was thought desirable in the future.

May I state that it feels like old times writing to the Field as I was Chief Instructor of the Armorer's School there and it has very many pleasant memories for me.

Very truly yours,

John McManus  
President.

JWV  
att.





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ROLLS ROYCE LTD  
14-15 CONDUIT STREET  
LONDON-W1

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ROLLS ROYCE LTD LONDON  
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MAYFAIR 2001-2002  
IN YOUR REPLY PLEASE  
QUOTE

COOPERATED  
A.B.C. (187 EDITION)  
BENTLEY'S  
MARCONI MOTOR TRADE  
WESTERN UNION

Sg10/E18439

18th April 1939

Major General H.H. Arnold,  
Chief of Air Corps,  
War Department,  
Washington, D.C.

Dear Sir:

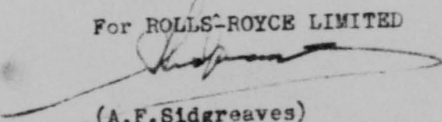
re Aero Engines.

Referring to Dr. Tustin's visit and the interview which you kindly gave to him, we have now received his report as it was at our request that he was making enquiries in America relative to the possibility of some one wishing to take the licence for the manufacture of our engines.

We are enclosing a catalogue of the Merlin engine and, if any further information is required, we shall be pleased to forward it.

Yours faithfully,

For ROLLS-ROYCE LIMITED

  
(A.F. Sidgreaves)  
Managing Director.

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Carbon - Parks and - *Wesley* Merlin 10  
MAP-34

September 11, 1939

Mr. Wm. Knudsen, President,  
General Motors Corp.,  
General Motors Building,  
Detroit, Michigan.

Dear Mr. Knudsen:

With reference to the relative horsepower output of the present Allison engine and the Rolls Royce Merlin engine, I am forwarding you the following data on the Merlin engine.

The highest continuous horsepower output of the Rolls Royce Merlin engine is obtained from their model "RM25M". This engine is similar to the Merlin "X", in that both are fitted with internal gear driven superchargers. The "RM25M" has been designed specifically for operation with 100 octane fuels. This engine has a take-off horsepower of 1320, and a maximum continuous horsepower in higher blower gear ratio of 1160 at 16,730 feet. The engine is of the standard 12 cylinder "V" type, cooled with Ethylene Glycol. The cylinders have a bore of 5.4 inches and a stroke of 6 inches, resulting in a piston displacement of 1648 cubic inches. The dry weight of the two-speed Merlin "X" engine is quoted at 1994 pounds, and the model "RM25M" engine weight is probably not greatly different from this figure.

A paper, "High Output Aircraft Engines", by E. B. Hives and Lieutenant Smith, as presented to the Society of Automotive Engineers on May 25, 1939, gives some interesting facts in connection with the Merlin engines. They quote an output of 325 H.P. at 3200 RPM, which would make it possible to secure a flash horsepower reading of 2165 for 1648 cubic inch displacement.

The Merlin engine has a slightly greater frontal area than the "A" series of the present Allison engines. This figure runs 5.95 square feet for the Merlin as compared with 5.19 for the "A" Allison, and 5.49 for the present "C" series.

The basic facts which it is desired to point out in connection with these figures on the Merlin engine are that this engine today is capable of being rated at 1320 horsepower; that it already has designed for it, and available for installation, a two-speed geared supercharger; that respects it is superior to the present Allison engine; and that unless extensive development work is undertaken at once by the Allison Engine Company, there is very little possibility that our Allison engine will be able to match the potential horsepower available in any of the modern engines.

Sincerely yours,

H. N. Arnold,  
Major General, Air Corps,  
Chief of the Air Corps.

EHB/ea  
452.8  
Rolls Royce Merlin  
Engine

TO USE RECORD ROOM
INFORMATION
FINANCE
PLANS
TRAIN. AND OPER.
W. COM. AERO. BD.

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*1528*

November 24, 1939

Mr. W. M. Gilman, President,  
Packard Motor Car Company,  
Detroit, Michigan.

Dear Mr. Gilman:

Your letter of October 30, 1939 received and after considerable discussion between Air Corps officials and your Washington representative, Mr. Platt, it was decided that the most expeditious manner of handling this matter would be to have an authorized representative of your company visit Wright Field for the purpose of discussing the project in detail with Lt. Col. Echols, Assistant Chief Materiel Division and the experimental engineering section personnel.

The Air Corps is interested in obtaining additional sources of supply for high powered aircraft engines and I appreciate your communicating direct with me in the matter and hope that the discussion at Wright Field will be beneficial both to the Packard Motor Car Company and the Air Corps.

Very truly yours,

H. H. Arnold,  
Major General, Air Corps,  
Chief of the Air Corps.

EMP/ls
To Mail & Record Room
Date <i>11-27</i>
EXECUTIVE
FINANCE
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RESERVE
SUPPLY
WAR P. & T.

AIR CORPS NOV 27 1939

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C.F. AAF-32-(2/348)

12

**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

October 30, 1939

Major General H. H. Arnold  
Chief of the Air Service U.S.A.  
Washington, D. C.

Dear Sir:

The Packard Motor Car Company is desirous of reentering the aircraft engine business and becoming a recognized source of supply for the Government. Our aircraft activities during the World War and for a number of years thereafter are well known. We regret that production of these engines was suspended a few years ago largely because our automobile business necessitated radical changes in the design of our cars and their manufacture. This major program is now largely behind us and we are planning for a greater diversification of our product.

Resumption of production of high powered engines is one of our first renewed activities. We are now building a 1200 horse power marine engine for torpedo boats for the United States Navy, and we are negotiating with the Navy and others for the production of a number of similar engines.

We feel that we are qualified from past experience to resume production of aircraft engines, and we are ready with the necessary facilities and personnel to carry out any reasonable development and production projects entrusted to us. Our facilities are such that the work may be segregated from our automobile activities, and we have space for considerable expansion.

We feel that the engine referred to above is capable of development in still higher horsepower ratings both for the service for which it is being built and for aircraft use. We have also made some preliminary studies of 3000 and 5000 horse power engine design possibilities and are doing some work with a very interesting sleeve valve design.

We would appreciate an opportunity to dis-

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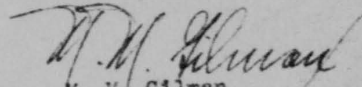
CFR-55 (3/1970)  
page 2

13

cause the possibilities of our entering into a program with the Air Service looking toward the development of an aircraft engine to meet your requirements. We can assure you it would be our earnest endeavor to perform any program agreed upon to our mutual advantage.

Very truly yours,

PACKARD MOTOR CAR COMPANY

  
M. M. Gilman  
President

MMG/a

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Carson Packard-Pitts cc 14  
CF. AAF-34

GHS/BB

452.8

Washington, D. C.,  
January 12, 1940.

Rolls Royce  
Engines

150021  
Rolls Royce Company, Inc.,  
150 Broadway,  
New York City.  
Attention: Mr. John J. McManus.

Dear Mr. McManus:

I have been approached by a Mr. Tom F. Maloney, 90 Broad Street, New York City, concerning the possibility of going into production on your latest model Rolls Royce engine for the aircraft industry.

Mr. Maloney stated that the Rolls Royce Company did not desire to turn this engine over as a possible enterprise in this country, however, I did not clearly understand why this was so. Mr. Maloney suggested that the Rolls Royce Company would be willing to let the Government have an engine provided it applied for same, but as the Government is not in the engine manufacturing business it would appear this is not a logical step to take.

The Government of course is intensely interested in anything in the latest development of aircraft engines and would undoubtedly be glad to secure an engine for the purpose of test and observation. However, before making any such application it is believed there should be some more definite understanding and that the exact nature of any understanding should be thoroughly appreciated. Therefore I am writing to you for information concerning the status of Mr. Maloney and the reaction of the Rolls Royce Company to any application the Government might make for an engine.

Very truly yours,

GEO. H. BRIST,  
Brig. General, Air Corps,  
Chief, Material Division.

AIR CORPS JAN 13 1940

EXECUTIVE
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CF, AAF-37-6/244  
Mat. Div. A. C. 100- Wright Field 131209-10M

16

## INTER-OFFICE MEMORANDUM

AIR CORPS  
MATERIEL DIVISION

Date 2m2-40

TO: General Brett

## SUBJECT: (check)

## EXPERIMENTAL ENG.

Engines  
 Propellers  
 Aircraft  
 Armament  
 Equipment  
 Accessories  
 Communications  
 Misc.

## PRODUCTION ENG.

Attack  
 Bombardment  
 Cargo  
 Observation  
 Pursuit  
 Training  
 CPE  
 Radio  
 Misc.

## CONTRACTS

Administration  
 Legal  
 Purchase

## FIELD SERVICE

Administrative  
 Depots  
 Supply  
 Maintenance  
 Transportation

## INDUSTRIAL PLANNING

## ADMINISTRATIVE

## DIV. COM. OFFICER

## RADIO LAB.

## S. C. LIAISON OFFICER

## MUSEUM

## INSPECTION

1. Attached hereto is a letter given me by Mr. Woods of the Bell Aircraft Corporation. You will remember, sometime ago I told you that I had discussed the matter with Mr. Bell and asked him, first if he thought it would be practicable for his company to buy this airplane, and later sell it to us. I also asked him if he thought it would be possible for him to buy two Merlin engines through his Canadian connections, and in turn, sell these engines to us for test. I would like particularly to invite attention to the statement in this letter in regard to the Rolls-Royce people being fussy about selling their engines which might be taken apart. If you will remember, this is what I told you I thought had been the difficulty throughout this whole transaction.

2. Every time that this matter has been taken up through official channels, we always encountered some difficulty in getting anywhere and I suspected that the British were unwilling to let us get their engine on the stand and disassemble it. It seems to me that under the existing circumstances in which we are selling to the British all of our latest equipment and everything that we have (as far as I know, the only things which have been held back are the turbo-supercharger and our bombing equipment - everything else that we have resulting from years of experimentation and development, is being sold to them,) for them to refuse to permit us to have a couple of their engines, which are now in combat being shot down on the Front and undoubtedly, in the hands of the Germans who are inspecting, testing and disassembling these engines, indicates a very peculiar attitude toward us.

3. It occurred to me that with the situation as it is now, if this matter can be brought to the attention of Mr. Morgenthau or someone who has direct contacts, and a little trading power, that we should be able to force a hand and get not only a chance to fly the airplane in question, but to get two engines for test and inspection on our stands here at Wright Field. As you will remember, I told you I am particularly interested in the internal supercharger blower in this engine. However, while they probably know, I believe it just as well not to tell the British that we are after that particular feature of the engine as they will undoubtedly come back and say that they will give it to us in return for the turbo-supercharger, and we are not willing to make this trade.

AIR CORPS (4) FEB 2 1940

Lt. Col. Air Corps  
 Materiel Division

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CF AAF-57-6(177)

15

Taylor-Ainsworth, Inc.

Independent Aeronautical Advisors ~ 420 Lexington Avenue, New York ~ Telephone MOhawl 2-260

JAMES B. TAYLOR, JR.  
BERTRAM W. AINSWORTH

Cable Address: Ainsworth

26 January 40

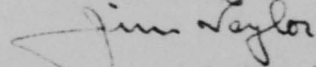
Mr. Robert Woods,  
Chief Design Engineer,  
Bell Aircraft Company,  
No. 2050 Elmwood Avenue,  
Buffalo, New York

Dear Bob:-

I had a long talk with Firie and he says that the Spitfire seems to be causing a great deal of commotion and that Mr. Morgenthau is apparently running everything. The present plan seems to be to ship it to Canada and then arrange for some of the Wright Field boys to go up there and fly it. He said he did not know why it could not be bought. The only catch was that the Hollis Royce people were very fussy at selling one of their engines which might be taken apart, as apparently they consider it a great secret. He is, however, going to work on it and let me know if anything can be done. Just as soon as I hear from him I will pass the information on to you.

I am returning herewith the list of spare parts which you gave me as I have made a copy of them.

Sincerely yours,



James B. Taylor, Jr.

JBT:WET

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WAR DEPARTMENT  
OFFICE OF THE CHIEF OF THE AIR CORPS  
Form No. 178  
Rev. Aug 21, 1945

OFFICE OF THE CHIEF OF THE AIR CORPS  
ROUTING AND RECORD SHEET

(To be filed with correspondence)

Note.—A line will be drawn across sheet after action by each office concerned.

SUBJECT: Merlin Engine.

NO.	FROM ORG. NO.	TO	DATE	DATA
1	Chf. Mat. C. A. C. Division		2-3	<p>1. The Materiel Division is and has been for a long period of time extremely interested in the Merlin engine. They desire this engine for purpose of putting on the test block, operating it, studying it, and gaining any knowledge of advanced type of engine operation which may be secured from this engine. It is understood there is a special gear ratio supercharger in this engine which is much more efficient than that in use in the United States.</p> <p>2. Effort has been made to secure engine in the past but without success. If there is any way this can be done, in view of the excessive information and cooperation which this Government is extending in the procurement of aircraft in the United States for foreign orders, I would suggest it be done.</p> <p style="text-align: right;">G. H. S. J. E. B.</p>
2	Chf. Mat. Div		2-5	<p>How about asking Brit. Attache to buy one.</p>

*ask Attache to buy one*

*MA*

(Do not use reverse side)

U. S. GOVERNMENT PRINTING OFFICE 16-10310

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*Carton - Packard - Merlin - 18  
cf. AAF-36-1379*

(2-9)

3464

February 15, 1940.

452.8  
Rolls Royce

MEMORANDUM TO:

X016  
Assistant Chief of Staff, G-2.

SUBJECT:

Cablegram to M/A, London - Merlin Engines.

1. It is requested that a cablegram, substantially as follows, be sent to the Military Attache, London:

"Understood here that British Government will approve sale to us of two each latest models Rolls Royce, Merlin Series 18 engines equipped with two-speed supercharger and the following spare parts therefor:

1. - 2 sets - Right and left hand Cylinder Blocks, complete with valves, crankshaft and vertical drive shaft.
2. - 2 each - Piston Assemblies, complete with gudgeon pin, piston rings and gudgeon pin retainers.
3. - 2 sets - Main Bearings, complete.
4. - 2 sets - Connecting Rod Bearings, complete
5. - 2 each - Supercharger Impeller Assembly, complete with bearings.
6. - 2 each - Connecting Rod Assembly, complete with fork and blade rods.
7. - 2 sets - Spark Plugs (24 plugs per set)
8. - 2 sets - Gaskets, complete, required to reassemble the engine.
9. - 2 sets - Screened ignition cables.
10. - 2 each - Right and left hand Magnets, unless magnets are identical in which case, two magnets only will be required.

ARM CORPS FEB 19 1940

JEB. 63

To Mail & Record Room
Date 2/13/40
EXECUTIVE
FINANCE
INFORMATION
INSPECTION
PERSONNEL
PLANS
RESERVE
SUPPLY
TRAIN. & OPER.

*Rolls*

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19

11. - 2 each - Complete Set of Instructions covering installation, starting, running, maintenance, dismantling for cleaning, inspection and reassembly, together with a list of tolerances and clearances.
12. - 2 sets - Complete Parts necessary to replace the friction surfaces of the super-charger clutches.

Desired you immediately negotiate price for these engines and spare parts. Cable unit cost of engines, spares, packing and crating and transportation to G. H. Depot, New York. Funds will be made available and contract prepared here."

2. It is understood that this purchase has been discussed by General Arnold with Group Captain Pirie, British Air Attache, and it is suggested that your office inform the British Embassy of this action in order that it may be expedited.

H. H. Arnold.  
Major General, Air Corps.  
Chief of the Air Corps.

To Mail & Record Room
Date 2/19
EXECUTIVE
FINANCE
INFORMATION
INSPECTION
PERSONNEL
PLANS
RESERVE
SUPPLY
TRAIN & OPER.

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*Col. Crane & Rolls-Royce Merlin*  
*21*  
 C-11445-37

WAR DEPARTMENT  
 OFFICE OF THE CHIEF OF THE AIR CORPS  
 FORM NO. 176  
 (REV. AUG. 22, 1939)

OFFICE OF THE CHIEF OF THE AIR CORPS  
 ROUTING AND RECORD SHEET

7528

Note.—A line will be drawn across sheet after action by each office concerned.

(To be filed with correspondence)

SUBJECT: Merlin Engines.

*Rolls Royce*  
*11/17/40*  
 AIR CORPS 5107  
 APR 5 1940

NO.	FROM	TO	DATE	DATA
1.	Inf.Div. Executive and Chief, Mat. Div.		3/29/40	<p>Colonel Crane reports he has been informed authoritatively, but verbally, by the British Attache that the Merlin engines are believed to be on the water enroute to the United States. As soon as the name of the boat and port of arrival are received, Colonel Crane will be notified. The engines will be sent direct to Dayton. Nothing in writing has been received or is expected on this subject.</p> <p><i>see</i>                      R.C.C.                      Chief, Information Division</p>

To Make Record Route

Date *6/12/40*

EXECUTIVE

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MATERIAL

MEDICAL

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4528  
Rolls Royce  
Engines  
June 25, 1940.

MEMORANDUM FOR - The Assistant Secretary of War.

1. Complications are arising in the negotiations with the Ford Motor Car Company for the reproduction of the Rolls-Royce XX engines which indicate positively that these negotiations should be placed in the hands of one agency. Questions of changes in structure, design, modifications, rate of production, etc., make it imperative that this be handled by an authorized agency of the War Department.

2. It is therefore recommended that:

- a. Colonel Oliver P. Echols be designated as the responsible agent and source of contact for all matters relating to contractual and technical matters applicable to the production of the Rolls-Royce Merlin XX engine by the Ford Motor Car Company.
- b. Mr. George J. Mead be advised of this action and that the representatives of the Advisory Commission to the Council of National Defense will take up all matters relating to the production of the Rolls-Royce engine with Colonel Echols.

H. H. Arnold,  
Major General, Air Corps,  
Chief of the Air Corps.

GHB/BR	
To Mail & Record Room	
Date	6/24
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W. COM. AERO. SQ.	

Retained by hand by  
Capt. B. B. ... 6/24/40 5:20 pm.

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*Carton Packard - Rolls Royce Merlin 30*  
*CEARE-43*

~~CONFIDENTIAL~~

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LI-50 - Addendum 1.

June 27, 1940.

Rolls-Royce Engine

To: Assistant Chief, Materiel Division,  
Wright Field, Dayton, Ohio.

1. The Chief of the Air Corps has designated Colonel Oliver P. Nichols as the responsible agent and sole source of contact for all matters relating to contractual and technical relationships applicable to the production of the Rolls-Royce Merlin engine by either the Ford Motor Car Company and/or the Packard Motor Car Company.
2. Dr. George J. Wood of the Advisory Commission to the Council of National Defense has been notified of this designation.
3. Forwarded herewith as attachments are copies of letters from Dr. George Wood to Major General H. H. Arnold, and to Mr. Edsel Ford, President, Ford Motor Company, dated June 26, 1940.
4. This confirms teletype E-1000, dated June 27, 1940.

Incl.  
by ltr fr Dr. Wood, 6/26/40,  
w/cy ltr to Mr. Ford, 6/26/40.

GEO. H. ERSTT,  
Brig. General, Air Corps,  
Chief, Materiel Division.

AJL:  
MEG:jj

To Mail & Record Room
Date
EXECUTIVE
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MATERIEL <i>MEG</i>
MEDICAL
PLANS
PERSONNEL
RESERVE
TRAIN & OPER.
S. COM

*Note: copy of this for  
the records attached to  
Carton No. 9 of the  
for Wood dated 6-28-40.*

*signed by  
Lyon  
meb*

*Original taken to  
W.F. by Lyon  
meb*

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*Continued - Packard - Merlin Engine 29  
CF, HAF - 45*

June 26, 1940

Mr. Edsel Ford, President  
Ford Motor Company  
Dearborn, Michigan

Dear Mr. Ford:

Pursuant to our discussion on Monday, Mr. M. K. Gilman, President of the Packard Motor Company, has signified his willingness to undertake the contract for Merlin XX Engines. Will you therefore kindly turn over to the Packard Motor Car Company, drawings and specifications of the engine and also the sample engine which you have in your possession.

I will appreciate that in accordance with our conversation such data as your company has compiled on the motor and the equipment be made available to Mr. Gilman's Company.

Very sincerely yours,

(Sgd.)

William S. Knudsen

C O P Y

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Nat. Div. A. C. 850-Wright Field 1-9-40-2034 sets of 5

**RADIOGRAM****SIGNAL CORPS, U. S. ARM.****TELEGRAM****Executive Office**

RECEIVED AT WRIGHT FIELD, DAYTON, OHIO

10

PD DA 11 TWS PAID 3 MINS DETROIT MICH JULY 26

COL O P ECHOLS WRIGHTFIELD

BELIEVE WE HAVE GENERAL UNDERSTANDING WITH ADVISORY BOARD AND  
 BRITISH PURCHASING COMMISSION FOR BUILDING MERLIN ENGINES. WOULD  
 LIKE TO ARRANGE MEETING FOR OUR MR DOBMAN WITH YOU OR WHOMEVER YOU  
 DESIGNATE FOR MONDAY, JULY TWENTYNINTH. TO DRAW UP PRELIMINARY  
 OR FINAL CONTRACT AS YOU DECIDE. BELIEVE AGREEMENT FOR FIRST FIFTEEN  
 HUNDRED ENGINES WILL HAVE TO BE ON COST PLUS FIXED FEE BASIS. FIXED  
 PRICE TO BE NEGOTIATED AFTER FIFTEEN HUNDRED ENGINES HAVE BEEN BUILT  
 AS YOU KNOW, NO ONE IN THIS COUNTRY HAS ANY COST EXPERIENCE WITH  
 THESE ENGINES AND IT IS ABSOLUTELY IMPOSSIBLE FOR US TO  
 PREDETERMINE WHAT OUR COST WILL BE. WE ARE ANXIOUS TO SIGN  
 CONTRACT AS QUICKLY AS POSSIBLE AND SHALL APPRECIATE YOUR  
 ADVISING ME WHAT WE CAN DO TO EXPEDITE THE MATTER

M M GILMAN PRESIDENT PACKARD MOTOR CAR CO

*web -*

Original Copy to.....

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✓ 15678

Chief, Contract Section

FPS:erg

September 11, 1940

Draft of Contract - Packard Motor Car Company

1. The attached draft of contract for 3000 aircraft engines to be purchased from the Packard Motor Car Company is highly involved and contains such departures from ordinary forms and practice as to justify a very careful and detailed consideration prior to its execution on behalf of the Government. These departures are due in part to the unusual nature of the transaction, in part to special understandings with the contractor arrived at independently of this Division, and in part to the refusal of the contractor to accept terms other than those incorporated in the instrument.

For your information the principal features of the contract are outlined in the following paragraphs.

2. General. Although legally the proposed contract would be a separate and distinct undertaking to which only the Government and the contractor are parties, it is in the final analysis practically a part of a major and combined undertaking which involves at least four separate contracts. These are (first) a contract between the contractor and a third party for the production by the contractor of 6000 engines, with an optional provision for the production of 10,000 more engines, (second) a contract between the contractor and the Government (this instrument) for 3000 engines with an option to the Government to procure 5000 more, (third) a contract whereby the Reconstruction Finance Corporation is to lend to the Defense Plant Corporation money for facilities which the latter is to lease to the contractor for use in manufacturing the engines, and (fourth) a lease by the Defense Plant Corporation to the contractor of the facilities acquired under the third-party contract mentioned, under which that corporation is to be paid for the use of such facilities a rental of \$1500 for each engine manufactured.

3. Special Tool Equipment. This equipment is to be provided by purchaser of the engines under the third-party contract, supra, and by the Government under this contract, in substantially the same ratio as that of their respective contemplated purchase of engines, i.e., two to one, the estimated obligation of the Government for such tools under this contract being \$3,300,000.

The third party and the Government will each own certain tools. The tools of the two purchasers, in combination, are to cover the special tool requirements for manufacturing the engines under both contracts. For this reason, this contract authorizes the contractor, without charge, to use its tools so long as they are required for the

DATE
ENG.
PROC.
F. S. S.
ADM.
C. O.
I. W. P.
BDG. OFF.
EXEC.

CENTRAL FILES

Mat. Div. A. C. Wright Field 1.6-39-110M

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manufacture of engines under either or both of the engine contracts, including optioned engines. The third-party contract is to contain a like provision for the use by the contractor of the tools of the purchaser thereunder in carrying out this contract, including any engines purchased under the option granted to the Government (see paragraph 2, supra).

4. Consideration. The estimated consideration to be paid by the Government under this contract (excluding any sums which may become due for patent infringement, increased costs which may result from the termination of the third-party contract, or default of the purchaser under that contract, and the cost of rehabilitating the contractor's plant after termination of this contract) is as follows:

"Engine Costs (3000 engines and data)	\$51,555,000.00
"Tool Equipment	3,300,000.00
"Rental (at \$1500 per engine)	4,500,000.00
"Fixed Fee (at \$1200 per engine)	<u>3,600,000.00</u>
"Total Estimated Price	\$62,955,000.00 "

"Tool Equipment Costs", "Rental Costs", and "Engine Costs" are defined in subparagraphs (1), (2) and (3), Article 3, at pages 5 and 6, 6, and 6-8 of the contract, respectively.

5. Fixed Fee. The fixed fee amounts to slightly less than 7% of the "Engine Costs". "Tool Equipment" and "Rental" costs are expressly excluded from consideration in computing the contractor's fee (paragraph (b), Article 2, page 4). However (see paragraph at the top of page 6), "Engine Costs" as defined in the contract include expenses of the contractor in procuring, installing and repairing tool equipment other than those items of cost specifically listed in paragraphs (a) to (d), inclusive, of subparagraph (1), paragraph (b), Article 3, page 5, which the contractor's representative stated it was impracticable to segregate from engine costs. Mr. Knudsen expressly advised the undersigned that no costs of buying tool equipment were to enter into the computation of the fee. The contractor's representative, however, takes the position that the contract, in this respect, substantially conforms to the understanding of the contractor with Mr. Knudsen. The matter is mentioned herein in order that it may be brought to the attention of higher authority when the contract is forwarded.

The contract departs, in respect of the amount to be deducted from the contractor's fee in the event of termination for contractor's default, from the terms of the approved cost-plus-fixed-fee form

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(C.P.F. Form No. 3), in that, instead of forfeiting 10% of the fixed fee, including the retained percentage thereof on articles completed prior to termination, the contractor will forfeit 25% of the fee which would otherwise have been due on partially completed work, and will receive full pay for all completed articles (see subparagraph (5), paragraph (b), Article 9 of C.P.F. Form No. 3 and subparagraph (3), paragraph (e), Article 9, page 11, of this contract. Whether one or the other of the foregoing provisions would be more advantageous to the Government is a matter for administrative determination, which would appear to depend on the stage of progress of the work at the time of termination.

6. Elements of Cost. As hereinbefore stated, "Tool - Equipment Costs" are defined on pages 5 and 6 of the contract. This definition does not use "Treasury Decision 5000" of August 2, 1940, the approved basis for determination of costs under C.P.F. Form 3, and provides in part for fixed charges of overhead costs at 50% the amounts paid and obligations incurred by the contractor for direct hourly labor and compensation to contractor's employees. The contractor's representative states that this feature of the contract is based on an informal understanding with the persons who initiated the project on behalf of the Government, and that it actually represents a saving to the Government on overhead costs which would otherwise be chargeable to the Government. As to whether or not such would be its effect, the undersigned is not qualified to express an opinion.

"Engine Costs", as hereinbefore stated, are defined at pages 6-8 of the contract, and that definition is based on "Treasury Decision 5000", supra. However, at the contractor's insistence, certain elements of cost, believed to be allowable under "Treasury Decision 5000", are expressly mentioned and made allowable items.

7. Order of Work. The contract, as hereinbefore stated, covers purchase by the Government of 5000 engines. Of these, 3 are to be manufactured and delivered within the period of six-eight months after the approval of the contract. These engines are to be used for test purposes, and the results of tests thereof will determine the rating, detailed specifications and special characteristics of the remaining 2997 engines. Further, the contractor agrees to furnish, without charge to the Government, 6 like engines for test purposes, which are to be delivered within the period of six and one-half to nine and one-half months (Item 1, paragraphs (a) and (b), Article 1, page 2 of the contract). Notwithstanding the foregoing, paragraph (c) of Item 1, page 3 of the contract provides that the contractor shall proceed with the fabrication of the test engines, the contractor agreeing to use its best judgment to minimize costs due to construction charges which may result from the tests.

This provision is understood to be in accordance with an informal understanding between the contractor and other representatives of the Government, and amounts, in effect, to a purchase of



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time with the assumption by the Government of the risk of losses in the event of change. Whether or not the time saved is worth the risk assumed is, of course, an administrative question.

This feature of the contract is pointed out herein because of its unusual nature, and for the reason that its effect is to place on the Government all risk of loss due to changes indicated by tests, except to the extent of such gross negligence or error on the part of the contractor as to amount to fraud.

8. Termination. The termination clause (Article 9) differs materially from the corresponding clause (Article 9) of C.P.F. Form No. 3. Insofar as concerns the computation of costs actually incurred prior to termination and the determination of estimated costs of completion of the contract had it not been terminated, for the purpose of determining the fee earned, the clause represents an adaptation of the termination clause generally employed in aircraft contracts, "Termination when contractor not in default" (paragraph 10 c (2) AR 5-1110, May 22, 1940, para 4). However, in view of the special understanding on which the contract is based, and the inter-relation between this contract and the third-party contract hereinbefore mentioned, termination is not final as respects all obligations of the Government, for the reason that the Government is expressly obligated, as stated, to allow the contractor even after termination to continue the use of the Government-owned special tools. Therefore, the Government cannot finally and effectively terminate the contract for all purposes until the third-party contract, including any optional purchase thereunder, has been completed or terminated, or until the contractor has purchased the Government-owned tool equipment, as provided in paragraph (f) of Article 1, page 3 of the contract.

Although, as indicated in paragraph 2, supra, the contract contemplates that the purchaser, under the third-party contract, shall furnish special tools in the amount of substantially twice the cost of tools to be provided by the Government (\$3,300,000 by the Government and \$6,600,000 by the third party), the contract provides that in the event the third-party contract be not carried to completion or there be any change in the relative number of engines to be manufactured under that or this contract, the percentage of tool equipment and engine costs thereafter chargeable to the Government shall be adjusted accordingly, and the Government shall be charged with any increase in any such tool equipment and engine costs to the contractor attributable to the reduction of the total number of engines to be manufactured under both contracts (see paragraph 4, bottom of page 7). The effect of this is that, should the purchaser under the third-party contract either default in the performance of any of its undertakings or terminate its contract, the Government, especially if such termination or default occur at an early date, might be confronted with the alternatives of terminating this contract at great expense and without any benefit to the Government, or of assuming additional costs running into millions, including the

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costs of providing all or a substantial portion of the \$6,600,000 worth of tool equipment which it is contemplated that the purchaser under the third-party contract will furnish. In this connection, the contractor's representative refused to consider a suggestion that the contract provide that up to some designated point, at least to the date of the completion of the G test engines, the costs to be charged to the Government should not in any event exceed one-third of the aggregate of the costs incurred by the contractor for the performance of this contract and the third-party contract.

9. Patent Clause. This clause (Article 20) consists substantially of a quotation from the opinion of the Supreme Court of the United States in *Richmond Screw Anchor Company v. United States*, 275 U.S. 331, 344, interpreting and applying to the facts of that case, the Act of June 25, 1910, 36 Stat. 881, as amended by the Act of July 1, 1914, 38 Stat. 705 (35 U.S.C. 68). Assuming that the language of the Supreme Court is applicable, without qualification, in all cases, the clause is unnecessary, and the full protection to the contractor contemplated thereby would attach by operation of law. If such be not the effect of the statute (see in this connection *Millen Davit and Boat Corporation v. United States*, 78 Ct. Cls. 772; 20 U.S.P.Q. 206; *Electric Boat Company v. Lake Torpedo Boat Company*, 264 Fed. 670), to sign a contract containing this article would amount to the assumption of a contractual obligation, uncertain in amount, which might exceed any sum set aside from appropriated funds for payments under this contract. In any event, to give the contractor free range in this respect is of very doubtful propriety. However, after effort to reach some agreement with the contractor on a basis which would be mutually acceptable, this article was inserted at the insistence of the vice president and patent counsel of the contractor. The contractor's representatives have been advised that this Division lacked authority to sign a contract containing this article and doubted that it would be approved by the War Department.

It is also pertinent in this connection to note that, although this Division was informed that full rights under the United States patents applicable to the Holtz-Boyce G engine had been licensed to the United States through the Treasury Department, more recent advice is to the effect that such is not the case. Further, the contract contemplates the adaptation to the Holtz-Boyce G engine, of American-designed and made parts, the use of which might subject the Government to heavy liability for patent infringement, even if the patents covering the Holtz-Boyce G engine in its present form were licensed to the United States. It is further pertinent to note that one of the contractor's principal objections to agreeing to protect the United States against patent infringement in any degree, was the contractor's contention that the necessary patent searches by the contractor would materially delay the production of the engines. This indicates that the contractor itself anticipates the probability of the infringement of patents in performing

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the work under this contract. Although one of the purposes of the statute in question was to preclude such delay, that the Government would contractually assume such accepting obligations, is doubtful.

10. In view of the foregoing, it is recommended that the attached draft of contract be not signed at this Division, but be forwarded to the War Department for consideration, accompanied by such comments and recommendations as you consider appropriate.

Att.  
Cy. draft of contract

FREDERICK P. SMITH,  
Major, Judge Advocate.

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Contract No. W 535 ag-15678  
(3667)

APPROVAL RECOMMENDED:

SEP 13 1940

*H. Arnold*  
BY H. ARNOLD,  
Major General,  
Chief of the Air Corps

APPROVED:

SEP 13 1940

By direction of the  
Secretary of War under  
the provisions of the  
Act of July 2, 1940  
(Public No. 703, 76th Cong)

COST-PLUS-A-FIXED-FEE

SUPPLY CONTRACT

(Air Corps)

WAR DEPARTMENT

FPS:ft  
EHS  
EMB

*R. P. P.*  
The Assistant Secretary of War

*All wa 547*

Contractor: PACKARD MOTOR CAR COMPANY

Contract for: 3,000 Aircraft Engines and Data

Estimated engine cost.....	\$ 51,555,000.00
Fixed Fee (\$1,031 per engine).....	3,093,000.00
Tool equipment cost.....	3,300,000.00
Rental.....	<u>4,300,000.00</u>
TOTAL .....	\$ 62,448,000.00

Payments to be made by Finance Officer at: Wright Field, Dayton, Ohio.  
*New Detroit, Michigan*

The supplies and services to be obtained by this instrument are authorized by, are for the purpose set forth in, and are chargeable to the following Procurement Authorities, the available balances of which are sufficient to cover cost of same:

AC 34-P 12-3037-A0705-01..... \$52,448,000.00  
AC 34 P. 12-30 A0705.261-2..... 10,000,000.00  
APP-170849

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COPY. *Robert P. Patterson*  
9/13/40

WAR DEPARTMENT  
Office of The Assistant Secretary  
Washington, D. C.

September 13th, 1940.

MEMORANDUM TO GENERAL BRETT:

On the Packard contract I am attaching a facsimile copy of the letter signed by the British Ambassador covering the right to use the patents, etc. The original is in the hands of the Secretary of State.

/s/ Robert P. Patterson

Robert P. Patterson,  
The Assistant Secretary of War.

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COPY OF A LETTER  
Pachard, all Royce Merlin  
et, 44-49-4379

4528

September 12th, 1940

My dear Mr. Secretary:

I have the honour to confirm the  
prior informal understanding between His  
Majesty's Government and your Government and to  
represent on behalf of His Majesty's Government  
with respect to the patents, designs and right  
to manufacture the Rolls Royce Merlin XI engine,  
which were supplied to your Government through your  
Ambassador in London and received in Washington  
on June 13th, 1940, as follows:

- (1) By proper authority, His Majesty's  
Government is authorized to and has  
licensed the Secretary of the Treasury  
on behalf of the United States Government,  
upon such future payments as it wishes

The Honourable  
Cordell Hull,  
Secretary of State of the United States,  
Washington, D. C.

L:HM

Mr. Tolson
Mr. E.A. Tamm
Mr. Clegg
Mr. Glavin
Mr. Ladd
Mr. Nichols
Mr. Rosen
Mr. Tracy
Mr. Carson
Mr. Egan
Mr. Gurnea
Mr. Hendon
Mr. Pennington
Mr. Quinn
Mr. Nease
Miss Gandy

A note from Robert P. Patterson, in file, says  
the original of this letter is in the possession  
of the Sec State (where it ought to be).

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CF, AAF-44-6/27p 38

-2-

and consents to make to His Majesty's  
Government, to use the patents and  
designs and to manufacture for its own use  
such engine either itself, through the  
Packard Motor Car Company or through any  
other private manufacturer approved by  
both governments; and

(2) His Majesty's Government will indemnify  
the United States Government against any  
and all claims, damages or expenses by  
whomsoever against the United States Government  
or reason of the use of such patents,  
designs and manufacture for its own use.

Believe me,

My dear Mr. Secretary,

Very sincerely yours

(Sd) LLOYD

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CF, AAF-100 (8/199)

~~CONFIDENTIAL~~

January 13, 1941

X016  
MEMORANDUM FOR COLONEL WARD:Subjects: Status of Halle Boyce Production.

While in general your statements on the attached are correct, I am not so sure that the answer is as easy as your memorandum might make it appear. At the time that we started the Halle Boyce production in the Packard plant, the 2000 H.P. Halle was not in a condition to get in production. As a matter of fact they did not even have working drawings for same. I am also not sure that right at the present time Packard has gone sufficiently far with the 1250 H.P. Halle (instead of 1000 H.P. as you say) that we cannot change to the 2000 H.P. provided the working drawings are all available. On the other hand, Packard may have gone so far as to start construction on tools and have so many tools made that the loss would be considerable.

In any event I am sending a copy of this memorandum to the Air Corps for a statement as to the exact status of Packard with regard to facilities, tooling, drawings, and possibility of manufacture of both the Halle Boyce Seber and the Halle Boyce Merlin.

HHA/ea

E. H. Arnold,  
Major General, Air Corps,  
Chief of the Air Corps.

Incl.  
Memo for Ch of Staff 1/13/41  
initials G.W. (CONFIDENTIAL)

Copy to Gen Pratt (for necessary action)  
ea

~~CONFIDENTIAL~~

To Mail & Record Room
Date
EXECUTIVE
FINANCE
INFORMATION
INSPECTION
MATERIAL
MEDICAL
PERSONNEL
PLANS
RESERVE
TRAINING & OPERATIONS
W. COM. AERO. BR.

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CP, AAF-102-(2/27)

<sup>2</sup>  
CONFIDENTIAL

COPY

WAR DEPARTMENT  
OFFICE OF THE CHIEF OF STAFF

January 13, 1941

MEMORANDUM FOR Chief of Staff:

Smith brought the following up this morning which I think should be brought to your attention:

The British have developed a 2,000 horse power Rolls Royce engine which they are putting into production. In the meantime they are asking us under the greatest secrecy to manufacture a 1,000 horse power engine. There are other cases in which they are asking us to put in production items which would be second best to those which they are manufacturing.

I think we should watch this very carefully as we may end up with everything tooled up for second best production while they on the other hand are tooled up and in the process of manufacturing the best possible items.

(signed) O.W.  
O.W.

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Carbon Packard - Engines  
AC/AA, M-S-11-1/10

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CONFIDENTIAL

(4)

January 21, 1941.

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MEMORANDUM FOR GENERAL BRETT.

SUBJECT: Status of Rolls Royce Production.

1. With reference to the attached copies of memoranda for the Chief of Staff, January 13, 1941, and for Colonel Ward, same date, signed by General Arnold, I think there is a good deal of misunderstanding as to the status of development of the respective engines in question; that is, the Rolls Royce Merlin 20 engine which is being manufactured by the Packard company is an improved Rolls Royce 20 engine. These are production engines, and are in production in England. They have completed all of the stand tests and service tests and flight tests incident to engine development, and complete detail design drawings and specifications were available; therefore, it seemed reasonable that these engines could readily be put into production in the United States within a reasonable length of time.

2. The Rolls Royce Merlin 20 engine has a rating of 1300 horsepower at 3,000 r.p.m. for take-off. It has a two-speed supercharger and with high blower has a rating of 1185 horsepower at 21,000 feet. The new Spitfire II airplane, with the Rolls Royce 20 engine, is operating effectively with this engine at an altitude of 27,000 feet.

3. The estimated performance of the Curtiss P-60 pursuit airplane with the laminar flow wing and Rolls Royce Merlin 20 engine, being manufactured by Packard gives a calculated high speed of 420 miles per hour at 23,000 feet. According to the present schedule, the flight test engines to be built by the Packard Company should be delivered in March of 1941.

4. It is difficult to estimate accurately when the production engines will actually be delivered. The best estimate to be made at the present time is that delivery on production airplanes of these engines will begin in about one year, which will be approximately eighteen months from the time that engine orders with Packard were placed. There are 3,000 of these engines being built for the United States Army and 6,000 for the British government.

5. With reference to the statement that the British have a 2000 horsepower liquid-cooled engine which they are putting into production,

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AC/AS MTC-1-1/3/41

CONFIDENTIAL

Memo for General Brett, 1/21/41 (Cont'd)  
Re Status of Rolls Royce Production.

the British have developed a 2000 horsepower Napier Lion Sabre engine. This is a sleeve valve engine, and is very similar to the liquid-cooled engine which was known as the X-1800 engine developed in this country, and which Pratt & Whitney refused to put into production. It is my understanding that about twelve of these engines have been built; that they have had considerable stand testing, and about 70 or 80 hours flight test. This engine is distinctly in what we call the service test development stage. There is considerable question as to whether it is ready to be put into production or not. The British have asked us to put it into production, and are pushing this work as they are extremely anxious to have these engines for installation in airplanes to be procured in the Fiscal Year 1942. One of these engines is now en route to the United States for study by the Army, Navy, and the Defense Council. It is extremely doubtful as to whether the detailed drawings and design data necessary to put this engine into production are available either in this country or in England, and to successfully reproduce it in this country, it will probably be necessary for the British to send a large staff of engineers who are familiar with this project and carry on considerable development work in this country before a satisfactory standard engine can be produced. Under most favorable circumstances it would require from one and one-half to two years from date before production can begin in the United States on this 2000 horsepower engine.

6. In regard to General Arnold's request for a statement as to the exact status of Packard with regard to facilities, tooling, drawings, and possibility of manufacture of both the Rolls Royce Sabre and Rolls Royce Merlin engine, report from the Air Corps representative, January 15, 1941, states as follows:

**FACILITIES:** The rework of old buildings and construction of new buildings appears to be progressing on schedule.

**RAW MATERIALS:** There is considerable question as to whether deliveries will be met particularly on aluminum forgings. Difficulties may be encountered in obtaining timely deliveries of aircraft quality electric furnace steel for forgings.

**ENGINEERING:** Extreme difficulty is being experienced in completion of processing drawings and establishing tooling requirements due to conversion from English to American standards. Difficulties are being experienced in fabricating suitable patterns due to deficiencies in pattern drawings.

**MACHINE TOOLS:** This item is very critical. It will be impossible for this Company to meet schedules unless assistance is obtained from the Priorities Administration.

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AC/Ad, mtd-1 (3/30)

12  
CONFIDENTIALMemo for General Brett, 1/21/41 (Cont'd)  
Re Status of Rolls Royce Production.**SPECIAL EQUIPMENT:** Gauging equipment particularly for English Type Whitworth Threads is very critical."

The following additional information is extracted from this report:

"This company has completed in record time a tremendously difficult task of converting English drawings to American drawings and standards. The company is making every effort to complete this work on schedule; however, it has turned out to be more complicated and involved than anyone had estimated.

Orders have been placed for raw and semi-fabricated materials both ferrous and non-ferrous.

Packard initially placed on blanket order some 2686 machine tools. This was done because it was impossible for the Packard Company to make definite allocations of machine tools together with delivery requirements until the process studies had been completed on this British engine. They apparently were unable to obtain complete information regarding processing and tooling requirements from the Rolls Royce Company. At this time approximately 2400 machines have been covered by process study and assigned to definite parts fabrication."

7. Due to the present status of manufacture of the Rolls Royce Merlin engine and the commitments which have already been made, it is not believed advisable to change the schedule as now approved. It is recommended that the question of the manufacture of the Rolls Royce Merlin and the Napier Sabre engine be handled as entirely separate projects; that after the arrival of the Sabre engine in the United States it be studied by Air Corps engineers in conjunction with the National Defense Council, and a decision made, first, as to whether it is advisable to undertake the manufacture of this engine in the United States or not, and in the event that it is decided to go ahead with the manufacture of this engine, that the question as to whether Packard, Allison, or some other facility be asked to undertake its manufacture to be decided at that time. Due to the state of development of the Sabre engine, it is not believed that it should be manufactured in the United States unless it can be manufactured by a facility which has an experienced and adequate engineering staff, supplemented by a group of British engineers who are familiar with the design details of this engine.

OPE:JJ

1 Incl.  
Memo fr Exec. CAC  
1/15/41, w/2 Incls.

CONFIDENTIAL

O. P. ECHOLS,  
Brig. General, U.S.A.,  
Chief, Material Division.

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PS/ed  
January 31, 1941

SUBJECT: Packard Motor Car Company  
Detroit, Michigan

1. Telephone message from Mr. J. H. Marks, who stated he wished to send representatives down here concerning increase of their Defense Plant Corporation lease previously negotiated with that corporation. He stated he had seen Colonel Volandt and Major Hopkins and that they referred him to this office. He advised further that the lease previously concluded had initially called for a distribution of a \$20,000,000 over-all with the United States carrying one third (\$6,660,000) and the British two thirds. When finally processed, the Packard cost chargeable to the United States was \$8,000,000.
2. He states now that recent economic developments have required a further increase for the United States Government in the amount of \$1,183,000 (approximately fifteen per cent), bringing the Army total up to \$9,183,000.
3. P. S. advised him that, since it was referred to this Section, the increase would have to be analyzed, engineered, and processed by this Section, even though the original lease was not. P. S. suggested, further, that representatives of that company visit on Monday, February 3, and that this office would assist them in setting out the data in the form required.
4. Summary of data applying to this expansion should be referred to the Production Engineering Section for recommendation.

P. S.

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PS/fea  
February 3, 1941. aNOTES ON: Packard Motor Car Company,  
Detroit, Mich.

1. Purpose. Representatives of subject company, R. W. Brown, Manager Aircraft Division, J. W. Raisbeck, Chief Accountant, visited this office this date for purposes of negotiating increases to apply to a Defense Plant Corporation lease negotiated between that company and the Defense Plant Corporation, September 3, 1940, for production of Rolls-Royce Merlin 20 Aircraft engine. Note that the original lease consummated September 3, 1940 was accomplished without reference to the Industrial Planning Section.
2. Present Production. Automotive, as well as aeronautical engines, and marine engines. All succeeding data will apply solely to aircraft engine production.
3. Present Capacities and Back-log.  
Capacity, none. Quantity production estimated to begin July 1, 1941.  
Back-log, 6,000 units for the British; 3,000 for U. S. Government.  
Maximum capacity estimated at 800 a month. Two shifts for production and approximately 3 shifts for test.
4. Proposed Capacity and customers. Same as that being planned for and noted in the above.
5. Expansion Requested. Consist largely of increased costs of machinery, plant equipment, buildings, increases in labor costs; in effect, subject company presented unsupported estimates in their earlier negotiations with the Defense Plant Corporation. Their experience to date, as based on the acquisition of buildings, machinery and equipment now serves as an accurate estimate of costs. Their latest estimate, as result of this experience, shows an increase of \$1,183,333 over the \$3,000,000 amount allocated by the Defense Plant Corporation. Land was not involved in the original lease, although costs for land improvements were made a part of such lease.
6. Contract Indicated. Does not apply in this case, inasmuch as a Defense Plant Corporation lease has already been negotiated.
7. Special Considerations.
  - a. Building phase of the project is now over 50% complete; acquisition of machinery and plant equipment is proceeding as rapidly as possible, with approximately 15% of items received to date. Acquisition of machinery is approximately 100% complete to date. Manufacturing tools; 50% of this item is on order or have been delivered to date.
  - b. "Plant rearrangement", as noted on Packard general information folder, consists as considered in this office, rehabilitation, modification and adaptation of existing facilities; as such, this item is acceptable.
  - c. The general information sheet of January 31, 1941 appears to assign to the Defense Plant Corporation, the total amount of increases, - (\$1,183,333). Subject corporation is, however, presenting a statement to

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February 3, 1941. PS/fea

NOTES ON: Packard Motor Car Company  
Detroit, Mich.

indicate that the British are carrying their share of increases; which will be at least in the proportion of other costs carried by the British as compared with those of the U. S.

Actions.

- a. In view of the procedure adopted by the Defense Plant Corporation in the original lease or contract, it is impractical at this time to set up either a separate Appendix "A" for the increases required, or combined over-all for the plant.
- b. Data submitted in general information folder, January 31, 1941, should be set as far as practicable upon a Construction - Production Analysis form for evaluation.
- c. List of machine tools, when received, shall be referred to Production Engineering. However, no detailed evaluation of same need be made, inasmuch as this company is proceeding with approval of over-all requirements with the authority of the Defense Plant Corporation.
- d. No verification of buildings, building construction, prints and specifications required.
- e. Copy of these notes are to be supplied to Contract Section, Production Engineering Section and Defense Plant Corporation.
- f. All data necessary for processing to Washington will have to be secured. If delay is to be entailed in supply of such data, it will be adequate at this time to indicate that power, water, fuel, transportation, sewage facilities are adequate.

P. S.

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PS/ed  
February 6, 1941

TO : General Motors Car Company  
Warren, Michigan

1. Mr. Marks, subject company, please explain other transactions which have increased the income of \$1,000,000 in the year. P. S. advised that their project appeared in good shape as result of our analysis, but that we are lacking a letter promised by Mr. Erwin and Mr. Kraisbeck which was essential to let the British had carried their share of the increased cost, since the information folder submitted by the subject company did not make that point clear.

2. Upon receipt of the letter requested and upon processing to Washington, a wire should be sent to Mr. Marks advising of our action.

RS  
P. S.

*W. S. 2/7/41*

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

February 6, 1941

Philip Schneberger  
Lt. Colonel  
Chief, 2nd Planning  
Wright Field, Dayton, Ohio

Dear Sir:

Reference: Ind. - 187

When Mr. R. N. Brown and Mr. J. W. Raisbeck were in your office Monday, February 3, 1941, you requested, I understand, that the British Purchasing Commission share of cost of increases be submitted in writing. Mr. Raisbeck has informed me that this was done but apparently you now wish that this be stated on a Packard Motor Car Company letterhead and signed by a company official.

The British Purchasing Commission and Defense Plant Corporation shares were determined as shown below:

	<u>Total</u>	<u>British</u>	<u>Defense P.C.</u>
Machinery, Equipment & Facilities	\$22,000,000.	\$13,250,667	\$8,743,333.
Buildings (new)	4,230,000	4,230,000	
Expense of plant rearrangement	1,320,000	880,000	440,000
<b>Total</b>	<b>\$27,550,000</b>	<b>\$18,366,667</b>	<b>\$9,183,333</b>
<u>Less</u>			
Money originally provided in contracts		13,333,333	8,000,000
		<u>\$ 5,033,334</u>	<u>\$1,183,333</u>
<u>Deduct</u>			
Original deposit to cover tool equipment	\$ 6,666,667		
<u>Less - Amount of present tool estimate</u>	<u>5,333,333</u>	<u>1,333,334</u>	
<b>Increases requested</b>		<b>\$ 3,700,000</b>	<b>\$1,183,333</b>

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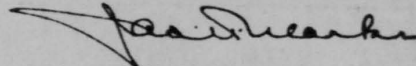
February 6, 1941

Philip Schneeberger

In order not to hold up our aircraft expansion program  
it is of the greatest importance that the amounts requested be provided  
without delay.

Yours very truly,

PACKARD MOTOR CAR COMPANY



Jas. H. Marks  
Vice President

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FEB 10 1941

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IND-T-186

2-7-41

FACILITIES SECTION

## P R I O R I T Y

FOLLOWING INFORMATION SUBMITTED BY THE PACKARD MOTOR CAR COMPANY, DETROIT, MICHIGAN, FOR THE PURPOSE OF NEGOTIATING INCREASES IN THE AMOUNT OF \$1,183,333 TO APPLY TO THE DEFENSE PLANT CORPORATION LEASE, AMOUNTING TO \$8,000,000 WHICH HAS BEEN CONSUMMATED WITH THE DEFENSE PLANT CORPORATION, IS SUBMITTED. SINCE IT IS IMPRACTICABLE AT THIS TIME FOR THE PACKARD MOTOR CAR COMPANY TO SET UP A SEPARATE APPENDIX A, COVERING THE INCREASE OF \$1,183,333, A BREAKDOWN OF THESE INCREASES CANNOT, THEREFORE, BE FORWARDED. THE INFORMATION SUBMITTED BELOW COVERS THE ESTIMATED TOTAL OVERALL COSTS OF THE EXPANSION PROJECT:

TYPE AND LOCATION OF PLANT: ERECTION OF AN OFFICE AND ASSEMBLY BUILDING, MANUFACTURING BUILDING, AND A TESTING AND TEAR-DOWN BUILDING ON LAND NOW OWNED BY THE COMPANY; INSTALLATION OF NECESSARY MACHINERY, EQUIPMENT, ETC. AND THE REMEDIATION, MODIFICATION AND ADAPTATION OF CERTAIN PORTIONS OF PRESENT PLANT. THE NEW FACILITIES ARE REQUIRED TO MANUFACTURE 9,000 ROLLS-ROYCE MERLIN XX AIRCRAFT ENGINES, OF WHICH 3,000 ARE FOR THE AIR CORPS AND 6,000 FOR THE BRITISH.

CAPACITY: MAXIMUM CAPACITY OF THE EXPANDED PLANT IS ESTIMATED TO BE APPROXIMATELY 800 ENGINES PER MONTH.

ESTIMATED OVERALL COSTS OF EXPANSION

LAND - NONE

BUILDINGS, INSTALLATIONS, LEASEHOLD IMPROVEMENTS, AND SERVICE COSTS - \$5,554,500.

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PORTIONS OF PRESENT PLANT. THE NEW FACILITIES ARE REQUIRED TO MANUFACTURE 9,000 ROLLS-ROYCE MERLIN XX AIRCRAFT ENGINES, OF WHICH 3,000 ARE FOR THE AIR CORPS AND 6,000 FOR THE BRITISH.

CAPACITY: MAXIMUM CAPACITY OF THE EXPANDED PLANT IS ESTIMATED TO BE APPROXIMATELY 800 ENGINES PER MONTH.

**ESTIMATED OVERALL COSTS OF EXPANSION**

**LAND - NONE**

**BUILDINGS, INSTALLATIONS, LEASEHOLD IMPROVEMENTS, AND SERVICE**

**MACHINERY, EQUIPMENT, ETC. - 21,995,500**

**TOTAL OVERALL COSTS - \$27,550,000.**

THE ABOVE TOTAL OVERALL COSTS INCLUDE THE INCREASES OF \$1,183,333, WHICH THE PACKARD MOTOR CAR COMPANY DESIRES TO HAVE INCLUDED IN A SUPPLEMENTAL DEFENSE PLANT CORPORATION LEASE AGREEMENT.

FLOOR SPACE COVERED BY EXPANSION: IT IS ESTIMATED THAT 1,000,000 SQ. FT. OF FLOOR SPACE WILL BE UTILIZED IN THE MANUFACTURE OF THE ROLLS-ROYCE ENGINES, OF WHICH 900,000 SQ. FT. ARE INDICATED AS PRODUCTIVE AREA.

PLAN OF FINANCING: DEFENSE PLANT CORPORATION CONTRACT PLAN IV.

LABOR TO BE EMPLOYED: IT IS ESTIMATED THAT LABOR REQUIREMENTS WILL BE AS FOLLOWS:

SKILLED EMPLOYEES	2,800
SEMI-SKILLED AND UNSKILLED	11,600
NON-PRODUCTIVE	2,000
TOTAL EMPLOYEES	16,400

TRANSPORTATION: RAIL, WATER, AND HIGHWAY TRANSPORTATION AVAILABLE.

MICHIGAN CENTRAL RAILROAD SIDINGS AT THE PLANT HAVE AN ESTIMATED CAPACITY OF AT LEAST THIRTY RAILROAD CARS. TRANSPORTATION FACILITIES ARE ADEQUATE.

POWER: REQUIREMENTS FOR BOTH THE CAR AND AIRCRAFT DIVISIONS ARE ESTIMATED AS FOLLOWS:

AVERAGE MONTHLY REQUIREMENTS	10,000,000 K. W. H.
MAXIMUM MONTHLY REQUIREMENTS	11,877,000 K. W. H.

POWER IS SECURED FROM DETROIT EDISON COMPANY AND SOURCE OF SUPPLY APPEARS TO BE ADEQUATE.

WATER: WATER REQUIREMENTS FOR BOTH THE CAR AND AIRCRAFT DIVISIONS ARE ESTIMATED AS FOLLOWS:

AVERAGE MONTHLY REQUIREMENTS	30,000,000 CU. FT.
MAXIMUM MONTHLY REQUIREMENTS	35,000,000 CU. FT.

WATER IS PROCURED FROM THE CITY OF DETROIT, SUPPLY OF WHICH IS ADE-



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MICHIGAN CENTRAL RAILROAD SIDINGS AT THE PLANT HAVE AN ESTIMATED CAPACITY OF AT LEAST THIRTY RAILROAD CARS. TRANSPORTATION FACILITIES ARE ADEQUATE.

POWER: REQUIREMENTS FOR BOTH THE CAR AND AIRCRAFT DIVISIONS ARE ESTIMATED AS FOLLOWS:

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POWER IS SECURED FROM DETROIT EDISON COMPANY AND SOURCE OF SUPPLY APPEARS TO BE ADEQUATE.

~~WATER: WATER REQUIREMENTS FOR BOTH THE CAR AND AIRCRAFT DIVISIONS ARE ESTIMATED AS FOLLOWS:~~

AVERAGE MONTHLY REQUIREMENTS	30,000,000 CU. FT.
MAXIMUM MONTHLY REQUIREMENTS	35,000,000 CU. FT.

WATER IS PROCURED FROM THE CITY OF DETROIT, SUPPLY OF WHICH IS ADEQUATE.

FUEL: FUEL REQUIREMENTS FOR BOTH THE CAR AND AIRCRAFT DIVISIONS ARE ESTIMATED AS FOLLOWS:

	AVERAGE MONTHLY	MAXIMUM MONTHLY
COAL	10,500 TONS	11,000 TONS
OIL	130,000 GALLONS	150,000 GALLONS
GAS	40,000 DETROIT CITY GAS UNITS	44 DETROIT CITY GAS UNITS

SUPPLY OF FUEL ADEQUATE FOR REQUIREMENTS.

TYPE OF BUILDINGS: BUILDINGS ARE OF STEEL AND BRICK CONSTRUCTION, STEEL FRAME.

SPECIAL REQUIREMENTS BUILDING PHASE OF THE EXPANSION IS NOW OVER 50 PERCENT COMPLETE. ACQUISITION OF MACHINERY AND PLANT EQUIPMENT IS PROCEEDING AS RAPIDLY AS POSSIBLE. ADDITIONAL COMMITMENTS FOR MACHINERY, EQUIPMENT, REHABILITATION, MODIFICATION AND ADAPTATION OF EXISTING FACILITIES FROM REQUIRED INCREASE OF \$1,183,333 MUST BE MADE AT ONCE IN ORDER TO AVOID DELAYS IN THE DELIVERY SCHEDULES OF ENGINES.

THE INFORMATION SUBMITTED BY THE PACKARD MOTOR CAR CO. INDICATES THAT THE TOTAL INCREASES IN THE AMOUNT OF \$1,183,333 ARE APPLICABLE TO THE DEFENSE PLANT CORPORATION LEASE AND ARE TENTATIVELY BROKEN DOWN AS FOLLOWS:

MACHINERY, EQUIPMENT, AND FACILITIES	\$743,333.
--------------------------------------	------------

REHABILITATION, MODIFICATION, AND ADAPTATION OF EXISTING FACILITIES	\$440,000.
---	------------

FOLLOWS:

MACHINERY, EQUIPMENT, AND FACILITIES \$743,333.  
 RENABILITATION, MODIFICATION, AND ADAPTATION OF  
 EXISTING FACILITIES 440,000.  
 TOTAL ~~1,183,333~~

THE COMPANY HAS AGREED TO PRESENT A STATEMENT TO INDICATE THAT THE BRITISH PURCHASING COMMISSION IS ALSO CARRYING ITS SHARE OF INCREASES OVER THE AMOUNT ORIGINALLY SET UP.

EXTENT TO WHICH APPLICANT WILL BE REIMBURSED FOR COST OF EXPANDED FACILITIES UNDER SUPPLY CONTRACTS: CONTRACT W 335 AC-15678 FOR 3,000 ROLLS-ROYCE ENGINES INCLUDES A PROVISION FOR RENTAL COST OF THE EXPANDED FACILITIES AT A RATE OF \$1,500 FOR EACH ENGINE ACTUALLY DELIVERED BY THE CONTRACTOR TO THE U. S. GOVERNMENT.

COMPETITION WITH OTHER MANUFACTURERS: THE PACKARD MOTOR CAR COMPANY IS NOT IN COMPETITION WITH OTHER MANUFACTURERS IN THE PRODUCTION OF THE ROLLS-ROYCE ENGINE. CONTRACT W 335 AC-15678 IS A COST PLUS-A-18/287/ FIXED-FEE CONTRACT.

RECOMMENDATIONS: THE EXPANDED FACILITIES COVERED BY THIS PROPOSAL ARE REQUIRED FOR THE PRODUCTION OF 9,000 ROLLS-ROYCE MERLIN XX AIRCRAFT ENGINES OF WHICH 3,000 ARE FOR AIR CORPS AND 6,000 FOR THE BRITISH. THE DEFENSE PLANT CORPORATION LEASE IN THE AMOUNT OF \$8,000,000, WHICH WAS CONSUMMATED, WAS BASED ON UNSUPPORTED ESTIMATES SUBMITTED TO THE DEFENSE PLANT CORPORATION BY THE PACKARD MOTOR CAR COMPANY, THEIR EXPERIENCE TO DATE, AS BASED ON THE ACQUISITION OF BUILDINGS, MACHINERY AND EQUIPMENT, AND REHABILITATION, NOW SERVES AS AN ACCURATE ESTIMATE OF COSTS AND INDICATES THE NECESSITY OF PROVIDING FOR THE INCREASE OF \$1,183,333 OVER AND ABOVE THE PRESENT \$8,000,000 LEASE AGREEMENT. IT IS RECOMMENDED, THEREFORE, THAT APPROVAL OF ALL AGENCIES CONCERNED BE OBTAINED TO THE INCREASE OF \$1,183,333 INCLUDED IN THIS PROPOSAL. IT IS FURTHERMORE RECOMMENDED THAT LETTER OF INTENTION IN THE AMOUNT OF \$1,183,333 BE IMMEDIATELY ISSUED TO THE PACKARD MOTOR CAR CO. IN ORDER THAT COMMITMENTS MAY BE MADE FOR NECESSARY MACHINERY, EQUIPMENT, ETC. IN ORDER TO NOT DELAY THE DELIVERY SCHEDULES OF THE ROLLS-ROYCE ENGINES.

TECHNICAL EXECUTIVE

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*Rolls Royce - call type day.  
SF RAR-54*

*42*

*(\*) 452.8*

*March 25, 1941.*

*Rolls Royce  
Engines*

MEMORANDUM FOR GENERAL ARNOLD

(THROUGH: GENERAL BRATT)

SUBJECT: Engines - Packard Motor Company.

For your information, the following is quoted from a report of the Air Corps Inspector of the Packard Motor plants:

"It is expected that the first engine will be approximately two months late and that full production will not be obtained prior to approximately January 1, 1942. Initial delays were caused by the discovery of differences between drawings and actual engine parts. Many patterns had to be reworked to change cast sections from blue print dimensions to dimensions found on the engine parts.

The procurement of taps and dies is holding up the completion of major engine parts. 900 changes were received by Packard from the Rolls-Royce Company during the last month.

These 900 changes are due to the fact that the drawings for the engines, initially furnished to Packard by the British, were not up-to-date.

*Handwritten initials*  
O. P. ECHOLS,  
Brig. General, U.S.A.,  
Chief, Materiel Division.

CPE:11	
To Mail & Record Room	
Date	
EXECUTIVE	
FINANCE	
INFORMATION	
INSPECTION	
MATERIEL	
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W. COM. AERO. BD.	

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*Carson Packard Rolls Royce Eng 43*  
*21 APR 41*

March 28, 1941

*4528*  
*Rolls Royce*  
*Engines*

*150076*  
Mr. W. W. Gilman,  
President & General Manager,  
Packard Motor Company,  
Detroit, Michigan.

Dear Gilman:

After talks with the British and certain industrialists, I am convinced that you must have your own representatives working with the Rolls people in England.

We cannot afford the time lost due to changes that would not have been required had full advantage been taken of British experience.

Sincerely yours,

H. H. Arnold  
Major General, Air Corps,  
Chief of the Air Corps.

*X33014*  
*Criticisms*

*X164 Delayed*  
*Contracts*

*Wanted Out Direct*

*EHB/7m*

To Mail & Record Room
Date <i>3/28/41</i>
EXECUTIVE
N & G
FINANCE
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INSPECTION
MATERIEL
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PERSONNEL
RESERVE
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W. CON. AERO BR.

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O. B. ...  
CF: PAF-56

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OFFICE OF PRODUCTION MANAGEMENT  
SOCIAL SECURITY BUILDING  
WASHINGTON, D. C.4/3-2.8  
May 28, 1941TO: Brig. General O. P. Echols  
Chief, Materiel Division  
Munitions BuildingSUBJECT: Merlin Engine Improvement

Rolls Royce

Colonel Powers has discussed the matter of incorporating a two-stage supercharger in the Merlin with Dr. Lewis of the National Advisory Committee for Aeronautics. Dr. Lewis stated that Mr. Jacobs had discussed the matter with him and, in their opinion, considerable improvement could be made in performance of the XP-60 and other aircraft using the Merlin by incorporating an intercooler on this installation. However, he felt that to do so might complicate the design and possibly delay production, which, of course, we cannot afford.

Dr. Lewis is of the opinion that since the Army is the only user of the Rolls Royce in the United States, any attempt to improve this engine, if the Army thinks it wise to do so, should be fostered by the Power Plant Branch at Wright Field.

It is our opinion that the Merlin engine borders so closely on obsolescence that it would not be economical to spend time and money trying to improve it. I think our best bet is to concentrate on the development of the Allison, Continental, Lycoming and Wright Tornado.

T. P. Wright  
Assistant Chief  
Aircraft Section

To - All - Bureau Room
Date
PRODUCTIVE
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THE WHITE HOUSE  
WASHINGTON

June 3, 1941

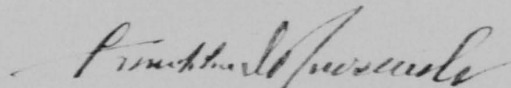
Dear Mr. Administrator:

You have heretofore taken steps looking to the acquisition of certain plant facilities for the manufacture of arms, ammunition, and implements of war situated in this country which have been financed by the British Purchasing Commission. In my opinion it is of the utmost importance that similar steps be taken to acquire other desirable British facilities in order to anticipate requirements, and to prepare the defense of this country on a more effective basis.

Certain of the facilities referred to above are now producing United States standard supplies under British contracts, and others have machinery and equipment which can be adapted to the production of United States standard supplies. Accordingly, you are advised that, in my opinion, it is in the interest of national defense for the Reconstruction Finance Corporation, through Defense Plant Corporation, or otherwise, to acquire such of these facilities as the Secretary of War and the Secretary of the Navy may, from time to time, with my approval, designate in writing.

If you are able to arrange for the acquisition of these plants and facilities, arrangements should be made for their continued operation by fulfilling existing British orders, without prejudice to the priority rights of the United States Government. After acquisition and completion of British orders, the plants and facilities will, of course, be available for producing supplies for the United States Government.

Sincerely yours,



Honorable Jesse H. Jones  
Administrator, Federal Loan Agency

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WAR DEPARTMENT  
WASHINGTON

June 3, 1941

Dear Mr. Administrator:

In accordance with the provisions contained in the President's letter to you dated June 3, 1941, I designate the following plants and facilities for the manufacture of the articles listed below, financed by the British Purchasing Commission, as being necessary to our national defense:

Ordnance facilities:

New Jersey Powder Company (Hercules)	Rifle and cannon nitro-cellulose powder
Pullman Standard Car Manufacturing Company	M3 medium tanks
Pressed Steel Car Company	M3 medium tanks
Lima Locomotive Company	M3 medium tanks
Republic Steel Corporation	Armor plate for M3 medium tanks
Blaw-Knox Company	Turret castings for M3 medium tanks
Western Cartridge Company	Small arms powder and ammunition
Remington Arms Company	Small arms and ammunition

Air Corps facilities:

Packard Motor Car Company	Airplane engines
Curtiss-Wright Corporation	Airplane engines
General Motors Corporation	Airplane engines

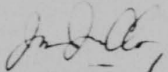
These plant facilities and their equipment are peculiarly well adapted to meet probable future defense needs, and in the opinion of the War Department it is in the interest of national

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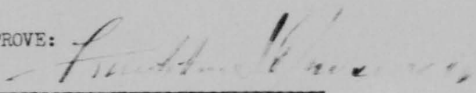
defense for you to arrange for their acquisition through the Defense Plant Corporation, or otherwise.

When existing British orders are completed, the War Department will seek appropriations or use available funds to purchase the above facilities upon the basis of their cost to the Reconstruction Finance Corporation. When funds are available, the War Department will purchase such facilities, notwithstanding any loss or damage thereto from fire, explosion or other catastrophe.

Sincerely yours,

  
Acting Secretary of War

Honorable Jesse H. Jones  
Administrator, Federal Loan Agency

I APPROVE:   

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X201.23 Complaints, ✓

452.8 Foreign Engines Secret

June 15, 1944

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MEMORANDUM FOR - Assistant Secretary of War for Air

X353

SUBJECT - Importation of British in Connection with Technical Development.

1. Attention is invited to the attached secret cablegram stating that the British Government has refused to send over the Sabot, Hercules and Merlin engines that we asked for, for test, with that exception to us as one of the poorest and least common that could possibly be given. This is an outstanding example of technical cooperation that we have had to face throughout this entire emergency. They send their engineers and technicians into our plants and into our business, and get into our hair on every occasion, but they have been unwilling at any time for us to inspect or test or to take any steps to learn anything about their technical equipment.

2. If this equipment has any good points our technicians are naturally entitled to an opportunity to run detailed tests and make comparisons between their equipment and ours. They recently requested to get P-38's, three P-39's, three P-47's, etc., which we have had an opportunity to test them ourselves, yet they have continually refused to give us anything that we could actually get on test and obtain any valuable intelligence information therefrom.

3. It is recommended that this matter be taken up and pressure for action as vigorously as possible, with a view of securing that these engines be furnished us.

Geo. H. Brett,  
 Major General, Air Corps,  
 Chief of the Air Corps.

Encs  
 Paraphrase of Cablegram No. 8/3  
 London, No. 1412, to MILID, 6-9-44.

Copy to Deputy Chief of Staff (Air)

**SECRET**

ADM. ASST.
ADM. SERV.
ADM. TRAINING
ADM. AFFAIRS
ADM. RECORDS
ADM. COMM.
ADM. INSPECTION
ADM. INTELLIGENCE
ADM. LEGAL
ADM. MATERIEL
ADM. MEDICAL
ADM. MILITARY AFFAIRS
ADM. PLANS
ADM. TRAIN & OPER.
ADM. V. GEN. AIRC. BR.

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PARAPHRASE  
of a~~SECRET~~~~CONFIDENTIAL~~

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RADIOGRAM

CABLEGRAM

Received at the War Department

8:09 AM  
PM

June 9, 1941

From: W/A London, England

June 9, 1941

No: 1412

To: MILID

Request denied today by MAP for two Sabre Mark two, three Hercules six and two Merlin twenty engines for reasons that full opportunities were had by Amr Corps to inspect Sabre Mark One engine in the United States, and information on all developments have been given through representative of Rolls Royce to Packard, also the modifications of Merlin twenty. It is stated by Map that there are not available any Hercules Mark six. In order that joint turbine test program may be expedited, You urges further representations KAC importance releasing two Hercules and two sabre mark twos. This is for General Arnold. We ask also that our l411 be referred to.

Lee

## Distribution:

Deputy Chief of Staff (Air) - Action copy  
File

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN July 14, 1941

Assistant Chief of the Materiel Division  
Air Corps, Materiel Division  
Wright Field  
Dayton, Ohio

Attention: Industrial Planning Section

Subject: Expansion of Facilities with Government Aid

(1) Our latest estimates, as of July 10, 1941, indicate that we should receive further loans of \$1,033,887 and \$700,777 from the British Purchasing Commission and Defense Plant Corporation, respectively, in order to provide the facilities for building aircraft engines in accordance with the contract requirements.

(2) These amounts have been determined as follows:

	Total	British Purchasing Comm.	Defense Plant Corporation	U.S. Air Corps
Machy. & Equipt.	\$23,776,146	\$14,352,062	\$9,424,084	\$ -
Buildings (new)	4,496,106	4,496,106	-	-
Rearrangement expense	1,578,078	1,052,052	526,026	-
Tools	9,050,500	-	6,033,667	3,016,833
	\$38,900,830	\$19,900,220	\$6,033,667	\$9,950,110
				\$3,016,833
Deduct - Money available per contracts	37,100,100	18,800,333	6,033,667	9,183,333
Additional sums required	\$ 1,800,064	\$ 1,033,887	\$ -	\$ 700,777

(3) In order that our aircraft expansion program will not be held up in any way, it is important that the loans requested be granted prior to July 31, 1941.

PACKARD MOTOR CAR COMPANY

*J. W. K. ...*  
Chief Accountant  
Aircraft Engine Division

JWR:rhuh

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ADDRESS REPLY TO

WAR DEPARTMENT  
AIR CORPS  
MATERIEL DIVISION

OFFICE OF THE CHIEF, INDUSTRIAL PLANNING SECTION

RS:vmh  
WRIGHT FIELD, DAYTON, OHIO  
July 15, 1941

SUBJECT: Packard Motor Car Company  
Request for Increase on  
Plancor Number 1

TO: Chief, Industrial Planning Section

1. Appendix "A", dated July 14, 1941 accompanied by various exhibits and plans and specifications was submitted to this unit for evaluation today and calls for an increase to the subject lease agreement in the amount of \$2,300,330 which, if approved, would require two thirds of the latter amount (\$1,533,553) to be furnished by the British Purchasing Commission and one third (\$766,777) by the Defense Plant Corporation in accordance with the terms of the contract.
2. The increase for Schedule II as set up calls for a total of \$266,106 to cover the cost of a new Chip Salvage and Oil Recovery Building and for fourteen additional production test cells to augment the original twenty-six.
3. Appendix "A" together with the various exhibits and plans and specifications referred to above have been examined and within the limits of the data submitted the estimates of costs as indicated in Schedule II-a in the total amount of \$266,106 appear reasonable at this time for the purpose submitted.
4. Attention is called to a list of items set up in Schedule V in the amount of \$258,078 to cover the cost of certain rearrangements of departmental facilities, modernizing lighting facilities in areas made available, extension of power lines to provide service in areas, made available, to provide for adequate toilet facilities, etc. all of which cannot be properly estimated at this time and more rightfully should be set up as a contingency for rearrangement and relocation costs. Therefore the total of \$266,106 for Schedule II should be augmented to the extent of \$258,078 and Schedule V eliminated when Appendix "A" is revised and resubmitted.

*August G. Harris*  
August G. Harris  
Major, Air Corps  
Chief, Structures Evaluation Unit  
Industrial Planning Section

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

July 17, 1941

To: Assistant Chief of the Materiel Division  
 Attention Industrial Planning Section  
 Air Corps, Materiel Division, Wright Field  
 Dayton, Ohio

SUBJECT: Expansion of Facilities with Government aid

1. As requested, we are stating below the reasons why those items, amounting to 2,300,530.00 (1/3 applicable to Defense Plant Corporation), listed in Appendix A, submitted with our Application for Emergency Facilities dated July 15, 1941, were not considered in our previous application for an additional sum of \$1,183,333.00 to be provided by the Defense Plant Corporation in order to provide the facilities for building engines in accordance with contract requirements.

2. The items are listed in the same order as they appear in Appendix A:

Schedule II-a

Chip Salvage Building, \$58,000.00:

It was thought that it might be possible to handle Aircraft Engine borings, turnings, etc. in the salvage department maintained in the Car Division. Experience to date indicates that the volume will be too heavy to do this with the result it has been deemed necessary to construct a building for this specific purpose.

Investigation discloses that savings to be accomplished by chip and oil salvage should justify the expenditure involved.

The amount shown, \$58,000.00 is the result of a bid.

Schedule II-a

Fourteen Additional Test Cells, \$208,106.00

In making the original provision for the number of test cells that would be needed for production of 40 engines a day, our thoughts were mainly guided by the experience of the Daimler-Benz Company in England.

Both the engines that are to be delivered to the British Government and those to be delivered to the United States Army Air Corps are subjected to Air Corps inspection methods of testing, and as a matter of check on our requirements, we investigated the facilities of American aircraft engine manufacturers.

We have been informed by the Air Corps inspector in our plant that in recent months the Allison Company, for instance, who are also making liquid cooled motors, are

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maintaining but 6/10's of a motor per test cell per day. Both Pratt and Whitney and Wright are also using more test cells in proportion to daily production than are the companies in England. It is consequently felt that provision should be made for more testing equipment than was originally planned.

It should be understood here, as in other cases, that these additional cells will not be actually built without additional approval from the representatives of both Governments.

Schedule II-e

Arrangement, Relocation, Etc., \$256,078.00

The following buildings are affected by the expenditure of \$256,078.00:

21, 23, 31, 32, 33, 34, 35, 37, 38, 56

The nature of these expenses is such that they are general to the buildings listed.

Final occupancy of these buildings has not yet been definitely determined because processing of production is not yet complete. Until processing is finally completed, the allocation of sums to specific building areas cannot be established.

This estimate, as supplied by our Plant Engineering Department, is based on experience gained in building preparation.

In this connection it should be mentioned that before work of this nature can be started it must be approved by the local representatives of the Defense Plant Corporation and the British Purchasing Commission. This is accomplished through issuance of "MAP" appropriations.

Note: "MAP" is the symbol assigned to appropriations involving expense of plant rearrangement, relocation, etc.

Schedule III-a

Machinery and Equipment, \$1,737,849.00

In estimating machine and tool requirements for the production of Rolls-Royce engines, our task was much more difficult than that of other American companies.

Those who were merely expanding their facilities were guided in their additional requirements by their own experience, while other companies contracting to make these engines for the first time could also benefit from the processing work and experience of the original manufacturers.

Rolls-Royce use different machines, and, in many cases, different methods than those used in this country. We not only had to re-blueprint this engine, but process it from the beginning.

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The first of this year, when the original request for increased appropriations was made, our processing work was barely started. Because we were using different materials, there was also a question as to the feed and cutting speeds that could be used on the machines. Our estimates at that time were, necessarily, guesses. We have now practically completed the processing work, and we have also had a considerable amount of experience with the machinery already in the plant and the parts to be machined, therefore, our present estimates are quite accurate. What was true in our case was also true in the case of our subcontractors.

The comparison below discloses, in total, the location of machines:

	<u>No. of Machines at:</u>		
	<u>Sub-contractors' Plants</u>	<u>Packard Motor Car Company</u>	<u>Combined</u>
Previous estimate	500	2350	2850
This estimate	700	2650	3350

Relative to any computation that might be made in order to determine the aircraft engine factory area per machine, etc. the number of machines at sub-contractors' plants should not be considered.

chedule III-c

Laboratory and Testing Equipment, \$18,297.00

Experience since submission of the previous estimate indicates that this equipment is essential to production of aircraft engines.

chedule III-d

Furniture and Fixtures, \$20,000.00

The number of employees necessary is greater than was anticipated. It was not anticipated, for instance, that the number of employees necessary to take care of specific government requirements would be so great.

There has been a general tendency to under-estimate requirements for Furniture and Fixtures.

3. If any further information is desired, please advise us accordingly.

*B. C. Budd*

\_\_\_\_\_  
B. C. Budd  
Aircraft Engine Division

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INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel Division

Ref: HES:jk - 70

Wright Field, Dayton, Ohio

Date July 23, 1941

TO: Chief, Industrial Planning Section  
Wright Field

SUBJECT: Expansion of Facilities for  
Packard Motor Car Company  
Detroit, Michigan

1. The list of machinery and equipment in the amount of \$1,776,116.00 as contained in Schedule 3 of Appendix "A", has been examined by this office and insofar as costs are concerned appears reasonably accurate. However, miscellaneous items in Program 6 should be itemized, as the amount listed is in excess of the allowable percentage for miscellaneous equipment.

*K. B. Wolfe*  
K. B. WOLFE  
Lt. Col., Air Corps  
Chief, Production  
Engineering Section

Signature .....

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FACILITIES SECTION

P R I O R I T Y

FOLLOWING INFORMATION WAS SUBMITTED BY THE PACKARD MOTOR CAR COMPANY, DETROIT, MICHIGAN, FOR THE PURPOSE OF NEGOTIATING INCREASES IN THE AMOUNT OF \$2,300,330 (ONE-THIRD TO BE BORNE BY DEFENSE PLANT CORPORATION, AND TWO-THIRDS BY THE BRITISH PURCHASING COMMISSION), TO APPLY TO THE DEFENSE PLANT CORPORATION LEASE, PLANCOR NO. 1 IN THE AMOUNT OF \$8,000,000. THIS INCREASE IS IN ADDITION TO THE \$1,189,333 PROCESSED IN TELETYPE IND-T-186 DATED 2-7-41, NOTIFICATION OF APPROVAL OF WHICH HAS NOT YET BEEN RECEIVED BY THIS OFFICE.

TYPE AND LOCATION OF INCREASES ARE AS FOLLOWS: SELECTION OF A CHIP **SALVAGE** BUILDING AND FOURTEEN ADDITIONAL PRODUCTION TEST CELLS ON LAND NOW OWNED BY THE COMPANY; INSTALLATION OF ADDITIONAL MACHINERY, EQUIPMENT, ETC., AND THE REHABILITATION, MODIFICATION, AND ADAPTATION OF CERTAIN PORTIONS OF PRESENT PLANT.

CAPACITY: THERE WILL BE NO INCREASE OVER THE ORIGINAL ESTIMATE OF MAXIMUM CAPACITY OF THE EXPANDED PLANT IN THE AMOUNT OF APPROXIMATELY 200 ROLLS ROYCE MERLIN XX ENGINES PER MONTH.

ESTIMATED OVERALL COSTS OF INCREASES:

LAND AND LAKE IMPROVEMENTS - NONE

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TYPE AND LOCATION OF INCREASES ARE AS FOLLOWS: RELOCATION OF A CHIP SALVAGE BUILDING AND FOURTEEN ADDITIONAL PRODUCTION TEST CELLS ON LAND NOW OWNED BY THE COMPANY; INSTALLATION OF ADDITIONAL MACHINERY, EQUIPMENT, ETC., AND THE REHABILITATION, MODIFICATION, AND ADAPTATION OF CERTAIN PORTIONS OF PRESENT PLANT.

CAPACITY: THERE WILL BE NO INCREASE OVER THE ORIGINAL ESTIMATE OF MAXIMUM CAPACITY OF THE EXPANDED PLANT IN THE AMOUNT OF APPROXIMATELY 800 ROLLS ROYCE MERLIN XX ENGINES PER MONTH.

ESTIMATED OVERALL COSTS OF INCREASES:

LAND AND LAND IMPROVEMENTS - NONE

NEW CONSTRUCTION: REHABILITATION, MODIFICATION, AND ADAPTATION

OF PRESENT PLANT - \$524,184

MACHINERY AND EQUIPMENT - \$1,776,146

OVERALL INCREASE - \$2,300,330

THE EXPANDED PLANT BUILDING IS TO BE CONSTRUCTED OF REINFORCED CONCRETE, BRICK AND STEEL, WITH STEEL SASH, METAL ROOF DECK, AND CONCRETE FLOOR. SPECIAL STEEL STORAGE BINS ARE TO BE BUILT INTO THE STRUCTURE.

FOURTEEN ADDITIONAL PRODUCTION TEST CELLS IN BUILDING NO. 84 ARE TO BE CONSTRUCTED OF BRICK AND STEEL WITH CONCRETE FLOORS, STEEL ROOF DECK, AND CINDER BLOCK PARTITIONS.

REHABILITATION, MODIFICATION AND ADAPTATION OF PRESENT PLANT IS TO CONSIST OF MOVING CAR DIVISION DEPARTMENTS, PAINTING AND CLEAN-UP, MODERNIZING LIGHTING FACILITIES, EXTENSION OF POWER LINES, REARRANGEMENT OF PARTITIONS, PROVISION OF TOILET FACILITIES, ADAPTING AND REPAIRING OF FLOORING, AND PROVIDING OUTLETS FOR AIR, HOT AND COLD WATER, GAS, AND ELECTRICITY.

SPECIAL REQUIREMENTS: BUILDING PHASE OF THE EXPANSION IS NOW APPROXIMATELY 65 PER CENT COMPLETE. ESTIMATED COST OF REHABILITATION, MODIFICATION AND ADAPTATION OF PRESENT PLANT IS SET UP IN THE NATURE OF A CONTINGENCY FOR THE REASON THAT DETAILED REQUIREMENTS ARE NOT KNOWN AT THIS TIME.

IT WAS ORIGINALLY INTENDED TO PROVIDE FOR CHIP SALVAGE AND OIL RECOVERY IN THE SALVAGE DEPARTMENT OF THE CAR DIVISION. IT IS NOW FOUND, HOWEVER, THAT THE VOLUME WILL BE TOO GREAT. BUILDING FOR THIS SPECIFIC PURPOSE IS NOW CONSIDERED NECESSARY.

ORIGINAL ESTIMATES OF TEST CELL REQUIREMENTS WERE BASED ON INFORMATION OBTAINED FROM ROLLS ROYCE. COMPARISON WITH PRACTICE OF AMERICAN MANUFACTURERS AND ESTIMATES OF INSPECTION REQUIREMENTS INDICATE

THIS

...LINE REQUIREMENTS? BUILDING PHASE OF THE EXPANSION IS NOW APPROXIMATELY 65 PER CENT COMPLETE. ESTIMATED COST OF REHABILITATION, MODIFICATION AND ADAPTATION OF PRESENT PLANT IS SET UP IN THE NATURE OF A CONTINGENCY FOR THE REASON THAT DETAILED REQUIREMENTS ARE NOT KNOWN AT THIS TIME.

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ORIGINAL ESTIMATES OF TEST CELL REQUIREMENTS WERE BASED ON INFORMATION OBTAINED FROM POLLS ROYCE. COMPARISON WITH PRACTICE OF AMERICAN MANUFACTURERS AND ESTIMATES OF INSPECTION REQUIREMENTS INDICATE THAT THE FOURTEEN ADDITIONAL TEST CELLS WILL BE REQUIRED.

ORIGINAL ESTIMATES OF MACHINERY AND EQUIPMENT REQUIREMENTS WERE ALSO BASED ON INFORMATION OBTAINED FROM POLLS ROYCE. ON TRANSLATION OF REQUIREMENTS INTO AMERICAN PRACTICE AND INTO AVAILABLE MATERIALS AND EQUIPMENT INDICATES THAT THE ADDITIONAL MACHINERY AND EQUIPMENT NOTED ABOVE IS NECESSARY.

IT IS UNDERSTOOD THAT ONLY ONE-THIRD OF THE \$2,300,830 INCREASE, OR \$766,777 IS TO BE BORNE BY THE DEFENSE PLANT CORPORATION AND TWO-THIRDS BY THE BRITISH PURCHASING COMMISSION.

IT IS NOTED, ACCORDING TO DPC CONTRACT PLANCOR NO. 1, PAGE 2, FIRST ARTICLE, THAT BUILDINGS WERE NOT TO BE FURNISHED AT DEFENSE PLANT CORPORATION EXPENSE. ATTENTION IS INVITED TO THE ITEM IN THIS PROPOSAL FOR BUILDINGS IN THE AMOUNT OF \$266,106. IT IS RECOMMENDED THAT THE DEFENSE PLANT CORPORATION SHARE OF THE OVERALL COST OF THIS PROPOSAL BE DEVOTED ENTIRELY TO MACHINERY AND EQUIPMENT.

RECOMMENDATIONS: THE FACILITIES COVERED BY THIS PROPOSAL ARE NECESSARY TO ACHIEVE THE PRODUCTION OF 800 ROLLS ROYCE ENGINES PER MONTH. IT IS RECOMMENDED, THEREFORE, THAT APPROVAL OF ALL AGENCIES CONCERNED BE OBTAINED TO THE INCREASE AMOUNTING TO \$2,300,330 OF WHICH \$766,777 IS APPLICABLE TO DPC CONTRACT PLANCOR NO. 1, AND THIS OFFICE AUTHORIZED TO PROCEED WITH FINAL NEGOTIATIONS WITH THE PACKARD MOTOR CAR COMPANY.

TECHNICAL EXECUTIVE

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INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
OFFICE, CHIEF, MATERIEL DIVISION  
WASHINGTON

August 1, 1941.

TO: Chief, Industrial Planning Section,  
Materiel Division, Wright Field,  
Dayton, Ohio

SUBJECT: Expansion for Packard Motor Car Company,  
Detroit, Michigan

1. Reference is made to Inter-Office Memorandum dated July 30, 1941, subject as above.
2. Attached hereto is copy of Memorandum for The Under Secretary of War dated August 1, 1941, requesting that necessary action be taken to increase the amount of the Defense Plant Corporation lease agreement by \$766,777.
3. The original Defense Plant Corporation lease agreement of \$3,000,000 was raised by \$1,183,000 in accordance with request made in teletype Ind-T-186 dated February 7, 1941. No War Department take-out letter was necessary to cover this lease agreement, and it has been handled by reimbursement based on engine production. The Defense Plant Corporation has been requested to furnish copies of the supplemental lease direct to your office.

*Frederick M. Hopkins, Jr.*  
Frederick M. Hopkins, Jr.,  
Lt. Colonel, Air Corps,  
Chief, Facilities Section

1 Encl.  
Cy Memo TUSW 8-1-41  
re Packard, with attachments.

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F-572

8-23-41

INDUSTRIAL PLANNING SECTION

P R I O R I T Y

RE TELETYPE IND-T-1046 DATED 7-31-41 CONCERNING ADDITIONAL EXPANSION FOR PACKARD MOTOR CAR COMPANY IN THE AMOUNT OF \$2,300,330 REVISION OF THE FORM OF FINANCING THE ORIGINAL BEASE AGREEMENT, WHICH WAS BASED ON REIMBURSEMENT PER ENGINE PRODUCED IS CONTEMPLATED BY OUSW AND DPC. NEGOTIATIONS TO PLACE THIS LEASE AGREEMENT ON A ONE DOLLAR A YEAR BASIS OR A RENTAL BASIS ARE IN PROGRESS. IN ORDER NOT TO DELAY THE FURTHER EXPANSION REQUIRED AS STATED IN ABOVE MENTIONED TELETYPE DPC WILL ISSUE LETTER TO PACKARD FOR ACQUISITION OF NECESSARY MACHINERY AND EQUIPMENT. BEFORE DOING SO HOWEVER, THEY REQUEST ASSURANCE THAT PURCHASE OF ALL THE MACHINERY AND EQUIPMENT, IN THE AMOUNT OF \$1,776,146 WILL BE NECESSARY AND THAT NO LIKE ARTICLES WILL BECOME AVAILABLE THROUGH CURTAILMENT OF PRODUCTION IN THE AUTOMOTIVE INDUSTRY SIMILAR TO THE CASE OF CHAMPION MACHINE AND FORGING CO. PLEASE EXPEDITE REPLY.

FACILITIES SECTION

TC

11:38 AM

*Copy sent to Production  
Eng. Sect for information  
upon which to base reply  
8-25-41 (Cyrus SF)*

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C O P Y  
 DEFENSE PLANT CORPORATION  
 EMERGENCY FACILITIES  
 APPENDIX A  
 PACKARD MOTOR CAR COMPANY  
 DETROIT MICHIGAN

SCHEDULE III

<u>Machinery, Equipment, Etc.</u>		<u>Estimated</u>	<u>Estimated</u>
		<u>Average Cost</u>	<u>Total Cost</u>
<u>(a) Machinery and Equipment</u>	<u>Quantity</u>	<u>Description</u>	
	5	Precision Boring Machines	\$3,006.18
	25	Single Spindle Drills	751.38
	25	External Grinders	4,510.23
	15	Internal Grinders	6,013.42
	10	Surface Grinders	1,873.46
	15	Centerless Grinders	6,765.23
	5	Gear Grinders	9,021.73
	5	Thread Grinders	6,760.30
	30	Gear Cutters	3,758.52
	40	Engine Lathes	2,255.03
	100	Horizontal & Vertical Millers	3,758.36
	60	Moulding Equipment	1,879.26
	70	Polishers	375.83
	25	Automatic Screw Machines	9,020.45
	60	Hand Screw Machines	3,006.71
	10	Milling, Cutting & Threading Machines	3,758.52
			<u>37,585.20</u>
Total	500	Machines	
		ADD - 3.797% for Estimated Freight & Installation	\$1,597,331.20
		TOTAL	<u>1,40,517.80</u>
			<u>\$1,737,849.00</u>
<u>(b) Building Installations (Mechanical)</u>			
		NONE	None
<u>(c) Laboratory and Testing Equipment</u>			
		X-Ray Machine(220,000V) Metal Analysis	\$ 12,000.00
		Miscellaneous items	6,237.00
		TOTAL	<u>\$ 18,237.00</u>
<u>(d) Furniture and Fixtures</u>			
		<u>Quantity</u>	<u>Description</u>
	30	Typewriters	83.33
	6	Adding and Calculating Machines	116.66
	250	Desks, Tables and Chairs	20.00
	200	Filing Equipment	25.00
		Drafting Equipment	
		Miscellaneous	
			2,500.00
			2,500.00
			5,000.00
			5,000.00
			2,000.00
			<u>3,000.00</u>
		TOTAL	<u>\$ 20,000.00</u>
Total of Schedule III			<u>\$1,776,116.00</u>

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TELETYPE MESSAGE

Production Engr. Section

DATE: August 29, 1941 10:50 am CB:mkb

FROM

ATTENTION: FACILITIES SECTION

R. W. PROPST, Lt. Colonel, Air Corps,  
Acting Chief, Industrial Planning Sect.

.....IND-T-1223.....REFERENCE TO TELETYPE P-572 DATED 8-23-41, REQUESTING ASSURANCE THAT MACHINERY AND EQUIPMENT IN AMOUNT OF \$1,776,146 FOR THE PACKARD MOTOR CAR COMPANY WILL BE NECESSARY AND WILL NOT BECOME AVAILABLE THROUGH CURTAILMENT OF PRODUCTION IN THE AUTOMOTIVE INDUSTRY. THIS IS TO ADVISE THAT INVESTIGATION OF AVAILABLE FACILITIES IS BEING MADE AND THAT DECISION IN THIS MATTER WILL BE FORTHCOMING WITHIN A WEEK OR TEN DAYS.

*Handwritten initials and a circular stamp*

INDUSTRIAL PLANNING SECTION

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*Carbon-Packard  
CF, AAF-10 (18 pp)*

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*452.8*

*Merlin  
Engines  
Secy*

*V336.4  
Moore-Brabson*

(4)  
2 General Echels 1941 General Arnold 8-30

With reference to the question of the manufacture of the Merlin 20, Merlin 60 and Merlin 61 in this country, the following comments are submitted:

1. The Merlin 20 -

a. This is the engine which is now being manufactured by the Packard Company. It is a two-speed engine, with a British rating of 1185 h.p. at 21,000 ft. According to the Wright Field tests, based on American standards, it has a rating of 1130 h.p. at 18,200 ft. I understand that British altitude ratings are based on the average conditions of pressure and temperature in London, whereas the American ratings are based on the Bureau of Standards, sea level conditions; consequently, all of our altitude ratings are several thousand feet less than theirs.

2. The Merlin 60 and 61 -

a. The difference between the Merlin 60 and 61 engines is a matter of gear ratio and supercharger rating, depending on whether the engine is to be used for bomber or pursuit. The Merlin 60 is run at an r.p.m. of 2850 and the 61 has a slightly lower ratio and is run at an r.p.m. of 3000. They are substantially the same engine.

b. The difference between the Merlin 20 and the Merlin 60 and 61 is that the Merlins 60 and 61 have an inter-cooler and an additional blower, making this a two-speed, two-stage engine. According to the information received by Wright Field from Mr. Ellor of the Rolls Royce Company, the Merlin 60 engine developed 1035 h.p. at 30,000 ft.

3. Mr. James E. Ellor is the American representative who is stationed at Packard. He has a copy of the drawings of the changes necessary for the

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Moore-Brabson

2 General General 1941  
(C '4) Echols Arnold 8-30

Merlin 20 into a Merlin 61. Mr. Eller has also informed Colonel Page at Wright Field that one of the Merlin 60 superchargers is being shipped to the Packard Company. Request has been made that this supercharger be shipped to Wright Field instead of to the Packard Company. It is believed that when the drawings and the supercharger are available, it will probably be practicable to make the necessary changes in some of the Merlin 20 engines to convert them to Merlin 60 engines.

4. Mr. Eller has been requested to deal in these matters directly with Wright Field instead of being inclined to deal with the Packard Company. ~~Communications~~ with the Packard Company from now on must be handled direct by the United States Government, and ~~before~~ the necessary changes and amendments can be made in the contracts, complete information and data should be on hand at Wright Field; that is, not only the necessary ~~information~~, but the supercharger and all other information which will enable the Power Plant Branch at Wright Field to determine, in conjunction with the Packard Company as to just when the changes can be incorporated in the ~~engine~~ what test procedure would be necessary to make them acceptable for service. I have been informed by Colonel Page at Wright Field that since Mr. Eller is a ~~British~~ Royce representative, he seems to be inclined to want to work direct with Packard and not with Wright Field because he does not like for Wright Field to check his data.

5. With reference to the question of manufacture of the Sabre engine, we, of course, have never ~~under~~ the position that the Sabre engine would not turn out to be a very fine engine, but, first, it is believed ~~that~~ the British underestimate the difficulty which ~~we do encounter~~ in the United States endeavoring to put into production a piece of equipment which may develop trouble. ~~The~~ Moore-Brabson comments in regard to the Merlin engine; that is, not wanting to give us an experimental ~~engine~~.

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(C-t'd) General Echals General Arnold

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engine to produce, are certainly more than applicable to the question of the Sabre engine. One of the things that we feared most in the Sabre engine and maintenance trouble, we would be unable to overcome the difficulties due to the lack of engineering knowledge and background in regard to its design. We believed that a complicated piece of equipment such as this should be produced by the people who are familiar with it and to overcome troubles if and when they develop. This was the same reason that we did not want to see the British undertake the development and production of the turbo supercharger; that is, we believe that the turbo supercharger should be concentrated in this country where the engineering know-how is available, and the production of the Sabre should be concentrated in England for the same reason.

Second, we already have, either being developed or being produced in this country, a large number of engines. Five liquid-cooled engines are being developed. To introduce an English liquid-cooled engine and put it into production on a large scale would certainly discourage our manufacturers from doing anything further, and since the Sabre was put up as a production problem only, we would then have liquid-cooled engines in production, but no development going on, which would certainly eventually kill the liquid-cooled engine in this country.

Third, we have in the R-2800 an air-cooled engine which, combined with the turbo supercharger, appears to us to be an engine which is at least equal to the Sabre for pursuit purposes. The results obtained to date on the XP-47 would indicate that we can build as good pursuit airplanes with the R-2800 as we could with the Sabre engine, and with our manufacturing facilities for the production of the R-2800 engines in large quantities well under way, the production of the Sabre engine

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McCree-Prabason

2 Gen. Echols Gen. Arnold 1941  
(Cont'd) 8/30

did not seem to be a necessity.

Fourth, at the time that the question of producing the Sabre engine was presented, we were faced, and still are, with the proposition of a large expansion of our engine industry to take care of the requirements of the four-engine bomber program. The bottleneck in this expansion was, and still is, the availability of machine tools, and to have diverted machine tools to the manufacturers of the Sabre engine would undoubtedly cause delays in this program.

6. In regard to the statement that there is a disinclination in America to indulge in the manufacture of the four-engine bombers, this report I think is unreasonable, as everyone knows the American Air Corps has, over a long period of years, been most enthusiastic about the development of the long-range bomber, and everything within its power to develop and to manufacture long-range bombers. During the early stages of the present war, when our Congress did not see fit to give us sufficient funds to develop the production facilities of our long-range bomber manufacturers, we endeavored to induce representatives of the French and British governments to place orders for the Boeing B-17 and the Consolidated B-24. The French did place some orders for the B-24, but the British displayed a definite lack of interest in both of these types of airplanes. It is only within the last twelve months that the British have become enthusiastically about these airplanes to support us in our expansion. Repeated reports from Europe have indicated that the British had no interest in airplanes of this type tended to make the high authorities in the United States believe that such airplanes were not of a great deal of value as military weapons. Since the British were fighting the war and we were not, the public and the Congress were inclined to believe that our desire to build large numbers of large bombers was not too sound.

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Moore-Brabson

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2 General General 1941  
(Co 4) Kebab Arnold 8/30

twin-engine bomber program as submitted by the British, but since that time the War Department has been under constant pressure to put back these light bombers in the British program, and to date 950 Lockheed airplanes have been put back in the program. There is also tremendous pressure being constantly brought by the British Air Commission to increase the number of trainers and other types, and, consequently, while the four-engine bombers theoretically have the highest priority, it is with the utmost difficulty that the representatives of the Army Air Corps are able to prevent the diversion of the materials, engines, and tools necessary to meet the projected four-engine bomber schedule to other other manifold projects which are continually being requested by the various lease-lend agencies.

10/30/41  
16 30 1941

Chief, Material

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CF, HAF-10 (8/1941)

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Moore-Brabson

1 General Arnold General Echols 8/27 1941 1. The following is a quotation from a letter recently received by me from Moore-Brabson.

"Other troubles, however, come my way from America which react on you, such as the fact that you are manufacturing the Merlin 20 and our latest engine now is the Merlin 60 and 61, and that you felt you had been asked to make an engine not up to date. I do not agree with this view. After all, if you are going to make something in quantities it is desirable that you make something that will work, and the Merlin 60 and 61 with two-stage two-speed blower is only being tried. Whether it will be a success or not I am unable to tell you, but it would have been ridiculous from the point of view of long range planning to have got the great firm of Packard to gamble on something which had never actually been tried, and was at that time in a nebulous state. But the situation is less disturbing for this reason, that the 60 and 61 are only developments of the basic engine, and the drawings for the conversion from 20-61 are already in America and are not a change of a basic type, only an addition. So I do not feel that you have been let down on that.

"The question of the manufacture of Sabre engines is one which was disclosed to you and which on the whole you decided against indulging in. We are going ahead with this engine in a large way here, but of course it is an engine which gets large horsepower but of small capacity, which is not the American way of building engines. To get 2,000 horsepower out of 32 litres is going it a bit. So far we have had no terrible troubles, but I think it is a gamble. However, gambles have got to be taken in warfare. The point I want to impress upon you is that there was no disinclination to disclose to you the latest engine that we are proposing to make in any quantities."

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Moore-Brabason

Page 2

It is desired that you prepare a reply in detail to the above, going into sufficient detail so that Moore-Brabason will have a complete picture of what we are doing along that line.

2. The following is also quoted from the same letter.

"Production on this side is going - how shall I describe it - fairly perhaps. There are many man hours buried in the eventual production of the heavy bomber. We hear very alarming reports from America as to the disinclination generally to indulge in the manufacture of this difficult type of aeroplane and as far as I can see the only aircraft of this type which we shall get from you is the Boeing (Fortress) and B-24. Both of these are valuable machines, but, except for the height the Fortress can get to by virtue of its enforced driving superchargers, I think they would both be rated as second class heavy bombers in view of the load carried. At a range of 1900 miles this is round about 4000 pounds for the Fortress and B-24 whereas the Stirling, Halifax and Lancaster will all carry nearer 10,000 pounds at this range. Whether you are chasing up other heavy bombers of superior performance, I don't know, as I am completely ignorant on this matter, and have no information, but I suppose that is the case."

Please prepare a reply to this. Do not be too brief in your reply. Please have this back to me not later than Saturday morning.

H.H.A.

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WAR DEPARTMENT  
AIR CORPS  
MATERIEL DIVISION  
Office, Chief of the Industrial Planning Section

FE/ed  
September 2, 1941

NOTES ON Packard Motor Car Company  
Detroit, Michigan

35

1. Mr. Budd of the subject company telephoned, advising that his project has been set up in Washington between the Defense Plant Corporation and the Office, Under Secretary of War, since it was cleared from this office, July 31, 1941. He stated that the delay is occasioned by the unwillingness of the Air Corps to pay an additional rental per engine; that the nature of the interest to be charged is under discussion; and that the Defense Plant Corporation has called for an investigation as to whether used machinery or machinery that can be rehabilitated could be adapted for the engine program. Mr. Budd wished that we could arrive at a decision concerning the utilization of used machinery, and P. S. promised that we would investigate and reply to the Defense Plant Corporation as promptly as possible.

P. Schneberger  
Colonel, Air Corps  
Chief of Section

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FD-36 (Rev. 5-22-64)

TELETYPE MESSAGE

DATE: <sup>WJL/jls</sup> SEPTEMBER 3, 1941

FROM: *F. Schweitzer*  
F. SCHWEITZER, CHIEF, A.C.  
CHIEF, INDUSTRIAL PLAN. SEC.

...IND-1-1051...

ATTENTION: FACILITIES SECTION

RE TELETYPE IND-1-106 DATED FEBRUARY 7, 1941 AND ICM DATED JULY 30, 1941 CONCERNING  
FIRST INCREASE IN THE AMOUNT OF \$1,100,000.00 TO DEMONSTRATION PLANT CORPORATION LEASE OF  
PLANT NO. 1 PACKARD MOTOR CAR COMPANY. THIS OFFICE HAS NOT YET RECEIVED NOTICE  
OF APPROVAL OF THIS INCREASE. REQUEST ADVICE CONCERNING PRESENT STATUS OF THIS  
PROJECT.

INDUSTRIAL PLANNING SECTION

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W. DEPARTMENT  
AIR CORPS  
MATERIEL DIVISION  
OFFICE OF THE DISTRICT SUPERVISOR  
CENTRAL PROCUREMENT DISTRICT  
8505 W WARREN AVE.  
DETROIT MICH

ALIVE

September 13, 1941

Subject: Expansion of Packard Motor Car  
Plant Facilities

To: Assistant Chief, Materiel Division  
Detroit  
Production Engineering Section  
Production Control Branch

Regarding an immediate action letter dated August 28, 1941, a conference was held on September 4th at the Packard Motor Car Company to determine the specific intended use of the equipment requested for expansion of the aircraft division. The following attended the conference:

Guests: C. E. Christopher, A. C. Day, W. L. Scott,  
J. F. Mackay, J. W. Raines (of Packard)

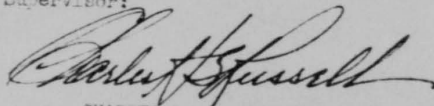
Major Charles H. B. Russell, Lieutenants  
E. L. Power and A. A. Edertson, of the  
Production Engineering Section.

On September 10 and 11, Lieutenants T. V. Smith and A. A. Edertson and Mr. A. F. Buchenhofer, as representatives of the Production Engineering Section, inspected the machine tools of the automotive divisions of above facility. The purpose of the inspection was to determine whether any machine tools used in the production of automotive parts could be adapted to the production of Rolls-Royce engine parts.

By combing the machine tools used in the manufacture of automobiles, it is found that not over two percent of such tools are adaptable to Rolls-Royce engine parts. The diversion to aircraft work of this two percent of the automotive machine tools, would prevent the minimum production of automobiles which is expected through the emergency.

Based on the above findings and the fact that subject company is now tooling for a production of 125 per day, it is recommended that in order to reach the planned production of forty engines per day, subject company be granted the request for this expansion in facilities.

Per the District Supervisor:



CHARLES H. B. RUSSELL  
Major, Air Corps  
Production Engineering Officer

Incls:  
Incl. 1 - C. Ltr. PLS to CPD, 8/28.  
Incl. 2 - C. Ltr. MTL CPD to PLS, 9/4.  
Incl. 3 - C. Ltr. TKN CPD to MTL, 9/11.  
cc: Auto. Mails. Sec., CPD.  
A.C. Rep. Packard

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INTER-OFFICE MEMORANDUM

WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel Division

Ref. HES:hq - 70

Wright Field, Dayton, Ohio

Date Sept. 16, 1941

TO: Chief, Industrial Planning Section

SUBJECT: Expansion of Facilities for  
Packard Motor Car Company  
Detroit, Michigan

1. Attached hereto are comments and recommendations relative to expansion of Packard Motor Car Company, which is self-explanatory.
2. After a careful investigation of facilities by Major Charles H. S. Russell, Production Engineer Officer, Central Procurement District, it is apparent that facilities made available through the recent curtailment of automotive production are comparatively small, and cannot be utilized without upsetting the present production system. While apparently the investigation committee did not cover the entire automotive industry, it is assumed that this condition can be used as a barometer of existing conditions in other plants.
3. It is, therefore, recommended that the Packard Motor Car Company be granted the expansion as requested.

*Charles R. Cook*  
for  
K. B. WOLFE,  
Lieut. Colonel, A.C.,  
Chief, Production  
Engineering Section.

Incl  
Comments by Maj.  
C. H. S. Russell  
dated 9/13/41.

Signature

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# TELETYPE MESSAGE

IND-7-10.6  
- IPS PROJECT NO. 43-A-2  
ATTENTION: FACILITIES SECTION

DATE: 8.11.1941  
FROM: T. Schweitzer, Assoc.  
INDUSTRIAL PLANNING SECTION

URGENT 8-11-41  
INDUSTRIES P-572, AUGUST 11, 1941, AND P-573, SEPTEMBER 4, 1941, TO ADVISE THAT  
BY THE EXPIRY OF THESE CONTRACTS THAT FACILITIES WERE AVAILABLE THROUGH REPAIR  
OPERATIONS TO ADEQUATELY MAINTAIN AND OPERATE WHICH SHALL AND CAN NOT BE UTILIZED  
FOR THE REPAIRS NECESSARY TO MAINTAIN THE PRODUCTION SYSTEM OPERATED BY  
PACKARD. IF IS, THEREFORE, REQUESTED THAT NEGOTIATION FOR A CEASE FOR PACKARD AS  
DESCRIBED IN IND-7-10.6 DATED JULY 31, 1941, BE CONSIDERED.

INDUSTRIAL PLANNING SECTION

39

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January 7, 1942

Mr. W. L. Drager, Chief Engineer  
 Defense Plant Corporation  
 Lafayette Building  
 Washington, D.C.

Re: Plancor - 1  
Additional Funds for Office  
 Furniture and Fixtures

Dear Mr. Drager:

There is sub-joined herewith a letter from Packard Motor Car Company, Aircraft Division, requesting that additional "emergency" funds be provided out of the approved supplemental allotment of \$700,777.77. This present request is for an additional sum of \$21,000, which would be in addition to the amount already authorized and has been already committed, and the Aircraft Division find themselves in the need of additional furniture and fixtures to provide for the increased personnel incident to the full Production Program.

It will be further noted from the letter that the present estimate and the final needs would require approximately \$117,000 over the amount already spent for furniture, which amount is \$185,000.

When considering this request the question may arise as to the need for this amount of furniture and fixtures. The policy was established at the very beginning that the D.P.C. would purchase all of the Furniture and Fixtures and the British would purchase extra machinery or buildings as a part of their  $\frac{2}{3}$  portion of all costs. It will be noted that percentage of all costs to build and equip the Aircraft Plant is approximately \$38,000,000.00. The amount of all allocations to date is \$185,000, which is approximately  $\frac{1}{2}$  of 1% of the total estimated cost. Considering the type of plant, this does not appear excessive. This request contemplates that the British would modify the arrangement above stated and would purchase and own \$14,000 of Furniture and Fixtures.

After considerable investigation, and analysis of the needs of the Aircraft Division, Plancor - 1, it appears that additional funds should be provided, and at the present moment there is an urgent need for further furniture and fixtures. A general list is attached hereto. Many of the employees, especially in the Engineering Department, are now working under handicapped conditions, using improvised tables, desks, and benches, lowering the efficiency very considerably. This condition will increase unless equipment is provided.

As to available funds, there is no appropriation open at this time, but the Plant Engineer has found that he can curtail the Rearrangement Expense to provide approximately \$21,000, \$14,000 British, \$7,000 D.P.C. This would modify the Appendix "A" and would require a transfer of funds from Schedule II to Schedule III which, as I understand it, would require an action by the Air Corps in addition to the Defense Plant approval. All reference to rearrangement (or M.A.P. account) assumes the British furnish two-thirds and the D.P.C. one-third and therefore D.P.C. are now being requested to transfer \$7,000 from Schedule II

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Mr. W. L. Drager

Page No. 2

January 7, 1942

and thereby reduce the present sum allocated from \$526,026 to \$519,026.

It has not been demonstrated by the Packard Company that all funds now allocated will be sufficient to provide all the machinery and equipment necessary for the full engine production required under the Lease Agreement, as amended. A survey of this situation is again being made by Packard, which may result in a request for additional funds for machinery, equipment and furniture and fixtures. That request, however, should stand on its own merits and as it is demonstrated.

There is an urgent and a definite need, now, for at least \$21,000 in furniture and fixtures, and it is, therefore, recommended that the requested transfer be made, that is, transfer \$7,000. from Schedule II, under Rearrangement, to Schedule III under furniture and fixtures. The British Purchasing Commission have agreed to the transfer of \$14,000 from their Rearrangement Budget.

Very truly yours,

W. S. Merick  
Division Engineer

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Encl.

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31  
INDUSTRIAL PLANNING  
SECTION

TO:

3	Col. Schneberger	TDS	Mr. Sumpter
4	Col. Probst		Miss Barnes
	Major Chase		Miss Clark
	Major Clark		Miss DeHaven
	Major Crom		Mrs. Rossi
	Major Graham		
	Major Harris		
5	Major Shaw	11/15	
	Capt. Bray		Admin. Br.
	Capt. Durbin		Analysis Unit
2	Capt. Winston		Proc. Plan. Br.
	Lieut. Glisch		Rqmts. Br.
1	Mr. Beckus	CB	Facil. Exp. Br.
	Mr. Faby		Certif. Unit
	Mr. Hochman		Str. Eval. Unit

FOR:

.....	Comment	.....	For your information
.....	Conference	.....	Necessary action
.....	Coordination	.....	Notation and Return
.....	Copies to all Districts	.....	Preparation of Reply
.....	File	.....	Signature
.....	Suspend	.....	Notation by all 11/3/46

REMARKS:

(a) The manufacture of "perishable tools" appears to be a matter of maintenance, as such, it is not a suitable for facilities. The purchase of "perishable tools" is also not acceptable for facilities, as this must be carried under plant orders.

Do you agree? 78  
 11/15 - description of item  
 (Enclosure 2/2)

WP-9-11-41-10M

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

January 8, 1942

ARMY OFFICE	
APPROVED	
CONCURRED IN	<i>SB</i>
NO COMMENT	

Via: Air Corps Factory Representative .  
 To: Wright Field  
 Dayton, Ohio  
 Attention: Colonel P. Schnesberger  
 Industrial War Plans Department  
 Subject: Balancing tools for maximum production.

1. With further reference to your letter of December 16 on the subject of additional requirements for three-shift, seven-day-week production, we do not feel at this time that we can make an accurate estimate.
2. Our orders for machine and tool requirements have been based on estimated times for each operation and production has not as yet reached a point where processing has been completely proven, where machine operators are thoroughly trained and plant efficiency is sufficient to enable us to definitely prove these estimated times. We believe that we should await further progress in these respects, and by so doing, we can make a very accurate estimate of both additional machines and tools that will be needed.
3. In the meantime, it has been definitely determined that a moderately sized space must be equipped for the manufacture of perishable tools in order to avoid excessive delay in securing emergency needs from outside vendors.
4. We also know that longer hours and more work means larger payrolls and more office help. As a consequence, our appropriation for office equipment will have to be increased. It is our intention to submit to you as soon as it can be prepared, a new Appendix A covering these immediate requirements. We will make a further request for funds at a later date to cover the machines and tools mentioned in the first part of this letter.

PACKARD MOTOR CAR COMPANY

*B. C. Budd*  
 B. C. Budd, Supervisor  
 Aircraft Engine Division

BCB:mg

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MOAC-302-WF 2-11-41-20M

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WAR DEPARTMENT  
AIR CORPS  
MATERIEL DIVISION  
OFFICE OF THE AIR CORPS REPRESENTATIVE  
Packard Motor Car Company  
Detroit, Michigan

JSE/CM  
January 8, 1942

Subject: Status of Rolls-Royce engine Production,  
Packard Motor Car Company

To: Chief, Materiel Division  
War Department, Air Corps  
Munitions Building,  
Washington, D. C.

(Thru Channels)

1. Since the Packard Motor Car Company to date has shipped less than 41 of the Rolls-Royce engines scheduled in their basic contract, it is believed that a report is in order relative to the difficulties encountered and future possibilities for improvement.
2. To January 7, 1942, twenty-one United States engines and forty-eight British engines were shipped. During the month of December, a total of twenty-three engines were shipped. In the first seven days of January, twenty-two engines were shipped, and it now seems possible that a shipping schedule of four engines per day for the remaining twenty-four days of January may be maintained.
3. For all of the delays experienced to date, the Packard Motor Car Company can be held responsible for only a portion. An early A-1-C priority prevented more rapid progress. The organization was inexperienced and possibly lacked appreciation of the size of the job. The drawings and design data received from the Rolls-Royce Company of England were inadequate and inaccurate. Engineering change orders were not made. In many instances limits were not given and in some cases where limits were given these were commercially impossible. Certain small tools, gages and checking fixtures were unobtainable.
4. The set-backs that can be laid at Packard's door are: Lack of proper supervision, inadequate training of personnel, lack of quality control, improper allotment of floor area, lack of coordination between purchasing, engineering, inspection and production.
5. Pressure exerted on Packard management in the past culminated in a conference between the Chief, Production Engineering Section, Central Procurement District, and Mr. Gilman, President of the Packard Motor Car Company, on January 7, 1942. It was recommended at this time that one man be placed in control of the Aircraft Engine Division.
6. The Packard Company has agreed to increase the amount of training, and are expanding the inspection department. A school for inspectors has been established. Inspection personnel will increase from 1300 to 2800 men.

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*Sched List 28 8/24/42**52*

Chief, Materiel Division  
 Status of Rolls-Royce Engine Production,  
 Packard Motor Car Company.  
 January 8, 1942

7. The parts which, at present, are holding up improved production are gears and supercharger casings. Efforts are being made to increase the production of these items.

8. Conclusions.

- a. There is an actual need of small tools, gages and inspection devices, which need is immediate and will be continuous. Denied these items, no management in the world could produce on the contract schedule.
- b. Production Engineering of the Central Procurement District has warned the Packard Motor Car Company to set up a stronger supervisory control. This warning came at an opportune time when increased production is a possibility.
- c. Within the Packard organization the best man available (at the Air Corps' instigation) has been selected by Mr. Gilman to manage the Aircraft Engine Division.
- d. Present facilities will permit Packard to reach a peak of about twenty-five engines per day. If a higher rate of delivery is required, additional assembly facilities and test cells will have to be provided.
- e. Training of production and inspection personnel has been poorly planned and inadequate. Union seniority rules prevent the best use of the more skillful hands at the difficult operations.

9. Recommendations.

- a. By means of Allocation, Packard should be assured a steady flow of small tools and gages.
- b. Production Engineering, Central Procurement District, has given Packard thirty days to show a decided improvement in deliveries. If this improvement does not develop by February 8, the Air Corps should have available new management to assume control of the Aircraft Engine Division, Packard Motor Car Company.

*Julian S. Dexter*  
 Julian S. Dexter  
 Major, Air Corps  
 Air Corps Resident Representative

CYS

- 1 - Automotive Liaison Officer  
 CPD
- 1 - Production Engineering Section  
 CPD

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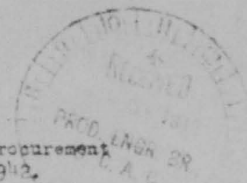
*C. H. Hand  
Serial 50-58-1/34  
1/23/42*

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CRSR: x/jm

1st Ind.

(Thru Channels)



War Department, Production Engineering Section, Central Air Corps Procurement District, 5505 West Warren Avenue, Detroit, Michigan, January 23, 1942.  
To: Chief, Materiel Division, War Department, Air Corps, Munitions Building, Washington, D. C.

1. Transmittal of communication was delayed by the Production Engineering Section, Central District, pending further investigation and developments.

2. At present date, various difficulties are being ironed out. Critical Machine Tool Lists are being prepared and every effort is being exerted to expedite materials and equipment necessary to place this organization on a more efficient production basis.

For the District Supervisor:

A handwritten signature in cursive script, appearing to read "Charles H. S. Russell".

CHARLES H. S. RUSSELL  
Major, Air Corps  
Production Engineering Officer

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

January 14, 1942

Via: Air Corps Factory Representative

To: Wright Field  
Dayton, Ohio

Attention: Colonel P. Schneeberger  
Industrial Planning Section

Subject: Submission of requests for additional loans.

1. In my letter to you of January 8, 1942 with respect to your letter of December 16, 1941, subject, Balancing Tools for Maximum Production, it was stated that pending further investigation of machine tools, etc. required for the utilization of the maximum practicable production personnel that can operate in our plant on a seven-day week, we would send in requests covering certain emergency needs.

2. We are, therefore, attaching for your prompt consideration two copies of the following:

- (i) Appendix A - Emergency Tool Room Equipment, in the amount of \$869,950.00.
- (ii) Appendix A - Furniture and Fixtures, in the amount of \$116,784.00.

3. For your information it should probably be stated that in view of the fact two-thirds of the amounts requested should be paid for by the British Government, in accordance with the terms of our contracts, the remainder being paid for by the Defense Plant Corporation, the contents of each Appendix A were discussed with Mr. J. M. Reid, authorized representative of the British Purchasing Commission, and he concurs as to the necessity of the requests made.

4. With the increased emphasis on production we cannot stress too strongly the necessity for prompt action with respect to the contents

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Page #2.

January 14, 1942

Colonel P. Schneeberger  
Industrial Planning Section

of each appendix referred to in paragraph (2).

PACKARD MOTOR CAR COMPANY

*F. C. Budd*

F. C. Budd, Supervisor  
Aircraft Engine Division

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*a*

LIST OF MACHINE TOOLS  
Airplane Engine Division  
PACARD MOTOR CAR COMPANY  
I N D E X

<u>TYPE</u>	<u>QUANTITY</u>
Breaches	19
Bore - Precision	14
" - Misc.	15
Chucking Machines - Horizontal	63
"      "      - Vertical	23
Drills - Single Spindle	154
" - Multiple Spindle	65
" - Special or Single Purpose	113
" - Radial	38
Grinders - Cylindrical External	165
" - Disc	5
" - Cutter and Pedestal	121
" - Internal	124
" - Surface	36
" - Surface Rotary	29
" - Centerless	14
" - Gear and Spline	24
" - Thread	51
Gear Cutters and Shapers	115
" Finishers and Burring	9
Hones, Laps, and Superfinishers	39
Lathe - Engine	75
" - Production	78
" - Turret	146

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<u>TYPE</u>	<u>QUANTITY</u>
Lathe - Crankshaft	16
" - Speed	18
Millers - Horizontal	270
" - Vertical	110
" - Thread	21
Polishers	155
Profilers and Duplicators	50
Shapers and Planers	6
Presses and Riveters	9
Screw Machines - Automatic	129
" " - Hand	12
Saws and Cutoff Machines	18
Reapers - Single Spindle	26
" - Multiple Spindle	22
Threading Machines	6
Inspection and Testing Machines	61
Misc. Machines	26
Welders	-
Centering Machines	10
Heat Treat Equipment	3
Equipment	<u>1</u>
At Packard	2,629
Approx. number to be Delivered	33
In Vendors' Shops	<u>689</u>
TOTAL (Approx.)	3,351

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## REPORT ON INVESTIGATION OF TOOLROOM FACILITIES

PACKARD MOTOR CAR COMPANY  
Aircraft Engine Division

The toolroom of the Motor Car Division of Packard Motor Car Company is operating three shifts, employing a total of 241 men. At present there are 2000 open orders for tools for the Aircraft Engine Division placed with this toolroom.

In 30 days this work for Aircraft Engine Division must be cleared out of the Motor Car Division toolroom so that the demand for tools for increased marine motor production (10 per day now scheduled), tank engine experimental work, and development of super-charged Rolls Royce engine can be met.

Maintenance departments of the Aircraft Engine Division -- "U" and "D" set up to do maintenance work in connection with production of aircraft engines -- have been forced to undertake emergency tool making in connection with their regular functions. These departments are operating on a 3-shift basis, but two shifts are not filled. Taken as a whole, the departments are about 50% manned -- "U" now employs a total of 217 and "D" 384. It was stated that these departments have placed requests with the employment department for additional men, but that requisitions are not being filled promptly. It would therefore seem that it is difficult to obtain workmen.

While Maintenance Departments "U" and "D" are not equipped with machines intended for emergency toolmaking, a considerable amount is being done, and if personnel were increased the emergency requirement could be further met.

The above was discussed with Mr. F. G. Quesbro, who stated that he would discuss the matter with his chief -- Mr. W. H. McCoy, master mechanic -- and report the result of the discussion.

The proposed toolroom is to be located on the third floor of buildings 16 and 18, fronting on Concord Avenue, owned by the Packard company. The area could be made ready in less than a month and 7 thread grinders (now operating in maintenance department, producing approximately 60% of present requirement for thread gauges) would be moved to new tool room.

It is estimated that the machine tools required for new toolrooms can be delivered in approximately 120 days if high priority



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Report on Investigation - Packard

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rating is granted. (Present contract W535-AC-15678 for 3000 engines has rating of A-1-C with A-1-A rating for machine tools. The British Purchasing Commission's contract No. A787 for 6000 Engines carries a rating of A-1-B with A-1-A on machine tools.)

The proposed toolroom would employ 120 - 150 men per shift and operate two shifts of 10-1/2 hours each.

Mr. McCoy, master mechanic, stated that he was planning to obtain the services of 15 or 20 key men and that the personnel of the toolroom would be built around these men.

The proposed toolroom will be used to provide perishable tools for the machines in the Aircraft Engine Division only. No jigs or fixtures will be made.

W. G. BANELS

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( COPY )

STATEMENT BY F. G. CHESERO  
 MASTER MECHANIC'S DIVISION -- AIRCRAFT ENGINE DIVISION  
 PACKARD MOTOR CAR COMPANY

The Rolls Royce Engine was never produced in this country or on a production basis, in any other country. It was necessary for the Packard Company to order tools from designs on new methods that had never been tried out. For this reason, it was decided that only three sets of tools would be covered on the original orders. When these tools were received, they were immediately placed on the machine and tried out. As each tool was proven on actual production, replacement tools were ordered.

On original orders for perishable tools, i.e., tools which require a blue print in order to have them duplicated, it was intended that these three sets of tools would start the job, and allow one set of tools on the job, one set in the tool grinding room, and one set in the tool crib available to the production department.

In view of the fact that machine and tool deliveries were delayed, and the time that was necessary to prove each individual tool on regular production, we were greatly handicapped in obtaining sources for our replacement tools.

When these replacement tools were ordered, the quantities ordered were based on the assumption that the replacement orders were sufficient for a 90-day usage. In not having previous experience with these tools, and not receiving the machine equipment far enough in advance of the original scheduled delivery of motors, it was necessary to try out these tools with new employees on this class of work. In a great many cases, all three of the original tools were broken before we were able to obtain any production.

Our present trouble has not been in obtaining tools over a long range period where we have had time to do sufficient planning to establish individual usage of each perishable tool; but our trouble has been in those cases where, due to machine trouble, fixture trouble, green operators, and faulty design, it has been necessary to provide emergency tools. It has been very difficult for us to obtain sources for this type of tool in small quantity orders due to the fact that, in most cases, it is necessary for the tool manufacturers to make temporary tools in order to produce the small quantity of tools covered by our orders. This means a loss to them on the larger volume of orders which they normally handle. As our production increases, the number of these emergency tools will also increase, and without facilities to make small quantities of special perishable tools, it will seriously interfere with the production of motors. With these facilities, it will allow the orders for larger quantities of tools to be made by the tool manufacturers by the most economical methods, and will not interfere with the production schedules on tools for other defense jobs.

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We do not intend to use this proposed tool making department to compete with any other tool companies, or to go into the tool making business, but we are only interested in providing means which will enable us to produce emergency tools necessary to eliminate any delays in the production of Aircraft Motors.

We have assigned approximately 7500 numbers to individual perishable tools, and the replacement orders for this 7500 tools averages about 50 tools per order. This makes a total of 375,000 tools required for a 90-day production period.

These 375,000 tools represent about 5,625,000 hours of labor. We do not feel that we will make in this emergency tool department over 3% of the total tools required, or approximately 168,750 hours of work in a 90 day period.

The 104 machines requested will allow a total of 156,000 hours during a 3 month period, averaging 20 hours per day, 25 days per month.

We believe the types of machines and the quantities shown will give us a balanced tool room and has been carefully prepared with this in mind.

Some other tools which will be made in emergency cases, but are not listed as perishable tools, are boring bars, plug gages, snap gages, and fixture bushings. This tool room is not required and will not be used for the maintenance of jigs and fixtures.

Following is a partial list of types of tools which will be made in emergency cases in this proposed tool making department:-

Form Milling Cutters  
 Reamers  
 Counterbores  
 Turning Tools  
 Thread Gages  
 Small Broaches  
 Boring Tools  
 Special Plain Milling Cutters  
 Circular Form Tools  
 Dovetail Form Tools  
 Gear Cutters  
 Shaving Tools

F. G. Chapiro  
 General Master Mechanic's Division

1/14/42

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DEFENSE PLANT CORPORATION  
c/o Packard Motor Car  
Company

January 14, 1942

Mr. W. S. Merick  
DFC Division Engineer  
c/o Packard Motor Car Company  
1560 East Grand Boulevard  
Detroit, Michigan

Re: Planeor - 1  
Peckard Motor Car Company

Dear Mr. Merick:

Reference is made to your letter of January 7,  
1942, with attached enclosure, requesting approval of a  
transfer of \$7,000.00 from Schedule II under Rearrangement  
to Schedule III, under Furniture and Fixtures.

It is suggested that you take this matter up with  
Wright Field for approval and upon their notifying this  
office, we will be in a position to approve the required  
transfer of funds.

Very truly yours,

(Signed) W. E. JOYCE  
W. E. Joyce  
Assistant to Chief Engineer





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January 23, 1942

Mr. W. S. Merick  
Defense Plant Corporation

Dear Mr. Merick:

On January 9, you sent me a directive from the Defense Plant Corporation requesting us to take immediate steps for the protection of this plant under a plan as indicated. Also included was the following notation, "In the event the cost of these improvements, as approved by our designated representative, cause an overrun in the above referenced program this Corporation will give favorable consideration to an Amendment to the Lease Agreement to cover such amount".

Assuming that these instructions were for plants wholly financed by the Defense Plant Corporation, the question was immediately raised as to how the various costs involved in such an undertaking might be paid in our particular case.

I wrote you a letter on January 9, calling certain conditions to your attention and asking for suggestions from your Corporation. This was followed by a subsequent letter of January 13.

As a member of our plant protection committee you have attended the meetings at which this subject has been discussed, and you will recall at the last meeting Mr. Morris strongly urged some immediate steps be taken as a precaution against sabotage, even though such larger projects as blackouts may have to be left for later consideration.

When I wrote to you on January 9, I also wrote to Mr. A. C. Boddis of the British Air Commission explaining to him as I did to you what the conditions were and because of their investment and their expected participation in the expense, I asked for his advice and suggestions. Attached is a copy of Mr. Boddis' reply which I received today.

Consequently placed in the position where the Defense Plant Corporation and the Air Corps have asked us to take certain steps which will cost a sizable amount of money and yet no one has advanced any ideas as to how this expense is to be met. Other than continuing to study what might be done, I don't see how we can proceed until there is a definite decision on this question. I wish you would urge its immediate consideration.

Yours very truly,

PACKARD MOTOR CAR COMPANY

B. C. Buddis, Supervisor  
Aircraft Engine Division

CONFIDENTIAL

CONFIDENTIAL

CC: G. T. Christopher  
W. R. Nathan

J. S. Dexter  
J. W. Raibeck

E. C. Hoelsle  
R. R. Rees

J. M. Reid  
W. McDermott

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BRITISH AIR COMMISSION  
1785 Massachusetts Avenue  
Washington, D.C.

January 20, 1942

Dear Mr. Budd:

With reference to your letters of the 12 and 13th inst. regarding protection of your plant, I regret that we have no funds available from which the expenditures involved could be met. Consideration of the allocation of the expenditure is accordingly academic; otherwise I should say that we would necessarily have to follow what the U.S. authorities decided.

Yours sincerely,

A. C. Boddie

RECEIVED  
MAR 8 1942  
DETROIT HUDSON  
DETROIT  
Mr. Budd  
Aircraft Engine Division  
Packard Motor Car Company  
Detroit, Michigan

RECEIVED  
FEB 13 1942  
MR. CH. ELLIOTT  
1400 KENNEDY BLDG  
WASHINGTON 25, D.C.

CONFIDENTIAL  
JAN 21 1942  
JORTWOO

CONFIDENTIAL

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January 27, 1942

Mr. C. R. Fairley,  
 Director General,  
 British Air Commission,  
 1785 Massachusetts Avenue  
 Washington, D. C.

Dear Mr. Fairley:

Confirming our discussions at the Joint Aircraft Committee Meeting yesterday, it is my understanding that you are intending to enter a requisition under Lend-Lease for thirteen thousand (13,000) Packard-built "Merlin" engines, which quantity is in addition to any previous orders, such as the one thousand (1,000) approved at the meeting yesterday.

It is further understood that you desire the production rate of Packard to be increased to approximately fourteen hundred (1,400) a month. I have been in touch with Packard who, although they have not made a detailed study, feel that such increase will probably be practicable. They have been asked to make a number of studies lately, one on torpedoes for the Navy, another on tank engines, as well as several others, so that increasing their effort on "Merlins" might in the long run prove to be contingent on other defense work they take on. It therefore appears desirable that official request be made to them to get out detailed estimates on facilities necessary to accomplish this increased production in "Merlins" at as early a date as feasible.

As a very rough estimate, it appears that this may amount to as much as fifteen million dollars (\$15,000,000) for tools but very little for buildings. One serious situation is the matter of handling their labor force in the very congested area in Detroit in which they are located. Their maximum labor force is 13,000 men whereas they now contemplate going up to 25,000 on the basis of present orders to which would be added the increases involved in discussions of this letter. (Furthermore, they must contact their sub-contractors to determine their ability to expand.)

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The requisition therefore should be coordinated with the Air Corps immediately from the standpoint of including funds in the next Army Appropriations Bill. After I receive word from the Air Corps that the inclusion of funds for this purpose is being made, I will then ask Packard officially to make the estimate necessary so that this facility expansion may be processed in the regular manner.

Sincerely yours,

T. P. Wright,  
Assistant Chief,  
Aircraft Branch.

Copy - Brig. General C.P. Ebnels

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ICM fr IPS 1-28-42  
 Re: Packard Motor Car Co.  
 Detroit, Michigan

1st Ind.

FMC:j1 - 70-6

Chief, Production Engineering Section, Wright Field, February 2, 1942  
 To: Chief, Industrial Planning Section

1. Relative to basic communication, pertaining to request of above mentioned company for additional loans, (IPS Project No. 43-A-3), all data submitted has been studied and Appendices "A" analyzed.

2. It is to be noted that the tool room of the "motor car division" is working to capacity, overcrowded with work, and that immediate steps must be taken to alleviate such condition.

3. Mr. F. G. Chesbro's report states that 375,000 tools are required in a period of 90 days for the production of aircraft motors, and that even with the proposed expansion of tool producing facilities, amounting to \$669,936.00, working 20 hrs. per day, 25 days per month, its total production would only represent 3% of the total requirements.

4. In view of these findings, the definite necessity for all items listed in Appendix "A", schedules II(A) and III (A.R.D.), amounting to \$669,936.00, is fully established.

5. With reference to separate Appendix "A", Schedule III (D) "Furnitures and Fixtures," amount \$116,784.00, the necessity for these facilities is not as apparent.

6. On the bottom of the first page of Appendix "A" appears the following statement: "Unfilled requests for approximately \$9,000.00 have accumulated." While this is a long way from the sum of \$116,784.00 requested, it is, however, advisable to judge this matter from a "long range" viewpoint and not lose sight of the fact that as production of aircraft engines increases and gets into the proper "swing," more personnel and consequently, more office equipment will be needed.

7. In view of these findings it is this Section's opinion that items listed in Separate Appendix "A", Schedule III (D), amounting to \$116,784.00 are necessary.

*[Signature]*  
 K. B. HOLMES  
 Colonel, Air Corps  
 Chief, Production  
 Engineering Section

3 Incls:nc

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MDAC-266-WF-6-28-41-200M

43

## INTER-OFFICE MEMORANDUM

WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel Division

Wright Field, Dayton, Ohio

Date January 28, 1942

TO: Chief, Production Engineering Section  
Wright FieldSUBJECT: Packard Motor Car Company  
Detroit, Michigan  
Plancor Number 1  
Submission of Requests for Additional Loans  
(IPS Project Number 43-A-3)

1. Reference is made to copy of letter from the subject company on the above subject dated January 14, 1942, and to attachments thereto consisting of machine tool list, report on investigation of toolroom facilities and statement by Mr. F. G. Chesbro, Master Mechanic's Division, Aircraft Engine Division of the Packard Motor Car Company, (copies attached).

2. Also attached are two Appendices "A", one in the amount of \$669,936 to cover the costs of emergency tool room equipment and the second in the amount of \$116,784 to cover costs in connection with Furniture and Fixtures.

3. It is requested that the comments and recommendations of the Production Engineering Section as to the necessity of these additional loans for machinery, equipment, Furniture and Fixtures be forwarded to this office at the earliest practicable date and that the data enclosed be returned with your reply.

*Frank Schubert*  
Major, Air Corps

for P. Schneeberger  
Colonel, Air Corps  
Chief, Industrial Planning Section

3 Enclosures to be returned:  
Encl. #1 - Cy. ltr. fr. Packard  
to IPS - 1-14-42 with  
attachments  
Encl. #2 & #3 - Cys. Appendices "A"

Signature

(17)

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MDAC-320-WF-7-2-41-100M

33

WAR DEPARTMENT  
AIR CORPS  
MATERIEL DIVISION  
OFFICE OF THE DISTRICT SUPERVISOR  
CENTRAL PROCUREMENT DISTRICT  
8503 W. WARREN AVE.  
DETROIT, MICH.

PWH/ep  
Plant Facilities Branch  
Industrial Planning Sec.

January 16, 1942

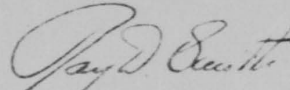
Subject: Packard Motor Car Company, Detroit, Michigan  
Application for Additional Expansion - DFC  
Flanor #1 (Project #657)

To: Assistant Chief  
Materiel Division  
Wright Field  
Dayton, Ohio

Attention: Chief, Industrial Planning Section

1. Representatives of subject facility have submitted request for additional funds to include (a) tool room equipment in the amount of \$669,936, and (b) furniture and fixtures in the amount of \$116,784.
2. Enclosed are two copies of their Appendix A, together with covering letter dated January 14, 1942 in duplicate.
3. Also enclosed herewith, in duplicate, are: (a) report of investigation of their present tool room facilities by W. G. Rannels, Industrial Planning Representative; (b) facility's statement presenting need for the expansion; and (c) List of machine tools in use by the Aircraft Engine Division of the Packard Company.
4. It is the opinion of this office that this tool room expansion is urgently needed at once.

For the District Supervisor:



RAY D. SMITH  
Major, Air Corps  
District Industrial  
Planning Officer

- Encl:
- 1) Appendix A, (in dup)
  - 2) Ltr, 1-14-42 (in dup)
  - 3) Rept of investigation (in dup)
  - 4) Fac Stmt (in dup)
  - 5) List - machine tools (in dup)

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RD-89-2 (77)

4

## WAR PRODUCTION BOARD

WASHINGTON, D. C.

February 3, 1942

IN REPLY REFER TO

WT-854

Lieutenant Colonel F. M. Hopkins  
War Department, Air Corps  
Washington, D. C.

Dear Colonel Hopkins:

Confirming our telephone conversation of today, it is my understanding that a British requisition has been placed under Lend-Lease which will ask for 12,000 or 13,000 more Packard Merlin engines to be delivered within a fairly short period of time after the completion of the current order of 9,000 for the British and the U. S. Army Air Corps, and to achieve an increase in monthly rate of production to a peak of 1400 per month.

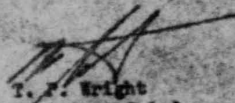
At the Joint Aircraft Committee meeting yesterday, I spoke to General Echols concerning this matter and understand that provision is going to be made in the next Air Corps Appropriation Bill to include this equipment.

I have been in touch with Packard on several occasions, having visited their Plant about two weeks ago. It is going to be quite difficult for them to expand to this increased rate and I think it would be wise for us to ask them officially to study just what is involved as soon as possible.

Copy of my letter to Mr. Fairey of January 27, copy of which also went to General Echols, is attached hereto to show the stage of my discussions with Mr. Fairey.

This letter is to suggest that Packard be requested to submit a study on ways and means of increasing their production to attain a peak of 1400 per month.

Sincerely yours,



T. F. Wright  
Assistant Chief  
Aircraft Branch

Attachment



48,734

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0-Packard-66  
RD-29-1177P

WAR DEPARTMENT - AIR CORPS  
OFFICE, CHIEF, MATERIEL DIVISION

INTER-DESK MEMORANDUM

TO: Colonel Hopkins . . . . .

Date February 8, 1942. . . . .

SUBJECT: 14,000 Additional Packard Merlin  
Engines for the British

1. These 14,000 engines are divided between 1,000 engines in the present British Lend Lease Program for which they have submitted a requisition and it has been approved, and 13,000 additional engines in the acceleration program. As you know, the money for the acceleration program has not even been asked for yet, and will not be available until March at the earliest.

2. I have talked to General Echols and Colonel Meyers about this, and they feel that we are sufficiently sure of getting the money for the Supply Contract that we should ask Packard their plans for meeting this requirement. It will involve a facility increase as Packard is jumping from 900 to 1,400 per month.

Incl.

From . . . . .  
196, A.C.

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(4-E-4)

INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
Office, Chief, Materiel Division  
WASHINGTON

February 9, 1942

TO: Technical Executive,  
Wright Field, Dayton, Ohio.

SUBJECT: 11,000 Packard Merlin Engines for the British.

1. The attached copy of a letter from Mr. Wright is transmitted for your information. The reply to that letter indicates the status of funds for the 11,000 engines and the desirability of Packard starting on their plans and presenting a proposal which will permit the desired expansion.

2. It is desired that you take the necessary action to get Packard started.

/s/ F. I. Bailey, Jr.

F. I. BAILEY, JR.  
Major, Air Corps  
Asst. Exec.

Incl.  
By ltr. Mr. Wright  
to Mr. Bailey, 1/27/42.

2/23/42 - Distribution by SEE  
Copy to Mr. BAILEY.  
Copy to Industrial Planning  
Copy to Budget Office  
Copy to Defense Aid  
Copy for "Lead-Base" File.

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**IMMEDIATE ACTION**

90-4

Asst Chief, Materiel Div.  
Asst.: Industrial Planning Sec.

Office of the Assistant Chief of Division OGF:mfs

Wright Field, Dayton, Ohio  
February 17, 1942

**SUBJECT:** Packard Motor Car Company  
1800 E. Grand Avenue  
Detroit, Michigan

(IPS Project AS 24)

**TO:** Chief, Facilities Section,  
Office, Chief, Materiel Division,  
Office of the Chief of the Air Corps,  
Washington, D. C.

1. The Packard Motor Car Company, Aircraft Engine Division, has submitted to this office an estimate covering costs of additional machinery and equipment to enable it to manufacture perishable tools in quantities adequate to meet emergency needs, as required to eliminate delays in the manufacture of Bille-Kayser Merlin IX Aircraft Engines. The estimated cost of the proposed additional facilities is as follows:

Building installations and costs of rearrangement, relocation of machinery and equipment, etc.	\$ 51,479.00 ✓
Machinery, Equipment, etc.	735,000.00 ✓
<b>Total Estimated Costs</b>	<b>\$786,479.00</b>

Estimated overall costs of the additional facilities are based upon preliminary analysis of the project and are subject to change. The Defense Plant Corporation lease agreement should, therefore, not exceed the overall estimates of the several schedules.

As soon as the Appendix "A" has received final approval in this office any material changes in the several schedules affecting the preliminary estimates will be submitted to your office in order that the lease agreement may be amended accordingly.

2. Plan of Financing: Amendment to Defense Plant Corporation lease agreement, Planer 1.

DATE
CHIEF, DIV.
TECH. EXC.
ADM. EXC.
C. P.
BUD. OFF.
EXP. ENG.
PROD. ENG.
CONTRACT
INSP.
MAINT. COMM.
OTHERS

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*[Handwritten signature]*  
OTHERS  
2-18-42

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IMMEDIATE ACTION

Chief, Facilities Section  
February 17, 1942

b. Justification: The above estimate covering additional machinery and equipment, etc., has been submitted to this office by the Packard Motor Car Company in response to instructions from this office by authority of Teletype E 355, dated December 8, 1941, and it is necessary in order to avoid delays caused by the inability of the company to acquire from outside sources perishable tools in the small lots necessary in emergencies. It is the experience of the company that because of the tendency of outside sources of these items to push production of items required in larger quantities, great delays are encountered in acquiring perishable tools in emergencies caused by machine trouble resulting from inexperienced operators, fixture trouble and faulty design.

c. Labor: It is estimated that approximately 290 additional employees will be required to man the facilities covered by this proposal and it is expected that the company will be able to train a sufficient number of employees to meet maximum requirements.

d. Floor Space to be Devoted to this Project: By rearrangement, the company will make available approximately 21,000 square feet of productive area to house the machinery and equipment covered by this proposal.

e. Special Requirements: Packard has submitted to this office a preliminary Appendix "A" which forms the basis of this processing I. O. N. However, duplicate copies are not available at this time, but will be forwarded as soon as received from the company. The following is quoted from "Report on Investigation of Tool Room Facilities," submitted to this office by the Central Air Corps Procurement District:

"The toolroom of the Motor Car Division of Packard Motor Car Company is operating three shifts, employing a total of 241 men. At present there are 2,000 open orders for tools for the Aircraft Engine Division placed with this toolroom."

"In 30 days this work for the Aircraft Engine Division must be cleared out of the Motor Car Division toolroom so that the demand for tools for increased marine motor production (10 per day now scheduled), tank engine experimental work, and development of a supercharged Rolls-Royce engine can be met."

In view of the fact that the additional facilities covered by this proposal are necessary, as quoted, to make machinery and equipment in the toolroom of the Motor Car Division available for production

-3-

IMMEDIATE ACTION

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Chief, Facilities Section  
February 17, 1942

of tools for an increase in Marine Engine production and tank engine experimental work, it is requested that the proper authorities be contacted in order that funds to cover the Ordnance Department and Navy portions of this expansion may be made available.

It is the understanding of this office that funds provided for under Defense Plant Corporation lease agreement, Plancoor 1, cover only one-third of the cost of the facilities provided for to date for the production of Rolls-Royce Merlin II engines, the balance being provided by the British Purchasing Commission. It is requested, therefore, that whatever arrangements are appropriate to current policy in this regard be followed in the financing of these facilities.

f. Recommendations: Additional facilities covered by this proposal are necessary to enable the Packard Motor Car Company to achieve and maintain a capacity for the manufacture of 9,600 Rolls-Royce Merlin II engines per year. It is recommended, therefore, that approval of all agencies concerned be obtained to the increase in the amount of \$786,720 and that this office be authorized to proceed with final negotiations with the company.

P. Schneeberger,  
Colonel, Air Corps,  
Chief, Industrial Planning Section.

Distribution:  
Production Engr. Sec.  
Budget Officer  
Lt. Wilson, Contract Adm.  
Major Harman, Contract Sec.  
Inspection Section

I. W. [unclear]  
Lt. Col. [unclear]  
Asst. [unclear]

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TELETYPE MESSAGE  
(TWX)

RS:vmh 90-4

DATE: February 19, 1942

TIME: 10:40 a.m.

FROM: Homer Shawman, Major, A. C.,  
Chief, Facilities Branch  
Industrial Planning Section.

TO: Supervisor, Central Air Corps  
Procurement District  
5505 West Warren Avenue  
Detroit, Michigan

Attention: Major Smith

..... LMD-TWX-713.....

5378-487

REVE FACE EXPANSION PACKARD MOTOR CAR COMPANY, DETROIT, MICHIGAN (IFS PROJECT  
NUMBER 43 A-3). THIS OFFICE FORWARDED TO HIGHER AUTHORITY TODAY ITS RECOMMENDATION  
FOR APPROVAL IN THE TOTAL AMOUNT OF \$786,720.00.

KINNEY.

COORDINATION

Adm.	Budget	Contract	Exp. Eng.	F. S. S.	Insp.	I. P. S.	Prod. Eng.	Exec.

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F-660 2-23-42

INDUSTRIAL PLANNING SECTION  
ATTENTION - COLONEL SCHNEEBERGER

E X T R A P R I O R I T Y

THE ARMY AND NAVY MUNITIONS BOARD HAS A NEW CIVILIAN MEMBER BY THE NAME OF MR. EBERSTADT WHO IS THE EXECUTIVE DIRECTOR. HE HAS ISSUED AN EDICT THAT TOOLS THAT ARE NOT ON ORDER BY APRIL 1ST WILL LOSE THEIR URGENCY STANDING. WE ARE CONSTANTLY IN TELEPHONE COMMUNICATION WITH MAJOR OSBORNE AND WE HAVE SENT OUT OVER 200 TELEGRAMS TO TO MANUFACTURERS ON THE URGENCY LIST REQUESTING THEM TO GET THEIR TOOLS ON ORDER. MR. PETERSON OF OTIS ELEVATOR HAS JUST CALLED ME AND INDICATED THE DIFFICULTY HE IS HAVING CLEARING HIS PROJECT FOR ADDITIONAL CRANK CASES, AND ALSO THAT WRIGHT AERONAUTICAL IS CALLING UPON THEM FOR INCREASED PRODUCTION FROM 2500 TO 3400 WHICH WILL REQUIRE ADDITIONAL FACILITIES. IT IS ABSOLUTELY ESSENTIAL THAT WE GET THESE PROJECTS THROUGH TO DEFENSE PLANT CORPORATION IN ORDER TO GET A LEASE AGREEMENT JUST AS RAPIDLY AS WE POSSIBLE CAN. WE MUST GO ON THE OFFENSIVE AND MAINTAIN CONTACT WITH THESE MANUFACTURERS, AND PUSH THEM TO THE LIMIT. THE CHIEF MATERIEL DIVISION'S INSTRUCTIONS WERE TO GET THESE EXPANSIONS INTO WASHINGTON IN THE LEAST POSSIBLE TIME. MR. PETERSON INDICATES THAT HIS ORIGINAL APPENDIX "A" WENT TO YOU OVER TWO WEEKS AGO. BECAUSE OF THIS CRITICAL MACHINE TOOL DECISION, WE MUST PROCESS AND JUSTIFY LATER.

PLEASE DO WHAT IS POSSIBLE TO CLEAR OTIS SO THAT WE CAN GET SOME CRANK CASES FOR WRIGHT ENGINES.

FURTHER, MR. BUDD OF PACKARD HAS JUST CALLED ME. HE HAS A PROJECT THAT HAS BEEN DOWN IN YOUR PLACE SINCE JANUARY 10TH AND CLAIMS IT IS TAKING TWO MONTHS TO GET THROUGH AN APPENDIX "A". IN ADDITION TO THAT, HE HAS BEEN CALLED UPON TO EXPAND FROM 800 TO 1100 ENGINES. THIS APPENDIX "A" WILL BE IN YOUR OFFICE BY THE END OF THE WEEK. THIS ONLY GIVES US ONE MONTH TO ANALYZE, TO COMPLETE THE NEGOTIATIONS, TO SIGN A LEASE AND TO GET 2200 MACHINE TOOLS ON ORDER BY APRIL 1ST. HE NEEDS AT LEAST TWO WEEKS FOR THIS LATTER ITEM, THEREFORE, THIS PROJECT MUST BE CLEARED THROUGH YOUR OFFICE AND NEGOTIATIONS FOR A LEASE AGREEMENT COMPLETED BY MARCH 10TH. WE WILL DO OUR PART IF YOU CAN DO YOURS. THIS SITUATION REQUIRES YOUR MOST URGENT ATTENTION BECAUSE WE CANNOT AFFORD TO HAVE MANUFACTURERS NOW ON THE MASTER PREFERENCE LIST LOSE THEIR URGENCY STANDING.

FACILITIES SECTION

HP

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JWS:ia:80-1

Wright Field, Dayton, Ohio  
February 23, 1942.

Contract W 535 ac-15678  
Purchase of 14,000 Additional Merlin  
Engines plus Spares

Packard Motor Car Company  
1580 East Grand Boulevard Att: Mr. Budd  
Detroit, Michigan

Reference: Telephone Conversation with Mr. Schwinn,  
Contract Administration Branch

1. This is to verify information given to Mr. Budd, of your company, that the Government contemplates a procurement of 14,000 additional Merlin engines plus spare parts from your company. In the interest of expediting construction for the existing emergency, authority is hereby granted for your company to proceed with preliminary work on specification, prices and delivery dates up to the point of actual purchase in order that negotiations may be completed at an early date, and that orders may be placed immediately upon signing of the Lease Agreement regarding facilities. It is understood that approximately \$14,000,000.00 worth of additional machinery will be necessary incident to the construction of these additional engines in the time desired by the Government.

For the Assistant Chief of the Materiel Division:

A. E. JONES,  
Colonel, Air Corps,  
Chief, Contract Section.

cc:  
Ind. Plan. Sect.  
Prod. Engr. Sect.  
A. C. Rep.  
Cent. Dist. Supvr.

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**CONFIDENTIAL**

Chief, Materiel Division  
Industrial Planning  
Section  
90-1

February 21, 1942

AWH:vdh

43A  
SUBJECT: Plant Protection  
Packard Motor Car Company  
Detroit, Michigan

TO: The Supervisor  
Central Air Corps Procurement District  
8505 West Warren Avenue  
Detroit, Michigan

Attention: Industrial Planning Officer

1. Reference is made to 2nd Memorandum by your office dated February 7, 1942, subject as above. Further reference is made to Inter-Office Memorandum from Office, Chief, Facilities Branch, Contract Section, Wright Field, dated February 17, 1942, in the same regard.

2. In connection with the request of this company for further allocation to provide the plant protection desired, it is requested that you procure and forward to this office the following information.

a. A statement by this company regarding the location of the facilities to be protected as to their being within the confines of Packard Motor Car Company's private property, or being within the confines covered by lease agreement under Planor 1, amended.

b. A Plot plan showing the location of the facilities.

c. A statement by this company as to whether or not this company can defray the costs incident to the provision of these measures from the contingency funds supplied under the pending amendment to Planor 1, WPS Project Number 43 A-3, which has been processed on February 17, 1942.

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**CONFIDENTIAL**

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Plant Protection  
Packard Motor Car Company

CONFIDENTIAL

3. It is requested that all correspondence and tabulations attached hereto be returned with your reply.

By Order of the Assistant Chief of the Material Division:

Romer Shawhan  
Major, Air Corps

for F. Schaeferberger  
Colonel, Air Corps  
Chief, Industrial Planning Section

7 Enclosures:

ICM to IPS fr Contract Section - 2-17-42  
2nd Ind - 2-7-42  
1st Ind - 2-5-42  
Minutes of Packard Plant Protection Committee  
Plant Protection Costs  
Ltr. fr Packard - 1-25-42  
Ltr. fr Packard to Mr. W. S. Merisk - 1-23-42

CONFIDENTIAL

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WAC:roh

February 25, 1942

Chief, Facilities Section  
Office, Chief Materiel Division  
Office, Chief Air Corps  
Washington, D. C.

Packard Motor Company  
Detroit, Michigan  
(IPS Project Number 43-A-5)

1. Enclosed, as noted below, are two copies of preliminary Appendix "A", submitted by subject company, which formed the basis of the processing Inter-Office Memorandum dated February 17, 1942.

2. It is the understanding of this office that one copy will be forwarded to the Defense Plant Corporation for its information and guidance.

Romer Shawhan  
Major, Air Corps

for P. Schmeberger  
Colonel, Air Corps  
Chief, Industrial Planning Section

Enclosures -  
App. "A" Packard Motor Car Co.  
(2 cys.)

FEB 25 1942

DATE
CHF. DIV.
TECH. EXC.
ADM. EXC.
C. O.
BUD. OFF.
EXP. ENG.
PROD. ENG.
CONTRACT
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MAINT. COMM.
I. P. S. WAC
OTHER

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WDAC-265-A-WF-12-22-41-500M

INTER-OFFICE MEMORANDUM  
 WAR DEPARTMENT, AIR CORPS  
 Office, Assistant Chief  
 Materiel Division

WED:ms:70-1

Wright Field, Dayton, Ohio

Date February 25, 1942

TO: Chief, GFE Branch, WED

SUBJECT: 12,000 Packard Merlin Engines for the British

1. There is transmitted herewith the original of memorandum of February 9, 1942, from the Office, Chief, Materiel Division, through the Technical Executive, directing this Division to proceed with the project covering procurement of 12,000 Packard Merlin engines for the British. There are also attached copies of the following communications and transcripts of telephone conversations:

- 2/19/42 Memorandum from Contract Section  
re Continental Motors Contract AC-17300
- 2/19/42 Telephone Conversation - Mr. Schwin and  
Mr. Marks of Packard Motor Car Company
- 2/20/42 Teletype Di-Tex-539 to Defense Aid Organiza-  
tion from Defense Aid Section, Washington
- 2/21/42 Telephone Conversation - Mr. Schwin and  
Mr. Budd of Packard Motor Car Company
- 2/23/42 IRL to Judge Advocate from Contract Section,  
Subject: Packard Contract # 539 AC-15678
- 2/23/42 Letter to Packard Motor Car Company  
re Contract # 539 AC-15678

2. The 1000 engines are covered by requisition PFDA 3967 which has already been furnished to GFE Branch. The 13,000 additional engines are covered by requisition PFDA 9902 which requisition has not as yet been received. It will be noted that the requisition for the 1000 engines calls for 15% spare parts and it is understood that the requisition for the 13,000 engines will call for the same percentage of spares.

Signature.....

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MDAC-265-A-WF-12-22-41-500M

INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel Division

SED:mas:70-1

Wright Field, Dayton, Ohio

Date: February 29, 1942

TO: Chief, GPN Branch, PNE

SUBJECT: 14,000 Packard Merlin Engines for the British

3. The Chief, Production Engineering Section, directs that we proceed immediately with negotiations on this project and, pending completion of the negotiations, that you issue a request for letter of intent to cover the 14,000 engines. This will be reduced to 13,000 provided a request has already been issued for the 1000 covered by PMA 8967. The Authority for Purchase should contain a paragraph to the effect that additional facilities are required in connection with this procurement.

4. A copy of this memorandum, together with the inclosures, is being forwarded to the Industrial Planning Section for use in connection with the facilities contract.

K. B. SOLY,  
Colonel, Air Corps,  
Chief, Production  
Engineering Section.

7 incs. -  
As noted herein

Copy to:  
Industrial Planning Section ✓  
Budget Office  
Defense Aid Organization

SEARCHED  
SERIALIZED  
INDEXED  
FEB 28 1942  
AIR CORPS

Signature.....

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WDAC-265-A-WF-12-22-41-500M

INTER-OFFICE MEMORANDUM  
 WAR DEPARTMENT, AIR CORPS  
 Office, Assistant Chief  
 Materiel Division

SGM:js-70-5

Wright Field, Dayton, Ohio  
 Date February 26, 1942

TO: Chief, Contract Section  
 Wright Field, Dayton, Ohio

SUBJECT: Procurement of Additional  
 Packard Merlin Engines.

Reference: Production Engineering Section I.O.M. dated February 14,  
 1942, O-Mabr-70-5.

1. It is requested that reference I.O.M. be disregarded and the following be substituted therefore.
2. It is requested that the Contract Section issue a letter of intent to the Packard Motor Car Co. covering the procurement of 14,000 Merlin 24 engines at an estimated cost of 120,000.00 each, plus spare parts to the value of approximately 15% of the total cost.
3. The 14,000 engines are to be purchased for the British under lease-lease and are covered by requisition AFIA 8967 for 1,000 engines and AFIA 9002 for 13,000 engines.
4. Additional facilities will be required by the Packard Motor Car Co. in connection with this procurement.
5. It is requested that the Contract Section negotiate the procurement of subject engines and notify this section so that a representative may be present during the negotiations in order to facilitate initiation of the Authority for purchase as quickly as possible.
6. Authority for purchase No. 221237 will be initiated to cover this procurement as soon as negotiations are completed.

cc: Prod. Eng. Sec.

J. E. POLSON  
 Chief, Air Corps  
 Chief, Production  
 Engineering Section

Signature \_\_\_\_\_

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43 B

## PACKARD MOTOR CAR COMPANY

DETROIT MICHIGAN

February 27, 1942

Via: Air Corps Resident Representative  
 To: Assistant Chief, Materiel Division  
 Wright Field  
 Dayton, Ohio  
 Attention: Contracting Officer  
 Subject: Training of Personnel

ARMY OFFICE	
INDEXED	
FILED	<i>TSB</i>
NO COMMENT	

1. One of the serious problems we have faced in connection with the manufacture of aircraft engines has been the training of personnel. This has been particularly true of machine operators and foremen whose previous experience has been confined mainly to the manufacture of motor cars.
2. While operations were getting underway, and prior to the receipt of machinery and tools purchased for this undertaking, these men were trained mainly in our Marine Engine Division. Special permission was obtained from the contracting officer of the materiel division to charge their hourly rate against engine costs of the aircraft engine contract. As machinery was received and installed, this training was transferred to the machine shop of the Aircraft Division and has been there up to the present time. During this period, we paid to trainees on an hourly rate basis approximately \$400,000.00.
3. With production now well underway, and the urgency of a steadily increasing schedule, it is both inefficient and unsatisfactory to confine the training of men to the machine shop where production parts are being made. It accordingly becomes essential to provide a separate place where this training work can be conducted. It is estimated with 10,000 or more productive employees, it will be necessary to provide training for two to three thousand persons per year. Counting on an average training period of six weeks, this will require a school capable of handling 300 employees at one time.

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Contracting Officer

Page 2

February 27, 1942

4. On the attached sheets are shown estimates covering the machinery and equipment which we consider necessary for such a school and also the approximate maintenance costs. It provides for 200 trainees in two eight hour shifts. This can be expanded to three shifts without increased equipment. We would like to have the authority of the contracting officer to charge items listed under capital expenditures against appropriations provided for similar purposes in the prime contract.

5. It seems equally essential to do continuous educational work with the employees now on the payroll and that many of the instructional pamphlets prepared for the school will be equally valuable in the shop.

6. To coordinate this effort, increase plant efficiency, and sustain a high degree of interest, a series of competitive contests between departments and divisions is planned, with proper citations and banners for winning departments. Also a monthly newspaper which will highlight achievements and contests, picture award winners and include interesting events of the war which will tie the man in the shop to the happenings at the front.

7. The cost of such a program will, we believe, be repaid many times in savings that can be effected. Under maintenance costs is included the estimated monthly expense, and we would also like to have authority to charge this against engine costs of the prime contract.

8. Your early consideration and approval will be appreciated.

FRANKLIN MOTTEN CAR COMPANY

*M. C. Budd*

M. C. Budd, Supervisor  
Aircraft Engine Division

FCB:mg

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PROJECT REPORT  
MONTHLY MAINTENANCE REPORT

1. TRAINING SCHOOLTrainees, Instructors, Supervisors and Personnel

	<u>Monthly Expense</u>
200 men at \$1.00 per hr.	2,000.00
20 Instructors at \$1.35 per hr.	2,700.00
8 Contact men at \$1.35 per hr.	1,080.00
2 Bulletin men at \$250.00 per month	500.00
2 Pool Crib men at \$1.0 per hr.	450.00
8 Stock boys at \$1.77 per hr.	1,416.00
2 Timekeepers at \$200.00	400.00
2 Processing clerks at \$1.40 per hr.	280.00
2 Stenographers at \$125.00 per month	250.00
4 Janitors at \$1.00	400.00
3 Supervisors	<u>1,200.00</u>

262,401.00

Rent

(15,600 sq. ft.) on two 8 hr. shift basis including light, heat, water and ins. taxes.

100.00

Electric Power

For 75 machines on two eight hour shift basis (\$1.20 per hr. per machine)

, 80.00

Tool Maintenance

Replacement

1,200.00

rough Stock

(Corrected material at no charge)

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Instructional pamphlets, literature and stationeryMonthly expense

771.00

Reprints

11.00

3. WASHINGTONMonthly Newspapers, Florida Cards, Maritime News, Citations, Posters, Contact Bulletin

2,000.00

Supervision for above

1,271.00

Total

3,200.00

Plus 10% for overhead

3,520.00

3,520.00

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## IMPROVEMENT PROGRAM

CAPITAL EXPENDITUREMachinery

10 Drill Presses	\$ 20,000.00
20 Milling Machines	64,000.00
10 Swine Lathes	40,000.00
10 Turret "	45,000.00
10 External Grinders	75,000.00
10 Internal Grinders	30,000.00
5 Surface Grinders	<u>21,500.00</u>

\$275,500.00

Freight and Installation on above and lines

24,000.00

15% for miscellaneous and contingencies

48,225.00

Tooling for these machines including inspection gauges, micrometers, etc.

75,000.00

Office and School Equipment

4 Desks (51" x 31") at \$48.00	192.00
7 Tables (60" x 30") at \$18.00	126.00
4 Steel chairs at \$18.00	72.00
11 Student chairs at \$15.00	165.00
1 School master's chair at \$1.00	1.00
1 " " desk at \$20.00	20.00
3 Steel filing cabinets at \$8.00	24.00
1 48" x 24" Steel Filing cabinet base and 2 sections	75.00
1 Typewriter	82.00
1 large table 40' x 24" for classroom	75.00
50 School chairs each with one side arm at \$10.00	500.00
4 Tables at \$5.00 each	<u>20.00</u>

\$ 3,420.00

Plus 15%

211.00

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-2-

Rearrangement and Equipment

Taggable Items

Plus 10%

14,420.00

1,545.00

Non-tagable Items

Plus 15%

1,540.00

531.00

Plotting Boards, Control and Display Boards, Information Panels, etc.4,310.00

248,241.00



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MAIL ROOM, WFO-25-41-100M

INTER-OFFICE MEMORANDUM

WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel Division

JWS:ia:40-1

Wright Field, Dayton, Ohio

Date March 4, 1942

TO: Chief, Industrial Planning Section

Attention: Major J. L. Clark

SUBJECT: Proposed procurement of 14,000 additional "Merlin" engines with the Packard Motor Car Company

1. This is to advise that negotiations are under way with the Packard Motor Car Company for the procurement of 14,000 additional "Merlin" engines and that Letter of Intent dated February 26, 1942 has been issued to cover the supplies. It is contemplated that approximately \$2,000,000 of additional facilities and tools are necessary to produce these engines in the time required.

2. The supply contract, when prepared, will provide an escape for the contractor in the event additional facilities are not provided.

H. P. Wilson,  
Colonel, in Charge,  
Office, Contract Section  
*H. P. Wilson*  
HARRY P. WILSON,  
1st Lt. (Inf.)

Signature

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RD-90

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WAR PRODUCTION BOARD  
WASHINGTON, D. C.

*file*

IN REPLY REFER TO

MAR 6 1942

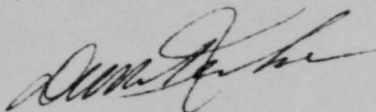
MEMORANDUM FOR: CHIEF OF AIR CORPS  
WAR DEPARTMENT

SUBJECT: The expansion of the Packard Motor  
Company at Detroit, Michigan at an  
estimated cost of \$25,000,000.

The Plant Site Board of the War Production  
Board has formally approved the proposal for the  
expansion of the Packard Motor Company at Detroit,  
Michigan at an estimated cost of \$25,000,000, for  
the manufacture of aircraft engines.

60.

This approval is given with the understanding  
that the War and Navy Departments will endeavor to  
remove from the Detroit area, less essential plants  
now operating there.



DOUGLAS C. MacFARLANE  
Chairman, Plant Site Board



60.

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*D. Packard-66*  
*RD-91*

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WAR PRODUCTION BOARD

WASHINGTON, D. C.

March 13, 1942

IN REPLY REFER TO

Subject Title Without Change

MEMORANDUM

TO: Air Corps  
War Department

FROM: E. B. Haines *mc/b-*  
Chief, Requirements Section

SUBJECT: Packard Motor Car Company \$786,720  
Detroit, Michigan  
Expansion for the mfg. of 9000 Rolls-Royce Aircraft Engines

This office has been advised that the above expansion preceded the expansion for \$25,000,000 with subject company for the same purpose.

This expansion being under one million dollars, would not require the approval of the Plant Site Board, in view of which this office approves this expansion for record purposes.

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FACILITIES SECTION

DIVISION HEADQUARTERS  
WRIGHT FIELD

EXTRA PRIORITY

IPS PROJECT 43 B, PACKARD MOTOR CAR COMPANY, DETROIT, MICHIGAN, HAS SUBMITTED TO THIS OFFICE A PROPOSAL COVERING ADDITIONAL FACILITIES NECESSARY TO INCREASE ITS CAPACITY FOR THE MANUFACTURE OF ROLLS-ROYCE MERLIN XX AIRCRAFT ENGINES FROM 800 PER MONTH TO 1400 PER MONTH.

TYPE AND LOCATION OF PLANT: THE ADDITIONAL FACILITIES CONSIST OF A REHABILITATION OF COMPANY-OWNED BUILDINGS AND MACHINERY AND EQUIPMENT TO BE INSTALLED IN THE PRESENT PLANT IN DETROIT, MICHIGAN.

NATURE OF THE PRODUCT:

THE PRODUCT TO BE MANUFACTURED IS THE 1300 HP ROLLS-ROYCE MERLIN XX ENGINE, WHICH IS BEING BUILT FOR THE BRITISH UNDER LEND-LEASE.

JUSTIFICATION: THIS OFFICE HAS BEEN INFORMED BY THE CONTRACT SECTION, WRIGHT FIELD, THAT A LETTER OF INTENT WAS ISSUED TO THE PACKARD MOTOR CAR COMPANY TO COVER THE ACQUISITION OF 14,000 ADDITIONAL MERLIN ENGINES AND THAT NEGOTIATIONS IN CONNECTION WITH THE CONTRACT TO COVER SAME ARE BEING CARRIED FORWARD ON THE BASIS THAT APPROXIMATELY \$20,000,000 WILL BE REQUIRED FOR ADDITIONAL FACILITIES NECESSARY TO ENABLE THE COMPANY TO PRODUCE THESE ITEMS AND THAT AN ESCAPE CLAUSE FOR THE CONTRACTOR WILL BE PROVIDED IN THE CONTRACT WHEN PREPARED.

CAPACITY: THE COMPANY AT PRESENT WITH COMPANY-OWNED FACILITIES AND FACILITIES PROVIDED FOR UNDER DEFENSE PLANT CORPORATION LEASE AGREEMENT, PLANCOR 11, HAS A CAPACITY FOR THE MANUFACTURE OF 800 MERLIN ENGINES PER MONTH AND...

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THE PRODUCT TO BE MANUFACTURED IS THE 1300 HP ROLLS-ROYCE MERLIN XX ENGINE, WHICH IS BEING BUILT FOR THE BRITISH UNDER LEND-LEASE. JUSTIFICATION: THE OFFICE HAS BEEN INFORMED BY THE CONTRACT SECTION, WRIGHT FIELD, THAT A LETTER OF INTENT WAS ISSUED TO THE PACKARD MOTOR CAR COMPANY TO COVER THE ACQUISITION OF 14,000 ADDITIONAL MERLIN ENGINES AND THAT NEGOTIATIONS IN CONNECTION WITH THE CONTRACT TO COVER SAME ARE BEING CARRIED FORWARD ON THE BASIS THAT APPROXIMATELY \$20,000,000 WILL BE REQUIRED FOR ADDITIONAL FACILITIES NECESSARY TO ENABLE THE COMPANY TO PRODUCE THESE ITEMS AND THAT AN ESCAPE CLAUSE FOR THE CONTRACTOR WILL BE PROVIDED IN THE CONTRACT WHEN PREPARED. CAPACITY: THE COMPANY AT PRESENT WITH COMPANY-OWNED FACILITIES AND FACILITIES PROVIDED FOR UNDER DEFENSE PLANT CORPORATION LEASE AGREEMENT PLANCOR 11, HAS A CAPACITY FOR THE MANUFACTURE OF 800 MERLIN ENGINES PER MONTH AMOUNTING TO \$179,376,000 IN YEARLY SALES VALUE. THE ADDITIONAL FACILITIES WILL PROVIDE THE COMPANY WITH CAPACITY TO PRODUCE AN ADDITIONAL 600 ENGINES PER MONTH AMOUNTING TO \$135,972,000 IN YEARLY SALES VALUE, THUS MAKING A TOTAL YEARLY SALES CAPACITY OF \$315,348,000 AND A TOTAL CAPACITY OF 1400 ENGINES PER MONTH. SUBCONTRACTING: THE PROPOSAL COVERING THESE FACILITIES IS BASED ON SUBCONTRACTING APPROXIMATELY 50 PER CENT OF THE WORK INVOLVED IN THE PRODUCTION. PREVIOUS EXPANSION: PREVIOUS EXPANSIONS OF THE FACILITIES BY PACKARD MOTOR CAR COMPANY WITH GOVERNMENT AID, WHICH WERE RECOMMENDED BY THE AIR CORP ARE AS FOLLOWS:

IPS PROJECT	DATED	PLANCOR NO.	WAR DEPT- MENT FUNDS	BRITISH PURCHASING COMMISSION
43 A	LEASE 9-3-40	1	\$8,000,000	\$16,000,000
43 A-1	AMENDMENT 9-6-41	1	1,183,333	2,366,666
43 A-2	PROCESSED 7-30-41		756,777	1,533,554
43 A-3	PROCESSED 2-17-42		700,720	SEE LAST PARAGRAPH 1-E PROCESSING 10M FEBRUARY 17, 1942

(SUPPLY CONTRACT W 535742-15678, DURABLE TOOLS ARMY A.C. \$3,300,000, BRITISH \$6,600,000) ESTIMATED OVERALL COSTS OF EXPANSION:

BUILDINGS, INSTALLATIONS, LEASEHOLD IMPROVEMENTS AND SERVICE COSTS	\$501,125.00
RE-ARRANGEMENT, RE-LOCATION, ETC.	1,539,306.00
MACHINERY, EQUIPMENT, ETC.	18,472,873.00
TOTAL	\$20,593,304.00

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RECOMMENDED BY THE AIR CORPS ARE AS FOLLOWS:

IPS PROJECT	DATED	PLANCOR NO.	WAR DEPART-	BRITISH PURCHASING
			MENT FUNDS	COMMISSION
43 A	LEASE 9-3-40	1	\$8,000,000	\$16,000,000
43 A-1	AMENDMENT 9-6-41	1	1,103,333	2,366,666
43 A-2	PROCESSED 7-30-41		766,777	1,533,554
43 A-3	PROCESSED 2-17-42		704,720	SEE LAST PARAGRAPH

1-E PROCESSING 10M  
FEBRUARY 17, 1942.

(SUPPLY CONTRACT W 53572-15678, DURABLE TOOLS ARMY A.C. \$3,300,000, BRITISH \$8,600,000) ESTIMATED OVERALL COSTS OF EXPANSION:

BUILDINGS, INSTALLATIONS, LEASEHOLD IMPROVEMENTS AND SERVICE COSTS	\$501,125.00
RE-ARRANGEMENT, RE-LOCATION, ETC.	1,539,308.00
MACHINERY, EQUIPMENT, ETC.	18,472,873.00
TOTAL	\$20,593,304.00

THE ESTIMATED OVERALL COSTS OF THE EXPANDED FACILITIES ARE BASED UPON PRELIMINARY APPENDIX A OF THE PROJECT AND ARE SUBJECT TO CHANGE. THE DEFENSE PLANT CORPORATION LEASE AGREEMENT SHOULD, THEREFORE, NOT EXCEED THE TOTAL OVERALL ESTIMATES OF THE SEVERAL SCHEDULES.

TWO COPIES OF PRELIMINARY APPENDIX A, WHICH FORMS THE BASIS OF THIS PROCESSING TELETYPE WILL BE FORWARDED UNDER SEPARATE COVER.

IT IS THE UNDERSTANDING OF THIS OFFICE THAT ONE COPY WILL BE FORWARDED TO THE DEFENSE PLANT CORPORATION FOR ITS INFORMATION AND GUIDANCE.

AS SOON AS THE APPENDIX A HAS RECEIVED FINAL APPROVAL IN THIS OFFICE ANY MATERIAL CHANGES IN THE SEVERAL SCHEDULES AFFECTING THE PRELIMINARY ESTIMATES WILL BE SUBMITTED TO YOUR OFFICE IN ORDER THAT THE LEASE AGREEMENT MAY BE AMENDED ACCORDINGLY.

PLAN OF FINANCING: DEFENSE PLANT CORPORATION LEASE AGREEMENT, PLAN IV.  
FLOOR SPACE

PRODUCTION, SQUARE FEET	634,358
NON-PRODUCTIVE, SQUARE FEET	63,600
TOTAL	697,958
LABOR:	
MALE	
PRODUCTIVE	7,605
NON-PRODUCTIVE	22
TOTAL	7,627
FEMALE	
PRODUCTIVE	0
NON-PRODUCTIVE	520
TOTAL	520
TOTAL	8,147

LABOR SUPPLY IS CLAIMED BY COMPANY TO BE ADEQUATE DUE TO CURTAIL-

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LABOR:	MALE	FEMALE	
PRODUCTIVE	7,605	0	7,605
NON-PRODUCTIVE	22	520	542
TOTALS	7,627	520	8,147

LABOR SUPPLY IS CLAIMED BY COMPANY TO BE ADEQUATE DUE TO CURTAILMENT OF NON-DEFENSE PRODUCTION IN THE DETROIT AREA. A RECENT SURVEY BY THE DETROIT CHAMBER OF COMMERCE FORECASTS THE EVENTUAL TRAINING AND EMPLOYMENT OF 100,000 WOMEN FOR WAR PRODUCTION WORK IN THIS HOUSING XXX AREA AND IT IS THEIR BELIEF THAT THERE WILL BE AN ADEQUATE SUPPLY OF LABOR FOR THIS EXPANSION.

HOUSING: PRESENT HOUSING FACILITIES ARE CLAIMED BY COMPANY TO BE ADEQUATE AS IT IS ANTICIPATED THAT ONLY THE IDEAL LABOR WILL BE REQUIRED. ACCORDING TO A SURVEY CONDUCTED BY THE CHAMBER OF COMMERCE, THERE ARE AT PRESENT 2,000 VACANT HOUSING UNITS AND 20,000 TO 30,000 NEW UNITS UNDER WAY. PRIVATE INDIVIDUALS ARE FILING APPLICATIONS FOR 750 TO 1,000 HOUSING UNITS PER WEEK. IT IS THE BELIEF OF THE DETROIT CHAMBER OF COMMERCE THAT THERE WILL BE AN ADEQUATE SUPPLY OF HOUSING FACILITIES FOR THIS PROJECT.

SPECIAL REQUIREMENTS: DETAILED INFORMATION IN REGARD TO LABOR, HOUSING, TRANSPORTATION AND UTILITY STILITY REQUIREMENTS WILL BE FORWARDED AS SOON AS IT HAS BEEN OBTAINED FROM THE COMPANY AND HAS BEEN VERIFIED BY THIS OFFICE. THE INFORMATION INCLUDED HEREIN IS AS SUBMITTED BY COMPANY REPRESENTATIVES AND IN THE EVENT OF ANY CHANGES YOUR OFFICE WILL BE NOTIFIED.

IT IS THE UNDERSTANDING OF THIS OFFICE THAT FUNDS PROVIDED FOR UNDER DEFENSE PLANT CORPORATION LEASE AGREEMENT, PLANCOR 1, COVER ONLY ONE-THIRD OF THE COST OF THE FACILITIES FURNISHED PACKARD TO DATE FOR THE PRODUCTION OF ROLLS-ROYCE MERLIN XX ENGINES, THE BALANCE BEING PROVIDED BY THE BRITISH PURCHASING COMMISSION. ALL OF THESE FACILITIES WILL BE USED ALONG WITH THOSE COVERED BY THIS PROPOSAL FOR THE MANUFACTURE OF 1400 ENGINES PER MONTH AS OBTAINED ABOVE. RECOMMENDATION: IT IS RECOMMENDED THAT APPROVAL OF ALL AGENCIES CONCERNED BE OBTAINED TO THE EXPANSION COVERED BY THIS PROPOSAL IN THE AMOUNT OF \$29,523,304 IN ORDER THAT FUNDS MAY BE RELEASED, AND THAT THIS OFFICE BE AUTHORIZED TO PROCEED WITH FINAL NEGOTIATIONS WITH THE COMPANY.

TECHNICAL EXECUTIVE

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**IMMEDIATE ACTION**RESTRICTED <sup>27</sup>

ADDRESS REPLY TO

WAR DEPARTMENT Ass't. Chief, Materiel Div.,  
AIR CORPS Att.: Industrial Planning Sec.  
MATERIEL DIVISION

Office of the Assistant Chief of Division

Wright Field, Dayton, Ohio  
March 11, 1942

SUBJECT: Packard Motor Car Company,  
Detroit, Michigan.

(IPS Project 43 B)

TO: Supervisor,  
Central Air Corps Procurement District,  
3505 W. Warren Avenue,  
Detroit, Michigan.

Attention: Industrial Planning Officer

1. The subject company has submitted to this office a proposal covering additional facilities necessary to increase its capacity for the manufacture of Rolls-Royce Merlin XX aircraft engines from 800 per month to 1,400 per month.

2. Estimated Cost of Proposed Expansion:

Buildings, Installations, Leasehold Improvements and Service Costs	\$ 581,125
Rearrangement, Relocation, etc.	1,539,306
Machinery, Equipment, etc.	<u>18,472,873</u>
Total	\$20,593,304

3. Pertinent information submitted by the subject company is as follows:

a. Floor Space Covered by Expansion: This proposal involves approximately 697,998 square feet, of which 634,358 square feet is indicated as productive. The additional floor space will be made available by rearrangement, relocation and rehabilitation of company-owned buildings.

b. Labor Requirements: Labor requirements are approximately 8,147 employees, of which 7,605 are classed as productive. The labor supply is expected to be adequate due to the curtailment of non-defense production in the Detroit area.

MDAC-321-WF-1-1-42-50M

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**IMMEDIATE ACTION**

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## IMMEDIATE ACTION

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ADDRESS REPLY TO

WAR DEPARTMENT  
AIR CORPS  
MATERIEL DIVISIONPackard Motor Car Co.,  
Detroit, Mich.  
(IPS Project 43 B)

c. Housing: The present housing facilities are expected to be adequate as it is not anticipated that other than local labor will be required.

d. Transportation: There is available 6,000 feet of railroad siding within company property which connects with the Michigan Central Railroad. U. S. Highways 25, 24 and 25 are available for motor transportation. All transportation facilities are adequate for maximum needs.

e. Power: The maximum power demand is estimated at 20,000 KW and can be adequately supplied by the Detroit Edison Company and company-owned power plant.

f. Water: The maximum monthly water requirements for the proposed facilities are 25,000,000 gallons and can be adequately supplied by the City of Detroit.

g. Fuel: The maximum fuel requirements for the proposed facilities are 22,000 gallons of oil and 1,870 tons of coal and can be adequately supplied by local dealers.

h. Type of Buildings: This proposal does not include any new construction. However, there are items amounting to \$1,559,506 for rearrangement, relocation and rehabilitation in present company buildings.

4. Your comments and recommendations are requested with regard to the amount of additional floor space that appears to be required for the additional labor and machinery.

5. It is further requested that investigation be made on the adequacy of the various items affecting this expansion and that this information be furnished with the least practicable delay in order that it may be available if and when authorization to proceed with final negotiations with the company is given this office.

By order of the Assistant Chief of the Materiel Division:

*Romer Shawhan*  
Romer Shawhan,  
Major, Air Corps,

*T. A. Sims*  
T. A. SIMS  
Lieutenant Colonel,  
Materiel Division

for P. Schneberger,  
Colonel, Air Corps,  
Chief, Industrial Planning Section.

MDAC-321-WF-145-42-26M

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AREA OF EXISTING PACKARD BUILDINGS  
TO EXPAND AIRCRAFT ENGINES TO 1400 PER MONTH

<u>BUILDING</u>	<u>FLOOR</u>	<u>SQ. FT. AREA</u>
27	1	27,790
27	2	27,790
27	3	27,790
27-28 Ct.	1	17,921
28	1	20,190
28	2	20,190
28	3	20,190
30	1	6,360
30	2	6,360
31	2	17,419
32	2	15,656
33	2	15,656
35	2	55,371
37	2	17,287
38	2	17,427
50	1	7,968
90	1	6,912
91	1	6,912
92	1	60,192
92	2	60,192
92	3	60,192
Total sq. ft. area for South Division		515,765
15	3	20,367
17	3	20,430
21	1	53,325
21	2	49,851
21	3	9,789
Total sq. ft. area for Main Division		153,762
Grand Total		669,527

R. R. Rees - eh  
3-17-42

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PACKARD MOTOR CAR COMPANY  
REPORT ON OUR PAST AND FUTURE USE OF WATER IN CU. FT.

	<u>Harper Main</u>	<u>Harper Main (If cooling towers are installed)</u>	<u>Rest of Plant</u>
1940 year total	18,714,000 cu.ft.		121,140,000 cu.ft
1941 year total	60,526,000 " "		166,068,000 " "
1941 Peak month (Aug.)	16,317,000 " "		18,014,000 " " (Oct)
<u>ESTIMATED</u>			
1942 year total	282,000,000 cu.ft.	102,000,000 cu.ft.	260,000,000 cu.ft
1942 peak day	1,000,000 " "	400,000 " "	1,000,000 " "
1942 peak hour	50,000 " "	20,000 " "	100,000 " "
1943 year total	442,000,000 cu.ft.	142,000,000 cu.ft.	260,000,000 cu.ft
1943 peak day	1,500,000 " "	480,000 " "	1,000,000 " "
1943 peak hour	70,000 " "	23,000 " "	100,000 " "

PACKARD MOTOR CAR COMPANY  
 Plant Engineering Division  
 3-17-42

R. R. Rees - M

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Packard Motor Car Co.  
 Detroit, Michigan  
 (IPS Project 43 B)

1st Ind.

WGR:ljp

War Department, Materiel Division, Production Planning & Engineering Sec.,  
 Plant Expansion Branch, Central Air Corps Procurement District, 8505 West  
 Warren Avenue, Detroit, Michigan, March 18, 1942. To: Assistant Chief,  
 Materiel Division, Wright Field, Dayton, Ohio. Attn: Chief, Industrial  
 Planning Section.

1. The following is in reply to basic communication, subject  
 facility dated March 11th, 1942.

2. Floor Space Covered by Expansion.

a. The proposed expansion involves 660,527 sq. ft. of existing  
 floor area owned by facility as detailed on attached "Area of Existing  
 Packard Buildings to Expand Aircraft Engines to 1,400 Per Month", and  
 indicated on Exhibit "A". This floor space will be made available by  
 rearrangement and rehabilitation.

b. Contrary to paragraph 3h. Type of Buildings, basic communication,  
 the proposal includes a new one-story building designated as Engineering  
 Machine Shop Building. See Exhibit "A". This proposed building having  
 a floor area of 28,431 sq. ft. together with the floor area in facility  
 owned buildings as mentioned in above paragraph 2a, this indorsement,  
 totals 697,958 sq. ft.

3. Estimated Cost.

a. The estimated cost of proposed Engineering Machine Shop Building,  
 installations, Leasehold improvements and Service Costs is \$31,125.  
 The cost includes six test cells. The facility plans to install 20 test  
 cells in the building. A previous expansion provided funds for 10 test  
 cells in new building 24, (See Exhibit "A") but only 26 were installed.  
 The unused funds will be used to install 14 cells of the 20 test cells in  
 proposed building.

b. The estimated cost of rearrangement, rehabilitation, etc of  
 660,527 sq. ft. of floor area in facility owned buildings is \$1,530,206.  
 The facility is not definitely certain, at this time, that the entire  
 floor area will be required for the expansion. Facility has not yet  
 completed detailed machinery layout. Only that floor area definitely  
 required will be rehabilitated.

4. Utilities.

a. Power. Requirements can be adequately supplied by the Detroit  
 Edison Company and facility owned power plant.

IMMEDIATE ACTIONRESTRICTED

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To: Asst. Chief, Wright Field. Industrial Plan. Sec. 3-18-42 WGR:ljp 0

1. Water.

(1) The estimated requirements of the facility for its combined activities is shown by attached "Report on Our Past and Future Use of Water in C. F. P."

(2) New Buildings 22 and 84 (See Exhibit "A") of the Aircraft Division of the facility obtain water supply from 24" Harper Avenue Main which runs along at North end of building 84. The proposed Engineering Machine Shop Building will receive water supply from same main.

(3) In order to overcome unsatisfactory conditions which have developed it is considered necessary to install a 24" Main under Harper Avenue, approximately 2,566 feet in length to connect dead end of existing Harper Avenue main with another supply line. Appendix A, page 7, Schedule II includes an item amounting to \$40,500 to provide for the construction of above main.

(4) Detroit Water Board authorities have been interviewed. They advise that they have studied the matter and are prepared to install the connecting main with funds which are believed to be available. The Board is desirous of having cooperation of the proper authorities in securing priorities covering materials necessary for the construction of the connecting main.

(5) In view of the above, \$40,500 may be deducted from the \$50,125 item in paragraph 2. basic communication.

(6) In the interest of economy in cost of operation and assurance of adequate water supply it is essential that cooling towers be installed. Schedule III, Appendix A, includes two cooling towers; one for existing group of 16 test cells in building 84, and the other for the group of 20 test cells in the proposed Engineering Machine Shop Building.

2. Fuel. Adequate oil and coal supply available from local sources.

3. Transportation. Adequate railroad facilities now exist on facilities generally. Highways are adequate and available for motor transportation.

4. Labor Requirements. Labor supply for the proposed expansion has been given very careful consideration, it is the studied opinion of this office that an adequate supply of labor will be available. It will be necessary, however, for the facility to employ female labor to the extent of about 30% and to institute an extensive training program at an early date.

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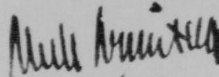
IMMEDIATE ACTION

To: Ass't. Chief, Wright Field. Industrial Plan. Sec. 3-18-42 WGR:ljp

7. Housing. Present housing facilities augmented by housing units now under construction are considered to be adequate.

For the District Supervisor:

CHARLES H. S. RUSSELL  
Major, Air Corps  
Production Planning and  
Engineering Officer



by: MERLE ARMISTICE  
Major, Air Corps  
Ass't. Production Planning  
and Engineering Officer

Incls.  
Exhibit "A"  
Report on Use of Water  
Area of Exist. Packard bldgs.

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IMMEDIATE ACTION

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## PACKARD MOTOR CAR COMPANY

DETROIT MICHIGAN

March 13, 1942

SUBJECT: Plant Protection

TO: Major J. S. Dexter  
Resident Air Corp Factory Representative  
Building #22, Packard Motor Car Company  
Detroit, Michigan

1. At the request of Mr. Morris, I am attaching four prints of our Plant layout on which is indicated in red proposed fence enclosures to give added protection to our main plant in connection with the manufacture of Rolls Royce engines.
2. There are three projects involved, namely:
  - a. The fence enclosing buildings 11, 12, 16, 18, and 22 on the west side of Concord Avenue.
  - b. The fence enclosing buildings 27 and 28 on Bellevue, Concord, and East Grand Boulevard.
  - c. The fence enclosing buildings 7, 8, and 9, as well as our main receiving dock, adjacent and east of the Michigan Central Railroad.
3. In my opinion, the expense of this installation, approximating \$10,000.00, can be carried on the contingency fund provided in Appendix

R. A. Rees  
General Plant Engineer  
Packard Motor Car Company

RRR:M

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*Letter Packard  
to Chief of Air Corps - 29-11/344  
March 18, 1942*

53

OFC:redw

March 18, 1942

Packard Motor Car Company  
Detroit, Michigan

In compliance with orders issued.

Chief, Materiel Division,  
Office, Chief of Air Corps,  
Washington, D. C.

1. To investigate manufacturing methods and practices at the Packard Motor Car Company and to recommend changes therein in the interest of increasing the productive output of this company on Rolls Royce engines on Contract Number W-535-ac-15678, the following report is submitted, covering the period from March 4, 1942, to include March 14, 1942.

2. The undersigned was given to understand prior to departure from Wright Field, Dayton, Ohio, March 3, 1942, that Lt. General Knudsen had visited the Packard Motor Car Company on January 30, 1942. General Knudsen had expressed himself as being concerned over Packard's delay in getting into production on Roll Royce engines. He felt that the addition of personnel from Wright Field to the Packard Plant for a temporary period would be of considerable value in expediting results. Information was requested at that time what tool equipment was delaying the production line. The Aircraft Engine Division of the Packard Motor Car Company compiled a report listing 7,200 items, tool equipment necessary for the production line. A copy of the consolidated report was handed to Lt. General Knudsen and party to be acted upon on return to Washington.

3. Two essential changes pertaining to organization have recently produced effective production increases on the Roll Royce engine. First, the production Vice-President, Mr. G. T. Christopher has been relieved of responsibilities pertaining to the production of marine engines and Packard automobiles and now is devoting his entire attention to the Aircraft Engine Division. The past month changes within the productive leadership have been made and through coordinated effort are continuing to be made. Secondly, Air Corps Inspection Staff had a top side house cleaning. Mr. J. R. Volmar, Inspector in Charge, Mr. D. H. Perry, Assistant Inspector in Charge and Mr. R. M. Webster, Chief Inspector on the production line were relieved by Mr. J. Hedwall, Mr. Mac Donald and B. E. Jones. The changes have proven very satisfactory, has regained the contractors' confidence and the performance was accomplished through diplomatic educational action of the new inspectors.

4. Tool equipment, since the consolidated list of 7,200 items was submitted roughly 50% of the list is in the plant. A revised list of critical items has been submitted to Mr. Carlson representing Mr. Kahala of Detroit

6800 ENCLOSURE

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*Sched Sect - 69-12/13pp*

54

Chief, Materiel Division,  
Office, Chief of Air Corps,  
Washington, D. C.

March 18, 1942

War Production Board. Daily telephone contacts are made by Packard representatives with the War Production Board representative on progress of critical items. The Packard representatives have reorganized the zone area to include an equalization of vendors responsible to each Packard Motor Car Company follow-up representative. An Educational Program has been instigated within the Packard Motor Car Company, to liquidate future needs on the emergency program.

5. The organization of the Packard Motor Car Company seemingly highly trained in automotive engineering must now admit optimism, or lack of appreciation of the necessary expansion to meet the contracted for production schedule. The new major changes within the production organization have magnified existing weaknesses which are, the lack of proper supervision, inadequate trained personnel, this by high percentage existing on the scrap reports, and lack of coordination between some departments as engineering production and inspection, all of which retarded the number of shipped engines.

6. The production line conveyor system is now operating to about 50% capacity with existing personnel. The lack of parts within the bond room proper can be traced daily. Existing shortage of gears seems to be the bottle neck in the productive line; revision of the tooth form on the reduction gear for production has made slow progress. On March 16, 1942, the undersigned contacted T. S. McCrae of Allison Division at Wright Field, and in turn he offered to assist by offering the experiences of Cadillac, General Motors, who are manufacturing Allison gears and have gone through this night-mare of machining practices on the reduction gears. Mr. J. R. Ferguson, engineer on production, Packard Motor Car Company was so informed of this offer to be followed up this week when Mr. T. S. McCrae visits Cadillac for production on Allison engines at which service experience, shop practice and drawings changes on Allison gears will be offered Packard Motor Car Company engineer to use as applicable to the Hool Royce engine.

7. Rejection on cam shafts made by the Muskegon Motor Facilities vendors reached such a peak that a conference was called involving the representatives of the two companies and the Air Corps Inspection Units of the two plants, complete understanding for future operation resulted.

8. The engine tear down and assembly unit is not complete. Tear down of engines are worked on temporary woodhorse and plank lines, new conveyor systems and wash racks will start construction March 22, and be completed sometime in April.

9. Production quantities of engines are showing a surprisingly percentage increase over previous efforts. January - 112 engines, February - 150 engines, and although a weak start in the first five days of March are now showing a daily production schedule shipment of twelve or thirteen engines per day which

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Chief, Materiel Division,  
Office, Chief of Air Corps,  
Washington, D. C.

March 18, 1942

should develop to a current month delivery of at least 100 engine units over the present estimated delivery schedule of 200 for the current month.

10. Conclusions:

- a. There is a need of tool equipment but the tool list as submitted January 30, 1942, has been reduced approximately 50%.
- b. There has been a reorganization of the Packard organization that shows improvement on the production lines.
- c. Training of production and inspection personnel continues but inadequate.
- d. That a change in Air Corps inspection personnel of more experience and diplomacy was necessary.

11. Recommendations:

- a. Temporary change of Air Corps inspection personnel be made permanent.
- b. The War Production Board continue to support the effort made by Packard Motor Car Company tool equipment unit.
- c. The Packard Motor Car Company be given a breathing spell to permit the new organization along with the new Air Corps inspection personnel to display their abilities before new personnel are injected into the production line.
- d. The Materiel Division personnel continue to the fullest extent to assist the Packard Motor Car Company in acquainting their personnel on the Air Corps service procedure.

OSCAR F. CARLSON,  
Lt. Col., Air Corps

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7-42-10M 13

**INDUSTRIAL PLANNING SECTION**  
OFFICE, CHIEF OF SECTION

TO:

<input type="checkbox"/> Col. Schaeberger	Chiefs of all Bns.
<input checked="" type="checkbox"/> Col. Probst	Adm. Br.
<input type="checkbox"/> Mr. Backus	Facil. Br.
<input type="checkbox"/> Miss Clark	Mats. Contr. Br.
<input type="checkbox"/> Miss DeHaven	Mach. Tools Br.
<input type="checkbox"/> Mrs. Royal	Proc. Plan. Br.
<input type="checkbox"/> 2 <i>[Signature]</i>	Qmnts. Br.

FOR:

<input type="checkbox"/> Comment	For Your Information
<input type="checkbox"/> Conference	Necessary Action
<input type="checkbox"/> Coordination	Notation and Return
<input type="checkbox"/> Copies to all Districts	Preparation of Reply
<input type="checkbox"/> Suspend	Signature
<input type="checkbox"/> Notation by Civilians	Notation by Officers

REMARKS:

① I imagine the answer to this is no.

*[Signature]* 1/5/70

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<sup>14</sup>  
Packard

See Colonel Schneeberger about \$780,000.00 item which was approved a month or six weeks ago, one-third for Defense Plant Corporation and two-thirds for the British Government. It is now evident that the British Government is going to back out and the Under Secretary of War wants to know whether Colonel Schneeberger will approve the Defense Plant Corporation taking over the charge.

Also see Colonel Schneeberger about the \$3,000,000.00 or \$4,000,000.00 subcontractor's project in addition to the \$20,000,000.00 lease.

Call me on  
this Harry (Glick)  
Reg. (Nashua)



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**ORIGINAL**

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*Shawhan*

MAR 20 2 30 PM '42

DIVISION HEADQUARTERS  
WRIGHT FIELD

*3-20-42*

*13A-3*



F-866

3-20-42

INDUSTRIAL PLANNING SECTION

ATTENTION: FACILITIES BRANCH

WHAT IS THE STATUS OF THE PACKARD EXPANSION BELIEVED TO BE APPROXIMATELY \$4,000,000 FOR TOOLS SUPPLIERS? REFERENCE IS MADE TO THE PACKARD MOTOR CAR COMPANY EXPANSION FOR A TOOL ROOM IN THE AMOUNT OF \$786,720. IT WAS INTENDED THAT THE BRITISH WERE TO PAY TWO-THIRDS AND THE DEFENSE PLANT CORPORATION ONE-THIRD OF THIS EXPANSION. THE BRITISH HAVE INDICATED TO DEFENSE PLANT CORPORATION THAT THEY ARE UNWILLING TO PAY THEIR TWO-THIRD SHARE. IN THE LIGHT OF THIS DEVELOPMENT, DOES YOUR OFFICE RECOMMEND THAT AN AGREEMENT BE MADE WITH DEFENSE PLANT CORPORATION TO PAY FOR THE WHOLE PROJECT IN THE AMOUNT OF \$786,720?

FACILITIES SECTION

HL

2:26 PM

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MDAC-S-WF-8-28-41-200M

12 BY WES  
TELETYPE MESSAGE

....IND-T-1655

ATTENTION: FACILITIES SECTION

DATE: March 21, 1942 1:30 P.M.  
FROM: R. W. PROBST, COLONEL, A.C.,  
ASST. CHIEF, INDUSTRIAL  
PLANNING SECTION

REFERENCE TELETYPE F-866, DATED 3-20-42, REQUESTING STATUS OF PACKARD EXPANSION BELIEVED TO BE APPROXIMATELY \$1,000,000 FOR SUPPLIERS' TOOLS, IT IS ADVISED THAT RECOMMENDATIONS RELATIVE TO THIS EXPANSION WERE FORWARDED TO YOUR OFFICE IN TELETYPE IND-T-1311, DATED 3-21-42. FURTHER REFERENCE TELETYPE F-866, THE PACKARD MOTOR CAR COMPANY EXPANSION FOR TOOL ROOM IN THE AMOUNT OF \$786,720, ADVISING THAT THE BRITISH HAS INDICATED TO D.P.C. THAT THEY ARE UNWILLING TO PAY THEIR TWO-THIRDS SHARE, AND REQUESTING RECOMMENDATIONS THAT AGREEMENT BE MADE WITH D.P.C. TO PAY FOR THE WHOLE PROJECT IN THE AMOUNT OF \$786,720. THIS OFFICE RECOMMENDS THAT THE FACILITIES ARE NECESSARY FOR THE PURPOSE INTENDED, AND IN THE LIGHT OF THE DEVELOPMENT REFERRED TO IN TELETYPE F-866, THIS OFFICE SEES NO REASON WHY THE AGREEMENT SHOULD NOT BE MADE WITH THE D.P.C. TO PAY THE WHOLE PROJECT, IN THE AMOUNT OF \$786,720.

INDUSTRIAL PLANNING SECTION

(I.P.S. Project No. 13 A-3)

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IND-T-3311 3-21-42  
 FACILITIES SECTION

EXTRA PRIORITY

REFERENCE IS MADE TO TELETYPE IND-T-997, DATED MARCH 7, 1942, WHEREIN IPS PROJECT 43 B FOR PACKARD MOTOR CAR COMPANY WAS RECOMMENDED FOR A TOTAL AMOUNT OF \$20,593,304 TO INCREASE THE OUTPUT TO A TOTAL OF 1400 ROLLS ROYCE MERLIN XX ENGINES PER MONTH. ATTENTION IS INVITED TO THE FACT THAT THIS PROJECT DID NOT INCLUDE ANY MACHINE TOOLS FOR PACKARD'S SUBCONTRACTORS OR THE FORGE DIVISION OF THE PACKARD MOTOR CAR COMPANY.

THIS OFFICE IS IN RECEIPT OF A PRELIMINARY ANALYSIS FROM PACKARD OF THE TOOLS WHICH WILL BE REQUIRED BY ITS ~~WORK~~ SUBCONTRACTORS AND THE PACKARD FORGE DIVISION TO EXPAND THEIR OUTPUT TO MATCH THE NEW EXPANSION AT PACKARD. THE ESTIMATED COSTS ARE AS FOLLOWS:

SUBCONTRACTORS' MACHINERY, EQUIPMENT, ETC.	\$2,869,860
PACKARD FORGE DIVISION MACHINERY, EQUIPMENT, ETC.	442,068
TOTAL	\$3,311,928

THE ESTIMATED OVERALL COST OF THE ADDITIONAL FACILITIES IS BASED UPON PRELIMINARY ANALYSIS OF THE PROJECT AND IS SUBJECT TO CHANGE. THE DEFENSE PLANT CORPORATION LEASE AGREEMENT SHOULD, THEREFORE, NOT EXCEED THE TOTAL OVERALL ESTIMATE.

TWO COPIES OF THE PRELIMINARY APPENDIX A WHICH FORMS THE BASIS OF THIS PROCESSING TELETYPE WILL BE FORWARDED UNDER SEPARATE COVER.

1009

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THIS OFFICE IS IN RECEIPT OF A PRELIMINARY ANALYSIS FROM PACKARD OF THE TOOLS WHICH WILL BE REQUIRED BY ITS ~~OWN~~ SUBCONTRACTORS AND THE PACKARD FORGE DIVISION TO EXPAND THEIR OUTPUT TO MATCH THE NEW EXPANSION AT PACKARD. THE ESTIMATED COSTS ARE AS FOLLOWS:

SUBCONTRACTORS' MACHINERY, EQUIPMENT, ETC.	\$2,869,860
PACKARD FORGE DIVISION MACHINERY, EQUIPMENT, ETC.	442,068
TOTAL	\$3,311,928

THE ESTIMATED OVERALL COST OF THE ADDITIONAL FACILITIES IS BASED UPON PRELIMINARY ANALYSIS OF THE PROJECT AND IS SUBJECT TO CHANGE. THE DEFENSE PLANT CORPORATION LEASE AGREEMENT SHOULD, THEREFORE, NOT EXCEED THE TOTAL OVERALL ESTIMATE.

TWO COPIES OF THE PRELIMINARY APPENDIX A WHICH FORMS THE BASIS OF THIS PROCESSING TELETYPE WILL BE FORWARDED UNDER SEPARATE COVER. PLAN OF FINANCING: DEFENSE PLANT CORPORATION LEASE AGREEMENT AND PLAN IV. IT IS RECOMMENDED THAT THE AMOUNT SET FORTH HEREIN BE SET UP AS PART OF THE LEASE AGREEMENT FOR IPS PROJECT 43 B, THE PACKARD MOTOR CAR EXPANSION TO INCREASE CAPACITY FROM 800 ROLLS ROYCE MERLIN XX ENGINES PER MONTH TO 1400 PER MONTH PROCESSED IN TELETYPE KMX IND-T-997 DATED MARCH 7, 1942, TO BE TRANSFERRED LATER IN INCREMENTS FROM THIS LEASE AGREEMENT TO SEPARATE LEASE AGREEMENTS TO BE SET UP FOR THE VARIOUS SUBCONTRACTORS THEMSELVES UPON THE ~~REXX~~ RECOMMENDATION OF THIS OFFICE.

JUSTIFICATION: THE CONTRACT SECTION UNDER DATE OF FEBRUARY 26, 1942, ISSUED LETTER OF INTENT TO THE PACKARD MOTOR CAR COMPANY TO COVER THE ACQUISITION OF 14,000 ADDITIONAL MERLIN ENGINES AND THAT THE NEGOTIATIONS IN CONNECTION WITH THE CONTRACT TO COVER SAME ARE BEING CARRIED FORWARD ON THE BASIS THAT ADDITIONAL FACILITIES WILL BE NECESSARY TO ENABLE THE COMPANY TO PRODUCE THESE ENGINES AND THAT THE CONTRACT WILL CONTAIN AN ESCAPE CLAUSE.

THE MACHINERY AND EQUIPMENT COVERED BY THIS PROPOSAL WILL ENABLE THE VARIOUS SUBCONTRACTORS AND THE FORGE DIVISION OF PACKARD TO MEET THE INCREASED REQUIREMENTS OF THE PACKARD MOTOR CAR COMPANY FOR THE PRODUCTION OF 1400 ROLLS ROYCE MERLIN XX ENGINES PER MONTH AS PREVIOUSLY OUTLINED. THE COSTS OF MACHINERY AND EQUIPMENT TO BE MADE AVAILABLE FOR PACKARD SUBCONTRACTORS IS AS FOLLOWS:

FEDERAL WOGUL CORPORATION	
DETROIT, MICHIGAN	\$ 3,379
ALLISON DIVISION, G.M.C.	
INDIANAPOLIS, INDIANA	668,782



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CARRIED FORWARD ON THE BASIS THAT ADDITIONAL FACILITIES WILL BE NECESSARY TO ENABLE THE COMPANY TO PRODUCE THESE ENGINES AND THAT THE CONTRACT WILL CONTAIN AN ESCAPE CLAUSE.

THE MACHINERY AND EQUIPMENT COVERED BY THIS PROPOSAL WILL ENABLE THE VARIOUS SUBCONTRACTORS AND THE FORGE DIVISION OF PACKARD TO MEET THE INCREASED REQUIREMENTS OF THE PACKARD MOTOR CAR COMPANY FOR THE PRODUCTION OF 1400 ROLLS ROYCE MERLIN XX ENGINES PER MONTH AS PREVIOUSLY OUTLINED. THE COSTS OF MACHINERY AND EQUIPMENT TO BE MADE AVAILABLE FOR PACKARD SUBCONTRACTORS IS AS FOLLOWS:

## FEDERAL MOGUL CORPORATION

DETROIT, MICHIGAN \$ 3,379

## ALLISON DIVISION, G.M.C.

INDIANAPOLIS, INDIANA 668,782

## LONG MANUFACTURING COMPANY

DETROIT, MICHIGAN 18,268

## CONNECTICUT TELEPHONE COMPANY

MERTON, CONNECTICUT XXX 4,855

## MUSKEGON MOTOR SPECIALTIES

MUSKEGON, MICHIGAN 314,712

## CHICAGO PNEUMATIC COMPANY

DETROIT, MICHIGAN 207,147 207,548

## STEWART-WARNER CORPORATION

DETROIT, MICHIGAN 410,416

## AIRCRAFT FITTING COMPANY

CLEVELAND, OHIO 77,949

## TECUMSEH PRODUCTS COMPANY

TECUMSEH, MICHIGAN 28,777

## THE ADAMS ENGINEERING COMPANY

DUBUQUE, IOWA 22,521

## ALPHA INDUSTRIES

LOGANSPOUT, INDIANA 21,896

## THOMPSON PRODUCTS, INC.

CLEVELAND, OHIO 478,646

## OTHER SUBCONTRACTORS

(UNDETERMINED TO DATE) 369,729

SPECIAL REQUIREMENTS: PACKARD MOTOR CAR COMPANY HAS STATED THAT SOME OF THE SUBCONTRACTORS, NAMELY ALLISON, MUSKEGON MOTOR SPECIALTIES, CHICAGO PNEUMATIC AND THOMPSON PRODUCTS WILL NEED ADDITIONAL FLOOR SPACE FOR THEIR REQUIRED PRODUCTION. IT IS EXPECTED THAT

PROVISION FOR THIS ADDITIONAL FLOOR SPACE WILL BE MADE WHEN THE

THIS PAGE 1

OTHER SUBCONTRACTORS

(UNDETERMINED TO DATE)

369,729

SPECIAL REQUIREMENTS: PACKARD MOTOR CAR COMPANY HAS STATED THAT SOME OF THE SUBCONTRACTORS, NAMELY ALLISON, MUSKEGON MOTOR SPECIALTIES, CHICAGO PNEUMATIC AND THOMPSON PRODUCTS WILL NEED ~~ADDITIONAL~~ ADDITIONAL FLOOR SPACE FOR THEIR REQUIRED PRODUCTION. IT IS EXPECTED THAT PROVISION FOR THIS ADDITIONAL FLOOR SPACE WILL BE MADE WHEN THE VARIOUS INCREMENTS FOR THE COMPANIES INVOLVED ARE PROCESSED. THOMPSON PRODUCTS, INC., AND THE ALLISON DIVISION HAVE BEEN CONTACTED AND THEY ADVISE THAT THEIR EXPANSION AS NOW PRESENTED TO THIS OFFICE DOES NOT INCLUDE THE FLOOR SPACE NECESSARY TO TAKE CARE OF PACKARD REQUIREMENTS. IN ORDER NOT TO DELAY PROCESSING OF THOMPSON AND ALLISON, THEIR PROJECTS WILL BE PROCESSED LESS PACKARD REQUIREMENTS. THE INFORMATION INCLUDED HEREIN IS IN A PRELIMINARY STAGE AS SUBMITTED BY REPRESENTATIVES OF PACKARD MOTOR CAR COMPANY AD XXX AND IN THE EVENT OF ANY CHANGES YOUR OFFICE WILL BE NOTIFIED. AS SOON AS INFORMATION REGARDING THE TOOLS RECOMMENDED HEREIN IS COMPLETE ENOUGH TO SET UP ~~AN~~ AN INDIVIDUAL APPENDIX A FOR EACH SUBCONTRACTOR, YOUR OFFICE WILL BE NOTIFIED AND REQUEST WILL BE MADE TO TRANSFER THE FUNDS FROM THE SUBJECT PROJECT 45 B-1 TO SEPARATE PROJECTS AND LEASES FOR THE SUBCONTRACTOR. ATTENTION IS INVITED TO THE NECESSITY FOR THE SUBJECT COMPANY TO PLACE ORDERS NOT LATER THAN APRIL 1 FOR ALL THESE MACHINE TOOLS SINCE DELIVERY BY XXX OF THEM IS REQUIRED NOT LATER THAN THE END OF 1942.

THIS OFFICE HAS REGULARLY RECOMMENDED DISTRIBUTION OF COSTS FOR THESE PACKARD ENGINE PROJECTS ON THE BASIS OF ONE-THIRD PRORATED TO U. S. GOVERNMENT AND TWO-THIRDS TO THE ~~BRITISH~~ BRITISH GOVERNMENT. HOWEVER, IN VIEW OF TELETYPE F-886, 3-20-42, ON THIS SUBJECT, THE PRORATION OF COSTS ~~NO LONGER~~ LONGER EXISTS. THIS OFFICE, THEREFORE, RECOMMENDS THIS PROJECT IN TOTO AS NECESSARY FOR INCREASING THE CAPACITY OF THE PACKARD MOTOR CAR COMPANY FOR PRODUCTION OF THE ROLLS ROYCE MERLIN ENGINES AT THE RATE OF 1400 UNITS PER MONTH.

RECOMMENDATIONS: IT IS RECOMMENDED THAT APPROVAL OF ALL AGENCIES CONCERNED ~~BE~~ BE OBTAINED TO THIS INCREASE IN THE AMOUNT OF \$3,317,928 IN ORDER THAT FUNDS ~~MAY~~ MAY BE ALLOCATED AND THIS OFFICE AUTHORIZED TO PROCEED WITH FINAL NEGOTIATIONS WITH THE COMPANIES.

TECHNICAL EXECUTIVE

MK

2:50 PM

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

March 24, 1942

Via: Air Corps Resident Representative

To: Assistant Chief, Materiel Division  
Wright Field  
Dayton, Ohio

Attention: Industrial Planning Section 90-4

Subject: Expansion of Facilities at Detroit, Michigan  
(IPS Project Number 43-B)

(1) In order to eliminate a situation whereby one of our project buildings would be partially owned by the United States and British governments, with equipment therein that would be partially owned by the two governments, and located on land owned by this company, it has been proposed, and is agreeable to the British government, that a portion of the funds which they advanced for equipment in connection with Appendix "A," dated July 15, 1941, be used to pay for the items listed in Schedule II, Appendix "A," submitted February 28, 1942, as follows:

(a) Buildings	\$ 597,950.00
(b) Building Installations (Not Mechanical)	68,425.00
(c) Leasehold Improvements	96,050.00
(d) Service Costs	16,700.00
	<hr/>
	\$ 581,125.00
	<hr/>

(2) It is proposed, therefore, that equipment in the amount of \$581,125.00, which was to have been paid for by the British government, be included in Appendix "A," dated February 28, 1942, by increasing Schedule III-(a) by \$581,125.00 and decreasing Schedules II-(a) to II-(d), inclusive, by a like sum.

(3) To accomplish what has been set forth in paragraphs (1) and (2), we are attaching for your consideration the following revised sheets in connection with Appendix "A," dated February 28, 1942, in the amount of \$20,599,304.00:

67.

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Page #2.

To: Assistant Chief, Materiel Division

March 24, 1942

Index

Sheet Nos. 3, 5, 19, 22, 25 and 31

PACKARD MOTOR CAR COMPANY

*J. W. Raisbeck*  
J. W. Raisbeck  
Chief Accountant  
Aircraft Engine Division

JWR:hmh



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*Paden*  
 Att: Industrial Planning  
 Section 90-4

WAC:vmh

March 27, 1942

SUBJECT: Expansion of Facilities at  
 Detroit, Michigan  
 (IPS Project Number 43 B)

TO: Packard Motor Car Company  
 Aircraft Motor Division  
 Detroit, Michigan

Attention: Mr. James Marks

1. Reference is made to your letter dated March 24, 1942, with enclosures of revised sheets of Appendix "A", subject expansion, in connection with the transfer of funds in the total amount of \$531,125 from Schedule II to Schedule III.

2. For your information the above-mentioned transfer of funds has been approved by this office, and your revised Appendix "A" incorporating these changes is now awaiting distribution.

For the Commanding General, Army Air Forces, Materiel Center:

*James Shawhan*  
 James Shawhan,  
 Major, Air Corps  
 for P. Schneeburger,  
 Colonel, Air Corps  
 Chief, Industrial Planning Section.

DATE
CHIEF, DIV.
TECH. EXC.
ADM. EXC.
C. O.
BUD. OFF.
EXP. ENG.
PROD. ENG.
CONTRACT
INSP.
MAINT. COMM.
I. P. S. W. G. C.
OTHERS

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CITY OF DETROIT  
DEPARTMENT OF WATER SUPPLY

March 24, 1942

Mr. F. R. Rees  
General Plant Engineer  
Packard Motor Car Company  
Detroit, Michigan

Dear Sir:

Relative to the construction of a 24" water line on Harper Avenue extending from your plant easterly along Harper to connect with our Sheridan Avenue main, I beg to submit the following:

We believe this main to be highly essential for the operation of the Rolls Royce plant of the Packard Motor Company. Not only will this eliminate the dead end condition in the present main with its attendant unreliability, but will also give added and better supply. Not only is this important from the standpoint of certainty of supply for your operations with improved pressure and flow conditions but also we believe it would be highly important from the standpoint of fire protection.

We have no funds to build this line. We exhausted funds of this department in providing for needs of defense plants in and around Detroit, not the least of which expenditure was that to supply water to your company and improve fire fighting facilities around the Packard Motor plant on which we spent better than \$350,000.

We have asked for the construction of this line as an item in our Defense Public Works project. However, this project was cut from our request of about 1,670,000 to 1,297,000. In the letter from Mr. Kennicott, Regional Engineer of the Defense Public Works Division as of date of March 10, Mr. Kennicott advised that the United States Health Service approved all of the items in our request with the exception of our number 3 which is the line on Harper Avenue to serve your plant. While the line is not specifically eliminated from the request, nevertheless, with the increased prices and the cut appropriation we see no opportunity to build this line unless the appropriation is augmented. We must take care of certain other work which has long been neglected first and hence

(continued)

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I can not say as to whether the Harper Avenue line can or will be constructed under Defense Public Works project and if it is possible eventually to do so, certainly it would be among the last. Under the reduced appropriations it is highly probable we must eliminate certain work which is desirable but for which funds thus far appropriated do not seem to be available.

It is my earnest suggestion that if you desire this line to be built anywhere in the near future, you find some other source of financing by reasons above mentioned. Further, for the same reasons it is highly problematical whether we will be able at any time to complete this work as a Defense Public Works project owing to the cut in funds and the great uncertainty as to whether this cut in funds will be restored.

Yours truly,

L. C. Benhardt  
General Manager



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W-201-4210M

INDUSTRIAL PLANNING SEC. JN  
OFFICE, CHIEF OF SECTION

TO:

- |  |   |
|--|---|
| <input type="checkbox"/> Col. Schneeberger | <input type="checkbox"/> Chiefs of all Bns. |
| <input type="checkbox"/> Col. Propst       | <input type="checkbox"/> Adm. Br.           |
| <input type="checkbox"/> Mr. Backus        | <input type="checkbox"/> Facil. Br.         |
| <input type="checkbox"/> Miss Clark        | <input type="checkbox"/> Mats. Contr. Br.   |
| <input type="checkbox"/> Miss DeHaven      | <input type="checkbox"/> Mach. Tools Br.    |
| <input type="checkbox"/> Mrs. Rossi        | <input type="checkbox"/> Proc. Plan. Br.    |
| <i>L. M. Clark</i>                         | <input type="checkbox"/> Rqmts. Br.         |

FOR:

- WGC-3-25-42*
- |  |   |
|--|---|
| <input type="checkbox"/> Comment                 | <input type="checkbox"/> For Your Information |
| <input type="checkbox"/> Conference              | <input type="checkbox"/> Necessary Action     |
| <input type="checkbox"/> Coordination            | <input type="checkbox"/> Notation and Return  |
| <input type="checkbox"/> Copies to all Districts | <input type="checkbox"/> Preparation of Reply |
| <input type="checkbox"/> Suspend                 | <input type="checkbox"/> Signature            |
| <input type="checkbox"/> Notation by Civilians   | <input type="checkbox"/> Notation by Officers |

REMARKS:

*Accident Letter sent  
to District requesting  
that matter be held  
in abeyance until that  
matter is resolved  
below.*

*WGC  
3-26-42*



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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

March 21, 1942

ARMY OFFICE	
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13	

Via: Air Corps Factory Representative  
To: Assistant Chief, Materiel Division  
Wright Field  
Dayton, Ohio

Attention: Industrial Planning Section 99-4

Subject: Expansion of Facilities at Detroit, Michigan  
(IPS Project Number 43 B)

(1) Your letter of March 19, 1942 with respect to the reduction of \$44,550 is acknowledged.

(2) We do not believe it is advisable to make this reduction until such time as the Detroit Water Board has issued a letter to us indicating its intention to take care of this particular item. It is our understanding that the Detroit Water Board is short of funds and we believe you will agree that it would not be good business policy to assume that this additional work would be taken care of without being officially approved by the Detroit Water Board.

(3) Such a letter has been requested, but none has been received to date.

(4) Your further thoughts on this matter will be appreciated.

PACKARD MOTOR CAR COMPANY

*J. W. Reilsbeck*  
J. W. Reilsbeck  
Chief Accountant  
Aircraft Engine Division

JWR:cmh

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12 30  
3 31 MAR 31 12 16 PM '42

DIVISION HEADQUARTERS  
WRIGHT FIELD



7-302 3-31-42  
INDUSTRIAL PLANNING SECTION  
ATTENTION - FACILITIES BRANCH  
CUM (12)

LEWIS) ADVISED THAT 193 PROJECT 43E, PACKARD MOTOR CAR  
COMPANY, DETROIT, MICHIGAN, CONTAINS PROVISIONS FOR AN ALUMINUM FORGE  
SHOP. IN ACCORDANCE WITH AGREEMENT BETWEEN ALUMINUM & MAGNESIUM  
BRANCH, THE PRODUCTION BOARD, AND AIRCRAFT SCHEDULING UNIT, FACILITIES  
FOR FABRICATING ALUMINUM THROUGH THE STAGES OF ROLLING, DRAWING, EX-  
TRUSION, CASTING, FORGING, ETC., WILL BE STUDIED AND NEEDED EXPANSION  
SERVICES BY THAT BRANCH. WHEN IT APPEARS DESIRABLE TO THE INTERESTED  
SERVICES FOR ALUMINUM FABRICATING FACILITIES TO BE MADE AN INTEGRAL PART OF  
AN AIRFIELD OR ENGINE PLANT, THE RECOMMENDATION WILL BE MADE TO THE  
ALUMINUM & MAGNESIUM BRANCH SO THAT THERE CAN BE PROPER COORDINATION WITH  
THE OTHER FACILITIES FOR SIMILAR FABRICATING WHICH WILL BE ARRANGED  
BY ALUMINUM & MAGNESIUM BRANCH. IT IS THEREFORE DIRECTED THAT IN THE  
CASE OF PACKARD OR ANY OTHER EXPANSION INVOLVING ALUMINUM FORGING OR  
CASTING FACILITIES, THAT THESE BE MADE THE SUBJECT OF A SEPARATE

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ORIGINAL

THIS PAC

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7-2 30  
3-31 MAR 31 12 16 PM '42

DIVISION HEADQUARTERS  
WRIGHT FIELD



1-362 3-31-42  
INDUSTRIAL PLANNING SECTION  
ATTENTION - FACILITIES BRANCH  
CLOS (48)

LETTER ADVISED THAT IPS PROJECT 43B, PACKARD MOTOR CAR COMPANY, DETROIT, MICHIGAN, CONTAINS PROVISIONS FOR AN ALUMINUM FORGE SHOP. IN ACCORDANCE WITH AGREEMENT BETWEEN ALUMINUM & MAGNESIUM BRANCH, AIR PRODUCTION BOARD, AND AIRCRAFT SCHEDULING UNIT, FACILITIES FOR FABRICATING ALUMINUM THROUGH THE STAGES OF ROLLING, DRAWING, EXTRUSION, CASTING, FORGING, ETC., WILL BE STUDIED AND NEEDED EXPANSION PROVIDED BY THAT BRANCH. WHEN IT APPEARS DESIRABLE TO THE INTERESTED SERVICES FOR SUCH FABRICATING FACILITIES TO BE MADE AN INTEGRAL PART OF AN AIRFRAME OR ENGINE PLANT, THE RECOMMENDATION WILL BE MADE TO THE ALUMINUM & MAGNESIUM BRANCH SO THAT THERE CAN BE PROPER COORDINATION WITH THE OTHER AIRCRAFT SCHEDULING AGENCIES WHICH WILL BE ARRANGED BY ALUMINUM & MAGNESIUM BRANCH. IT IS THEREFORE DIRECTED THAT IN THE CASE OF PACKARD OR ANY OTHER EXPANSION INVOLVING ALUMINUM FORGING OR CASTING FACILITIES, THAT THERE BE MADE THE SUBJECT OF A SEPARATE PROCESSING ION WHICH WILL BE TRANSMITTED TO THE ALUMINUM AND MAGNESIUM BRANCH. THESE WILL NOT BE INCLUDED IN THE PROCESSING ION FOR THE FACILITIES PROPOSAL.

70

PLEASE EXPEDITE REPLY AS TO THE EXTENT OF THE ALUMINUM FORGE SHOP IN THE PACKARD PROPOSAL.

INDUSTRIAL SECTION

12

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WP-12-22-41-500M

**CONFIDENTIAL**INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel DivisionWright Field, Dayton, Ohio  
Date: Apr 11 26 1942TO: Chief, Facilities Branch, J.A.G.S.  
Contract Section  
Wright Field

AMH:vdh

SUBJECT: Plant Protection  
Packard Motor Car Company  
Detroit, Michigan

43A

1. Reference is made to your Inter-office Memorandum dated February 17, 1942, subject as above. This matter was referred to the Supervisor, Central Procurement District, by Inter-office Memorandum from this office dated February 24, 1942, to which replies have been received by intercom and exhibits as hereinafter listed.
2. It is noted that inclosure number 1, letter of March 13, 1942 from Packard to the Air Corps Resident Representative describes the projects involved and sets forth the opinion that the expense of the installation regarding fencing can be carried on through the contingency fund provided in Appendix "A". It is the opinion of this office that, through the instructions issued by the Commanding General, Materiel Center, December 26, 1941, to the District Supervisor, and then through the further fact that various plants which are being rehabilitated, renovated and reorganized to provide facilities for production in the interest of the Army Air Forces have been permitted to include the cost of anti-sabotage measures which are directed by Air Plant Protection Control, the fencing desired by Packard, either about its privately owned or its Defense Plant Corporation facilities, would be permissible. The wire guards desired on the exterior windows of the main power house on the north, east and west elevations would come in the same category, and consequently the total expenditure involved would be \$16,047.00, which sum would consume all of the contingency amount in Schedule II and a portion of the contingency amount in Schedule III.

- 1 -

**CONFIDENTIAL**

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MDAC-208-WP-12-52-61-500M

**CONFIDENTIAL**

INTER-OFFICE MEMORANDUM  
 WAR DEPARTMENT, AIR CORPS  
 Office, Assistant Chief  
 Materiel Division

Wright Field, Dayton, Ohio

Date: April 4, 1942

TO: Chief, Facilities Branch  
 Contract Section

SUBJECT: Plant Protection  
 Packard Motor Car Company  
 Detroit, Michigan

3. It is requested that your office render an opinion as to the propriety of the action involved, in order that Packard may be informed as to the steps to be taken in the provision of this facility protection. It is further requested that all inclosures herewith be returned to this office.

Romer Shavhan  
 Major, Army Air Forces  
 for  
 P. Schmeisberger  
 Colonel, Army Air Forces  
 Chief, Industrial Planning Section

## 14 Enclosures:

- Encl. #1 - 3 cys 4th Ind. SJH:km, 3-26-42
- Encl. #2 - 3rd Wrapper Ind. SJH:mb, 3-23-42
- Encl. #3 - 1st Ind. SJH:km, 3-4-42
- Encl. #4 - Ltr. fr Chf, IPS to C.P.D., 22621-42
- Encl. #5 - 4 cys ltr. fr R.R.Rees to A.C.R.R., 3-13-42
- Encl. #6 - ICM fr Chf., Contract Section to Chf, IPS, 2-17-42
- Encl. #7 - 1st Ind. SJH:kk 2-5-42
- Encl. #8 - 2nd Ind. EAW:mdg, 2-7-42
- Encl. #9 - Ltr fr BCB:ing to A.C.R.R., 2-24-42
- Encl. #10- Meeting Minutes No. 3
- Encl. #11- Memo fr. R.R.Rees to B.G.Budd, 1-20-42
- Encl. #12- Ltr B.G.Budd to D.P.G., 1-23-42
- Encl. #13- Ltr. A.C.Boddie to Mr. Budd., 1-20-42
- Encl. #14- Plot Plan, Packard

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OAC-246-WF-9-28-41-8895

**CONFIDENTIAL**  
**INTER-OFFICE MEMORANDUM**  
 WAR DEPARTMENT, AIR CORPS  
 Office, Assistant Chief  
 Materiel Division

RCH:mos

Wright Field, Dayton, Ohio

Date April 8, 1942

TO: Industrial Planning Section  
 Wright Field

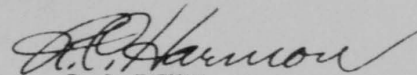
Attention: Major A. W. Harris

SUBJECT: Plant Protection  
Packard Motor Car Company  
Detroit, Michigan

43A 3

1. This memorandum is in response to your memorandum of April 4, 1942, concerning the above subject.

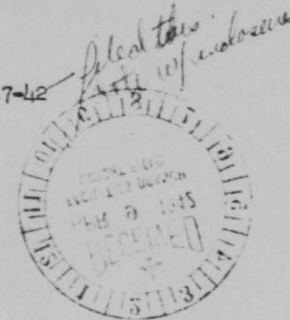
2. It is the opinion of this office that funds set up in the Defense Plant Corporation Lease Agreement may be used to provide necessary plant protection measures for the property owned by the Defense Plant Corporation and for property owned by the contractor and used in the performance of Government contracts but that such funds may not be used to provide plant protection measures for the plant owned by the British Government unless said plant has been taken over by the Defense Plant Corporation. All inclosures listed in your memorandum of April 4, 1942, are hereby returned.



R. C. HARMON  
 Major, J.A.G.D.  
 Chief, Facilities Branch, J.A.G.D.

## 14 Inclosures:

- 1-3 cys. 4th Ind. SJH:km, 3-26-42
- 2-3rd Wrapper Ind. RJM:nb, 3-23-42
- 3-1st Ind. SJH:km, 3-4-42
- 4-Ltr. fr. Chf., IPS to C.P.D., 2-24-42
- 5-4 cys. ltr. fr. RR Rees to A.C.R.R., 3-13-42
- 6-IOM fr. Chf., Facilities Br., J.A.G.D. to Chf. IPS, 2-17-42
- 7-1st Ind. SJH:bk 2-5-42
- 8-2nd Ind. EAW:mdg, 2-7-42
- 9-Ltr. fr. BCB:mg to A.C.R.R., 2-24-42
- 10-Meeting Minutes No. 3
- 11-Memo. fr. R.R.Rees to B.C.Buud, 1-20-42
- 12-Ltr. B.C.Budd to D.P.C., 1-23-42
- 13-Ltr. A.B.Boddie to Mr. Budd, 1-20-42
- 14-Plot Plan, Packard



Signature .....

**CONFIDENTIAL**

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**CONFIDENTIAL**

Att: Industrial Planning  
Section  
90-4

April 11, 1942

AWH:vdh

**SUBJECT:** Plant Protection  
Packard Motor Car Company  
Detroit, Michigan

**TO:** Packard Motor Car Company  
Detroit, Michigan

Attention: Mr. B. C. Budd

1. Reference is made to your letter of January 24, 1942, subject as above, which enclosed a statement of expected costs in the sum of \$12,000.00 for protective fencing, and an additional sum of \$6,047.00 for the installation of wire guards on your main power plant. This letter with its attachments was forwarded to this office through the Facilities Branch, Contract Section, Wright Field. Receipt is also acknowledged of your letter of March 13, 1942 to the office of the Supervisor, Central Procurement District, which states that in the opinion of Mr. R. R. Reed, General Plant Engineer, the expense of this installation, approximately \$12,000.00, can be carried on the contingency fund provided in your Appendix "A".

2. Provided that only those properties that are engaged in the performance of Government contracts are involved, you are herewith authorized to provide the necessary plant protection measures heretofore requested and as described above, and to defray the costs of same from contingency funds supplied in the amendment to Planer 1, IPS Project Number 43-A-3.

For the Commanding General, Army Air Forces, Materiel Centers

Romer Shanhan  
Lt. Colonel, Army Air Forces  
for  
P. Schneeberger  
Colonel, Army Air Forces  
Chief, Industrial Planning Section

DATE
CHF. DIV.
TECH. EXC.
ADM. EXC.
C. O.
BUD. OFF.
EXP. ENG.
PRUD. ENG.
CONTRACT
INSP.
MAINT. COM.
I. P. S. C. E.

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

April 17, 1942

ARMY OFFICE	
APPROVED	
CONSIDERED IN	
NO COMMENT	4/19 HFB

VIA: Army Air Forces Resident Representative

SUBJECT: Extension of 24" Water Main

TO: Major Roser Shawhan  
Army Air Forces Material Division  
Wright Field  
Dayton, Ohio

Attention: Industrial Planning Section

1. Reference is made in your letter of March 19, 1942 to Appendix "A", submitted to Wright Field on February 20, 1942 in the amount of \$20,595,304.00.
2. This schedule was revised in our letter of March 24, 1942 to Wright Field, in which \$51,127.00 was transferred from schedule #2, covering the new buildings and building installations, to schedule #3. The new buildings and building installations of which the water extension is a part are now to be borne by the British Purchasing Commission.
3. As a matter of record, however, I refer you to copy of letter received March 21, 1942 from the City of Detroit, Department of Water Supply, in which they state that no funds are available for this water extension, nor is it to be expected that the City will bear this installation if and when it becomes necessary.

*R. J. Harris*  
 R. J. Harris  
 Chief Plant Engineer  
 Packard Motor Car Company

RMH:  
 CC:  
 Mr. J. W. Harbo  
 Mr. J. W. Faisbeck

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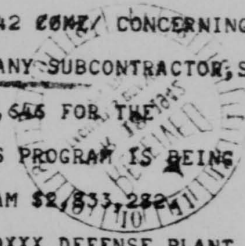
WA 459 MATL COMMAND HAAR WASH DC 4-17-42 8/05 PM



F-TWX-163

PRODUCTION INDUSTRIAL PLANNING SECTION  
ATTENTION FACILITIES BRANCH ✓

REFERENCE IS MADE TO TELETYPE IND-T-1311 DATED 3/21/42 ~~CONF~~ CONCERNING  
IPS PROJECT NO. 43-B FOR THE PACKARD MOTOR CAR COMPANY SUBCONTRACTOR'S  
PROGRAM. THE OUSW ZXXX ADVISES THAT AN ITEM OF \$478,646 FOR THE  
THOMPSON PRODUCTS COMPANY INCLUDED IN THIS SUPPLIER'S PROGRAM IS BEING  
DELETED, MAKING THE NET COST OF THE SUPPLIER'S PROGRAM \$2,833,282.  
REQUEST VERIFICATION OF THE ABOVE SO THAT OUSW AND DDXX DEFENSE PLANT  
CORPORATION MAY PROCEED WITH NEGOTIATIONS FOR LEASE AGREEMENTS.  
RESOURCEDS DIVISION



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WA 459 MATERIEL COMMAND HAF WASH DC 5-7-42 8/20 PM ENT HL

P-TWX-364-MMH

PRODUCTION INDUSTRIAL PLANNING SECTION

FACILITIES BRANCH

TAKEOUT LETTERS HAVE BEEN SIGNED FOR THE FOLLOWING EXPANSIONS----

PACKARD MOTOR CAR COMPANY, DETROIT, MICHIGAN, IPS PROJECT 43 B, IN  
THE AMOUNT OF \$23,426,586.,

TERNSTEDT MANUFACTURING DIVISION, FISHER BODY, GMC, DETROIT, MICHIGAN  
IPS PROJECT 49D, IN THE AMOUNT OF \$2,567,645.,

A. C. SPARK PLUG DIVISION, GMC, FLINT, MICHIGAN IPS PROJECT 162 D,  
IN THE AMOUNT OF \$1,679,186.

RESOURCES SECTION

TAKEOUT LETTER INCLUDES 43 B and 43 B-1 WHICH AMOUNTS  
TO \$23,905,232. BALANCE OF AMOUNT IN TAKEOUT LETTER WAS  
FOR THOMPSON PRODUCTS WHICH COMPANY DID NOT ACCEPT SUB-  
CONTRACTING.

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**PACKARD MOTOR CAR COMPANY**

DETROIT MICHIGAN

May 13, 1942

430 1554

Via: Army Air Forces Resident Representative

SUBJECT: Plant Protection

To: Commanding General  
 Army Air Forces, Material Center  
 Wright Field  
 Dayton, Ohio  
 Attention: Romer Shawhan  
 Industrial Planning Section

ARMY OFFICE	
APPROVED	
CONCURRED IN	
NO COMMENT	<i>[Signature]</i>

1. - Reference is made to your letter of April 11, 1942, addressed to Mr. B. C. Budd, regarding Plant Protection.
2. Such additional fencing as is deemed necessary by our Plant Protection Committee, consisting of representatives of the Army Air Corps, Defense Plant Corporation, and Packard Officials, will be installed and the expense borne from funds provided in Appendix "A".
3. The matter of wire screen guards for the Main Power Plant windows is still under consideration; and if and when the proper plan is agreed upon, this project will also be taken care of in the same manner.

*[Signature]*  
 R. K. Rees  
 General Plant Engineer  
 Packard Motor Car Company

RRR:M  
 CC:-  
 Mr. B. C. Budd

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**RESTRICTED**

June 24, 1942

MEMORANDUM FOR: Col. F. M. Hopkins, Jr.

SUBJECT: Packard Motor Car Company Tool Room Facilities

1. Reference is made to your request dated June 22, 1942, for information regarding facilities for the Packard Tool Room, the estimated cost of which is \$786,720.
2. Defense Plant Corporation and Packard have executed an amendatory agreement dated April 15, 1942, providing for an increase in the amount of Plancon #1 by \$262,240, one-third of the estimated cost of the Tool Room facilities, and it is understood that the British have agreed to supply the remaining two-thirds.
3. There is no Takeout Letter in connection with this project, Defense Plant Corporation, however, being protected by the payment of rental by the War Department to Packard under a supply contract and the payment of such rental by Packard to Defense Plant Corporation.

SIGNED

FRANKLIN T. HAMMOND, JR.  
Major, AUS  
Special Legal & Liaison Division

RECEIVED  
JUN 25 1942  
MAY 50 BW 5:13

WOOD ENGRS REC

**RESTRICTED**

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Ref: WLN/hr 90-4-1  
June 29, 1942 10:00 A. M.

SUBJECT: Packard Motor Car Company, Detroit, Michigan - IPS Project 43 B.

1. Mr. Marsh, subject company, telephoned Major Winston and stated that he had been having quite a bit of trouble in getting clearance on certain items of Machinery and Equipment, which were vitally needed for additional production of spares; that he had been to everybody concerned; that representatives of Romaine's office, Col. Osborne's office, and Central District had been in his plant, and that he still did not know whether he would get this Machinery and Equipment, or when he would get any additional Machinery and Equipment.

2. He stated that out of 1,700 machines which he had in his Appendix A to increase production from 800 to 1,400 engines per month there were 24 critical items which he needed to increase production immediately and produce necessary spares, and 37 critical items which he needed for camshaft production, making a total of 121 critical machines which he needed immediately.

3. Major Winston stated that he would investigate the matter, but as long as it was out of the jurisdiction of this office he would not promise any action whatsoever concerning it. (Major Winston then called Col. Osborne and requested that he take necessary action to investigate this matter and to determine the justice of Mr. Marsh's representations.)

  
WALTER L. WINSTON  
Major, Army Air Forces

RS 6/30

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11/12/42  
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JLB:vwpr90-4-3  
September 2, 1942Project  
#43 B-3SUBJECT: Packard Motor Car Company  
Detroit, Michigan

1. Mr. W. M. Packer, Vice President, and Mr. G. W. Requarth, representative of subject company, called at the Facilities Branch on September 1, 1942 at 4:30 p.m. and were referred to Major Bowling for an interview.

2. Mr. Packer explained that he had been attending conferences with General Doolittle and other Air Corps officers in Washington regarding the Rolls-Royce Merlin Engine, Type 1650-3, being manufactured by Packard with revised superchargers which have recently been tested in England for stratosphere flying. The proceeding was heard by the Joint Aircraft Committee and it was marked Case No. 1850. All papers and reports were sent to Wright Field and Mr. Packer and his associates have spent the past two days at Wright Field with the Power Plant officers and were with General K. B. Wolfe and Colonel O. R. Cook yesterday afternoon. They have received authority to proceed, at the earliest practicable date, with the manufacture of this new revised engine, Type 1650-3, with revised superchargers. The production schedule has been planned thusly:

- a. One motor per day beginning March 1, 1943.
- b. Five motors per day beginning April 1, 1943.
- c. Eight motors per day beginning May 1, 1943, and thereafter the schedule will be stepped up.

3. Mr. Packer has not received his contract, or letter of intent, but has been authorized to proceed, making his arrangements without delay. Mr. Packer states that Colonel Cook, Chief, Production Engineering Section, will issue a letter to the Chief, Facilities Branch, September 2 as authority for the machinery and equipment, Schedule III, that will be required to handle this expansion. No additional land or buildings will be required. All machinery and equipment will be located in Building No. 2 of the Packard Plant. However, there probably will be such items as electric fixtures and concrete foundations to be provided for certain types of machines.

4. Mr. Packer gave Major Bowling a list of the machines they will need at once. Said list dated August 26, 1942 and consists of four sheets. He further stated that General Wolfe and Colonel Cook have insisted that these machines be obtained and delivered to Packard so that production can commence not later than November 1, 1942. He also requested that Major Bowling advise

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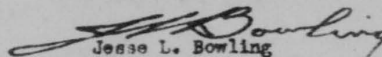
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Packard Motor Car Co.  
September 2, 1942

him by telephone today after checking with Colonel Osborne as to the probable dates that the machines can be obtained, in order for them to arrange their production schedule accordingly. Mr. Packer, in turn, will advise General Wolfe and Colonel Cook. Major Bowling gave Mr. Packer revised forms of Appendix A and Application and went over the changes that have been made in this new revised Appendix. Mr. Packer stated he would start to prepare the Appendix immediately for the necessary requirements to meet this production.

  
Jesse L. Bowling  
Major, Air Corps

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COPY

SEE LOG TO IPS - ABU:R:70-A  
9-17-42

E-567

9-12-42

TECHNICAL EXECUTIVE

ATTENTION: BRIG. GENERAL K. B. WOLFE

REFERENCE TELETYPES E-469, 9-7-42, DY-78, 9-7-42, PES-T-1103, 9-6-42, PES-T-755, 9-1-42, AND PROD-T-413, 8-28-42. APPARENTLY THE INDUSTRIAL PLANNING SECTION HAVE CONTACTED PACKARD WITH THE INTENTION OF DELAYING DELIVERY OF SOME OF THEIR MACHINE TOOLS ON THE BASIS THAT PACKARD WERE AHEAD OF THEIR SCHEDULE. IN VIEW OF THE URGENCY OF THE PACKARD MERLIN 61 PROJECT, AND NEED OF EXPANSION OF PACKARD PRODUCTION FROM 1400 PEAK IN JUNE 1942 TO 2000 PEAK AT EARLY IN 1943, IMMEDIATE STEPS SHOULD BE TAKEN TO STRAIGHTEN OUT THEIR MACHINE TOOL REQUIREMENTS FOR THE MERLIN 61 DEVELOPMENT AND THE EXPANSION PROJECT.

ASST. CHIEF OF STAFF (P)

HL

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September 14, 1942

Packard  
Proj  
43B-3

Via: AAF Resident Representative

To: Commanding General  
AAF, Materiel Center  
Wright Field  
Dayton, Ohio

Attention: Colonel Phillip Schneeberger

Subject: Appendix A for Equipment and Facilities  
for V-1650-3 Engines

1. As result of experimental and engineering cooperation between the Engineering Section of the AAF at Wright Field and our engineers, we have developed an improvement in the Packard-built Merlin Rolls-Royce engine whereby there is incorporated a two-speed two-stage supercharger with attendant changes in the engine which results in better engine performance so that the engine will deliver higher power at substantially greater altitudes.

2. We have been instructed through a telegram from the Production Division, Wright Field, dated September 5, 1942, to prepare a list of machine tools necessary to convert 225 engines of the present V-1650-1 to V-1650-3 which is the designation for the engine with the improved supercharger. This telegram reads as follows:

"REQUEST THAT YOU PREPARE LIST OF MACHINE TOOLS NECESSARY TO CONVERT 225 ENGINES FROM YOUR PRESENT SCHEDULE 1650-1 TO 1650-3 ENGINES. THIS LIST WITH PERTINENT DATA THEREON SHOULD BE SUBMITTED TO INDUSTRIAL PLANNING SECTION PRODUCTION DIVISION MATERIEL CENTER AS SOON AS PRACTICABLE IN ORDER THAT NECESSARY PROCESSING OF SUCH REQUEST CAN BEGIN. LEAD EVERY EFFORT TO EXPEDITE IT. IN ADDITION TO THIS HAVE CONTRACT SECTION IMMEDIATELY NEGOTIATE FOR 2000 - 3."

3. Further, we have contacted the AAF Materiel Center, Contract Section and have received from them under date of September 8, 1942 a letter of some length on the same subject which is intended to authorize the preliminary contract work as requested in the above paragraph, and this is the subject of negotiation between us and the Contract Section at the present time.

4. As result of this we are presenting herewith the preliminary data

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Page 2. 41

To: Commanding General  
AAF, Wright Field  
Dayton, Ohio

September 14, 1942

requested in the above paragraph quoting the telegram.

PACKARD MOTOR CAR COMPANY

J. W. Raisbeck  
Chief Accountant  
Aircraft Engine Division

JWR:msk

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# PACKARD MOTOR CAR COMPANY

DETROIT MICHIGAN

September 16, 1942

APPROVED	
CONCURRED IN	
NO COMMENT	9/17/42 HRC

Via: AAF Resident Representative

To: Commanding General  
AAF, Materiel Center  
Steel High Building  
Dayton, Ohio

Subject: Lease with Defense Plant Corporation  
Plancor 995

Attention: Industrial Planning Section  
Facilities Branch

458

- In accordance with the requirements of our lease with the Defense Plant Corporation known as Plancor 995, we are submitting herewith copies of all plans, designs and specifications approved by the Defense Plant Corporation in connection with this lease.
- We are also enclosing a monthly progress report with reference to this project.

PACKARD MOTOR CAR COMPANY

Jas. H. Marks  
Vice President

JHM-br

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WDAC-266-WF-12-24-41-300M

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INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
Office, Assistant Chief  
Materiel Division

AIN: 10:70-

Wright Field, Dayton, Ohio

Date September 11, 1947

TO: Chief, Industrial Planning Section,  
Wright Field, Dayton, Ohio.

SUBJECT: Acquisition of equipment for the  
Materiel Division, 2,000 - 1000  
Materiel.

1. In reference to the attached report dated August 10-12, 1947,  
it is requested that your Section, in cooperation with the  
Department of Defense, and the War Relocation Authority, acquire  
2,000 - 1000 of these items. This equipment is to be used for  
the production of the materiel for the Materiel Division.  
It is desired that these items be of a type which  
will not suit for the details to be furnished for all other equipment.

*Alfred H. Johnson*  
Chief, Materiel Division

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Signature

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MDAC-205-W-17-24-41-300M

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INTER-OFFICE MEMORANDUM  
 WAR DEPARTMENT, AIR CORPS  
 Office, Assistant Chief  
 Materiel Division

BJMcN:kk-70-5

Wright Field, Dayton, Ohio

Date September 17, 1942

TO: Chief, Industrial Planning Section  
 Att: Facilities Branch  
 Steele High building  
 Dayton, Ohio

SUBJECT: Machine Tools Necessary for Packard V-1650-3 Engines.

REF: Proc. Eng. Sec. IOM dated September 4, 1942, BJMcN:js-70-5.

PROJ #  
 43-B-3

1. Supplementing reference IOM, it is desired that Packard reach a minimum production of 225 V-1650-3 engines per month as soon as possible. The Packard Motor Car Company has indicated that they can reach such a rate of production as follows:

- a. 26 V-1650-3 engines the fifth month after necessary machine tools are provided. 130 the sixth month, 225 the seventh month and 225 per month thereafter until completion of the present proposed procurement of 2000 V-1650-3 engines per month.

2. Tools Branch of Industrial Planning Section has been furnished a list of machines necessary to meet the above listed delivery schedule of V-1650-3 engines. As stated above, it is desired that the V-1650-3 engine be brought in as soon as practicable and as previously noted, the entire program hinges on the necessary machine tools as submitted by the Packard Motor Car Company being made available. It is therefore requested that every effort be made to expedite the delivery of the necessary machine tools for this program to the Packard Motor Car Company.

*O. R. Cook*  
 O. R. COOK  
 Colonel, Air Corps  
 Chief, Production  
 Engineering Section

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Signature

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San/ing  
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AAF, Materiel Center  
Steele High Building, Dayton, O.  
JL Eren: 90-4-3

September 18, 1942

F. Schneeberger  
Colonel, Air Corps

PACKARD MOTOR CAR COMPANY  
DETROIT, MICHIGAN

ATTENTION MR. W. M. PACKARD  
VICE PRESIDENT

FOR YOUR INFORMATION PROJECT NO. 43 B-3, IN THE AMOUNT OF \$2,347,856.00  
WAS APPROVED BY THIS OFFICE AND PROCESSED TO THE RESOURCES DIVISION,  
MATERIEL COMMAND, WASHINGTON, D.C. FOR FURTHER HANDLING, THIS DATE,  
BY TELETYPE. THIS OFFICE MADE SLIGHT DIVERSIONS IN APPENDIX AND WILL  
SEND YOU COPY FOR YOUR FILE AND THE PREPARATION OF TWELVE ADDITIONAL  
COPIES THAT ARE NEEDED BY THIS OFFICE FOR DISTRIBUTION. REFERENCE  
INBTG 92105 JLB.

PROLOGUE DIVISION, WRIGHT FIELD

*Day Letter Collect*

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MDAC-5-MF-6-28-41-2004

Distribution:  
Prod. Division  
Budget Officer  
Col. Harmon, Ofc. JAGD  
Capt. Wilson, Contract Adn.  
Inspection Section

TELETYPE MESSAGE

REF:TRF: vwp:90-4-3  
DATE: September 18, 1942 2:20 P.M.

FROM: Industrial Planning Section

ATTENTION: RESOURCES DIVISION

INDT 92101 DHE... RE IPS PROJECT 43 B-3, THE FOLLOWING ARE THE RESULTS OF  
PRELIMINARY ANALYSIS OF A PROPOSAL SUBMITTED BY THE PACKARD MOTOR CAR COMPANY,  
DETROIT, MICHIGAN, FOR FACILITIES CONSIDERED NECESSARY TO PROVIDE CAPACITY FOR  
THE MANUFACTURE OF A NEW TYPE AIRCRAFT ENGINE:

DESCRIPTION OF ITEMS TO BE PRODUCED: THE SUBJECT COMPANY NOW HAS THE FACILITIES  
NECESSARY TO MANUFACTURE THE TYPE V-1650-1 MERLIN ROLLS-ROYCE 1300 HP AIRCRAFT  
ENGINES, AND HAS BEEN REQUESTED TO ADD THE TYPE V-1650-3 1500 HP ENGINE WITH A  
TWO-SPEED TWO-STAGE SUPERCHARGER TO ITS PRODUCTION SCHEDULE.

IT IS THE SOLE SOURCE OF SUPPLY FOR MERLIN ROLLS-ROYCE AIRCRAFT ENGINES,  
BUT IS NOT THE SOLE SOURCE OF SUPPLY FOR AIRCRAFT ENGINES.

IT IS ESTIMATED THAT PRODUCTION IN THE PROPOSED FACILITIES WILL COMMENCE  
WITHIN 5 MONTHS AND THAT MAXIMUM PRODUCTION WILL BE ATTAINED WITHIN 7 MONTHS  
AFTER RECEIPT OF THE FACILITIES.

JUSTIFICATION: AS A RESULT OF EXPERIMENTAL AND ENGINEERING CO-OPERATION BETWEEN  
THE PACKARD MOTOR CAR COMPANY AND THE AAF ENGINEERING SECTION AT WRIGHT FIELD,  
THE TYPE

-1- (See Sheet 2)

87.

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WDAC-5-4E-3-5-10-67M

TELETYPE MESSAGE

DATE: September 18, 1942

INDI 92101

FROM Industrial Planning Section

ATTENTION: RESOURCES DIVISION

3 MOTOR WHICH INCORPORATED A TWO-SPEED TWO-STAGE SUPERCHARGER HAS BEEN DEVELOPED, RESULTING IN BETTER ENGINE PERFORMANCE WITH HIGHER POWER AT SUBSTANTIALLY GREATER ALTITUDES.

IN ORDER TO MEET THE REQUIREMENTS FOR THIS IMPROVED TYPE OF ENGINE, IT IS NECESSARY THAT THE PROPOSED FACILITIES BE PROVIDED WITH THE LEAST POSSIBLE DELAY. SUBCONTRACTING: IT IS ESTIMATED THAT THE PRESENT PRACTICE OF SUBCONTRACTING 50 PER CENT OF REQUIREMENTS CAN BE MAINTAINED IN THE PROPOSED FACILITIES.

TYPE AND LOCATION OF PLANT: THE PROPOSED FACILITIES WILL BE INSTALLED IN THE PLANT OF THE PACKARD MOTOR CAR COMPANY LOCATED IN DETROIT, MICHIGAN.

CAPACITY: PRESENT FACILITIES IN SUBJECT COMPANY'S PLANT PROVIDE CAPACITY FOR THE PRODUCTION OF 1,400 TYPE V-1650-1 MERLIN ROLLS-ROYCE PER MONTH WITH A YEARLY SALES VALUE OF \$317,268,000. THE PROPOSED FACILITIES WILL PROVIDE FOR REVISION OF PRODUCTION SCHEDULES TO 1,175 TYPE V-1650-1 AND 225 TYPE V-1650-1 ENGINES PER MONTH WITH NO APPRECIABLE DIFFERENCE IN SALES VALUE.

-2- (See sheet 3)



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MDAC-5-WF-3-5-42-3004

## TELETYPE MESSAGE

INRT 92101 DEF (CONT'D)

DATE: September 18, 1942

ATTENTION: RESOURCES DIVISION

FROM: Industrial Planning Section

ESTIMATED OVERALL COSTS OF THE PROPOSED FACILITIES:

BUILDING CONVERSION	\$ 95,838
MACHINERY, EQUIPMENT, ETC.	<u>2,252,018</u>
TOTAL	\$2,347,856

THE ESTIMATED OVERALL COSTS OF THE PROPOSED FACILITIES ARE BASED UPON PRELIMINARY ANALYSIS OF THE PROJECT AND ARE SUBJECT TO CHANGE. THE DEFENSE PLANT CORPORATION LEASE AGREEMENT SHOULD, HOWEVER, NOT EXCEED THE OVERALL ESTIMATE OF THE SCHEDULES.

THREE COPIES OF PRELIMINARY APPENDIX "A" WHICH FORMS THE BASIS OF THIS PROCESSING TELETYPE WILL BE FORWARDED UNDER SEPARATE COVER.

AS SOON AS THE APPENDIX "A" HAS RECEIVED FINAL APPROVAL IN THIS OFFICE ANY MATERIAL CHANGE IN THE SCHEDULES AFFECTING THE PRELIMINARY ESTIMATE WILL BE SUBMITTED TO YOUR OFFICE IN ORDER THAT THE LEASE AGREEMENT MAY BE AMENDED ACCORDINGLY.

PLAN OF FINANCING: DEFENSE PLANT CORPORATION LEASE AGREEMENT, PLAN IV.

SPECIAL REQUIREMENTS: THE FACILITIES INCLUDED IN THIS PROPOSAL DO NOT INVOLVE ANY INCREASE IN FLOOR AREA, LABOR, HOUSING, TRANSPORTATION OR UTILITIES OVER AND ABOVE

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MDAC-5-WF-3-3-42-500M

TELETYPE MESSAGE

DATE: September 13, 1942

INDT 92101 LHF (CONT'D)

FROM Industrial Planning Section

ATTENTION: RESOURCES DIVISION

THOSE STIPULATED AND APPROVED FOR PREVIOUS EXPANSION.

MACHINERY AND EQUIPMENT AMOUNTING TO \$337,859 WILL BE ALLOCATED TO SUB-CONTRACTORS.

CERTIFICATION: THIS OFFICE CERTIFIES THAT THE FACILITIES INCLUDED IN THIS PROPOSAL ARE NECESSARY TO MEET THE REQUIREMENTS OF THE 8-K PROGRAM, AND THAT OTHER FACILITIES NOT REQUIRING EXPANSION WITH GOVERNMENT AID ARE NOT AVAILABLE.

EXTENT TO WHICH APPLICANT WILL BE REIMBURSED FOR THE COSTS OF EXPANDED FACILITIES UNDER SUPPLY CONTRACTS: THE COMPANY HAS CERTIFIED THAT NO PART OF THE COSTS OF THE PROPOSED FACILITIES HAS BEEN OR WILL BE INCLUDED IN THE PRICES OF ARTICLES FURNISHED THE GOVERNMENT, OR PRIME CONTRACTORS TO THE GOVERNMENT.

COMPETITION: THE PACKARD MOTOR CAR COMPANY IS NOT THE SOLE SOURCE OF SUPPLY FOR AIRCRAFT ENGINES AND CAN, THEREFORE, BE CONSIDERED IN COMPETITION WITH OTHER MANUFACTURERS.

RECOMMENDATIONS: IT IS RECOMMENDED THAT APPROVAL OF ALL AGENCIES CONCERNED BE OBTAINED TO THIS PROPOSAL IN THE AMOUNT OF \$3,347,856 AND THAT THIS OFFICE BE AUTHORIZED TO PROCEED WITH FINAL NEGOTIATIONS WITH THE COMPANY.

-4- (End)

TECHNICAL EXECUTIVE

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Gamma

Ref: 14887th:90-2-5

September 19, 1946

PS  
9/19

SUBJECT: Plans, Specifications, Etc.  
Submitted to Wright Field  
(IPS Project Number 43 B-2)

TO: ~~Ransom~~ ~~Wagon~~ Car Company  
Detroit, Michigan

1. Reference is made to letter of September 15, 1946, inclosing plans, designs and specifications as approved by the Defense Plant Corporation.

2. On July 24, 1942, all Defense Plant Corporation Supervising Engineers were requested by the Defense Plant Corporation to discontinue the practice of submitting plans, specifications, contracts, insurance certificates, copies of purchase orders, etc. to Wright Field, and that these documents should be retained at the job until the project is completed, after which the Supervising Engineer should communicate with Wright Field for instructions regarding the disposition to be made of such papers.

3. The foregoing instructions do not apply to plans and specifications submitted to Wright Field for the purpose of submitting changes in the scope of the project or for the review of critical materials.

4. It is requested that the letter of transmittal state clearly the purpose for which the plans and specifications are being sent.

For the Chief of Production Division:

F. Schaefer  
Colonel, Air Corps  
Chief, Industrial Planning Section

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43 B-3

AAF Material Center  
Steele High Building, Dayton, Ohio

JLB:ehc:90-4-3  
September 19, 1942 11:30 AM

F. Schneberger  
Colonel, Air Corps

JLB  
9-19  
PS  
9/19

PACKARD MOTOR CAR COMPANY  
DETROIT, MICHIGAN  
ATTENTION: MR. W. B. PACKARD, VICE PRESIDENT

.....IT IS REQUESTED THAT YOU SUBMIT AS SOON AS PRACTICABLE TO THIS OFFICE  
APPLICATION AND FIVE COPIES OF APPENDIX A COVERING ADDITIONAL FACILITIES NECESSARY  
TO INCREASE YEAR PRODUCTION OF V-1650 ENGINES FROM 1,400 TO 2,000 PER MONTH.  
THIS 600 ENGINE PER MONTH PRODUCTION INCREASE SHOULD BE OF TWO STAGES SUPERCHARGED  
TYPE MODEL V-1650-3. REFERENCE INDTG 92122 JLN.

PRODUCTION DIVISION, WRIGHT FIELD

DAY ENTER COLLECT

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ARMY AIR FORCE  
HEADQUARTERS OF THE MATERIAL COMMAND

AFAME-7

SEP 28 1942

MM:RED

ATTENTION: The Under Secretary of War  
Attention: Colonel J. P. Mosem

PROJECT - Additional Funds  
Packard Motor Car Company  
Detroit, Michigan  
AF Project 43 2-3

1. Reference is made to Defense Plant Corporation Lease Agreement with Packard Motor Car Company, Detroit, Michigan in the amount of \$25,426,226.
2. It has been determined that additional funds in the amount of \$2,447,886 will be required to provide capacity for the manufacture of a new type aircraft engine. Data relative to the increased cost is included in Teletype Ind-1-221013727, dated September 19, 1942, copies of which are attached.
3. It is recommended:
  - a. That the increased cost of this project be approved.
  - b. That an amendatory lease agreement be concluded with the Defense Plant Corporation and Packard Motor Car Company to include the increased cost of \$2,447,886, making the total amount of the lease agreement \$28,774,112, and that the War Department enter into an agreement to reimburse the Defense Plant Corporation for 1/2 of the increase, but not in excess of \$1,173,928.
  - c. That necessary action be taken to obtain approval of this increase in cost for this project for the total additional overall amount of \$2,447,886, and an authorization from expediting production funds which will enable this office to transmit to Wright Field procurement authority for \$1,173,928 in addition to funds heretofore appropriated.

For the Commanding General:

Frederick W. [unclear]  
Brig. General U. S. A.  
Asst. Chief of Staff

1 encl.

by [unclear] 9/19/42, [unclear].

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WA459 MATERIEL COMMAND HAAF WASH DC 10-1-42 11543 2

F-TWA-841 MMH

INDUSTRIAL PLANNING SECTION

FACILITIES BRANCH

TAKEDOUT LETTER HAS BEEN SIGNED FOR THE EXPANSION OF PACKARD MOTOR COMPANY, DETROIT, MICHIGAN, IFS PROJECT 43 B-3, IN THE AMOUNT OF \$2,347,056; ON SEPTEMBER 30, 1942.

RESOURCES DIVISION

RECEIVED



OCT 1 1942

*B. Raden*

*James L. ...  
10/1/42*

*AB 10/1  
10/2*

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DISTRIBUTION-70-5

October 13, 1948

SUBJECT: Packard Motor Car Company  
Production FacilitiesTO: Chief, Field Service  
Air Service Command  
Patterson Field, Fairfield, Ohio  
Att: United Nations Branch  
PROJ. #43-5-3

1. Confirming recent telephone conversation between Major Joseph F. Steechal of the United Nations Branch and Major Orville E. Nohler of the Production Engineering Section, it is desired to emphasize that, at the present time, the facilities of the Packard Motor Car Company will not permit that contractor to undertake the building of parts for British manufactured Rolls-Royce engines.

2. For your information, the Production Division is, at the present time, faced with a problem of attempting to secure sufficient facilities for the Packard Motor Car Company in order that that company will be able to meet the engine production schedule as shown in the 96 engine schedule. In addition, Air Force Section, Air Service Command, is unable to obtain the necessary quantity of spare parts for Packard built Rolls-Royce engines necessary to properly maintain these engines in the field.

3. From the above can be seen that until the facilities of Packard Motor Car Company are greatly expanded, it will be impossible for the Packard Motor Car Company to attempt diversion of any of their present manufacturing facilities to assist British production unless higher authority decides to cut Air Force production of either Air Force engines or required spare parts.

For the Chief of Production Division:

G. A. COCK,  
Colonel, Air Corps  
Chief, Production  
Engineering Section  
RB 10/19

cc: Ind. Plan, Sec. ✓

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*Pack and Milton  
Proj #430-4*

October 17, 1942

Via: Army Air Forces Resident Representative

To: Commanding General  
Army Air Forces, Materiel Center  
Wright Field  
Dayton, Ohio

Attention: Production Division  
Industrial Planning Section

Subject: Appendix A for Additional Facilities for  
Increasing Monthly Production of V-1650-3  
Engines from 225 to 600.

1. Since submission of Appendix A, dated September 14, 1942, IPS Project No. 43 B-3, in the amount of \$2,347,856, which detailed the machine tools, etc. necessary to convert 225 engines per month of the present V-1650-1 to V-1650-3, we have received a telegram dated September 19, 1942 - Reference INTDG 92122 JLE - requesting that we submit, as soon as practicable, Appendix A covering additional facilities necessary to increase production of V-1650 engines from 1,400 to 2,000 per month, this 600 per month increase to be of two-stage supercharger type, Model V-1650-3.
2. Our letter of September 21, addressed to the Army Air Forces, Materiel Center, attention Production Division, Colonel A. H. Johnson, set forth our reasons for submitting application on the basis of increasing our facilities so as to produce 600 V-1650-3 superchargers per month, such 600 to be part of, not over and above, our maximum production of 1,400 engines per month.
3. In view of the fact an Appendix A, as referred to in paragraph (1), has already been submitted and approved in connection with the monthly conversion of 225 V-1650-1 to V-1650-3, we are submitting herewith five copies of a tentative Appendix A in the amount of \$1,872,171 to cover the additional 375 V-1650-3 superchargers per month.
4. We have made a survey of the unappropriated balances applicable to Plancor No. 978, that is, your IPS Project Nos. 43 B and 43 B-1, and our estimate indicates that, after allowing for additional equipment necessary for tooling the V-1650-1 engine, the remaining balances appear to be ample to purchase the increased requirements itemized in the attached Appendix A.

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Page #2.

October 17, 1942

To: Commanding General  
AAF, Wright Field  
Dayton, Ohio

5. Since the balances of Plancor No. 978, listed below, appear to be in excess of presently-known requirements for the V-1650-1 engine, we are submitting this information for the consideration of the Industrial Planning Section and the Defense Plant Corporation with respect to the manner of financing the increased requirements in the amount of \$1,872,171:

	<u>IPS 438</u>	<u>IPS 438-1</u>	<u>Combined</u>
Schedule II-E	\$ 115,665	\$ -	\$ 115,665
Schedule III-A	1,008,957	464,684	1,473,641
Schedule III-B	240,223	-	240,223
Schedule III-D	42,642	-	42,642
<b>Total</b>	<u>\$1,407,487</u>	<u>\$464,684</u>	<u>\$1,872,171</u>

6. Should any additional information be desired we shall be pleased to supply it.

PACKARD MOTOR CAR COMPANY

J. W. Raisbeck  
Chief Accountant  
Aircraft Engine Division

JWR:hmk

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*Carson Packard  
Sheet book 60  
Master*

56

CONFERENCE - SIR RICHARD FAIREY, MR. FRANK  
MUSSON AND BRIG. GEN. E. E. MEYERS - 10-20-43.

*Lead Barber  
1943  
Loyalty*

SUBJECT: Merlin Engines.

1. Sir Richard Fairey stated that our present planned production of P-51 airplanes with -61 engines was satisfactory insofar as British requirements on Packard were concerned. This schedule provided for the following P-51 production:

1943		Est	Prod	Total	Surplus
Through May		400		400	400
June	100	100	100	500	500
July	150	150	150	650	650
August	200	200	200	850	850
September	225	225	225	1075	1075
October	250	250	250	1325	1325
November	275	275	275	1600	1600
December	300	300	300	1900	1900

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2. This will permit sufficient -28 engines for British requirements with a diminishing surplus of about 1200 in January 1943 to about 700 at the end of 1943, based on 20% spares and Packard maintaining their production schedule rising to 1200 in June 1943.

3. Any additional Packard production over that now planned can also be allocated to sustaining production through April 1944.

E. E. M.

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AAAFMC-265-WF-G-22-42-300M

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## INTER-OFFICE MEMORANDUM

ARMY AIR FORCES  
MATERIEL CENTER  
Office of The Commanding GeneralRef: CBC:j1-90-3-8  
Steele High Building,  
~~Wichita~~ Dayton, Ohio  
Date October 26, 1942TO: Chief, Facilities Branch  
Industrial Planning Section  
Steele High Bldg., Dayton, OhioSUBJECT: Packard Motor Car Company  
Detroit, Michigan  
(IPS Project #43 B-4)

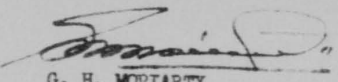
1. Reference is made to IDC, dated October 21, 1942, relative to request by subject company for authority to use the amount of \$1,872,171, unused balance from previous projects, for the purpose of converting monthly, 375 Rolls Royce Engines per month from V-1650-1 to V-1650-3. This will constitute a monthly total of 600 V-1650-3 Engines, the difference being in the addition of a two-stage supercharger.

2. Careful investigation and coordination with Production Division establishes that subject production is essential to the war effort.

a. This office knows of no other facility which could get into production as quickly or at as reasonable cost.

b. The funds are already available, needing only authorization for their use.

3. This Branch recommends favorable consideration for subject project as submitted.

  
G. H. MORIARTY  
Lt. Colonel, Air Corps  
Chief, Planning Branch
Incls.  
(returned)

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Signature

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FILE

0 Filed 11/4  
 Bowling  
 11/4  
 James  
 11-4

DEF:reb:90-4-3

November 4, 1942

SUBJECT: Defense Plant Corporation Lease  
 Plancor No. 978, IPS Projects  
 43 B, 43 B-1 and 43 B-3

TO: Packard Motor Car Company  
 Detroit, Michigan

Attention: Mr. J. W. Reisbeck

1. Reference is made to letter of June 15, 1942 from this office with DPC Lease Agreement dated May 25, 1942 covering IPS Projects 43 B and 43 B-1. There is inclosed herewith approved revised Appendix "A", otherwise identified as IPS Project 43 B-4, which covers the reallocation of unexpended funds amounting to \$1,872,171 from IPS Projects 43 B and 43 B-1 to IPS Project 43 B-4, and the transfer of funds amounting to \$42,648 from Schedule II-e to Schedules III-a and III-b, IPS Project 43 B-3. It will be noted that, while the overall estimated costs of the projects have not been changed, the allocation and transfer of funds hereinbefore mentioned has been approved.

2. The reallocation of \$1,872,171 to IPS Project 43 B-4 is considered necessary due to changing 375 type V-1650-1 Merlin Rolls-Royce Aircraft engines monthly to 375 type V-1650-3 monthly, as requested by the Production Division, Wright Field, in letter dated September 17, 1942.

3. Similarly revised Appendices "A" are being forwarded to the other offices of record noted in the distribution hereon.

For the Chief of Production Division:

E. W. Rawlings  
 Colonel, Air Corps  
 Chief, Industrial Planning Section

1 Incl:  
 Revised Appendix A  
 Nos IPS Project 43 B-4

Copy to:  
 Central Proc. Dist. w/incl.  
 Defense Plant Corp. w/incl. in trip.  
 Resources Division w/incl.  
 Contract Section w/incl.  
 Tools Branch w/incl.

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*Custom Packard  
checked back of  
10-20-42*

**CONFIDENTIAL** 57

JOINT AIRCRAFT COMMITTEE  
WASHINGTON, D. C.

November 24, 1942

MEMORANDUM TO: Commanding General, Army Air Forces,  
Material Command

SUBJECT: Packard-Merlin Engine Production

1. At the meeting of the Joint Aircraft Committee on November 13, 1942, a schedule was presented by the Material Command for a contemplated increased production of the Packard-Merlin engine. The British representatives at the meeting stated that they desired all engines for export to the United Kingdom be equipped with superchargers as soon as possible. The Committee was informed that at the present time the Packard-Merlin Company is making a study of the possibilities of increasing supercharger production and that upon completion of such study a revised schedule of supercharger production to permit equipping of export engines will be presented to the Committee by the Material Command.

2. The Committee also requested the Army Air Forces representatives to make an investigation and study of the possibilities of setting up an additional plant for the manufacture of the Packard-Merlin engine. A production of 1,000 to 1,200 additional engines per month is contemplated for the new plant.

J. H. SHENOTT  
Lieutenant, USAR  
Deputy Recorder, Joint  
Aircraft Committee

RECEIVED  
NOV 25 1942  
PROD. DIV.  
AFAMC

**CONFIDENTIAL**

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AAFMC-245-WF-5-22-42-300M

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INTER-OFFICE MEMORANDUM  
ARMY AIR FORCES  
MATERIEL CENTER  
Office of The Commanding General

AEJ:RC:70-C

Wright Field, Dayton, Ohio

Date December 3, 1942

TO: Chief, Production Resources Section,  
Steele High Building,  
Dayton, Ohio.

SUBJECT: United Kingdom Request for Merlin Engine Production.

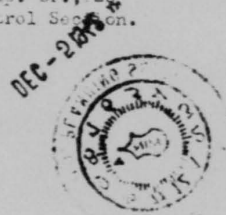
1. Attached for your information and necessary action is a directive from the Commanding General, Materiel Command in reference to expansion of facilities for the manufacture of Merlin engines by Packard and also the expansion of necessary facilities to supply component parts required by the British Air Commission for the manufacture of Merlin engines in the United Kingdom.

2. The Packard Company should be informed that their expansion plans should include provisions for supplying engines and parts in accordance with attached lists. Any other manufacturers should be contacted in reference to any expansion required to meet the total demands by Packard and United Kingdom.

*K. B. Wolfe*  
K. B. WOLFE,  
Brig. General, U.S.A.  
Chief, Production Division.

Attach:  
Orig. ICM fr  
Mat. Com. 11-18-42  
w/2 incls.

cc: Aero. Equip. Br., PEG  
Prod. Control Section.



Signature \_\_\_\_\_

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AFMOC-6 3

INTER-OFFICE MEMORANDUM  
WAR DEPARTMENT, AIR CORPS  
OFFICE, CHIEF, MATERIEL DIVISION  
WASHINGTON

November 18, 1942.

TO: Technical Executive,  
Wright Field,  
Dayton, Ohio.

See Prod. Div. IOM to Prod. Res. Sec.  
12-3-42  
See Prod. Div. IOM to Wash. - 12-3-42

SUBJECT: United Kingdom Request for Merlin Engine Production.

1. Transmitted herewith is a copy of a letter addressed to the Commanding General, Materiel Command, by the Director General of the British Air Commission. To this letter is attached a statement of urgently requirements for items essential to support the continued production of Merlin engines in the United Kingdom.

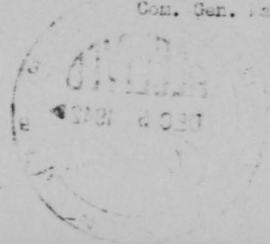
2. There is transmitted herewith also a copy of the Commanding General's reply to the basic communication.

3. In accordance with the statement made in the latter, it is desired that any studies relating to the expansion of Packard include the furnishing of United Kingdom requirements.

For the Commanding General:

*J. W. Sessums, Jr.*  
J. W. SESSUMS, JR., Maj. AC.  
Colonel, Air Corps,  
Asst. Chief of Staff (P)

- 2 Incls:
- #1. copy ltr from SAC, with attach.
- #2. copy ltr from Com. Gen. Mat. Div.



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10:03  
W-11-98

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BRITISH AIR COMMISSION  
1785 Massachusetts Ave.  
Washington, D. C.

Office of  
The Director General.

November 12, 1942.

Dear General Echols:

Merlin Engine Production

In considering the expansion of Packard's facilities to make possible an output of 2000 engines per month, I would like to draw your attention to the associated matters of (a) spares and (b) parts for export in aid of the U.K. production of Merlins of which a list is attached.

As you are doubtless aware, a meeting was held at the instance of the U.S.A.A.F. authorities at Wright Field on Monday last at which were represented, in addition to U.S.A.A.F., Packard, R.A.F. Delegation and this Commission. The object was to place before Packard's an overall picture in relation to engine production of 1400 per month and as reported to me the outcome was as follows:

1. Subject to the availability of machine tools already called for, Packard's could reach an output of 1400 engines per month by July. In addition they could supply at that time 32% spares behind current output, but they could not supply parts for export.
2. Given additional machine tools, they could, in addition to 1400 engines per month, overtake the backlog of spares caused by the decisions in Case 1850, supply spares in the required standard quantity of roughly 38% of engines, and moreover could supply export parts as required by us.

In effect therefore the meeting found that even if engine output were limited to 1400 per month, any increase in the quantity of spares to be supplied over the present rate of just below 20% would interfere with the supply of our export parts unless further capacity were created. These parts which can be assessed at less than 2% of Packard's projected output are of the greatest importance to us as the factories making Rolls Royce engines in the United Kingdom will be absolutely dependent upon them in the quantities stated and have no possible alternative source of supply, having regard to the machine tool and labour position in England.

We are already obtaining some supplies of these parts and I should like to emphasize that the figures on the attached list represent monthly requirements which we are anxious to receive as soon as possible. The supply of this comparatively small quantity of component parts will mean a large increase in the British, and at the same time our combined, output of Merlin engines. I should therefore be grateful of your assurance that this requirement will be catered for in planning the expansion of Packard capacity for 2000 engines per month.

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I should perhaps refer particularly to the ball and roller bearings. I appreciate fully that the general position in regard to such bearings is under review, but these particular bearings are special to Merlins and to that extent can, I feel, best be regarded as an integral part of our combined Merlin production rather than an element in the overall bearing problem.

Yours very sincerely,

/s/

C. S. FAIREY,  
Director General

Major General Oliver P. Echols,  
Office of the Chief of the Air Corps,  
War Department,  
Room 4121, Munitions Bldg.,  
Washington, D. C.



DEC-21-45



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CCPY

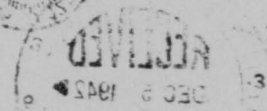
October 24, 1942

Essential items whose continued supply to the U.K. is necessary if R.R. and Ford are to meet their production programme.

Item	Quantity required engine sets monthly	Remarks
1. Ball & Roller bearings	1700 sets - Bower 1200 sets - Merlin Rockwell 1200 sets - Norma Hoffman	These are supplied independently of Packard but from the same supplier.
2. Silver lead bearings	1000	
3. Cylinder liners	500	
4. Boost controls	400	
5. Crankshaft forgings	1200	Ordered and supplied independently of Packard.
6. Coolant pumps	400	
7. Camshafts	200	
8. Finished crankshafts	200	Forgings for these can be taken from Item 5 above.
9. P.D. 16B Carburetors	400	Ordered and supplied independently of Packard but from the same manufacturers.
10. No. 9 units (carburetors)	400	Ordered and supplied independently of Packard but from the same manufacturer.
11. Bendix starters, complete with gearing, hand starter units, layshaft and engaging mechanism	300	Only item not so far covered by a requisition.

DEC-2 1942

\*Small cutting tools are also essentially needed to the approximate value of \$6,000,000. per annum. These have been supplied since the outbreak of war and do not come from the Packard Company.



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48

AFAMC-6  
RWJ:gnb  
Written 11-16-42

Dated November 21, 1942

Sir Richard Frisay,  
Director General,  
British Air Commission,  
1785 Massachusetts Avenue,  
Washington, D. C.

Dear Sir Richards

This will acknowledge receipt of your  
letter dated November 12, 1942, concerning the United Kingdom's  
request for our support in the production of Merlin engines.

I have instructed the Materiel Center to  
include in its study of Packard expansion, the furnishing of  
the monthly requirements as presented in support of your  
letter.

Yours sincerely,

DEC-2 1942



/s/ B. E. MEYERS  
Brig. General, U.S.A.  
Chief of Staff  
Materiel Command



1 0 6 1

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A 16

Original to: *AFAC*  
 Original by: *AFAC*  
 Original on: *AFAC*

P R I O R I T Y

TO ASST. CHIEF OF STAFF /P/, AAF *Supplies*  
 WASHINGTON, D. C. *AFAC* (6) *Production* *Hinc* DECEMBER 16, 1942

PES-T-632....RETELETYPE PE-62, DECEMBER 12. FOLLOWING TENTATIVE ENGINE SCHEDULE SUBMITTED THIS DATE BY PACKARD--

MARCH	1943	1024	SINGLE STAGE,	26	TWO STAGE
APRIL		1066	SINGLE STAGE,	130	TWO STAGE
MAY		1075	SINGLE STAGE,	225	TWO STAGE
JUNE		1054	SINGLE STAGE,	350	TWO STAGE
JULY		929	SINGLE STAGE,	475	TWO STAGE
AUGUST		804	SINGLE STAGE,	600	TWO STAGE
SEPTEMBER		604	SINGLE STAGE,	800	TWO STAGE
OCTOBER		444	SINGLE STAGE,	1060	TWO STAGE
NOVEMBER	<i>See</i>	1504	TWO STAGE		
DECEMBER	<i>PE1 T-712</i>	1604	TWO STAGE		
JANUARY	1944	1800	TWO STAGE		
FEBRUARY		1850	TWO STAGE		
MARCH		2101	TWO STAGE		
APRIL		2400	TWO STAGE		
MAY	1944	2600	TWO STAGE		
JUNE	<i>12-18</i>	2700	TWO STAGE AND 2700 PER MONTH THEREAFTER		

REQUEST IMMEDIATE APPROVAL BE GIVEN TO ISSUE LETTER OF CONTRACT TO PACKARD FOR 16,350 TWO STAGE ENGINES, PLUS SPARE PARTS ACCORDING TO CASE 1350, IN ORDER THAT PACKARD CAN PLAN PRODUCTION WITH SUBCONTRACTORS AND OBLIGATE NECESSARY MATERIAL AND MACHINE TOOLS FOR SELVES AND SUBCONTRACTORS. ORDER FOR 16,350 ENGINES TOGETHER WITH PREVIOUSLY ISSUED CONTRACTS AND LETTER OF CONTRACTS WILL FILL OUT PACKARD SCHEDULE AS OUTLINED ABOVE THRU OCTOBER, 1944. APPROXIMATE SUM TO BE OBLIGATED FOR 16,350 ENGINES IS \$228,900,000.00 PLUS 38.5 PERCENT MONEY VALUE FOR SPARE PARTS. REQUEST APPROVAL ALSO COVER NUMBER OF ENGINES BY MONTH TO BE ALLOCATED TO THE BRITISH AND THE NUMBER TO BE ALLOCATED TO THE AIR FORCES IN ORDER THAT PROPER FUNDS MAY BE CHARGED FOR THIS PROCUREMENT.

PRODUCTION ENGINEERING SECTION, WRIGHT FIELD

END  
 RHS  
 12-17-42

1703Z

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 DECEMBER 17 1942

TRANS BUDGET - TELETYPE MESSAGE

TRANS BUDGET - TELETYPE MESSAGE



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*D. Packard  
Sched. Ser. - 63  
Mar. 1942*

59

*See JAE letter  
re Packard*

RECEIVED  
DEC 30 1942  
PROD. DIV.  
AFMAG

MEMO-T-710

12/29/42

ASST. CHIEF OF STAFF (P)

REMOVE FROM RECORDS - P E I O P I T Y

REOURSELETYPE MEMO-T-632, SIGNATURE 16. PACKARD FOR OFFICIALLY  
SUBMITTED PRODUCTION SCHEDULE AS FOLLOWS: SCHEDULE REMAINS SAME AS IN  
REPLACEMENT TELETYPE UNTIL OCTOBER, 1943.

OCTOBER	1942	1440 SINGLE STAGE, 900 TWO STAGE
NOVEMBER		1400 TWO STAGE
DECEMBER		1400 TWO STAGE
JANUARY	1943	1550 TWO STAGE
FEBRUARY		1700 TWO STAGE
MARCH		1800 TWO STAGE
APRIL		2100 TWO STAGE
MAY		2400 TWO STAGE
JUNE		2600 TWO STAGE
JULY		2700 TWO STAGE

100

THIS P

SECURITYTYPE PPS-T-632, DECEMBER 16. PACKARD HAS OFFICIALLY  
 SUBMITTED PRODUCTION SCHEDULE AS FOLLOWS: SCHEDULE REMAINS SAME AS IN  
 REFERENCE TELETYPE UNTIL OCTOBER, 1943.

OCTOBER	1943	444 SINGLE STAGE, 900 TWO STAGE
NOVEMBER		1400 TWO STAGE
DECEMBER		1400 TWO STAGE
JANUARY	1944	1550 TWO STAGE
FEBRUARY		1700 TWO STAGE
MARCH		1800 TWO STAGE
APRIL		2100 TWO STAGE
MAY		2400 TWO STAGE
JUNE		2600 TWO STAGE
JULY		2700 TWO STAGE

AND 2700 PER MONTH THEREAFTER.

100  
 100

URGENT THAT SCHEDULE BY TYPE, BY MONTH BE FORWARDED INASMUCH AS SPARE  
 PART PROCUREMENT IS BEING HELD PENDING THIS INFORMATION. ACTING ON  
 TELEPHONED AUTHORITY FROM COLONEL BROWN TO COLONEL JOHNSON, HAVE  
 INITIATED A.P.P. FOR AN ADDITIONAL 5,500 V-1600-S ENGINES. THIS  
 PROCUREMENT TOGETHER WITH EXISTING CONTRACTS AND LETTERS OF CONTRACT  
 GIVES PACKARD TOTAL ORDERS FOR 27,325 ENGINES INCLUDING OF PRESENT  
 5000 ENGINE CONTRACT. BASED ON ABOVE PRODUCTION SCHEDULE, PRESENT  
 CONTRACTS WILL RUN OUT BEFORE MAXIMUM SCHEDULE OF 2700 IS REACHED IN  
 JULY OF 1944. 1700 ENGINES IN JULY OF 1944 WILL COMPLETE TOTAL OF  
 27,325 ENGINES ABOVE MENTIONED. REQUEST AUTHORITY TO PURCHASE AN  
 ADDITIONAL NUMBER OF ENGINES TO CARRY PACKARD THROUGH OCTOBER OF 1944  
 AT MAXIMUM RATE OF 2700 PER MONTH. THIS DESIRED IN ORDER TO ASSIST  
 PACKARD BRINGING IN SUB-CONTRACTORS FOR MAXIMUM PRODUCTION OF 2700  
 ENGINES PER MONTH.

PRODUCTION ENGINEERING SECTION.

2700 } -3  
 5000 } A.P.P.  
 5500 }  
 13225  
 10000 }  
 27325  
 8400 } New Inv. 10/24  
 35725

RJE  
 18102WT

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Auth: C. Q. ATSC

Initials: CWT

Date: 30 OCTOBER 1945

~~SECRET~~

W-61348-3  
PART I





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Auth: C.B. ATSC  
Initials: *CMW*  
Date: 30 OCTOBER 1945

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W-61348-3  
PART II

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RESTRICTED

~~SECRET~~  
Auth. C. G. ATSC  
Initials: *CAUT*  
Date: *20 OCTOBER 1945*

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*W-61348-3*  
*PART II*

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IMMEDIATE ACTION

54 RESTRICTED

ARMY AIR FORCES  
 Materiel Center  
 Production Division  
 Production Resources Section  
 Steele High Building

Ref:DMF:vwp:90-3-3-1

Dayton, Ohio  
 January 4, 1943

SUBJECT: Packard Motor Car Company  
 Detroit, Michigan  
 PIS Project 43 E-5

TO: Supervisor  
 Central Procurement District  
 AAF Materiel Center  
 2505 West Warren Avenue  
 Detroit, Michigan  
 Attention: Production Section

1. The subject company has submitted to this office a proposal covering facilities in the amount of \$2,705,690 considered necessary to convert 300 Rolls-Royce Merlin engines monthly from type V-1650-1 to type V-1650-3. The following information has been submitted in addition to the inclosed Appendix "A":

a. Floor Area: Approximately 52,000 square feet of productive floor area will be made available for this expansion.

b. Additional Monthly Requirements of Utilities:

	<u>Maximum</u>	<u>Average</u>	<u>Source of Supply</u>
Gas, cubic feet	50,000	50,000	Michigan Consolidated Gas Co.
Power Demand in KW	1,500	1,000	Packard Motor Car Co. Detroit Edison Co.
Water, Gallons	2,200,000	2,000,000	City of Detroit

c. Conversion Costs: In addition to the conversion costs of \$126,649 included in Schedule II, approximately \$426,333 is included in Schedule III to cover the rearrangement of machinery and equipment. It is requested that investigation be made to determine the necessity for conversion to this extent of cost.

RESTRICTED

IMMEDIATE ACTION

1071

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IMMEDIATE ACTION  
RESTRICTED 55

Central Procurement District  
SUBJECT: Packard Motor Car Co. (Project 43 B-5)  
January 4, 1943

d. No additional labor, housing or transportation is involved in this proposal.

2. It is requested that investigation be made to determine the adequacy of the supply of utilities and that the information gained thereby, together with your observations and recommendations, be forwarded to this office with the inclosed Appendix "A", at the earliest practicable date.

By Command of Brigadier General Vanaman:

*E. W. Rawlings*  
for E. W. RAWLINGS Major A. C.  
Colonel, Air Corps  
Chief, Production Resources Section

1 Incl:  
Pre. Appen. "A"  
(to be returned)

-2-

IMMEDIATE ACTION

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36

APPENDIX A

DEFENSE PLANT CORPORATION  
EMERGENCY FACILITIES

PACKARD MOTOR CAR COMPANY  
DETROIT MICHIGAN

SUMMARY OF ADDITIONAL FACILITIES REQUIRED IN CONNECTION WITH APPENDICES A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ

APPENDIX A (1PS-42 B)

Sch. No.	Summary	As Revised 10-17-42	Proposed Revision 12-26-42	Base or as 10-28-42	Required on Basis of 60 per Month 10-17-42
I	<u>Land &amp; Land Improvements:</u>				
	(a) Land	\$ -	\$ -		\$ -
	(b) Land Improvements				
	Total	\$ -	\$ -		\$ -
II	<u>Buildings, etc.:</u>				
	(a) Buildings				
	(b) Building Installations (Not Mechanical)				
	(c) Leasehold Improvements				
	(d) Service Costs				
	(e) Rearrangement, Relocation, etc.	858,070.00	858,070.00		858,070.00
	Total	\$ 858,070.00	\$ 858,070.00		\$ 858,070.00
III	<u>Machinery, Equipment, etc.:</u>				
	Machinery	\$13,458,115.00	\$13,458,115.00		\$13,458,115.00
	Equipment	2,556,684.00	2,525,854.00		2,525,854.00
	Rearrangement	245,200.00	553,940.00	\$ 703.00	151,800.00
	(a) Total	\$16,359,999.00	\$16,538,942.00	\$17,943.00	\$16,681,534.00
	(b) Building Installations (Mechanical)	1,328,803.00	1,328,803.00		315,726.00
	(c) Laboratory & Testing Equipment				
	(d) Furniture & Fixtures	638,945.00	638,945.00		53,912.00
	Total	\$18,327,747.00	\$18,506,690.00	\$17,943.00	\$17,051,172.00
IV	<u>Portable Tools &amp; Automotive Equipment</u>				
	(a) Portable Tools	\$ -	\$ -		\$ -
	(b) Automotive Equipment				
	Total	\$ -	\$ -		\$ -
	Grand Total	\$19,185,817.00	\$19,364,760.00	\$17,943.00	\$18,220,027.00

EXHIBIT A  
Pages 4-19,  
Incl.

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APPENDIX A  
 DEFENSE PLANT CORPORATION  
 EMERGENCY FACILITIES  
 PACKARD MOTOR COMPANY  
 DETROIT MICHIGAN

FACILITIES REQUIRED IN CONNECTION WITH APPENDICES A, I.P.S. 43-B-3 AND I.P.S. 43-B-4  
 SUPPLEMENTAL TO PLAN OR 97(8) BASIS OF INCREASE IN MONTHLY PRODUCTION  
 FROM 600 TO 1400, ALSO ADDITIONAL FACILITIES REQUIRED FOR I.P.S. 43-B  
 AS AT 12-28-42

APPENDIX A (I.P.S. 43-B-3)			APPENDIX A (I.P.S. 43-B-4)			Additional Funds Required from Defense Plant Corporation
Revised 7-42	Proposed Revision 12-28-42	Increase or Decrease as of 12-28-42	Required on Basis of 600 per Month 10-17-42	Required on Basis of 1400 per Month 12-28-42	Increase Required	
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 8,070.00	\$ 858,070.00	\$ 850,000.00	\$ 158,855.00	\$ 295,507.00	\$ 136,649.00	\$ 136,649.00
\$ 8,070.00	\$ 858,070.00	\$ 850,000.00	\$ 158,855.00	\$ 295,507.00	\$ 136,649.00	\$ 136,649.00
\$ 8,115.00	\$ 13,458,113.00	\$ 13,450,000.00	\$ 158,855.00	\$ 641,807.00	\$ 482,952.00	\$ 482,952.00
\$ 6,584.00	\$ 2,525,894.00	\$ 2,519,310.00	\$ 243,285.00	\$ 569,676.00	\$ 326,391.00	\$ 326,391.00
\$ 5,200.00	\$ 553,940.00	\$ 548,740.00	\$ 151,800.00	\$ 269,390.00	\$ 117,590.00	\$ 117,590.00
\$ 9,999.00	\$ 16,538,942.00	\$ 16,528,943.00	\$ 3,681,534.00	\$ 480,335.00	\$ 3,199,199.00	\$ 3,199,199.00
\$ 8,803.00	\$ 1,328,805.00	\$ 1,320,002.00	\$ 315,726.00	\$ 171,607.00	\$ 144,119.00	\$ 144,119.00
\$ 8,945.00	\$ 638,945.00	\$ 630,000.00	\$ 53,912.00	\$ 96,290.00	\$ 42,378.00	\$ 42,378.00
\$ 7,747.00	\$ 18,506,690.00	\$ 18,498,943.00	\$ 4,051,172.00	\$ 6,531,270.00	\$ 2,480,098.00	\$ 2,480,098.00
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ 817.00	\$ 19,354,760.00	\$ 19,346,943.00	\$ 4,220,027.00	\$ 6,746,774.00	\$ 2,526,747.00	\$ 2,526,747.00

EXHIBIT A  
 pages 4-19

EXHIBIT B  
 pages 20-47

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*Carbon - Packard  
Schedule List - 67  
mas/aw*

~~CONFIDENTIAL~~ 67 (AFANG-6)  
FVS/aa/mla

January 6, 1943

General O. P. Echols.

Packard Production.

1. Packard's latest estimate of their ability to rise to a rate of 2700 engines per month indicates a loss of some 1875 engines to January 1, 1944, when compared with original schedule submitted to the Joint Aircraft Committee on November 22, 1942. Their latest estimate, however, is based on producing all 2-stage engines by November, 1943.

1943	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Initial Schedule:	900	1000	1100	1200	1300	1400	1400	1575	1650	1650	1700	1750
Present Schedule:	850	884	1050	1186	1300	1404	1404	1404	1404	1404	1400	1400
Difference Monthly	-50	-116	-50	-4		+ 4	+ 4	-171	-246	-246	-300	-350
Con. Loss	50	166	216	270	220	216	212	283	329	375	1175	1525

1944	Jan	Feb	Mar	Apr	May	June	July
Initial Schedule:	50 FIGURES SUBMITTED						
Present Schedule:	1550	1700	1900	2100	2400	2500	2700

2. The present schedule is the best that can be expected from Packard's present plant as, while work for all engines above 1800 per month will be fabricated by subcontractors, they will be assembled in Detroit.

3. The present Packard schedule compared with P-51 program in S-1 will give the Army Air Forces a surplus of 806 2-stage engines at January 1, 1944.

J. W. SASSURS, Jr.,  
Colonel, Air Corps,  
Asst. Chief of Staff (P).

Return to Prod. Div., Room 4135

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*Packard  
W. P. H. 2*

*25*

AFANC-6  
FRS:as

Wr 1-5-42

MEMORANDUM FOR: Joint Aircraft Committee

JRN 6 1943

SUBJECT: Packard Merlin Engine Production.

1. At the meeting of the Joint Aircraft Committee November 1942, the Materiel Command was requested to make a study indicating the possibility of supercharged Packard Merlin engines to be made available for export.

2. The Materiel Command presents herewith results of their study of the production of the Packard Merlin 1-stage and 2-stage engines. Schedule indicates that 2-stage engines will be available for export during the month of September, 1943, and by November, 1943, the entire Packard Merlin production will be of the 2-stage type.

1943	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1-Stage	850	884	1024	1066	1075	1054	929	804	804	444	0	0
2-Stage	0	0	26	120	225	380	475	500	800	960	1400	1400
	850	884	1050	1186	1300	1404	1404	1404	1404	1404	1400	1400

1944	Jan	Feb	Mar	Apr	May	June	July
1-Stage	0	0	0	0	0	0	0
2-Stage	1550	1700	1900	2100	2400	2600	2700
	1550	1700	1900	2100	2400	2600	2700

3. The Committee also requested the Army Air Forces to make an investigation and study of the possibility of setting up an additional plant for the manufacture of the Packard Merlin engines. Schedule in above paragraph indicates the assembly of 2700 engines a month by Detroit plant. All engines produced in excess of 1600 engines per month will be fabricated through subcontractors and assembled at the Packard plant. This will eliminate the necessity for the additional facility previously contemplated.

For the Commanding General:

W. E. MURPHY  
Lieutenant General, U.S.A.  
Chief of Staff  
Materiel Command

A-1/AS
A-2/AS
Intel. S.
A-3/AS
A-4/AS
Plan/AS
Imp/AS
Mil. Req.
A. Def.
Comm.
Weather
Traffic
Photo. M&C
Tech. Insp.
Pub. Rel.
Dir. Pers.
Mil. Pers.
Dir. Pers.
Adm. Serv.
Proc. Serv.
Plan.
Mgmt. Con.
Adj. Con.
Org. Pl.
Stat. Pl.
Log. Pl.
S. C.
W. C.

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CONFIDENTIAL

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*Caston-Packard*  
 3-24-43-2nd ed. of 4 Sched. Sect-6  
 1701-1000

61

ARMY AIR FORCES  
 SERIAL NO. HEADQUARTERS OF THE MATERIEL COMMAND  
 WASHINGTON, D. C.

MEMORANDUM REPORT FOR: Brig. General Chidlaw and Colonel Sessums  
 Date January 8, 1943.

SUBJECT: Conference At the Materiel Center Reference Attached Letter dated December 3, 1942, from the British Air Commission regarding Contractual Agreement with Packard Affecting Design Changes to be Approved by Rolls Royce.

1. Purpose:

a. The conference was held at the Materiel Center on January 6, 1943, relative to the subject matter. Those attending were:

Packard

~~Colonel~~ J. W. Vincent - Packard Motor Car Company.  
 Mr. G. W. Requarth - Packard Representative  
 Major H. G. MacClure - Army Air Forces Factory Representative.  
 Mr. J. Hedwall - Army Air Forces Factory Representative.

Office, CG, Materiel Command  
 Major C. D. Casser

Materiel Center

Mr. W. J. Brown - Power Plant Laboratory  
 Mr. L. Parmakian - Production Engineering Section.  
 Miss L. G. Schickler - Production Division  
 Mr. F. L. Clark - Fiscal Division  
 Mr. D. J. Blackman - Contract Section  
 Mr. C. W. Collins - Contract Section

British Air Commission

Mr. T. B. Barrington - Rolls Royce Representative at Packard  
 Mr. J. E. Klor - Rolls Royce Representative at Packard  
 Mr. J. F. Holman - R.A.F. Delegation  
 Mr. M. S. Royce - British Air Commission  
 Mr. E. R. Alexander - British Air Commission  
 Mr. E. E. Edwards - British Air Commission  
 Mr. K. C. Pegg - British Air Commission  
 Mr. E. A. Drury - British Air Commission.

2. Factual Data:

a. Discussion in general covered the desirability of inserting a clause in the pending contract between the Army Air Forces and the Packard Motor Car Company by which Packard would be prohibited from making engineering changes

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Sched. Sect - 65 2/3 pp 62  
 Memo. Rpt. Eng #183

design changes, or alterations affecting the quality of workmanship or material without first obtaining the approval of Rolls Royce through their local representatives at the Packard Plant.

3. Conclusions:

a. As a result, it was determined that such a clause would be inserted in the above contract substantially as proposed. Points of particular interest that were discussed in connection with the above clause and which were agreed upon by all concerned were that:

- (1) All engineering or design changes whether submitted by the Army Air Forces, Packard Motor Car Company or the British Air Commission will be submitted to the Rolls Royce representatives (listed in the attached letter from the British Air Commission) for approval.
- (2) Rolls Royce representatives will not submit such changes as mentioned in paragraph (1) above to the Rolls Royce Company, Ltd., Derby, England, for approval unless such changes are of major importance and then only after obtaining Army Air Forces and Packard approval. (Rolls Royce representatives at Packard are furnished all of the latest engineering data by Rolls Royce, Ltd., and are fully authorized to pass judgment on all minor changes (excluding redesign of block, crankcase, piston, etc.) as may be submitted by Packard or the Army Air Forces.)
- (3) The Army Air Forces will be contacted for approval on all changes submitted by other parties. Such changes will be withheld pending approval, or if not approved will be reconsidered by the organization of origin.
- (4) The Army Air Forces and Packard will continue to be furnished complete data on engineering matters, experimental projects and reports on service failures of Rolls Royce Merlin 61 engines in order to facilitate improvement of V-1650-3 engines.
- (5) The British Air Commission will be furnished vandykes of all changes made by Packard or the Army Air Forces.
- (6) Packard will assume responsibility of testing all engine accessories.
- (7) Engine specifications will include an additional clause requiring frequent model testing of production engines (intervals undetermined - to be settled jointly between Packard and Rolls Royce representatives).

Incl.  
 Cpy. BAC ltr. 12-3-42

C. D. GASSER,  
 Major, Air Corps.

McD

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BRITISH AIR COMMISSION  
1785 Massachusetts Ave.  
Washington, D. C.

December 3rd, 1942

Please quote

Reference No. 5641/SLOG-10/JNDH

Brigadier General B. W. Chidlaw  
Assistant Chief of Staff (S)  
Army Air Forces  
Headquarters of the Materiel Command  
Washington, D. C.

Subject: Rolls Royce Merlin Engines Built by  
Packard Motor Car Company.

Dear Sir:

Confirming the conversation between Major Heenan of this Commission, Brigadier General Carroll, Colonel Page and yourself recently on the above subject; we feel that now that the British Contract for 6,000 engines is nearing completion and Packards are about to start on a further contract with the United States Government, that some clause should be inserted in the contract which prevents Packard Motor Car Company from making any alterations in the design of the engine or in the quality of material or workmanship without getting prior approval of Rolls Royce Limited, Derby, through their local representatives.

We understand from Major Heenan that you have agreed to this in principle and we would point out that there are already three Rolls Royce representatives at Packards and we would suggest that they continue at those works in their present capacities. We, of course, would continue paying their salaries and expenses and we set out below their names and functions:

Mr. T. B. Harrington, who is responsible for design and engineering matters.

Mr. J. E. Ellor, who is responsible for performance, testing and installation work.

Mr. J.M. Reid, who is responsible for quality of workmanship and materials and up to the present has been advising Packards of production matters.

/s/ A. C. Boddie

A. C. Boddie  
for Director General  
BRITISH AIR COMMISSION

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52 IMMEDIATE ACTION  
RESTRICTEDPackard Motor Car Co.  
Detroit, Michigan  
(FRS Project 43 B-5)

1st Ind.

Roy  
AJG:EPW:h1

105

War Department, Army Air Forces, Materiel Center, Office of the District Supervisor, Central Procurement District, 8505 W. Warren Avenue, Detroit, Michigan. January 13, 1943. TO: Commanding General, Army Air Forces, Materiel Center, Steele High Bldg., Dayton, Ohio. Att: Production Resources Section.

1. The following is in reply to basic immediate action letter. Ref: DHF:vwp:90-3-3-1, subject: Packard Motor Car Company, Detroit, Michigan FRS Project 43 B-5, dated January 4, 1943.

2. Attention is invited to error in total of column 2, page 3, subject Appendix "A". Revised and corrected summary as prepared by subject facility is inclosed. Facility has been directed to forward additional copies to your office.

3. Attention is invited to revised summary of facilities, page 3, subject Appendix "A". Total funds are requested in the amount of \$2,705,690. Facility distributed its requirements as follows: IPS Project 43-B - \$178,943, and combined IPS Projects 43 B-3 and 43 B-4 - \$2,526,747. Basic letter designated the total sum (\$2,705,690), to FRS Project 43 B-5.

a. The total, \$178,943, column 3, is the net overrun on IPS Project 43 B, original Rolls-Royce Merlin engine project. An overrun of \$308,743 in Schedule III, "Equipment Rearrangement", is partially offset by a credit of \$129,800 in the same schedule for equipment estimated in excess of requirements.

(1) Investigation by this office discloses that several rearrangements had been started and then abandoned because of the necessity of revising plans for increased production demands. Costs incurred through such incompleted programs are of little value to facility's final production effort.

(2) It is the opinion of this office that estimates compiled by subject facility are fair and reasonable, and that conversion to this extent is necessary for proposed production requirements.

b. The total, \$2,526,747, column 6, is the additional funds required to convert 800 Rolls-Royce Merlin engines monthly from type 1650-1 to true V-1650-3.

(1) Schedule II-e, "Rearrangement, relocation, etc.," total - \$126,649, provides for the removal and storage of facility's equipment and conversion of floor area for production requirements. It is the opinion of this office that this additional area will be necessary and that estimates are fair and reasonable.

(2) That portion of Schedule III, "Rearrangement," total - \$117,590, provides for the relocation of present equipment now located on floor areas currently assigned to this production to permit the installation of additional machinery and equipment. It is the opinion of this office that rearrangements, as listed, will be necessary to maintain efficient production lay-out and that estimates are fair and reasonable.

IMMEDIATE ACTION  
RESTRICTED

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23  
IMMEDIATE ACTION  
RESTRICTED

To: Commanding General, MAF, Steele High Bldg., Dayton, Ohio  
Subj: Packard Motor Car Co., Detroit, Michigan

AJG:RFW:hl  
1/13/43

(3) Investigation by this office discloses that existing facilities now installed on subject company's property, and connections from respective services are adequate to provide peak requirements, as stated in basic communication. Water requirements, however, are at the maximum capacity of existing 24" service main, and usage in excess of the peak will not be possible.

For the District Supervisor:

*Robert H. Wray*  
*Lieut A C*  
1st PAUL W. HUSTON  
Major, Air Corps  
Chief, Production Resources  
Branch, Production Section

Incl:

- (1) Appendix "A" - returned
- (2) Revised Summary Sheet (App. A.)

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*Control Packard -  
Labeled Dec - 6-5-8/379  
Ming. D.*

*64*  
*OK.  
John  
Packard July*

January 13, 1943

Via: Army Air Forces Resident Representative  
 To: Commanding General  
 Army Air Forces, Materiel Command  
 Wright Field  
 Dayton, Ohio  
 Attention: Brig. General K. B. Wolfe  
 Subject: Preliminary Production Study of 2700 V-1650-3  
 Engine Per Month Program.

To determine how to best reach the rate of 2700 a month, a complete breakdown of the engine has been made and a program mapped out. This covers parts to be retained in the Packard plant - either as a whole or in part - new parts to be obtained from subcontractors, expansion of present subcontractor facilities, labor situation - present and projected - including employment of women, and per cent of engine parts to be purchased on the outside. While the study is not complete, the facts available now are presented here in order that the Army Air Forces and the War Production Board may be familiar with the program which is in process of planning.

1. Value of parts of single-stage engine now being purchased on the outside - \$6600 - or approximately 50% of engine cost.

2. Additional major items to be purchased on outside for two-stage supercharger engines -

Entire after cooler	(per engine) -	\$528.00
50% of cylinder liners	"	- 136.23
50% of camshafts	"	- 93.88
50% of impellers	"	- 179.89
50% of over-running clutches	"	- 224.44
50% of all parts now made by U Division consisting of small parts, the majority of which are made on automatic screw machines (figured at Packard cost, plus 50%)	-----	2343.90
		1906.34
		6600.00

3. Estimated total two-stage supercharger engine parts to be purchased on the outside ----- \$10,106.34  
 or 64.3% of engine cost

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Wright Field  
Page #2

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4. Employment - Present, 16,000 - estimated, June 1943, 1400 engine production, 21,200 - estimated, July 1944, 2700 engine production, 27,200.

Employment of Women - Present, 2100 out of a total of 16,000, or approximately 13% - estimated will go to 10,800 on 2700 engine program, or 40% of over-all employment.

5. Machines required by Packard for production -

1400 engines per month	- 4111
2700 engines per month	- 4752

The additional number of machines required to increase engine production from 1400 to 2700 a month amounts to - 15% - or 641 machines.

6. Major items already being purchased on the outside and requiring new sources or expansion of present facilities are -

- Aluminum Castings
- Main and connecting rod bearings
- Starter motors
- Carburetors
- Boost Controls
- Coolant pumps
- Magnets
- Intake and Exhaust Valves
- Brass bushings
- Anti-friction bearings
- Screw machine parts

7. Machines and Facilities requirements of the vendors furnishing the above major items are now being studied and will be ready in approximately 30 days.

8. Requirements of the vendors who will furnish the parts included under No. 2 and which are not now being purchased from vendors will be studied with the subcontractors as soon as arrangements have been made covering the manufacture of the parts. These new vendors, as well as our present suppliers will, of course, need the same help as the prime contractor as regards urgency rating.

9. Engine Test Facilities: Present set-up of 26 test cells is being expanded to 48. This would not be adequate to test production of 100 engines a day if the same requirements as to green run, teardown and final test as all engines was to be continued. We recommend that this matter be given thorough study with the idea of reducing the running time on the dynamometers, as well as eliminating the teardown of 100% of engine production. While this is not an immediate problem, it is one that requires careful study well before the 1400 monthly rate is increased.

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Wright Field  
Page #3

1-13-63

Packard proposes that Letter of Intent incorporating the items covered in our letter of December 28, be issued - under this letter, Packard to proceed with plant layout, facilities, utilities, etc., same to be later covered under Plansor 978.

It is further pointed out that while the Letter of Intent is proposed to cover only 5550 additional engines, actually Packard's expansion program and arrangements with subcontractors must be based on getting to a production of 2700 engines per month and maintaining that rate.

PACKARD MOTOR CAR COMPANY

Geo. T. Christopher  
President

WMP:5

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DHP:vwp:90-3-3-1

Steele High Bldg.

January 13, 1943

Commanding General  
 AAF Materiel Command  
 Washington, D. C.  
 Attention: Chief, Resources Division

Packard Motor Car Company  
 Detroit, Michigan  
 (FRS Project 43 B-6)

1. The following are the results of preliminary analysis of a proposal submitted by the subject corporation for additional facilities considered necessary for the manufacture of aircraft engines:

a. Description of Item to be Produced: The Packard Motor Car Company has been requested to convert its entire production of Rolls-Royce Merlin engines from type V-1650-1 to type V-1650-3, the type 3 engine having a 2-stage 2-speed supercharger.

(1) It is the sole source of supply for Rolls-Royce Merlin engines.

(2) It is estimated that production in the proposed facilities will begin in September, 1943.

b. Justification: Due to the increased efficiency and superior performance of the type V-1650-3 engine over the type V-1650-1 engine, it is deemed necessary to convert the remaining 800 type 1 engines mostly to type 3 engines. In order to accomplish the conversion, the facilities included in this proposal must be provided as quickly as possible. This office knows of no other manufacturer who could get into production as quickly or at as reasonable cost.

c. Subcontracting: It is estimated that present practice of subcontracting 50 percent of requirements can be increased to 52 percent in the expanded facilities.

d. Previous Expansion: The Packard Motor Car Company has been previously expended with Government aid recommended by the Army Air Forces as follows:

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Steele High Bldg.,

January 19, 1943

Com. Gen., IAF Mat. Com.

Packard Motor Car Co. (Project 43 B-5)

<u>FBS (Formerly IIS) Project No.</u>	<u>Processed</u>	<u>Amount</u>
43 A	2/3/40 (Lease)	\$ 2,000,000
43 A-1	2/7/41	1,183,333
43 A-2	7/30/41	2,300,330
43 A-3	2/17/42	786,720
43 B	2/7/42	20,593,304
43 B-1	3/21/42	3,311,928
43 B-2	Proc. by WFB	950,706
43 B-3	9/19/42	2,347,856
44 B-4	11/4/42	1,872,171

e. Type and Location of Plant: The facilities included in this proposal will be installed in the Packard plant, located in Detroit, Mich.

f. Capacity: The Packard Motor Car Company presently has capacity for the manufacture of 800 type V-1650-1 and 600 type V-1640-3 Rolls-Royce Merlin Engines monthly, with an estimated yearly sales value of \$252,559,200. The proposed facilities will enable conversion of the 800 type 1 engines to type 2 engines monthly, adding approximately \$11,452,800 for a total of \$264,012,000 in yearly sales value.

g. Estimated Overall Costs:

Building Conversion	\$ 126,649
Machinery, Equipment, Etc.	2,572,041
Total	\$2,705,690

(1) The estimated costs of the proposed facilities are based upon preliminary analysis of the project and are subject to change. The Defense Plant Corporation lease agreement should, however, not exceed the overall estimate.

(2) There are inclosed two copies of preliminary appendix "A" submitted by subject company, which forms the basis of this processing inter-office memorandum. It is the understanding of this office that

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Steele High Bldg.,

January 18, 1947

Con. Gen., PAP Mat. Com.

Packard Motor Car Co. (Project 43 B-6)

one copy will be forwarded to the Defense Plant Corporation for its information and guidance.

(3) As soon as the Appendix "A" has received final approval in this office, any material changes in the schedules affecting the preliminary estimate will be submitted to your office in order that the lease agreement may be amended accordingly.

b. Floor Space: The subject company will provide 5,000 square feet of productive floor area for this project.

i. Plan of Financing: Defense Plant Corporation lease agreement, Plan IV.

i. Additional Monthly Requirements of Utilities:

	Maximum	Average	Source of Supply
Gas, Cu. Ft.	50,000	50,000	Michigan Consolidated Gas Co.
Power Demand in KW	1,150	1,000	Packard & Detroit Edison Co.
Water, Gallons	2,200,000	2,200,000	City of Detroit

(1) The supply of utilities is adequate for maximum needs.

k. Type of Buildings: No building construction is involved in this proposal.

i. Special Requirements:

(1) No additional labor, housing or transportation are involved in this proposal. A field survey by the Central Procurement District Supervisor has confirmed the adequacy of the supply of utilities.

(2) Machinery and equipment amounting to \$437,691 will be allocated to various subcontractors, subject to approval by the proper agencies.

(3) Attention is invited to conversion costs of \$126,649 in Schedule II, and \$426,333 in Schedule III totaling \$552,982, approximately 90 percent of which is Class II (rearrangement). Further analysis and evaluation may result in a reduction of approximately \$30,000, a large part of which

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January 19, 1943

Com. Gen., AAF Mat. Com.

Packard Motor Car Co. (Project 43 B-5)

is Class III. A field survey by the Central Procurement District Supervisor indicates that conversion costs to the extent shown are necessary in order to provide efficient production layout and that the costs are reasonable.

A. Certification: This office certifies that the facilities included in this proposal are necessary to meet the requirements of the P-L Aircraft Program, and that other facilities not requiring expansion with Government aid are not available.

B. Reimbursement: The company has certified that no part of the cost of facilities covered by this proposal has been or will be included in the prices of articles furnished the Government, or prime contractors to the Government.

C. Competition: The Packard Motor Car Company is the sole source of Rolls Royce Merlin engines, and should not, therefore, be considered in competition with other manufacturers.

2. Recommendations: It is, therefore, recommended that approval of all agencies concerned be obtained to the facilities covered by this proposal amounting to \$2,705,600, and that this office be authorized to proceed with final negotiations with the applicant.

E. W. RAWLINGS  
Colonel, Air Corps  
Chief, Production Resources Section

1 Incl:  
Pre. App. "A"  
(In dup.)

Distribution:  
Prod. Div.  
Budget Officer  
Col. Hermon, Ch., Fac.Br., Proc.Div.  
Inspection Section



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43/B-5

January 19, 1943

*Job Bowling  
May 27 1943*

Dictated by Col. Herod over phone. Telegram written today by Col. A. H. Johnson.  
Assistant Chief of Staff (R)

PRODT-212.....RETEL F-865 DATED 1-15-43 PACKARD EXPANSTON INFORMATION RECEIVED  
FROM PACKARD BY TELEPHONE INDICATES THAT EXPANSION OF PACKARD COMPANY IN DETROIT  
WILL INVOLVE A COST OF \$5,769,000. FOR MACHINERY, \$2,000,000, FOR MISCELLANEOUS  
PLANT EQUIPMENT AND \$3,974,000. FOR PLANT REARRANGEMENT AND MISCELLANEOUS ITEMS.  
IN ADDITION TO THE ABOVE IT IS ESTIMATED THAT TEN TO FIFTEEN ADDITIONAL TEST CELLS  
AT APPROXIMATELY \$70,000. EACH WILL HAVE TO BE RELEASED IN THE NEAR FUTURE. THE  
ABOVE ARE PRELIMINARY ESTIMATES ONLY AND MORE ACCURATE ESTIMATES WILL BE AVAILABLE  
WHEN PACKARD SUBMITS THEIR APPENDIX.

PRODUCTION DIVISION

*file*



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0-Packard-26  
RD-75

WAR PRODUCTION BOARD  
WASHINGTON, D. C.

9

January 26, 1943

MEMORANDUM FOR: Headquarters of the Army Air Forces  
Facilities Section  
Material Command

SUBJECT: Packard Motor Car Company  
Detroit, Michigan

The Facility Clearance Board has approved the above project in the amount of \$12,700,000 for machinery, equipment and building conversion for the production of aircraft engines.

It is understood that the expansion resulting from this approval will require an additional 6,000 employees, of whom approximately 5,500 will be women. A copy of this memorandum is being directed to the War Manpower Commission so that they will be informed of the additional demand for labor being placed in Detroit.

In order to avoid delay and duplication of effort, a signed copy of this letter of approval must be included in the case folder of this project, as a part of the permanent record.

*Gordon E. Textor*  
Gordon E. Textor  
Acting Chairman  
Facility Clearance Board

By *Lincoln Clark*  
Lincoln Clark  
Acting Secretary  
Facility Clearance Board



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THE NATIONAL ACME COMPANY

Cleveland, Ohio

January 26, 1943

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Mr. W. B. Murphy  
Aviation Division  
War Production Board  
Railway Retirement Bldg.  
Washington, D. C.

Dear Mr. Murphy:

This letter confirms our telephone conversations of yesterday and this morning regarding your previous requests that we submit proposals to The Packard Motor Car Co. for the manufacture of the pressure pump and scavenger pump, complete, for the Merlin Motor.

Our engineers and production men have made careful studies of production time, material requirements, inspection, and assembly, both here and at Packard, and we are prepared to submit our price on the quantities they requested. We have also prepared a list of the additional equipment required, involving about a dozen machines.

Yesterday I contacted Mr. I. R. Kappler, Purchasing Manager of Packard, to arrange a conference for the submission of our proposals, but was informed by him that Packard has decided to build all of the pumps themselves, and have rearranged their manufacturing schedules accordingly. It is apparent, therefore, that so far as they are concerned, a quotation is not required at this time.

We have telephoned you accordingly, and will take no further action in this matter until we hear further from you.

Very truly yours

THE NATIONAL ACME COMPANY

A. E. DRISSNER,  
Vice-President & Chief Engineer

AED:KPK

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REF ID: A66666

Packard Case No 3484 12  
JAC-113-6/370

CONFIDENTIAL

Case 3484

ARMY AIR FORCES  
HEADQUARTERS OF THE MATERIEL COMMAND  
WASHINGTON

JAN 20 1943

MEMORANDUM FOR: Joint Aircraft Committee

SUBJECT: Packard Merlin Engine Production.

*Army to give  
two engines on per month  
possible to be flown  
over - engine to be  
Army*

1. In accordance with decision of Joint Aircraft Committee at meeting of January 7, 1943, attached hereto are Exhibit "A" and Exhibit "B" showing:

Exhibit "A"

Study showing British and U.S. requirements with Surplus and Deficit figures calculated, using as capacity, Packard Schedule as approved January 14, 1943, J.A.C. Case No. 3397. These figures arrived at in conference with British member of the Special Engine Subcommittee.

Exhibit "B"

Proposed Packard Engine Allocation Schedule with a recommended allocation of Packard Merlin engines to British and U.S. This proposed allocation gives all Packard Merlin two stage engines to the U.S. for P-51 production until a peak of 600 per month is reached. British to receive all single stage engines after P-40 requirements are met, and all two stage engines produced in excess of 600 per month. Packard are to produce all two stage engines by November, 1943.

2. It is requested that suggested allocation schedules shown in Exhibit "B" under "Proposed British Allocation" and "Proposed U.S. Army Allocation" be adopted for planning purposes.

*O P Echols*

Incls: 2  
#1, Exh. "A".  
#2, Exh. "B".

O. P. ECHOLS  
MAJOR GEN. U.S.A.  
COMMANDING GENERAL

Approved by Joint Aircraft Committee.

20/14/43

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Packard - Case no. 3484  
JAC-103-(2/3pp)

CONFIDENTIAL

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Destination	Airplane	Months Lead	Engine Type	No. of Engines on Order	Delvd. to 12-31-42	Bal. Due	Plus or Minus	PACKARD MERLIN ENGINE STUDY																			
								1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954								
<b>One-Stage</b>																											
<b>British</b>																											
U. K.	Lancaster	3 mos.	-28:-33	1244	9795	5215	257	24	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
U. K.	York	3 mos.	-28:-33	207	1547	255	25	-	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
Canada	Lancaster	3 mos.	-28:-33	29	204	25	25	25	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
Canada	Mosquito	2 mos.	-31:-33	478	1245	257	192	192	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
Aust.	Mosquito	6 mos.	-31:-33	183	476	152	20	20	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
Subtotal - British								1271	1517	2123	629	38	200	1154	1026	1075	1362	209	514	514	444						
<b>U. S.</b>																											
U. S.	P-47	2 mos.	-1	312	421	307	24	24	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
U. S.	P-40	2 mos.	-1	200	1347	257	206	206	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194				
Subtotal - Army								1174	1347	257	206	206	194	194	194	194	194	194	194	194	194	194	194	194	194	194	
Total One Stage Requirements								5773	14174	3546	2086	1196	1143	1196	1397	1228	1123	1254	929	804	604	444					
" " " " Schedule 2/													848	583	1081	1066	1075	1074	209	804	604	444					
Cum. Surplus or Deficit													848	583	1081	1066	1075	1074	209	804	604	444					
<b>Two-Stage</b>																											
<b>British</b>																											
U. K.	Lancaster	5 mos.	-68	2163	11248	0	11248	0																			
Canada	Lancaster	3 mos.	-68	433	2291	0	2291	0																			
Canada	Mosquito	2 mos.	-69	2075	9305	0	9305	0																			
Aust.	Mosquito	6 mos.	-69	220	572	0	572	0																			
Subtotal - British								19576	0	19576	0																
<b>U. S.</b>																											
U. S.	P-51	2 mos.	-3	3337	4662	2	4662	0																			
U. S.	(Dallas)																										
U. S.	P-51	2 mos.	-3	3300	3220	5	3220	5																			
U. S.	(Ingle.)																										
Subtotal - Army								9962	5	9977	5																
Total Two Stage Requirements								29438	5	29483	5																
" " " " " " " " Schedule 2/													270	180	270	306	455	731	636	1212	1403	1960	2054	2148	2215	2283	2344
Cum. Surplus or Deficit													270	180	270	306	455	731	636	1212	1403	1960	2054	2148	2215	2283	2344
<b>Total Packard Requirements</b>								43992	3391	30841	1261																
<b>Total Packard Schedule</b>																											
<b>Cum. Surplus or Deficit</b>																											

NOTE: Study excludes completed Hurricane Requirements.  
U. S. Requirements per S-L; British per own schedule.1/ Includes: 30% Spare Engines for British - 40% for U. S.  
2/ Includes latest estimate of production. Spec. N. 336



Packard - Case no. 3484  
AC-103-(2/377)

CONFIDENTIAL 13

CONFIDENTIAL

Destination	Airplane	Months Lead	Engine Type	No. of Planes	Engines on Order	Delvd. to 12-31-42	Bal. Due	Plus or Minus	PACKARD MERLIN ENGINE STUDY																																									
									1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954																														
<u>One-Stage</u>																																																		
<u>British</u>																																																		
U. K.	Lancaster	3 mos.	-30:-30	1815	9785	3015	9757	694																																										
U. K.	York	3 mos.	-30:-30	310	1040	255	795	-																																										
Canada	Lancaster	3 mos.	-30:-30	55	284	25	261	53																																										
Canada	Mosquito	2 mos.	-31:-33	408	1245	257	388	190																																										
Aust.	Mosquito	6 mos.	-31:-33	183	476	132	344	26																																										
Subtotal - British														1128	629	38	80	1173	1666	1775	1744	200	804	604	444																									
U. S.	P-47	2 mos.	-1	312	421	397	24	0																																										
U. S.	P-47	2 mos.	-1	70	137	57	54	276																																										
Subtotal - Army														1124	624	257	234	198	24																															
Total One Stage Requirements														3773	1414	654	858	1196	1143	1196	1307	1208	1103	1754	920	804	604	444																						
Schedule 2/																			840	883	1241	1060	1073	1204	200	804	604	444																						
Cum. Surplus or Deficit																			1196	81	130	192	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<u>Two-Stage</u>																																																		
<u>British</u>																																																		
U. K.	Lancaster	3 mos.	-68	2163	11248	0	11248	0																																										
Canada	Lancaster	3 mos.	-68	453	2291	0	2291	0																																										
Canada	Mosquito	2 mos.	-69	2775	5395	1	5395	0																																										
Aust.	Mosquito	6 mos.	-69	220	577	2	577	0																																										
Subtotal - British														10796	0	10796	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
U. S.	P-51	2 mos.	-3	3337	4662	2	4662	0																																										
U. S.	(Dallas)																																																	
U. S.	P-51 (Ingl.)	2 mos.	-3	500	532	1	532	5																																										
Subtotal - Army														9322	5	9327	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total Two Stage Requirements														20436	5	20441	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Schedule 2/																			2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
Cum. Surplus or Deficit																			2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Total Packard Requirements														43592	5391	38441	1291	1143	1196	1307	1208	1103	1754	920	804	604	444																							
Total Packard Schedule																			840	883	1241	1060	1073	1204	200	804	604	444																						
Cum. Surplus or Deficit																			1291	81	130	192	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

NOTE: Study excludes completed European Requirements.  
 U. S. Requirements per B-L; British per own schedule.  
 1/ Includes: 3% Spare Engines for British - 4% for U. S.  
 2/ Packard's latest estimate of production. Case No. 33

January 25, 1943.  
 WSE/



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CONFIDENTIAL

PACIARD MGR IN ENGINE STUDY

1943 1944  
Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec

Del. No.	Del. Date	Plus or Minus	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980							
3015	3757	604	50	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500
3016	3758	605	51	71	81	91	101	111	121	131	141	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351	361	371	381	391	401	411	421	431	441	451	461	471	481	491	501
3017	3759	606	52	72	82	92	102	112	122	132	142	152	162	172	182	192	202	212	222	232	242	252	262	272	282	292	302	312	322	332	342	352	362	372	382	392	402	412	422	432	442	452	462	472	482	492	502
3018	3760	607	53	73	83	93	103	113	123	133	143	153	163	173	183	193	203	213	223	233	243	253	263	273	283	293	303	313	323	333	343	353	363	373	383	393	403	413	423	433	443	453	463	473	483	493	503
3019	3761	608	54	74	84	94	104	114	124	134	144	154	164	174	184	194	204	214	224	234	244	254	264	274	284	294	304	314	324	334	344	354	364	374	384	394	404	414	424	434	444	454	464	474	484	494	504
3020	3762	609	55	75	85	95	105	115	125	135	145	155	165	175	185	195	205	215	225	235	245	255	265	275	285	295	305	315	325	335	345	355	365	375	385	395	405	415	425	435	445	455	465	475	485	495	505
3021	3763	610	56	76	86	96	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416	426	436	446	456	466	476	486	496	506
3022	3764	611	57	77	87	97	107	117	127	137	147	157	167	177	187	197	207	217	227	237	247	257	267	277	287	297	307	317	327	337	347	357	367	377	387	397	407	417	427	437	447	457	467	477	487	497	507
3023	3765	612	58	78	88	98	108	118	128	138	148	158	168	178	188	198	208	218	228	238	248	258	268	278	288	298	308	318	328	338	348	358	368	378	388	398	408	418	428	438	448	458	468	478	488	498	508
3024	3766	613	59	79	89	99	109	119	129	139	149	159	169	179	189	199	209	219	229	239	249	259	269	279	289	299	309	319	329	339	349	359	369	379	389	399	409	419	429	439	449	459	469	479	489	499	509
3025	3767	614	60	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	
3026	3768	615	61	81	91	101	111	121	131	141	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351	361	371	381	391	401	411	421	431	441	451	461	471	481	491	501	
3027	3769	616	62	82	92	102	112	122	132	142	152	162	172	182	192	202	212	222	232	242	252	262	272	282	292	302	312	322	332	342	352	362	372	382	392	402	412	422	432	442	452	462	472	482	492	502	
3028	3770	617	63	83	93	103	113	123	133	143	153	163	173	183	193	203	213	223	233	243	253	263	273	283	293	303	313	323	333	343	353	363	373	383	393	403	413	423	433	443	453	463	473	483	493	503	
3029	3771	618	64	84	94	104	114	124	134	144	154	164	174	184	194	204	214	224	234	244	254	264	274	284	294	304	314	324	334	344	354	364	374	384	394	404	414	424	434	444	454	464	474	484	494	504	
3030	3772	619	65	85	95	105	115	125	135	145	155	165	175	185	195	205	215	225	235	245	255	265	275	285	295	305	315	325	335	345	355	365	375	385	395	405	415	425	435	445	455	465	475	485	495	505	
3031	3773	620	66	86	96	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416	426	436	446	456	466	476	486	496	506	
3032	3774	621	67	87	97	107	117	127	137	147	157	167	177	187	197	207	217	227	237	247	257	267	277	287	297	307	317	327	337	347	357	367	377	387	397	407	417	427	437	447	457	467	477	487	497	507	
3033	3775	622	68	88	98	108	118	128	138	148	158	168	178	188	198	208	218	228	238	248	258	268	278	288	298	308	318	328	338	348	358	368	378	388	398	408	418	428	438	448	458	468	478	488	498	508	
3034	3776	623	69	89	99	109	119	129	139	149	159	169	179	189	199	209	219	229	239	249	259	269	279	289	299	309	319	329	339	349	359	369	379	389	399	409	419	429	439	449	459	469	479	489	499	509	
3035	3777	624	70	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500		
3036	3778	625	71	91	101	111	121	131	141	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351	361	371	381	391	401	411	421	431	441	451	461	471	481	491	501		
3037	3779	626	72	92	102	112	122	132	142	152	162	172	182	192	202	212	222	232	242	252	262	272	282	292	302	312	322	332	342	352	362	372	382	392	402	412	422	432	442	452	462	472	482	492	502		
3038	3780	627	73	93	103	113	123	133	143	153	163	173	183	193	203	213	223	233	243	253	263	273	283	293	303	313	323	333	343	353	363	373	383	393	403	413	423	433	443	453	463	473	483	493	503		
3039	3781	628	74	94	104	114	124	134	144	154	164	174	184	194	204	214	224	234	244	254	264	274	284	294	304	314	324	334	344	354	364	374	384	394	404	414	424	434	444	454	464	474	484	494	504		
3040	3782	629	75	95	105	115	125	135	145	155	165	175	185	195	205	215	225	235	245	255	265	275	285	295	305	315	325	335	345	355	365	375	385	395	405	415	425	435	445	455	465	475	485	495	505		
3041	3783	630	76	96	106	116	126	136	146	156	166	176	186	196	206	216	226	236	246	256	266	276	286	296	306	316	326	336	346	356	366	376	386	396	406	416	426	436	446	456	466	476	486	496	506		
3042	3784	631	77	97	107	117	127	137																																							



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JAC 103-2/77

CONFIDENTIAL

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PROPOSED FACTORY ENGINE ALLOCATION SCHEDULE  
- BRITISH REQUIREMENTS

	Eng. on Order	Divd. to 12-31-42	Bel. Due	+ or -	1943												1944			
					Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr
<b>One Stage</b>																				
British Requirements (Exh. "A")	12640	4512	8128		938	980	1103	1066	1075	1074	929	804	684	544						
Proposed British Allocation					563	565	1003	1003	107	1000	927	804	601	544						
Cum. Surplus or Deficit					+929	+571	+139													
U.S. Requirements (Exh. "A")	1160	331	829		29	31														
Proposed US Army Allocation					29	31														
Cum. Surplus or Deficit					+29	+31														
<b>Two Stage</b>																				
British Requirements (Exh. "A")	1960		1960																	
Proposed British Allocation																				
Cum. Surplus or Deficit																				
U.S. Requirements (Exh. "A")	957		957		20	20														
Proposed US Army Allocation					2	1														
Cum. Surplus or Deficit					+18	+19														

Suggested British and U.S. Allocations Based on:-

- (a) Packard producing all two stage by November, 1943.
- (b) U.S. getting all two stage engines until Oct per month and 600 per month thereafter.
- (c) British to re-assign their engines in accordance with new allocation.

January 25, 1943.



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## IMMEDIATE ACTION

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ADDRESS REPLY TO 0

WAR DEPARTMENT  
AIR CORPS  
MATERIEL DIVISION

86:CGW:em

Wright Field, Dayton, Ohio  
February 3, 1943

To: Chief, Production Resources Section  
Steele High Building  
Dayton, Ohio

Attention: Facilities Branch

Subject: Contract W535 ac-15678  
Supplement No. 11  
Packard Motor Car Company

1. This will confirm telephone conversation between Mr. C. G. Walker of the Aircraft Procurement Branch, and Mr. Meisinger of your office with reference to the question of facilities requested by the Packard Motor Car Company on subject supplement.
2. The problem which has been raised concerns the date that should be inserted in the Facilities Escape Clause in the contract, said date indicating the time when the facilities requested by Packard should be available to them and, after which time, facilities not being available, Packard will be able to renegotiate the delivery schedule set forth in said supplement.
3. Along this line Packard mentioned Production Resources Projects Nos. 43B, 43B1, 43B2, 43B3, 43B4, and 43B5. It was indicated that each of these projects covered a different portion of the program of raising Packard's production from 800 to 1400 per month and it was requested by Packard that these projects be incorporated into the supplement by reference, using the dates set forth in said projects as the times when the facilities for this supplement would be required.
4. It is requested that your office inform this office as soon as possible whether such a method can be used to set the deadline for delivery of facilities in subject supplement and, if so, give this office the applicable dates taken from the above-mentioned projects, which dates should be controlling as to delivery of these facilities. It is also requested that, as a method of more correct reference for contractual purposes, the actual approval dates of the above-mentioned projects be given this office.
5. Subject supplement is in the process of being drafted and coordinated and it is requested that an answer be made to this communication immediately.

MDAC-321-WF-1-5-42-50M

*Frank R. Jones*  
A. E. JONES *at AC*  
Brig. General, U.S.A.  
Chief, Procurement Division

IMMEDIATE ACTION

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0-Packard-66  
RD-46

//  
**RESTRICTED**  
WAR DEPARTMENT  
OFFICE OF THE UNDER SECRETARY  
WASHINGTON, D. C.

FILE 66  
February 4, 1943

MEMORANDUM FOR: Brig. Gen. F. M. Hopkins, Jr. (AF)

SUBJECT: Packard Motor Car Company, Detroit, Michigan  
Defense Plant Corporation Lease Agreement  
Plancor 978 - PRS Project 43 B-5

1. This increase (\$2,705,690 for additional facilities including building conversion, machinery and equipment) will be provided by amendment. The lease is at a Dollar-A-Year and the increase will require an additional firm commitment of one-half the increase, or \$1,352,845.

2. I understand that you will request funds.

*Franklin T. Hammond, Jr.*

FRANKLIN T. HAMMOND, JR.  
Lt. Colonel, A.U.S.  
Special Legal & Liaison Division, OUSW

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O-Feather 66  
P.D.-99.

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FILE 66

WAR PRODUCTION BOARD

WASHINGTON, D. C.

February 5, 1943

IN REPLY REFER TO:

MEMORANDUM FOR: Headquarters of the Army Air Forces  
Facilities Section  
Material Command

SUBJECT: Packard Motor Car Company  
Detroit, Michigan  
PES Project 43 E-5

The Facility Clearance Board hereby approves your request for funds in the amount of \$2,700,000 to convert the entire production of Rolle-Royce Merlin engines by the subject company from present V-1850-1 type to the new V-1850-3 type.

In order to avoid delay and duplication of effort, a signed copy of this approval must be attached to the case file and made a part of the permanent record.

*Gordon E. Teyton*  
Gordon E. Teyton  
Acting Chairman  
Facility Clearance Board

*Fredrick A. Kinich*  
Fredrick A. Kinich  
Executive Officer  
Facility Clearance Board



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INTER-OFFICE CORRESPONDENCE SAC:msb:90-3-1-2

To Chief, Industrial Capacity Unit Date February 6, 1943

B

SUBJECT: Cooperation of Peckard with  
International Harvester in the  
Manufacture of Heat Treated and  
Ground Engine Parts and Assemblies

115

1. On contacting Mr. A. J. Kramer of the above company, we were advised that Peckard has been very slow to the point that International Harvester is no longer interested in dealing with Peckard in the manufacture of Heat Treated and Ground Engine parts.
2. I.H.C. has been given every effort to expedite placement of business with them for reportedly critically needed engine parts, but to date Peckard has maintained a very high attitude and little or no cooperation.
3. During the week of February 1, one of the Peckard men was sent to the I.H.C. Plant to question whether or not they would need a few machines to supplement those they have presently offered to produce 8 Precision Ground Parts and 30 Heat Treated Studs. Mr. Kramer reports that the man who visited the plant in the past (from Peckard) was insolent in his demands and more or less inferred that Peckard was doing International Harvester a favor for even considering them for engine parts manufacture.
4. It is the expressed desire of I.H.C. at the moment, that they be released from further negotiations with Peckard and be placed in contact with an engine manufacturer, preferably of Wright Parts, who would use their open capacity and cooperate towards this end.

Copy to:  
Mr. Thomas  
Major Sheffield

*Storath*  
S. A. SWIATT  
Captain, Air Corps

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66:007:100

Wright Field, Dayton, Ohio  
February 27, 1943Sub-leasing of D.P.C.  
Machinery and EquipmentPackard Motor Car Company  
1520 West Grand Boulevard  
Detroit, MichiganReferences: AAF Letter CWC:ent66, November 25, 1942, subject, "Sub-  
leasing of D.P.C. Machinery and Equipment, D.P.C. Lease  
No. 4, Planor 978, and D.P.C. Lease No. 5, Planor 999".

1. This is in reference to conversation with your Mr. Milock at the Materiel Center on February 25, 1943, in which discussion Mr. Milock stated that Packard had been informed by D.P.C. that the sub-leasing of D.P.C. machinery and equipment had to be approved not only by the D.P.C., but by the War Department. Packard indicated that if War Department approval was necessary, since there were numerous cases of such sub-leasing, the whole process of transfer of this machinery and equipment would be slowed down.
2. This matter has been taken up with Production Resources Section of the Production Division and this will inform you that there is no manner in which such sub-leasing can be carried out without the approval of that Section representing the War Department.
3. It is suggested that when Packard has a number of machines to sub-let, at the time request is made for approval from D.P.C., a copy of such request go forward to the Production Resources Section at the Materiel Center with the request that approval be given by that Section also. In the majority of cases, where the lessee is a reputable contractor, approval can be given immediately. If the Production Resources Section approves such sub-leasing, it will forward to Packard a notice of the approval subject to the simultaneous approval of the D.P.C.
4. It is requested that receipt of this letter be acknowledged and that advice be given as to whether Packard will follow this procedure in the future.

For the Commanding General, Army Air Forces Materiel Center:

cc:  
AAF Rep.  
C.D. Supv.  
Prod. Res. Sect. (Mr. Meisinger)A. E. JONES  
Brig. General, U.S.A.  
Chief, Procurement Division.3796  
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INTER-OFFICE CORRESPONDENCE SAO:mab:90-3-1-2

To Chief, Industrial Resources Branch

February 8, 1943

SUBJECT: Packard - National Acme Negotiations  
for Oil Pressure Pump and Scavenger  
Pump

B

1. On word from Colonel Moriarty, talked to Mr. W. P. Murphy, who is very discouraged with Packard's attitude and action in creating new capacity for the above pumps.
2. National Acme has indicated they have 75% of the machine tools to do the job and produce 1400 units per month. After spending a week with the Vice President and Engineer, and three top engineers in figuring the above job, National Acme was asked to cease negotiations with no explanation offered other than that they could handle the job themselves.
3. Mr. Murphy said that William Packard, Vice President of Packard, made the statement to him when questioned on the contents of letter of January 26th (attached) that Packard to date do the job with only one machine tool.
4. This is very doubtful in lieu of big new Appendix for 12,000,000. Colonel Moriarty asks that each assembly, machine tools be checked and each not contained in the Appendix or indicated separately, be requested from Packard immediately for checking against their above statements.
5. This of course does not make available to the Air Corps the excellent capacity available at National Acme. It is imperative that some action be taken immediately or we will lose National Acme capacity.

S. A. OVIATT  
Captain, Air CorpsCopy to:  
Major E.P. Muther ✓  
Mr. H.C. Thomas

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AAFMC-261 WF-E-22-42-603M

## INTER-OFFICE MEMORANDUM

ARMY AIR FORCES  
MATERIEL CENTER  
Office of The Commanding General

80-5:RTW:lmg

Wright Field, Dayton, Ohio

Date February 11, 1943.

TO: Chief, Production Resources Section  
Wright Field.

SUBJECT: Packard Motor Car Company  
Detroit, Michigan  
PRS Project 43B-3, B-4 and B-5

1. Subject Contractor has requested the inclusion of an escape clause within Supplement No. 11 now being prepared to Contract W 535 ao-15678.

2. In connection with the changeover in the manufacture of Rolls-Royce Merlin engines from Type V1650-1 to V1650-3 the following PRS projects have been processed in the indicated amounts:

43B-3	9-16-42	\$ 2,347,856.00
43B-4	11-4-42	1,572,171.00
43B-5	1-18-43	2,705,690.00

3. The proposed delivery schedule calls for a gradual conversion to the new type motor over a period of several months. It is the claim of the Contractor that the additional facilities processed are to be installed gradually and only as required by the conversion in manufacturing in order to meet the specified schedule.

4. It is requested that your office furnish such data as is available concerning the estimated acquisition dates under each of the three (3) expansions listed hereinabove.

*R. C. Harmon*  
R. C. HARMON  
Colonel, J.A.G.D.  
Chief, Facilities Branch  
Procurement Division

Signature

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checked with [unclear]  
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AFAMC-6  
JWS:repc

February 27, 1943.

Production Division,  
Wright Field, Dayton, Ohio.  
Attention: Brig. General E. B. Wolfe.B. E. Meyers,  
Brig. General, U.S.A.

6-161. When the Packard engine schedule was presented to the Joint Aircraft Committee the British requested a study of the possibility of them getting more single stage engines for two reasons. One was that the total quantity of engines was reduced as a result of changing to all two-stage engines, and second because we were giving them the two-stage engines before they had sufficient time to re-engineer their airplanes for the engines. They preferred to get two-stage engines on a somewhat retarded schedule. Mr. Packer has provided a new schedule which has been coordinated with Colonel A. H. Johnson and was presented here February 25. Mr. Packer feels that the revised schedule is preferable to the previous schedule as it gives Packard a little longer to prepare for all out two-stage production. The new schedule would result in an additional 3500 single stage engines on the 14,000 engine contract, and we may be able to obtain some of these single stage engines, if desirable. Colonel Price was contacted by phone and he stated that the P-40M with the Allison is superior to the Packard installation P-40. However, if Packards are substituted in P-40's it might make available additional Allisons for P-38's or P-63's. The

*for Capt. Lovett.*

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Sched. Sect. - 66-6(77)

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6-161 continued.

new engine schedule was brought before the Engine Sub-Committee of the Joint Aircraft Committee on February 25, with Captain Muller present.

Your comments are requested as to Army Air Force requirements for some of the additional single stage engines.

CHIEF OF STAFF

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*Custom Receipt*  
*dated 10-1-69*  
*17*

69

March 5, 1969

Chief, Aircraft Section

120

1. In order to comply with Federal Regulations relating to the...  
 2. The...  
 3. The...  
 4. The...  
 5. The...  
 6. The...  
 7. The...



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Sched list - 64-21340

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March 5, 1943

Memorandum For: Chief, Aircraft Section  
 Subject: Packard Spares

was in the money value of approximately \$21,000,000.00 and was covered by Authority for Purchase No. 242504 dated September 3, 1942, and Authority for Purchase No. 242507, dated September 11, 1942. Packard's bid on this material was received with its letter of transmittal dated September 26, 1942. However, the letter of transmittal indicating proposed deliveries for items bid on was not considered acceptable at the time by Air Service Command, due to the fact that materials would not be provided in time to permit their utilization in maintenance of aircraft already in service.

8. On October 15, 1942, another letter relative to the exhibit for the \$21,000,000.00 spares order was received from Packard which further qualified promised delivery dates and stated that Packard would be unable to produce the parts without additional facilities due to the fact that Production Division of Materiel Center had required Packard to burden already overtaxed facilities with the production of a large quantity of V-1650-J engines and at the same time raise production schedules to a rate of fourteen hundred (1400) engines per month. It is obvious that such action by Materiel Center would not permit Packard to further commit itself on deliveries of the \$21,000,000.00 worth of spares. Although considered ill-advised by Air Service Command personnel, but in order to permit new production schedules to be accomplished, the Air Service Command reluctantly reduced the \$21,000,000.00 order by an overall 20% and the resultant \$16,800,000.00 order was re-submitted to Packard on November 27, 1942; Authority for Purchase No. 242507 was cancelled and the entire \$16,800,000.00 was placed on Authority for Purchase No. 242504.

9. On January 4, 1943, Air Service Command received word from the Chief of Contract Section that the revised list had been submitted to Packard on December 3, 1942, and that Packard was requested to furnish within ten (10) days price quotations and definite information regarding delivery schedules. In the meantime and during the ten (10) days immediately preceding November 25, 1942, the Joint Aircraft Sub-Committee on Engine Spares met at the Packard Plant and revised the AEB exhibit of Spares to Case 1850. This revision was made at that time due to the fact that service information was available for spare parts required for some one thousand (1,000) engines operated by the Royal Air Force and some one hundred five (105) engines that had been overhauled by Packard Motor Car Company for the Army Air Forces. The re-typing and checking of this AEB list was completed during December and revised copies of the AEB list were forwarded to Packard the first of January, 1943. It was felt by Packard, as a result of these revisions, that the order for \$21,000,000.00 worth of spares was then obsolete due to the fact that revision had been made in the AEB Standardized Maintenance Parts list. In this connection Packard's contention was that to produce and deliver parts on the basis of the old standardized parts list which was the basis

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March 5, 1943

Memorandum  
To: Chief, Aircraft Section  
From: Packard Bureau

for the \$18,000,000.00 order would result in the consumption of undue quantities of some items of raw stock and would utilize machine tools urgently required for the production of new engines. As an ultimate compromise of the part of Air Service Command it was agreed after many conferences that Packard could compile the exhibit for spares which would cover contract deficiencies that the new and revised AEB list would be used as a basis for figuring the deficiency requirements. An incomplete unpriced advance copy of this list was received from Packard for the first time March 5, 1943.

10. In conference with Packard representatives during the past week it was stated that no promises could be made as to when the spare parts listed on proposed Supplement No. 10 referred to above would be delivered. In this connection Packard Production Manager stated that such parts would be produced when, as and if fractions of machines and tail ends of materials were available. It was further stated that all of Packard's facilities would be first utilized for the production of the fourteen thousand (14,000) engines and the 10% spare parts therefor.

11. It is firmly believed that non-current parts, which represent twenty (20) to thirty(30) percent of the parts listed on proposed Supplement No. 10 will not be produced and thereby become available for maintenance of aircraft now in operation for a considerable period of time.

12. It is recommended that immediate action be taken, even at the expense of suspending production of complete engines to insure the delivery of spare parts urgently required to maintain engines now in operation and before same become obsolete.

L. S. BETTISON,  
Captain, Air Corps  
Asst., Supply Division.

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0-Packard-Engines  
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 A4/a 0, 7m+5-15(1)ppp

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(AFAMC-60)  
 FRS:gey  
 J.K.L.

INTER-OFFICE MEMORANDUM  
 ARMY AIR FORCES  
 HEADQUARTERS OF THE MATERIEL COMMAND  
 WASHINGTON

March 9, 1943.

TO: Major Gen. O. P. Schols.

SUBJECT: Production of Spare Parts in lieu  
 of 1200 Packard Merlin Engines.

1. Case No. 3484 was re-opened March 4, 1943 to submit a new Packard Production Schedule which increased Packard's 1-stage engine production by 3500 engines over the schedule approved by the J.A.C. on February 4, 1943. At the same time 2-stage production was set back approximately one month. Meanwhile P-51 schedules have been set back in approximately a corresponding amount.

2. As the Army Air Forces only require 600 2-stage engines per month, the 3500 increase in the above schedule went to the British. In order that some of the advantage in this new schedule should accrue to the Army Air Forces, Wright Field has notified Packard that we will be placing an additional order for 14 million dollars worth of spare parts which will be considered life time spare parts for the 3,000 single stage engines received on the original contract. This move will cost the British 1200 engines as follows:

1943 -	March	400
"	April	300
"	May	300
"	June	200

3. As regards spare parts for future engine deliveries, while spares for the original 9,000 were set up at 17%, the British 14,000 order will be set up for 32% spare parts and all subsequent engine deliveries will carry 38.5% spare parts. The British are contemplating an order for approximately 26 million dollars to consist of life time spare parts for the 6,000 engines on their original contract. Packard considers, however, that they will be able to make these deliveries without interrupting concurrent spare parts deliveries on the 14,000 contract or future contracts.

4. The schedule as approved by the J.A.C. on February 4, gave the British 8136 1-stage engines, and 2160 2-stage engines during 1943. The subsequently approved schedule gave the British 10320 1-stage engines, and 200 2-stage engines during the same period. Hence, Wright-Field's proposal will result in the British receiving 98% more 1-stage engines than originally proposed, but 1200 less engines than they had expected from the latter approved schedule.

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HCAS, Mes-15-6-170  
(Continued)

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(AFAC-60)  
FMS:gew

March 9, 1943.

SUBJECT: Production of Spare Parts in lieu  
of 1200 Packard Merlin engines.

5. It is, therefore, requested that the above proposals to  
take spare parts in lieu of 1200 British engines, be considered  
so that a new schedule may be submitted to the J.A.C. for approval.

J. W. <sup>S</sup> JESSUP, JR.,  
Colonel, Air Corps,  
Ass't Chief of Staff (P). 4/11/43



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JOINT AIRCRAFT COMMITTEE  
Subcommittee on Production Programs

Reopening of  
Case No. 3484

M E M O R A N D U M

TO: Recorder, Joint Aircraft Committee

FROM: Subcommittee on Production Programs

SUBJECT: Reopening of Case No. 3484, Memorandum from the Materiel Command, Army Air Forces, dated March 4, 1943  
Packard Merlin Engine Production Schedule

1. The subject memorandum was filed by Brigadier General R. E. Meyers, Chief of Staff, Materiel Command.
2. SYNOPSIS: The Packard Motor Company has notified the Materiel Command that it will be unable to accomplish the production schedule as approved by the Joint Aircraft Committee on February 4, 1943, and has submitted the attached schedule as an alternative. (Attachment 1) Packard states that their inability to meet the February 4 schedule is due to the fact that their subcontractors of the 2-stage engines are unable to go beyond the requirements for 750 engines per month prior to engines scheduled for delivery in January, 1944.
3. The proposed schedule provides for the continuation of the single-stage engine through February, 1943, at which time the conversion of Packard production to the 2-stage type will be complete. The continuation of the single-stage engine beyond that previously approved, will provide approximately 3500 additional single-stage engines for the British, while satisfying, insofar as possible, the 2-stage requirements of the Army Air Forces.
4. It will be noted, by the following comparison between totals of the old and new schedules, that a slight over-all gain in each year results:

	1943	1944	2 years
Single Stage	2293 gain	1200 gain	3493 gain
Two Stage	2113 loss	1060 loss	3173 loss
TOTAL	180 gain	140 gain	320 gain

5. RECOMMENDATION: It is recommended that the attached schedule for the production of Packard Merlin Engines be approved.
6. This action was taken at the Subcommittee meeting of March 4, 1943, and was agreed to by all members present as follows:

Navy: Comdr. G. W. Anderson, Comdr. E. M. Condra  
Lt. P. W. Wood, Capt. Paul E. Pihl

Army: Col. E. C. Langmead, Capt. A. K. Lovett  
Col. D. G. Lingle

Staff Board: Lt. Col. H. Burchall, F. W. Musson  
T. P. Wright, Chairman, A. E. Lombard, Jr.  
M. A. Tracy, J. R. O'Connor

A. R. C. C.: Lt. G. E. Connally (Army)

Also Present: Lt. Comdr. H. P. Hiley, Lt. T. B. Focke (Navy)  
Lt. S. F. Christy, Lt. S. M. Anthony, Capt. N. H. Shea (JAG)  
C. H. Simmons, G. W. Ball (ARCO) D. C. Bevan (OLLA)

For the Subcommittee on Production Programs.

C O N F I D E N T I A L

M. A. Tracy  
Recorder

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*Revised April 15 (3) 1944*

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Attachment No. 1 to  
Case No. 3484 Reopening

Attachment No. 1

*Cancelled*

SCHEDULE

	<u>Total</u>	<u>Single Stage</u>	<u>Two Stage</u>
<u>1943</u>			
January	850	850	
February	911	911	
March	1050	1050	
April	1196	1170	26
May	1300	1120	180
June	1400	1000	400
July	1400	950	450
August	1400	800	600
September	1400	800	600
October	1400	800	600
November	1450	800	650
December	1450	800	650
<u>1944</u>			
January	1550	800	850
February	1750	410	1340
March	1900		1900
April	2100		2100
May	2400		2400
June	2600		2600
July	2700		2700
August	2700		2700
September	2700		2700
October	2700		2700
November	2700		2700
December	2700		2700

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Sched. Cont. 75-4/100

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~~CONFIDENTIAL~~

PACKARD SCHEDULE GIVING EFFECT TO REDUCTION OF 600 ENGINES  
TO PROVIDE ADDITIONAL SPARE PARTS FOR P-40 AIRCRAFT.

<u>1943</u>	<u>Total</u>	<u>1-Stage</u>	<u>2-Stage</u>
January	850	850	
February	911	911	
March	650	650	
April	996	970	
May	1300	1120	26
June	1400	1000	180
July	1400	850	400
August	1400	800	550
September	1400	800	600
October	1400	800	600
November	1450	800	600
December	1550	800	650

1944

January	1650	800	850
February	1750	510	1240
March	1900		1900
April	2100		2100
May	2400		2400
June	2600		2600
July	2700		2700
August	2700		2700
September	2700		2700
October	2700		2700
November	2700		2700
December	2700		2700

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*D. Packard  
Sched Inst-67  
Mat Div.*

*Col Barber* 72

*5D 917*

War Department  
Office of the Commanding General  
Material Command  
TELETYPE

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MAR 9 1943.  
PROD. DIV.

Commanding General

*File*

PROD-T-232

3-9-43

ASST CHIEF OF STAFF - P

CONFIRMING TELEPHONE CONVERSATION BETWEEN COLONEL JOHNSON AND COLONEL BARBER MARCH 8, AIR SERVICE COMMAND STATES THAT IT IS ABSOLUTELY NECESSARY THAT THEY OBTAIN THE BALANCE OF THE SPARE PARTS REQUIRED FOR 3,000 V-1650-1 ENGINES DURING MARCH, APRIL AND MAY IN ORDER THAT THEY CAN MAINTAIN THESE ENGINES IN THE FIELD, PARTICULARLY IN FOREIGN THEATERS. THE PACKARD MOTOR CAR COMPANY HAS BEEN CONTACTED AND IT HAS BEEN ASCERTAINED THAT TO DELIVER THESE PARTS AS REQUIRED BY AIR SERVICE COMMAND WILL RESULT IN REDUCING THE ENGINE SCHEDULE WHICH IS AS FOLLOWS: MARCH - 1100, APRIL - 1200, MAY - 1300, JUNE -- 1400 TO MARCH - APPROXIMATELY 800, APRIL - 900, MAY - 900, JUNE - 1300. IN EFFECT THIS IS A REDUCTION OF ENGINES ALREADY ALLOCATED TO THE BRITISH AND BEFORE WE CAN DIRECT PACKARD TO MAKE THIS REDUCTION IN ENGINE SCHEDULE THE JOINT AIRCRAFT COMMITTEE APPROVAL MUST BE OBTAINED. IT IS MOST URGENT THAT THIS APPROVAL BE OBTAINED IMMEDIATELY IN ORDER THAT THE NECESSARY ADJUSTMENT OF THE MARCH SCHEDULE OF DELIVERY OF ENGINES CAN BE MADE. IT IS URGED THAT VERBAL APPROVAL OF THE JOINT AIRCRAFT COMMITTEE MEMBERS BE OBTAINED THIS DATE IN ORDER THAT WE CAN NOTIFY PACKARD IMMEDIATELY.

PRODUCTION DIVISION

VM

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*Forward*

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## CONVERSATION BETWEEN COLONEL SESSUMS AND COLONEL JOHNSON--March 11, 1943

COLONEL J: What are we going to do about these spare parts, Johnny?

COLONEL S: Why didn't somebody tell us about it Johnny, we submitted the case on the basis of lifetime spares for those engines and the material people got hold of it and they weren't willing to let us put all that material into engines of it right away. That was the it was presented to us.

COLONEL J: I called Barber on it Monday and told him how urgent it was and I sent a teletype in on the next day saying--joining aircraft committee members be obtained this date in order we can notify Packard immediately.

COLONEL S: I've got all the dope that Bain gave me on it and apparently it is a life and death for the Air Service Command to keep those airplanes going. If we are going to get any of the parts this month we got to give Packard the go ahead right away, so I'm trying to get that right now, but they called off the JAC meeting for today and if it is a matter of getting production this month we probably ought to walk the thing through JAC members and if the British will go along with us I don't think we will have any trouble doing that.

COLONEL J: I thought probably after I talked to Barber, he said he would get his boys going on it right away.

COLONEL S: He did, and they drew up the case but when they took it down for concurrence of the sub committee the sub committees wouldn't concur it. That was on the basis of tying up so much material just for lifetime spares.

COLONEL J: I don't see where the lifetime spares came in to it.

COLONEL S: It was written in a JAC case and was the only reason for giving up a thousand of these engines instead of giving them to the British was to give us lifetime spares for our P-40's.

COLONEL J: That wasn't-- I told Barber the day before that that whole thousand wasn't for spares that Packard would not have made the original schedule anyway about half of the loss was the loss due to the fact Packard couldn't get the parts from their sub contractor on machine tool shortages and the other half was to get these concurrence spares.

COLONEL S: I think I can get it straightened out, Johnny. I'm going to ask that we walk the thing through.

COLONEL J: I wish you would, because they are up against it, now I will give you a short resume of what the situation is; they came to us yesterday, they've gotten some project on and they need to ship some engines along with it. They have 193 repairable engines in this country and they are just sitting around. They also want they only got about 38 or 40% spare engines so they want us to take engines out of the Curtiss airplanes at Buffalo and give them to them for spare engines. They want to get 100 engines that way, that would mean that there were 100 skeletons sitting around that way at the Buffalo airport because Curtiss can't stop that fast. He are going to tell Air Service Command Ok, we can't stop Curtiss, but we can complete the airplane and if they need engines so badly they will

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have to take the engines out of the airplanes at the depot.

COLONEL S:

How are we getting along on this Kinmer engine deal? I see where they want to get a bunch of cylinder heads they say they can't make them available, and that matter was mentioned when they had a meeting in your office. What are we going to do, Wright says they can't supply them?

COLONEL J:

We will probably have supply enough. What Wright is doing is just saying that they will lose cylinders. Actually I know their cylinder capacity is more than they let on. I wouldn't consider that thing too seriously, we will work it out with Wright, but Wright doesn't like the idea of us getting somebody else to build Wright parts, trying to hot all the business. They don't want to try and educate Kinmer, they would try and educate Caterpillar. Caterpillar came in today with a list of parts they can make. We don't care where we get these critical parts. I can foresee that next year we will probably using the capacity of these engine plants about 1/5 or 1/3 for complete assemblies and the rest for spare parts. That's the way it looks. You will get this Packard thing straightendout.

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CONVERSATION BETWEEN COLONEL JESSURS AND COLONEL BELL March 11, 1943

COLONEL B: I was talking to Packard this morning and it now develops that Squin and Lovett have been calling Packard and talking to him about cutting down his schedule as though it was Packard's idea. They didn't get the idea it was Packard's idea, did they?

COLONEL S: Do you mean the spare parts?

COLONEL B: Yeah, cutting Packard's schedule by 100 engines for the next three months to provide spare parts.

COLONEL S: I understood there is no chance of getting it by up here anyway.

COLONEL B: You know what it meant, Johnny, it means that the P-40's flying in the foreign theatres will all become casualties immediately, see, unless they get the spares.

COLONEL S: Why haven't we heard about it before?

COLONEL B: We heard about it Monday.

COLONEL S: It is a damn good thing the British insisted on getting some more single-stage engines, isn't it. We wouldn't had any. It looks to me like somebody has been asleep out there.

COLONEL B: Well, Air Service Command admittedly has been asleep.

COLONEL S: It was presented here as a lifelong requirement of spares for single-stage engines.

COLONEL B: This is the difference between the original 12% and the 35%. It is a list of the spare parts that are needed as presented to us from Air Service Command and they say they are willing to justify it in the meeting, that all the air-planes that are now in foreign theatres practically become casualties unless they get this stuff out there.

COLONEL S: This request is certainly poorly timed. It's got more chance passing on that basis than it has all lifetime spares. I'm glad brought it to our attention.

COLONEL B: \*\*told me he had it all squared away and I was going down there from Detroit and Johnny said he had it all lined up with you.

COLONEL S: Yeah, we were going to put it in all right, but as soon as the Material people saw it they said no, they weren't going to let build lifetime spares right away here.

COLONEL B: This has nothing to do with lifetime spares.

COLONEL S: That was the way it was presented somewhere.

COLONEL B: Because the engines have all been delivered, the airplanes have all been delivered practically.

COLONEL S: It does amount to lifetime spares too, doesn't it.

COLONEL B: No, it amounts to the new case 1850 spares for initial delivery.

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*Packard 48-214pp*

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- COLONEL S: That's fine we have a lot better chance of getting it by now.
- COLONEL B: When are we going to come to a decision on it? Packard has to know.
- COLONEL S: It has to be approved by the JAC. We didn't have a meeting this afternoon they are going to have it Thursday.
- COLONEL B: That is ten days gone out the month and by then it will be well pasted the middle of the month and if we are going to cut down our production 300 engines this month we had better start cutting it. This is a hell of a big thing.
- COLONEL S: Maybe we can walk this thing through and--
- COLONEL B: The British are going to lose 1000 engines actually it amounts to this, they are going to lose 1200 engines off a schedule between now and July. They won't make that schedule anyway, because even today Packard hasn't got the machine tools and equipment to build 800 engines a month with complete spares although their schedule calls for 1100 this month, 1200, 1300 and 1400 chances are they won't make over 1000 or 1100 engines a month in the next three or four months and they certainly won't deliver any spares. In order to deliver these spares we are asking for and keep concurrent on the other engines they build for the British they will have to lose 1000 engines which actually will mean around 800 engines. They are going to lose the difference on the schedule.
- COLONEL S: We will get right after it, Walter. I don't know what--
- COLONEL B: After I left Detroit I went to Buffalo and we are getting the same thing out of Curtiss on P-40. In other words we are taking that thing serious. Arnold said that when airplanes had to be maintained in the field then we cut production and maintained them and this is the first decisive case we have taken the P-40's is the second case we have taken.
- COLONEL S: I don't know who went to sleep on presenting it to us originally it weakened our case a lot to check the thing up and then find out we didn't have the right reason for bringing it up.
- COLONEL B: Johnson was called and then those fellows called Packard apparently. I would recommend those guys get the story from us instead of Packard. How about calling me, I will be at Ford tomorrow in Detroit. If they don't get it this summer when they start using these P-40's in this big push they just won't have any P-40 airplanes because they won't have any spare parts.



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AFANG-40

March 13, 1943.

Colonel J. W. Tessums, Jr.,  
Asst. Chief of Staff (P)

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Report on visit of Major Galletly and Capt. Squires to  
British Air Commission, Friday, March 13, 1943.

1. Sir Richard stated he is prepared to take responsibility for cutting out 600 engines from Packard schedule, but as for the additional 600 he would have to ask the advice of W. A. P. Meanwhile, he wished General Meyers to know he was going to inquire as to what further aid the J. A. C. could give Packard, as he felt they were falling down on their schedules.
2. He also felt that \$14,000,000 worth of spares for A. S. C. would be a terrific load to absorb, that it would wreck Packard's production build up after June, and that quite possibly attrition had not been considered when the \$14,000,000 order was placed and we might possibly be left with a large volume of unusable spare parts. This would be due to large quantity of parts which would not be usable in two stage engines.
3. He also wished no interference with concurrent deliveries on British spare parts and components being supplied for U. K. production. Sir Richard will have by next Thursday's meeting a reply from W. A. P., and would like us to have a further report from A. S. C. as to whether they could reduce somewhat their demands upon Packard.

ALAN M. GALLETTY,  
Major, Air Corps.

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*Carlson-Packard  
Sched Sect-71*

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AFANC-6C

March 13, 1943

Colonel J. W. Seaman, Jr.,  
Asst. Chief of Staff (P)Report on telephone call from Mr. William Packard,  
Saturday, March 13, 1943.

1. Mr. Packard phoned this morning and gave information which had not as yet been brought to light on the Packard scheme. He stated that Packard could not make complete engines as we had them scheduled for the next four months, and also deliver any range of spare parts at all. By cutting out 1200 engines during the next four months and going all out on spare parts they are attempting to:

- a. Maintain concurrency on 14,000 engine contract.
- b. Make up deficit of spare parts on original British 6,000 order.
- c. Deliver all of our \$14,000,000 order, and also make some deliveries on a \$16,000,000 order for the British, which is for the original 6,000 engine order.

2. There is to be a meeting on April, 1943, between the British and Materiel Center representatives with Packard to split up the entire output of Packard's spare parts production. Packard expects within this period to make an unbalanced range of parts. In other words some vendors will be able to come through and some will not. They would like all vendors to get a 1.4 rating and feel this is the only way that full realization of the proposed program will be achieved. Mr. Packard stated another way to word it would be to say that Packard intended to meet the schedule we have presented to the J. A. C. and that the huge volume of spare parts they intend to produce in the next four months would be split between the British and ourselves in a manner to be decided upon April 1st. This, of course, gives the scheme greater potentialities to the British than we had before realized. In other words, if we can pare down A. S. C. requirements for V-1650-1 spare parts, the British will be the beneficiary.

3. They are still in need of a great amount of machines if they are to meet the 1400 complete engine program with normal range of spare parts by July, 1943. Mr. Packard requested Colonel Irvine's aid be enlisted.

4. They intend to lay off 1,000 to 1,600 men from their assembly line.

5. Mr. Packard requested, if at all possible, a meeting be arranged in Washington on Tuesday, March 16, 1943, to discuss this matter and that Colonel Bane attend.

FRED N. SQUINES,  
Captain, Air Corps.

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*Carbon Packard  
Litho 10-10-43  
77*

(AFAC-6C)  
FNS:gew

*AMH*

March 13, 1943.

Chief, Production Engineering Section,  
Wright Field,  
Dayton, Ohio.

J. W. SESSIMS, JR.,  
Colonel, Air Corps.

EXTRA PRIORITY

6C-145 \* \* \* \* \* Re Teletype FHOE-T-232, dated March 9, 1943.

British have concurred in proposal to sacrifice completed engines for the urgent requirements of the Air Service Command for V-1650-1 spare parts, with the proviso that immediate action be taken to procure only 50% of the desired spares with a consequent reduction of only 600 engines from Packard schedule prior to a more complete study by the Air Service Command as to whether or not our full requirements could be met by something less than a sacrifice of 1200 engines. In other words, they feel:

(a) a full case 1850 percent spare parts will not be necessary for the lifetime of these engines due to the high attrition rate P-40's must suffer, and the fact that no more 1650-1 engines will be built may leave us with a large volume of unusable parts.

*Wm. Crawford*

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(Continued)

March 13, 1943.

6C-145

Page Two.

EXTRA PRIORITYJ. W. SESSOMS, JR.,  
Colonel, Air Corps.

(b) Fourteen million dollars worth of spare parts is a considerable load to absorb within four months.

(c) Packard's future production may be wrecked if this terrific inroad is made upon their production schedule within the next four months.

(d) They request that no interference be made with either concurrent delivery of spares for British Merlin engines or of components being supplied for British production.

(e) In view of the above this office requests that Packard be immediately advised to go ahead with the scheme to the value of 600 engines, and an alternative schedule be forwarded to this office by Tuesday, March 16, 1943 giving effect to the reduction of 600 engines in the Packard Schedule during the next four months. The Air Service Command to be contacted to see if a reduction cannot be made in this fourteen million dollar order for spare parts giving effect to (a) attrition rates, (b) the comparatively small



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(AFAMC-6C)  
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(Continued)

March 13, 1943.

Page Three.

6C-145

J. W. SEXTON, JR.,  
Colonel, Air Corps.

EXTRA PRIORITY

NUMBER of parts which are common to both the single and double stage engines.

(f) J.A.C. approval of the above scheme will be withheld pending receipt of a new schedule of Packard complete engine delivery.

ASST CHIEF OF STAFF (P)

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AFARC-80  
FNS:aa

March 17, 1943

Gen. Fowles

Packard Merlin Engine Production

1. During the last week of February Packard Motor Car Company notified this office that due to their late start in getting organized for the production of 2-stage engines they would be unable to make the schedule as approved by the J.A.C. on February 4, 1943, which had the 2-stage engines commencing in March of this year and reaching 600 per month in August of 1943 at which point the British were to receive all 2-stage engines above 600 per month. The new schedule delayed by one month the initiation of 2-stage production and production of over 600 per month was not reached until November 1943.

2. As a result of the new schedule, the British were slated to receive 3900 additional engines or a total of 10,500 1-stage engines on their 14,000 engine requisition. There was a compensating loss of some 3300 2-stage engines and a net gain of 360 engines. As the Air Corps were receiving no 1-stage engines, the advantages accrued to the British and Wright Field was asked whether or not we could use some of the additional 1-stage engines.

3. Wright Field declined the suggestion but meanwhile the Air Service Command came forth with an urgent demand for the production of 14 million dollars' worth of spare parts to be produced within three months - March through May, 1943. The production of these would cost as 1200 complete engines during the four months commencing March while not presented as such to the J.A.C., their 14 million dollar emergency order will be in reality life-time spares for our original 3,000 engines. As it was obvious that Packard in any event would be unable to accomplish the schedule presented to this office during the last week of February 1943, and due to the great urgency of the Air Service Command's requirements, this office felt inclined to present the new schedule to the J.A.C.

4. In an effort to get British advance agreement, a representative of this office visited Sir Richard Fairley on March 13, 1943. Sir Richard stated he was prepared to take the responsibility for cutting out 800 engines from the Packard schedule but as for the additional

A-1/AS	
A-2/AS	
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Plans/AS	
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Bomb.	
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Base S.	
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Mil. Pers.	
Civ. Pers.	
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J. Advoc.	
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FNS:aa

March 17, 1943

SUBJECT: Packard Merlin Engine Production.

600, he would seek the advice of M.A.P. He pointed out the obvious difficulties in the new proposal to take such a vast quantity of spare parts and asked that the Air Service Command be requested to review their demands with a view toward lowering them. Meanwhile he was to cable M.A.P.

5. In a conference held in this office on March 16, 1943 the Air Service Command emphasized that they were unable to lower their sights on this order and that the Case should be presented to the J.A.C. as requested by them.

6. This office feels that Packard will have a much better chance of making the proposed schedule than they would have had making the schedule approved February 4. They are being given every assistance possible.

J. W. SESSUMS, Jr.,  
Colonel, Air Corps,  
Asst. Chief of Staff (P)

A-1/AS
A-2/AS
Intel. S.
A-3/AS
A-4/AS
Plans/AS
Log/AS
Off. Req.
A. Def.
Recd.
Gr. Sup.
Sec. 5.
War O&M
Tech. S.
Comm.
Weather
Traffic
Photo. M&C
Tech. Insp.
Pub. Rel.
Dir. Pers.
Mil. Pers.
Civ. Pers.
Surg.
J. Advoc.
Budget
Fiscal
Mgmt. Con.
Adj. Gen.
Org. Pl.
Stat. Pl.
Leg. Pl.
Man. & A.S.C.
F. C.

ATTN: [Handwritten initials]  
A.S.C.

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O. Packard  
March 17, 1943

82

## CONVERSATION BETWEEN COLONEL BESSUES AND GENERAL WOLFE--March 17, 1943

WOLFE: When I got back here I found out that Bain and the gang had been in there on this Packard engine spare deal. Well, on the way back they got to comparing notes and they found out that this thing is kind fishy and I didn't want you to go ahead and procure anything more on this JAC over and above the original 600 that they were supposed to get from the British.

BESSUES: Yeah, well Bain was sure talking loud around here about and---

WOLFE: This Air Service Command have made a lot of statements here that I don't believe they can back up.

BESSUES: Yeah, well I felt like 14 million dollars worth of parts in 3 months is more than they can use, R. B.

WOLFE: One other thing, to show you what is going on, one other thing we found out was that this list that they are calling emergency spare is that old identical list almost part number for part number of those retro-active spares they were trying to fill in here a while back, therefore, this thing smells and we are going to run it down, but I can't get hold of anybody over there.

BESSUES: They're not being held up now because we gave them the go ahead on the 600.

WOLFE: That is the only thing I want to go ahead on now is the 600.

BESSUES: All right, fine, we will hold tight on it until--

WOLFE: Don't do anything on that other sales talk until we get some more dope. You are sure that the British agree to these 600?

BESSUES: That's right.

WOLFE: Then I am going to tell Packard we can build 600 British engine worth of spares and to sell with the rest of it--unless they can come over here and justify this conversation. Here's one thing--

BESSUES: Do you think we better go ahead and put the 600 through the JAC and make a record of it?

WOLFE: Yeah, put the 600 through as a case. Now let me ask one more thing. Jim Early and some his gang were over here yesterday talking loud about a policy which states they can get spare engine spares at the cost of production any time they want them.

BESSUES: That's McMullin's statement to me. He said Gen. Echols was present when Gen. Arnold said that, but I haven't been able to get any thing in writing on it.

WOLFE: He don't have anything in writing on it and I refuse to take Jim Early's or anybody else's word that --emergency. When McMullin gets back from this tour I am going to make some kind of deal with SAC so when we have an honest to God emergency we can do something about it, but to put in a ringer like this, to put retro-active spares on that flimsy definition, I'll be damned if I am going to play that game.

BESSUES: He called me and sprung that on me for some right engine spares that he had to have right now that he was going to General Arnold if we didn't give them



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Continued--

to him immediately so we got hold of Wright Arrow and they could give them to him without losing any production and he got all straightened out on that deal.

GENERAL W: Look, one thing to show you how damn silly they are they are crying like hell about a lot of engines being held up for repair due to shortage of spares at Middletown. Their capacity is only for a week. They don't need any 47 million dollars worth of spares for that. Another thing is they got a hell of a big flock of spares lost and they got the Packard gang trying to help them find them. What they are doing is buying the stuff instead of finding it.

COLONEL S: Esin was reading off that list the engines they were holding on the ground because of the spares in the U. S. and Packer was sitting here and he said, "Wait a minute you will have to correct those 50 engines at Packard, they are not there for spare parts, they are there at Air Service Command's request for us to study the engines."

GENERAL W: Sure, that is right. Lets not do another thing after the 600.

COLONEL S: We will do it that way.

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March 18, 1943

MEMORANDUM FOR: Joint Aircraft Committee.

Recorded, Case Registered

SUBJECT: Packard Merlin Engine Production.

1. An emergency situation has arisen requiring the production of spare parts needed to maintain P-40 airplanes currently engaged in operations in various theaters or scheduled for immediate delivery to various theaters.
2. On March 4th, Materiel Command presented for consideration of the Joint Aircraft Committee a schedule covering production of the Packard engines.
3. The Materiel Command requests that Packard Motor Car Company be authorized to delete from said schedule a quantity of 600 engines during the months of March, April and May, 1943 in order to fulfill, as far as possible, these urgent and immediate requirements.
4. In no case will Packard allow production of the emergency spares to interfere with concurrent deliveries of British spare parts or the production of components for U. K. built engines.

For the Commanding General:

B. S. MEYERS  
Brigadier General, U.S.A.  
Chief of Staff  
Materiel Command

~~CONFIDENTIAL~~

Approved by Joint Aircraft Committee

On 3/18/43

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SPUPS  
RHT:evw  
Ext. 5825

WAR DEPARTMENT  
HEADQUARTERS, SERVICES OF SUPPLY  
WASHINGTON, D. C.

May 1, 1943

MEMORANDUM FOR THE ASSISTANT CHIEF OF AIR STAFF,  
Materiel, Maintenance and Distribution,  
Army Air Forces.

Attention: Brig. Gen. F. M. Hopkins, Jr.

Subject: Packard Motor Car Company,  
Detroit, Michigan.

1. The additional expansion of facilities of the Packard Motor Car Company at Detroit, Michigan, required to increase the capacity of this company for the production of V-1650-3 Rolls Royce Merlin Aircraft Engines, has been approved by all necessary agencies, including the approval by the Under Secretary of War for the allocation of funds on April 20, 1943.
2. The estimated cost is \$14,838,002, of which there is to be obligated at the present time, under the agreement between the War Department and the Defense Plant Corporation, not to exceed \$7,419,431.

For the Commanding General:

H. C. MISTON,  
Brig. Gen., S.S.C.,  
Dir., Resources and Production Div.

*H. B. TAYLOR*  
H. B. TAYLOR,  
Lt. Col., Corps of Engineers,  
Chief, Production Service Branch.



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Out on U-163 U-164  
 Mrs. Airo. Proj. 42-1/9PP  
 Mrs

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June 3, 1943  
 W:R:R: 7-036

MEMORANDUM FOR: FILES

SUBJECT: Discussion with Sir Richard Fairey on 7/2/43 -  
 Packard "Merlin" Situation

Sir Richard is much concerned over the "Merlin" situation for the following reasons:

- (a) The present deficit that is keeping airplanes on the ground at North American at the moment and continues straight through 1944. This is not only a cumulative deficit, but also a monthly deficit until well into 1944. The action necessary, of course, is to accelerate the coming in of the new facilities at Packard.

Sub-headings discussed were the following:

1. The casting facility situation which appears to be under way satisfactorily now. In this regard, I read him the teletype that General Hopkins has sent to Wright Field.
  2. There is the difficulty with porous castings which Dr. Lombard reported and which should be investigated at once. It is understood that the after-cooling housing and the supercharger housing are coming through badly with about 17 a day received, making good only about 7 or 8 with 10 rejections. (NOTE: Mr. Christopher should be called on this situation to get the material specifications and see just what the trouble is.)
  3. Regarding facilities, I read the report of Mr. Meyer on his recent visit and it appears that this situation is not too badly off. I wrote to Mr. Place asking him to follow this closely and see that nothing hindered getting through the facilities for this high priority project.
- (b) In addition to the proposition of getting Packard going quicker, there is the other possibility of going to a higher peak. The present peak of 2700 per month is barely necessary to meet peak requirements for aircraft installation (some

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Aircraft - 42-61-111

- 2 -

deficit is still shown towards the end of 1944). In addition, there is the possibility of a need for a greater number of "Merlins" for installation in the following planes which are required in greater quantities than are now anticipated. First, the increase in "Lancaster" production in Canada; then, the possibility of wanting more "Mosquitos", perhaps some to be built by Higgins or some other American manufacturer; and then the third possibility, of wanting more "Mustangs" than are now planned. All of these things combined might make it justifiable to go to a peak of 3500 per month instead of 2700. However, it will be difficult to find a way for Packard to do this extra job, as they are hard-pressed to reach their presently planned peak.

As regards the increase in peak necessitated by further expansion of "Lancasters", consideration should be given to the possibility of installing air-cooled engines, possibly R2600B's or R2800's in the "Lancasters" in Canada.

T. P. Wright, Director,  
Aircraft Resources Control Office.

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*Col Barber*  
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MITCHEL DENNING  
AIR STAFF

TEX-280            E X T R A   P R I O R I T Y            6-14-43  
MAJOR GENERAL O. P. ECHOLS  
ASST. CHIEF OF AIR STAFF, MM&D

REFERENCE P-51B AIRPLANE PROGRAMS AS AFFECTED BY PACKARD ENGINE SCHEDULE.

1. LATEST PACKARD PRODUCTION SCHEDULE USING JAC LIMIT OF SIX HUNDRED TWO-STAGE ENGINES PER MONTH FOR UNITED STATES AND ASSUMING ONE HUNDRED AND FORTY ENGINES ADDITIONAL FOR ONE HUNDRED EXTRA P-51B AIRPLANES HAS APPROVAL OF JAC AS FOLLOWS:

APRIL MAY JUNE JULY AUGUST SEPT. OCT. NOV. DEC. JAN.  
1      19    150 260 400      600 600 650 740 740    ETC

2. USING JUNE 10 WORKING SCHEDULE AND ASSUMING SIXTY DAYS ADVANCE THERE WILL BE A CUMULATIVE MONTHLY SHORTAGE OF INSTALLATION ENGINES AS FOLLOWS, IF NO SPARE ENGINES ARE DELIVERED TO AIR SERVICE COMMAND:

MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER  
-27   -208   -388   450-440   -350   -150   PLUS ALL OUT.

3. USING JUNE 10 WORKING SCHEDULE ASSUMING SIXTY DAYS ADVANCE AND PROVIDING DELIVERY OF SPARES IN ACCORDANCE WITH CASE 1850 THERE WILL BE A CUMULATIVE MONTHLY SHORTAGE OF ENGINES AS FOLLOWS:

MARCH APRIL MAY JUNE JULY AUGUST SEPT. OCT. NOV. DEC. JAN.  
-38   -292   -552   -702   -792   -823   -783   -757   -737   -627   -587  
SHORTAGE TO DISAPPEAR IN APRIL, 1945

*133*

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TEX-280                      EXTRA      PRIORITY                      6-14-43  
 MAJOR GENERAL O. P. ECHOLS  
 ASST. CHIEF OF AIR STAFF, MM&D

REFERENCE P-51B AIRPLANE PROGRAMS AS AFFECTED BY PACKARD ENGINE SCHEDULE.

1. LATEST PACKARD PRODUCTION SCHEDULE USING JAC LIMIT OF SIX HUNDRED TWO-STAGE ENGINES PER MONTH FOR UNITED STATES AND ASSUMING ONE HUNDRED AND FORTY ENGINES ADDITIONAL FOR ONE HUNDRED EXTRA P-51B AIRPLANES HAS APPROVAL OF JAC AS FOLLOWS:

APRIL   MAY   JUNE   JULY   AUGUST   SEPT.   OCT.   NOV.   DEC.   JAN.  
 1        19     150   260   400        600   600   650   740   740   ETC

2. USING JUNE 10 WORKING SCHEDULE AND ASSUMING SIXTY DAYS ADVANCE THERE WILL BE A CUMULATIVE MONTHLY SHORTAGE OF INSTALLATION ENGINES AS FOLLOWS, IF NO SPARE ENGINES ARE DELIVERED TO AIR SERVICE COMMAND:

MARCH   APRIL   MAY   JUNE   JULY   AUGUST   SEPTEMBER  
 -27    -208   -388   430-440   -350        -150        PLUS ALL OUT.

3. USING JUNE 10 WORKING SCHEDULE ASSUMING SIXTY DAYS ADVANCE AND PROVIDING DELIVERY OF SPARES IN ACCORDANCE WITH CASE 1850 THERE WILL BE A CUMULATIVE MONTHLY SHORTAGE OF ENGINES AS FOLLOWS:

MARCH   AIRPL   MAY   JUNE   JULY   AUGUST   SEPT.   OCT.   NOV.   DEC.   JAN.  
 -38    -292   -552   -702   -792   -823   -783   -757   -737   -627   -587  
 SHORTAGE TO DISAPPEAR IN APRIL, 1945

4A. USING JUNE 10 WORKING SCHEDULE ASSUMING SIXTY DAY ADVANCE AND PROVIDING SPARES IN ACCORDANCE WITH COMPROMISE DISCUSSED WITH AIR SERVICE COMMAND FOR REDUCED DELIVERY OF SPARES DURING REMAINDER OF 1943, THERE WILL BE A CUMULATIVE ENGINE SHORTAGE AS FOLLOWS:

MARCH   APRIL   MAY   JUNE   JULY   AUGUST   SEPT.   OCT.   NOV.   DEC.  
 -27    -208   -388   -452   -468   -416   -276   -146   -76        0

WITH SIX HUNDRED SIXTY-ONE ENGINE SPARE ARREARAGE WHICH WILL RUN OUT IN APRIL, 1945. THIS IS UNSATISFACTORY TO AIR SERVICE COMMAND WHO BELIEVE THAT SPARES ACCORDING TO CASE 1850 ARE REQUIRED.

4B. ABOVE WITH THIRTY DAY ADVANCE WHICH IS IMPOSSIBLE TO MEET ON WEST COAST IS AS FOLLOWS:

MARCH   APRIL   MAY   JUNE   JULY   AUGUST

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-26 -189 -238 -218 -108 PLUS SPARES ARREARAGE IS THREE THOUSAND ENGINES.

5. PROPOSED SOLUTIONS TO THIS PROBLEM ARE:

- (1) MORE ENGINES FROM PACKARD WHICH IS NOT POSSIBLE UNTIL NOVEMBER AND THEN ONLY IF WE DIVERT FROM THE BRITISH. NOTHING CAN BE DONE TO ENGINE SCHEDULE TO ELIMINATE AIRPLANES ON GROUND FOR THE NEXT SIX MONTHS
- (2) DRASTICALLY REDUCE PRODUCTION ON P-51B AIRPLANES TO BRAXX BRING IN LINE WITH ENGINE PRODUCTION.

6. RECENT PACKARD SCHEDULES WHICH HAVE BEEN DRAWN UP IN WASHINGTON HAVE BEEN MADE WITH LITTLE APPARENT UNDERSTANDING OF PRODUCTION PROBLEMS. THREE THOUSAND ADDITIONAL SINGLE-STAGE ENGINES HAVE BEEN ADDED TO PACKARD SCHEDULE FOR PRODUCTION TO START IN MARCH, 1944. THIS EIGHT HUNDRED A MONTH SINGLE-STAGE PRODUCTION WILL DECREASE TWO-STAGE PRODUCTION BY SAME AMOUNT AND WILL DELAY TWO-STAGE EXPANSION. MATERIALS AND PRODUCTION FACILITIES MUST BE SET UP IN DIFFERENT AMOUNTS FOR SINGLE-STAGE ENGINES AND A CHANGE IN SCHEDULE AT THIS TIME WILL SERIOUSLY IMPAIR PACKARD'S PLANNED PRODUCTION. NO BREAKDOWN FOR MERLIN 33 AND 38 ENGINES FOR REMAINDER OF THIS YEAR HAS BEEN AVAILABLE UNTIL THIS WEEK AND NEW SCHEDULE IS TOO ERRATIC FOR PRODUCTION PURPOSES. THE WORKING SCHEDULE APPROVED ON JUNE 10 BY JAC ADDED ADDITIONAL PACKARD ENGINE REQUIREMENTS TO A PROGRAM ALREADY IN ARREARAGE. THE LACK OF DEFINITE DESIGN INFORMATION ON MERLIN 68 AND 69 ENGINES AND ABSENCE OF PRODUCTION SCHEDULES ON THESE ENGINES WHICH WERE ORIGINALLY REQUESTED FOR NOVEMBER OF THIS YEAR MAKES PRODUCTION PLANNING BY PACKARD AN IMPOSSIBILITY. FAILURE OF ENGINE SUBCOMMITTEE TO PROVIDE FOR DIVERSION OF PACKARD CAPACITY FROM BRITISH BEYOND SIX HUNDRED TWO-STAGE ENGINES PER MONTH INDICATES LACK OF COORDINATION BETWEEN ENGINE AND AIRPLANE PLANNING COMMITTEES.

7. ANY ADDITIONAL PROCUREMENT OF P-51B AIRPLANES OVER AND ABOVE FIVE HUNDRED NOW SET UP WILL REQUIRE ADDITIONAL ENGINE AND PROPELLER FACILITIES AND MUST BE SCHEDULED AT ONCE TO BE REALIZED WITHIN THE



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7. ANY ADDITIONAL PROCUREMENT OF P-51B AIRPLANES OVER AND ABOVE FIVE HUNDRED NOW SET UP WILL REQUIRE ADDITIONAL ENGINE AND PROPELLER FACILITIES AND MUST BE SCHEDULED AT ONCE TO BE REALIZED WITHIN THE NEXT EIGHTEEN MONTHS.

8. THE ENTIRE SUBJECT IS TOO INVOLVED TO BE COVERED COMPLETELY IN TELETYPE. IT IS REQUESTED THAT GENERAL ECHOLS MAKE TIME AVAILABLE TO DISCUSS THIS MATTER WITH WRIGHTFIELD REPRESENTATIVES AT THE EARLIEST POSSIBLE MOMENT.

9. IN THIS CONNECTION COLONEL BAIN WHO IS FAMILIAR WITH THE WHOLE PROBLEM WILL BE IN WASHINGTON ON TUESDAY JUNE 15 TO MEET WITH MR. BODDIS AND ENGINE SUB-COMMITTEE OF JAC TO ATTEMPT SOLUTION.

BRANSHAW, MATERIEL COMMAND

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73  
~~CONFIDENTIAL~~JOINT AIRCRAFT COMMITTEE  
Subcommittee on Production Programs  
MEMORANDUMCase No. 3484  
June 14, 1943

TO: Recorder, Joint Aircraft Committee

FROM: Subcommittee on Production Programs

SUBJECT: Case No. 3484, Memorandum, dated June 8, 1943, from  
The Commanding General, Army Air Forces  
Proposed Revision of Packard-Merlin Engine Production Schedule

1. The subject memorandum was filed by the Commanding General, Army Air Forces.
- 2a. DISCUSSION: The memorandum states that, owing to delay in delivery of machine tools to Packard and their vendors, as well as various engineering problems which have arisen in connection with the production of the Packard-Merlin two-stage engine, Packard Motor Car Company has advised Wright Field they will be unable to accomplish the production schedule as approved by the Joint Aircraft Committee on March 18, 1943, and requests that the attached Packard-Merlin Engine Production Schedule be approved. It is further stated that the attached schedule includes 3000 additional one-stage engines for the British on Requisition RFDA AD553.
3. RECOMMENDATION: It is recommended that the subject request for revision of Packard-Merlin Engine Production Schedule (Attachment No. 1) be approved.
4. This action was taken at the Subcommittee meeting of June 10, 1943, and was agreed to by all members present as follows:

Navy:	Comdr. E. M. Condra, Lt. Comdr. T. W. Jones, Lt. F. F. Wood
Army:	Col. E. M. Powers, Lt. Col. E. G. Barber, Maj. A. K. Lovett
Aero Board:	Col. E. G. Lingle
B. A. C.:	Lt. Col. H. Burchall, F. W. Musson
A. R. C. O.:	T. P. Wright, Chairman, Dr. A. E. Lombard, Jr. M. A. Tracy, Recorder

Also Present: Lt. Comdr. J. M. Coy, Lt. Comdr. Ralph Merritt, Navy  
Maj. A. M. Galletly, Capt. V. N. Agather, Army  
Capt. Russell M. Smith, Lt. V. H. Oswald, Jr., Army  
Lt. S. P. Christy, Lt. S. R. Anthony, J. A. C.  
Col. W. S. Cave, B. A. C.- A. S. U.  
J. A. Stillwell, O. L. L. A.  
C. H. Simons, A. R. C. O.

For the Subcommittee on Production Programs.

Approved by Joint Aircraft Committee

On 6/14/43  
Attachment  
CMS:mcM. A. Tracy  
Recorder~~CONFIDENTIAL~~ 134

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*Sched. Cont. 28 (2/27)*

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June 8, 1943

Case No. 3484

PACKARD-MERLIN ENGINE PRODUCTION

<u>1943</u>	<u>Proposed Schedule</u>			<u>Present Schedule</u>	<u>Cum. Loss 1943</u>
	<u>Single-Stage</u>	<u>Two-Stage</u>	<u>Total</u>		
January	850		850	850	0
February	864		864	911	47
March	615		615	650	82
April	605	1	606	996	472
May	1131	19	1150	1300	622
June	1050	150	1200	1400	822
July	940	260	1200	1400	1022
August	1000	400	1400	1400	1022
September	800	600	1400	1400	1022
October	800	600	1400	1400	1022
November	800	650	1450	1450	1022
December	800	750	1550	1550	1022
<u>1944</u>					
January	800	850	1650		
February	800	950	1750		
March	800	1100	1900		
April	800	1300	2100		
May	800	1600	2400		
June	800	1800	2600		
July	206	2494	2700		
August		2700	2700		
September		2700	2700		
October		2700	2700		
November		2700	2700		
December		2700	2700		

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Barton-Packard  
 Sched. Sect 77-6/77p  
 3/21/43

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AFPM-45

June 18, 1943

MEMORANDUM FOR: Gen. Echols

SUBJECT: Packard Engine Production

1. Attached hereto is a Packard Engine Study drawn up as a result of a conference held in this office June 15 with Mr. A. C. Boddie of the British Air Commission and Lt. Col. W. G. Bain and other representatives of Wright Field. 135
2. V-1650-3 engines have been scheduled to meetAAF and British P-51B requirements. Packard Merlin 33's and 35's have been scheduled to meet British requirements including the additional 3,000 engines requisitioned on AFDA #40553.
3. It has developed that the British are no longer desirous of getting the original P.W. 68 and 69 engines and thus will have to accept production as shown at 1/ on attached chart. This is due to the number of design changes Packard will have to make on the original engine and is also due to the fact that Packard as yet have not received specifications for the new British engine. Consequently, Packard are left with an available capacity in two-stage engines which commences in February 1944 as shown at 2/ on attached chart. These engines will have to be made as V-1650-3 engines unless the British consent to revert back to the original P.W. 68 and 69.
4. As each week's delay by the British in informing Packard of what type two-stage engines they desire decreases the quantity of engines the British will receive, Mr. Boddie has undertaken to find out from the U.K. by June 30 what their realistic design and schedule requirements are.
5. Mr. Boddie is investigating the feasibility of having an engineer representing Wright Field stationed in England to coordinate design changes developed in England which could be utilized in this country.

Incl:  
 #1, cht, Packard Eng. Study.

R. G. BARBER,  
 Lt. Col., Air Corps.

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	PACKARD ENGINE STUDY																		
	1947				1944														
	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
V-1650-3, U.S. & Br.	19	150	260	400	600	600	650	750	900	940	850	850	750	750	750	750	750	750	750
P.M. 38 & 35	1187	1050	940	1000	800	800	800	800	750	700	700	700	700	600	400	250	151	-	-
P.M.(?)(Br. 2-St.)	1/									10	50	250	550	850	1150	1450	1700	1950	1950
Avail. Cap. (2-84)	2/									100	300	300	400	400	400	250	139	-	-
Total Packard Prod.	1206	1200	1200	1400	1400	1400	1450	1550	1650	1750	1900	2100	2400	2600	2700	2700	2700	2700	2700
<u>British Allocation</u>																			
P.M. 38 & 35	1187	1050	940	1000	800	800	800	800	750	700	700	700	700	600	400	250	151	-	-
V-1650-3									70	70	140	140	140	140	140	140	140	140	140
Br. 2-St P.M.(?)										10	50	250	550	850	1150	1450	1700	1950	1950
Avail. Capacity										100	300	300	400	400	400	250	139		
Total British	1187	1050	940	1000	800	800	800	800	820	880	1190	1590	1790	1990	2090	2090	2090	2090	2090
Total U.S. Alloc.	19	150	260	400	600	600	650	750	850	850	720	720	620	620	620	620	620	620	620
Total Packard Prod.	1206	1200	1200	1400	1400	1400	1450	1550	1650	1750	1900	2100	2400	2600	2700	2700	2700	2700	2700

June 16, 1943  
FMS

CONFIDENTIAL

CONFIDENTIAL

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Copy-back and cc  
R.D. 198  
1/27/47

13

June 21, 1945

Via: AAF Resident Representative

To: Commanding General  
AAF, Materiel Command  
Wright Field, Dayton, O.

Attention: General A. H. Jones

Subject: Contract W 335 ac-1078, DA W 335 ac-947  
Delay in Delivery of Engines

1. The subject contract as supplemented and amended imposes upon us the responsibility of notifying you of any occurrences that will interfere with the delivery of engines being made in accordance with the schedule, and it is for this reason that this letter is being written.

2. We are forced to notify you that we will be unable to meet the schedule now current through the operation of Supplement No. 18 to subject contract for the reason that we are unable to obtain facilities on account of delays by the War Production Board as enumerated below.

3. On April 28, 1945 a request was filed in the form of Appendix "A" to Defense Plant Lease #995 for a part of the additional facilities necessary to increase production to 2700 engines per month plus spares. As the situation now exists we do not have facilities to build 1400 engines per month plus spares and the schedule requires that deliveries at this rate shall begin in August. The reason that we do not have facilities for 1400 engines plus spares is that the number of castings to be produced has been increased because of the introduction of the two-stage supercharger program, and while we at one time had facilities available for 1400 engines per month plus spares we do not now have that number. We would estimate that facilities now available are theoretically capable of producing approximately 1300 per month plus spares.

4. The Appendix aforementioned contains an item of approximately \$1,000,000 for additional aluminum casting facilities. This Appendix was delivered to Mr. Frederick Ayer II, on April 27, 1945, by Messrs. M. F. Macenlay and J. W. Salsbery of this Company. We have followed this Appendix diligently with Mr. Ayer and have been told on several occasions that it had been approved and was being forwarded to the Defense Plant Corporation for the necessary appropriations. We were notified by telephone on June 22, by Mr. Ayer, that the WPC would not approve this schedule of expenditures for the reason that it contemplated additional labor in Detroit, Cleveland and Dayton, Ohio, which are in critical labor areas. Incidentally, the expansion for Maytag in Newton, Iowa is also held up although that is not in a critical labor area. In the meantime the Acme Pattern and Tool Company in Dayton, Ohio have built an additional

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June 24, 1943

Page 2

Subject: Contract W 335 ac-15675, DA W 335 ac-597  
Delay in Delivery of Engines

Attendant: General A. E. Jones

building on their own account and have hired the additional labor and at the present time have too much labor because they do not have the equipment un-  
subscribed by this Appendix. The Maytag Company have also expanded their plant  
at their own expense and are waiting for equipment. At this late date it will  
not be impossible for us to get the equipment; get it in operation, and produce  
engines in time to meet the provided schedule referred to in the contract.

On March 11, 1943, we submitted to the Aircraft Scheduling Unit  
at Dayton, Ohio an Appendix covering approximately \$3,900,000 for machinery--  
approximately \$1,100,000 that was for vendors already selected. This Appendix was  
prepared at a reasonable time at Wright Field and forwarded to the  
Facilities Section of the WPA at Washington. After considerable delay we were  
told by Mr. W. J. Murphy that the Appendix would not be processed for the amount  
designated for "vendors unknown". We agreed that the sum of money for that  
purpose should be deleted for the present and were told that the balance would  
be appropriated and the funds made immediately available. This latter informa-  
tion was given to us on several occasions but the last time was on June 11, on  
the occasion of Mr. J. D. Marks' visit with Mr. Murphy. It is obviously im-  
possible for us to meet expanding schedules starting in November 1943 and in-  
creasing monthly to 2700 engines per month plus spares without the machinery  
being made available. As a matter of fact, some of the vendors selected to  
whom we agreed to furnish machinery, International Harvester, for example, have  
asked to be relieved of the orders for the parts for the reason that they want  
to use their facilities and their organization for other work in which they can  
engage now without waiting for this machinery.

6. We are unable at this time to offer another schedule that we can  
meet for the reason that we do not know when these facilities are going to be  
made available.

7. We wish also to refer to another discussion with Mr. Frederick  
Ayer II, with reference to the facilities and sources of supply for castings  
to increase our production to 2700 engines per month. Our plans with respect  
to the selection of these sources of supply were given to Mr. Ayer by Mr. Marks  
over the telephone approximately June 1 and they were approved by Mr. Ayer, and  
he told Mr. Marks that the Appendix could be made up on the basis of that  
selection of sources of supply and that the facilities would be made available.  
This plan included the establishment of additional sources of supply in Detroit,  
Rockford, Illinois, St. Louis, Mo., and Syracuse, N. Y. On June 22 we were told  
again by Mr. Ayer that no additional facilities would be permitted in Detroit  
because the fact that on the strength of Mr. Ayer's statement we have already

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RD-98 (3/27)

15

June 21, 1943

Page 3

Subject: Contract W 535 ac-15676, DA W 535 ac-597  
Delay in Delivery of Engines

Attention: General A. E. Jones

committed ourselves with a Detroit foundry, namely, the Ray Day Piston Company. We were also advised by Mr. Ayer on June 22, that we should give consideration to other sources of supply about which we have the following remarks to make: One of these was the Scovel Company, of Evansville, Indiana. That company has already told us that they could not take on any additional aluminum casting business for the reason that they could not get the labor to take on additional work. Another source of supply offered was the Dowagiac Stove Company who have had very little, if any, experience making aluminum castings. It was urged upon us that we go further with the National Foundry and Machine Company at St. Louis. We have already inspected that foundry with the result that it is our opinion that practically everything needed to go into the aluminum casting business would be needed at that plant with the exception of the building. We were also given the name of the Blackhawk Foundry Company at Davenport, Iowa about which we know nothing. We believe it is impossible for us to pick up sources of supply such as these; furnish them with facilities, patterns, and have them undergo the experience of making these complicated castings in time to meet the expanded program.

B. As stated above, the production schedules are already jeopardized by the dilatory procedure of the WPH and they will be still further jeopardized unless this situation is immediately corrected.

Yours very truly,

PACKARD MOTOR CAR COMPANY

Geo. F. Christopher  
President

GTC-br

cc Mr. C. E. Wilson, WPH  
Mr. W. B. Murphy, WPH  
Mr. A. C. Boddie, PAC  
Mr. Fred. Ayer, WPH  
Mr. A. F. Sunker, WPH  
Col. E. W. Rawlings, ASU  
Col. A. H. Johnson, CPT

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O. Pastoral 56  
RD-106

RESTRICTED  
WAR DEPARTMENT  
OFFICE OF THE UNDER SECRETARY  
WASHINGTON, D. C.

*File 15  
Money  
ref. 1971*

MEMORANDUM FOR: Brig. Gen. F. T. Hammond, Jr.

SUBJECT: Packard Motor Car Company  
Detroit, Michigan  
R&D Project 43-D  
Defense Plant Corporation Lease Agreement  
12 March 1971

1. This increase for additional facilities for sub-contractors (\$1,903,427 for machinery and equipment) will be provided by amendment of Plancon 978. The lease is at a dollar-a-year with a 50 percent takeout and the additional War Department firm commitment will accordingly be one-half of the increase, or \$951,713.50.

2. I understand that you will request funds.

*Franklin T. Hammond, Jr.*

FRANKLIN T. HAMMOND, JR.  
Lt. Colonel, USAF (Ret.)  
Legal Division, A.S.S.S.

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a/c V.1650-Pack Com.  
P-5, Airc. Proj - 43  
m+s.

AFDMA-LE  
FNS:gow

July 3, 1943.

S. W. CHIDLAR,  
Brig. Gen., U.S.A.

EXTRA PRIORITY.

Commanding General,  
Material Command,  
Wright Field.

AFDMA-1-101 \* \* \* \* \* The Joint Aircraft Committee in meeting Thursday, July 1, 1943, directed that a survey made of production possibilities at Packard to determine whether or not Packard will be able to maintain or better their present production schedule. The J.A.C. felt that Packard's continual slippage is having a serious effect upon P-51 production in this country and British aircraft production in the United Kingdom, Canada and Australia.

It is requested that a recommendation be made by the Material Command for submission to the Joint Aircraft Committee on Thursday, July 8, 1943 as to what action the Joint Aircraft Committee could take to improve Packard Merlin engine production.

Material Division, WREAO.

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Carbon-V-1650  
 Pts, Air. Proj. 45  
 m+s

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Packard "Merlin" Situation.

July 7, 1943.

Brig. General B. E. Meyers.

1. Reference T. P. Wright's memorandum, dated June 3, 1943, regarding the above subject. Present indications are that the cumulative deficit of V-1650-3 engines will be cleared by April, 1944, and that there will be sufficient engines for both United States and British P-51's thereafter. This has been accomplished by increasing production of this engine over the previous peak of 600 to 940 by February, 1944. Due to design changes in PM 68 and 69, Packard will not commence production of these types until February, 1944.
2. Supercharger casting difficulties are still retarding production of the two-stage engine. The Material Command is taking vigorous steps to help Packard out of its difficulties. The main difficulties are design peculiarities of the castings and the unusual alloy being used.
3. There is sufficient casting capacity, however, once the trouble is overcome, to support Packard's present schedule.
4. Any increase in Packard's schedule over the present 2700 peak, it is recommended, would warrant establishment of a new facility rather than trying to get Packard over the 2700 peak.
5. The Pratt and Whitney R-2000 would seem to be a more satisfactory alternate for the Merlin engine in the Lancaster.

E. G. BARBER,  
 Lt. Colonel, Air Corps.

1 Incl:  
 Memo. frn.  
 T.P. Wright,  
 dtd. 6-3-43.

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Certain V1650  
 P+S, Air. Proj - 44  
 m-5

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a  
 Gen. Chilton  
 Production  
 May 1943

R

HQP-3 7/7/43

ASST CHIEF OF AIR STAFF MMND

EXTRA PRIORITY

SUPPLEMENTING INFORMATION GIVEN IN TELETYPE RCS-TWX-671-RBC, THIS OFFICE FEELS THAT IT IS USELESS TO TRY TO EXPEDITE PACKARD PROGRAM BY INSTALLATION OF ADDITIONAL FACILITIES. ANY NEW FACILITY, SUCH AS THE ALLISON PLANT, COULD NOT PRODUCE ROLLS ROYCE ENGINES FOR AT LEAST TWELVE MONTHS. THIS WOULD BE TOO LATE TO HELP U.S. AND BRITISH AIRPLANE PROGRAMS.

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COMPLETE INFORMATION OF STATUS OF OUR PROGRAM WAS GIVEN IN TELETYPE TEX-200 DATED 14 JUNE 1943.

BOTH CENTRAL PROCUREMENT DISTRICT AND PRODUCTION DIVISION ARE CLOSELY WATCHING THE SUPERCHARGER CASTING SITUATION AS OUTLINED IN RCS-TWX-671-RBC.

THE ONLY POSSIBLE HOPE OF EXPEDITING THIS PROGRAM AND ASSURING DELIVERY OF MACHINE TOOLS TO MEET PACKARD'S PROJECTED SCHEDULE, LIES IN RASIX RAISING PREFERENCE GROUP RATING OF P-51B AIRPLANES TO AT LEAST GROUP TWO. SUGGEST FURTHER THE POSSIBILITY OF PAXX PLACING 1000 P-51B AIRPLANES AS A SPECIAL PROJECT IN PREFERENCE GROUP NUMBER ONE IN ORDER TO FURTHER INSURE TOOL DELIVERIES.

TECHNICAL EXECUTIVE

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CONFIDENTIAL

JOINT AIRCRAFT COMMITTEE  
Subcommittee on Production Programs  
MEMORANDUMCase No. 3484-A1  
July 15, 1943

TO: Recorder, Joint Aircraft Committee

FROM: Subcommittee on Production Programs

SUBJECT: Case No. 3484-A1, Memorandum, dated July 8, 1943, from  
The Commanding General, Army Air Forces  
Packard-Merlin Production Schedules

1. The subject memorandum, dated July 8, 1943, was filed by The Commanding General, United States Army Air Forces.
- 2a. DISCUSSION: The memorandum states the production schedules, as shown on Attachment No. 1, are identical to the overall schedules approved by the Joint Aircraft Committee on June 10, 1943.
- b. The attached schedules provide a new distribution between the single-stage and two-stage production, beginning January, 1944. This revision in schedule has been brought about mainly as a result of recent information made available regarding production of and requirements for British Packard-Merlin two-stage engines.
3. RECOMMENDATION: It is recommended that the attached production schedules for Packard-Merlin engines be approved.
4. This action was taken at the Subcommittee meeting of July 8, 1943, and was agreed to by all members present as follows:

Navy:	Lt. Comdr. T. V. Jones, Lt. Comdr. T. B. Focke, Lt. F. P. Wood
Army:	Lt. Col. E. G. Barber, Maj. A. K. Lovett, Capt. R. M. Smith
S. A. C.:	Lt. Col. H. Burchall
Canada:	D. H. Gatehouse
A. R. C. C.:	T. P. Wright, Chairman, A. S. Lombard, Jr., M. A. Tracy

Also Present: Lt. Comdr. E. J. Merritt, Navy  
Capt. M. H. Shea, J. A. C.  
J. R. Smith, C. L. L. A.  
C. H. Simmons, G. W. Ball, A. R. C. C.

For the Subcommittee on Production Programs:

Approved by Joint Aircraft Committee

On 7-15-43

M. A. Tracy  
RecorderAttachment  
CHS:mc

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Sched. Sect. - 80-2/7pp

98  
CONFIDENTIAL

## PACKARD SCHEDULE

Attachment No. 1

Y	C O P					Totals
	Merlin 33	Merlin 38	1650-3	1/ Merlin 68	1/ Merlin 69	
1943 - Mar.		568				568
Apr.	119	486				605
May	147	1059	19			1225
June	190	860*	150**			1200
July	100	840	260			1200
Aug.	125	875	400			1400
Sept.	125	675	600			1400
Oct.	200	600	600			1400
Nov.	300	500	650			1450
Dec.	400	400	750			1550
1944 - Jan.	350	400	900			1650
Feb.	300	400	940	10	100	1750
Mar.	169	531	850	50	300	1900
Apr.		700	850	165	385	2100
May		700	740	415	545	2400
June		600	740	710	550	2600
July		400	740	1010	550	2700
Aug.		250	740	1310	400	2700
Sept.		131	740	1460	369	2700
Oct.			740	1610	350	2700
Nov.			740	1610	350	2700
Dec.			740	1440	420	2700

\*Delivery Actually 756. Bal. of 104 to be made up in July  
 \*\*Delivery Actually 56. Bal. of 94 to be made up by Nov.  
 1/ 18 Mock-up and Experimental Models to be delivered prior to  
 February, 1944.

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PE8-2331-P  
MATERIEL DIVISION  
PRODUCTION BRANCH

7-17-43

RECEIVED  
MATERIEL DIVISION  
PRODUCTION BRANCH  
JUL 19 1943  
AFAMC

EXTRA PRIORITY

PACKARD PRODUCTION SCHEDULE. PACKARD MOTOR CAR COMPANY HAS BEEN INSTRUCTED TO MANUFACTURE V-1650-3 AND MERLIN ENGINES ACCORDING TO SCHEDULE PREPARED AT WRIGHT FIELD 6 JULY. ANY CHANGES AT THIS TIME WILL EFFECT TOTAL PRODUCTION. ON 15 JUNE BAC WAS ADVISED THAT IT WAS NECESSARY FOR REQUIREMENTS TO BE KNOWN BY 1 JULY. NO CHANGES IN PRODUCTION REQUIREMENTS FOR THE NEXT 8 MONTHS CAN BE MADE AND PACKARD WILL BE INFORMED THAT THE SCHEDULE FOR NEXT 8 MONTHS IS FINAL. REQUEST CHANGE IN BRITISH REQUISITION FOR SINGLE STAGE ENGINES BE MADE IMMEDIATELY BY WIRE AS REQUISITION BREAKDOWN REQUIREMENTS DIFFER FROM SCHEDULE REQUIREMENTS. NO MERLIN 68 ENGINES CAN BE SHIPPED PRIOR TO FEBRUARY 1944. V-1650-3 ENGINES WITH BRITISH PROP SHAFT AND REDUCTION GEAR CAN BE SUPPLIED TO BRITISH AT EXPENSE OF V-1650-3 PRODUCTION. MOCK UP ENGINES FROM SCRAP PARTS CAN BE SUPPLIED. ENGINES ARE AVAILABLE IN ENGLAND FOR COMPARABLE FLIGHT TEST WORK. END..AFAMC

TECHNICAL EXECUTIVE

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21382

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C-U-1630  
P10, Airc. Proj. - 48  
mrs

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## BRITISH AIR COMMISSION

OFFICE OF  
THE DIRECTOR GENERAL

1785 MASSACHUSETTS AVENUE

WASHINGTON, D C

Ref. L15  
CRF:mb

July 29, 1943.

Dear General Echols,

We discussed the question of an additional production line for Packard Merlin engines and you mentioned that in your opinion it would be prudent to assume that Packards themselves could not exceed a maximum of 2000.

As you know, we have been making a comprehensive study of the overall position of the Merlin requirement from the present time through June 1946 and it disclosed that even assuming that Packards reach their peak of 2700 by October 1944 there is a serious shortage of engines starting in the last quarter of 1944 and becoming cumulatively more serious thereafter. Complete figures of this analysis are being sent under separate cover to your office. They are already in the possession of Mr. T. P. Wright.

So long, however, as it was assumed that Packards could reach their peak of 2700 by October 1944 the threatened shortage could be easily remedied by setting up an additional production line since the real shortage does not develop for some fifteen months from now.

If, however, it is to be assumed that Packard reach only 2000, the shortage develops to a serious degree steadily from March 1944 next and the setting up of an additional production line, although essential to meet the ultimate requirements, does not operate in time to prevent a very serious shortage throughout the vital period June 1944 to June 1945 since the new line could hardly start before November 1944 or reach its peak until November 1945. I attach a chart which shows the position clearly.

May I express the hope, however, that apart from setting up the additional facilities, some action can be taken whereby Packard's production should reach at least 2500 per month, failing which we are faced with the situation that the British Lancaster programme will have to be curtailed.

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C-U-1630  
PFD, Airc. Proj. - 48  
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## BRITISH AIR COMMISSION

OFFICE OF  
THE DIRECTOR GENERAL

1785 MASSACHUSETTS AVENUE

WASHINGTON, D C

Ref. L15  
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July 29, 1943.

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May I express the hope, however, that apart from setting up the additional facilities, some action can be taken whereby Packard's production should reach at least 2500 per month, failing which we are faced with the situation that the British Lancaster programme will have to be curtailed.

Yours very sincerely,

Director General.

Enc.


Major General Oliver P. Echols,  
U. S. Army Air Forces,  
Commanding General, Army Air Forces  
Materiel Command,  
4C-886 Pentagon Building,  
Washington, D. C.

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AIR 18  
Pvt. Airc. Proj. - 47. (V) pp  
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**BRITISH AIR COMMISSION**  
1755 MASSACHUSETTS AVENUE  
WASHINGTON, D. C.  
TELEPHONE HOBART 9000

PLEASE QUOTE  
REFERENCE NO. \_\_\_\_\_

July 30, 1943.

Dear General Echols,

When Sir Richard Fairey and I saw you the other day I promised to send to you the statistical tables outlining the supply/demand position for Rolls Royce type engines. Here they are.

Table I shows the Rolls Royce type engines required for all aircraft in the British Aircraft Programme (excluding Lancaster and York) and the total Rolls Royce engines which will be available from British production. The difference between requirements and supply shows, of course, the number of British Rolls Royce engines available for the British Lancaster and York programme.

Table II shows the Lancaster and York programme in Great Britain, the total engines required for this programme; the engines which will be available from British sources (Table I); the engines which we have been expecting to obtain from Packards on present schedules and the overall deficiency of engines against the Lancaster and York Programme.

Table III gives the general picture for Packard engines setting the present scheduled production up to 2700 engines a month against the requirements for all aircraft in the United States aircraft programme, the British aircraft programme, the Canadian aircraft programme and the Australian Aircraft programme. It will be seen from this table that a cumulative deficiency makes itself evident in the latter part of 1944 and reaches a deficiency of 9,143 at the end of 1945 and a deficiency of 13,794 by the middle of 1946.

The charts attached illustrate the position as shown in Table III.

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*Charts in  
Aircraft file  
ag*

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Micro  
P.S. Air Proj. 47 (f/3pp)

4

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Major General Oliver P. Echols -- 2.

July 30, 1943.

You will realize that all these tables have been drawn up on the two important assumptions

- a) That Packard output reaches 2700 engines a month by October 1944.
- b) That no additional Mustangs are put into the United States aircraft programme.

If either of these assumptions proves to be untrue then, of course, the engine deficiencies will become more serious.

We will, of course, be glad to discuss any points arising out of these tables at any time.

Yours very sincerely,

*John Tenney*

Major General Oliver P. Echols,  
U. S. Army Air Forces,  
Commanding General, Army Air Forces  
Materiel Command,  
4C-886 Pentagon Building,  
Washington, D. C.

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WAR DEPARTMENT  
 Office, Adj. Gen. Air Staff, Materiel, Plans, and Production  
 Inter-Desk Memorandum  
 For General Staff Date August 14, 1945  
 SUBJECT: Production Schedules for Completed Merlin Engines  
 1. Attached hereto is copy of proposed production schedule for completion of the Merlin engine, compared with approved Joint Aircraft Committee Schedule for Production.  
 2. Proposed requirements for these engines are expected to be 2,000 engines per month as compared with peak capacity which is now estimated at 1,000 engines per month.  
 Shall:  
 Copy proposed prod. sched.  
 From \_\_\_\_\_  
 THIS COPY WILL NOT BE USED OUTSIDE THE AC/AS, AS, M, & D.  
 W. B. Ellis



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Project - 44 (44 pp)

Col Barber:

See O.P.E.'s note -

Let's not go to sleep  
 & let all the engines  
 get earmarked for UK -  
 Get our projected requirements.  
 Gen Echols wants machine  
 tried out in P-63 which  
 may or may not require  
 engines - we will  
 want to step up P-51-B  
 O.C. & R. says requirement  
 for 1000 "on the deck" fighters  
 exists - This takes P-51-B

Wing Lt. J. G. J.

Notes

F-47

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V-1650  
Asst. Chief of Staff - 09-11/10 12  
WAR DEPARTMENT  
HEADQUARTERS ARMY AIR FORCES  
OFFICE, ASST. CHIEF OF AIR STAFF,  
MATERIEL, MAINTENANCE and DISTRIBUTION

Col Sweeney

British - Sir  
Richard F. King -  
putting in a  
request for  
15,000 additional  
Medivc Supplies  
based on proposed  
new Continental  
Production - will  
go to the JAC

~~J. H. Nichols~~  
J. H. NICHOLS  
MAJOR GENERAL, U.S.A.  
ASST. CHIEF OF AIR STAFF  
3-7931, AF

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13  
 1650-3  
 Merlin 63  
 Merlin 60  
 49 (6/1/49)

	1943												
	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR
<u>PACKARD</u>													
Merlin 33 )		119	147	190	100	125	125	200	300	400	350	300	169
Merlin 38 )	568	456	1059	850	840	875	675	600	500	400	400	400	531
Merlin 63 )			10	150	260	400	600	600	650	750	900	940	850
Merlin 60 )												10	50
<u>TOTAL</u>	568	605	1225	1200	1200	1400	1400	1400	1450	1550	1650	1750	1900
<u>CONTINENTAL</u>													
<u>TOTAL</u>	568	605	1225	1200	1200	1400	1400	1400	1450	1550	1650	1750	1900

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<u>1944</u>												<u>1945</u>				<u>PEAK</u>								
<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUNE</u>	<u>JULY</u>	<u>AUG</u>	<u>SEPT</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>PEAK</u>						
300	400	350	300	169																				
500	400	400	400	531	700	700	600	400	250	171														
650	750	900	940	850	850	740	740	740	740	740	740	740	740	1010	1310	1460	1610	1610	1350					
			10	50	165	415	710	1010	1310	1460	1610	1610	1350	100	300	385	545	550	550	400	360	300	300	410
1450	1550	1650	1750	1900	2100	2400	2600	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700
					2	5	15	30	50	100	200	300	400	550	700	900	1100	1350	1350					
1450	1550	1650	1750	1900	2100	2415	2630	2750	2800	2900	3000	3125	3250	3400	3600	3800	4050	4050	4050					

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CONFIDENTIAL

5 August 1943

MEMORANDUM FOR GENERAL HINES

SUBJECT: Rolls Royce Merlin Engine

1. The British have outlined their requirements for Rolls Royce Merlin engines from the United States, and in accordance with their computations their requirements, plus the allocation to us which is sufficient Merlin engines for 300 P-51 airplanes per month, call for a production rate of 3500 Merlin engines per month from United States production. The all-out capacity of Packard is 2700 a month, or there is an apparent shortage of 800 Merlin engines per month to meet what I understand are present commitments. I asked General Meyers, while he is in England, to check these requirements with a view of determining if it were not possible for the British to reduce the number of Merlin engines they expect to receive from the United States. Preliminary information from him indicates that these requirements cannot be materially reduced without interference with their bomber program.

2. Due to the situation described in paragraph 1, I have for some time been studying the feasibility of increasing the production of Merlin engines in the United States. It is impracticable to increase Packard, as it is very doubtful as to whether they can meet their existing commitments. Ordinarily it would take two years or more to start a new facility from the ground up; however, recent negotiations with the Army Ordnance has resulted in their agreement to turn over to us a portion of the Continental engine facilities. Since these people are already engaged in manufacturing aircraft engines, have the factory space, the trained personnel and many of the tools, it seems reasonable that they probably could get into production rather quickly on additional Merlin engines. I am now negotiating with the Continental Corporation to set up the facilities for an additional 1500 Merlin engines per month. If these plans work out, it will give us a theoretical capacity of 4000 engines a month, against our requirement of 3500. In other words, it could save 500 additional Merlin engines per month available for Army Air Force use. This would be sufficient engines for 300 additional P-51's per month, if so desired, and arrangements could be made to reduce B-25's to permit the manufacture of additional P-51's.

3. The above is for information only at this time. As soon as definite information on the Continental deal is available, this matter will be taken up with C.O. & E. with a view of making such revisions in the program if considered desirable by that Division.

RESTRICTED  
cc: OGER  
Mat. Div., 3042

OPER:jj  
APWD-1

HQ. AAF

AUG 6 1943

O. P. ECHOLS  
Vice General, U. S. A.  
Chief of Air Staff  
General Maintenance & Distribution

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U. S.

TABLE I

REQUIREMENTS (EXCLUDING CASTLE AND YORK) OF BRITISH POLLS AND ICE TYPE ENGINES

Requirements allowing 20% Reserve Engines and Two Month's Lead for Engines on Aircraft Build

	Single Stage Merlins					Two Stage Merlins				Griffons						Total	Total	
	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Griffon	Griffon	Griffon	Griffon			Griffon
1943 3rd Quarter	3300	1006	-	205	290	525	20	85	255	-	70	130	-	-	-	40	707	676
4th Quarter	2700	735	120	270	301	205	30	1150	310	50	225	150	-	-	-	98	6439	1320
1944 1st Quarter	1580	570	120	420	315	330	-	1100	235	200	235	150	-	35	-	400	5670	1887
2nd Quarter	1150	600	120	420	210	270	-	1100	200	350	205	220	-	100	15	515	5575	2445
3rd Quarter	530	670	120	470	180	255	-	850	290	300	285	210	-	150	50	805	5230	2938
4th quarter	100	650	120	620	-	205	-	400	205	490	285	105	35	200	65	1235	4705	3438
1945 1st Quarter	100	660	120	450	-	220	-	370	300	540	300	-	100	360	150	1950	5020	3940
2nd Quarter	100	600	120	300	-	220	-	300	30	540	300	-	230	360	240	1600	5270	4460
3rd Quarter	100	600	120	-	-	150	-	200	300	540	300	-	520	360	240	1940	5450	5010
4th Quarter	100	600	120	-	-	100	-	100	300	540	300	-	520	360	240	2300	5640	5570
1946 1st Quarter	100	660	120	-	-	100	-	-	300	540	300	-	520	360	240	2600	5840	6160
2nd Quarter	100	660	120	-	-	100	-	-	300	540	300	-	520	360	240	2600	5840	6740
3rd Quarter	100	660	120	-	-	-	-	-	300	540	300	-	520	360	240	2600	5740	7310
4th quarter	100	660	120	-	-	-	-	-	300	540	300	-	520	360	240	2600	5740	7890

July 26/43

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TABLE I

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REQUIREMENTS (EXCLUDING WINGS AND TAILS) OF BRITISH POLLS AND CE TYPE ENGINES

Requirements allowing 20% Spare Engines and Two Month's Lead for Engines on Aircraft Build

In Merlin	Stage		Merlins					Griffons					Total	Total	Surplus	Surplus
	Merlin	Merlin	Merlin	Merlin	Merlin	Merlin	Griffon	Griffon	Griffon	Griffon	Griffon	Total				
55	63 & 7	61	66	72	67	73	II	VI	71	65	Total	Total	British	British	for	for
IX	VIII	VII	VIII	IX	IV	IV	Firefly	Baracuda	Seafire	Firefly	Spitfire	Spitfire	Quarterly	Quarterly	Quarterly	Cumulative
IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX	IX
525	30	65	255	-	70	135	-	-	-	40	787	6767	7050	7000	+ 490	+ 280
225	30	1150	315	50	225	150	-	-	-	98	6439	13210	7400	12260	+ 961	+ 1294
330	-	115	235	230	235	150	-	35	-	400	5670	18776	7280	21740	+ 1610	+ 2804
270	-	1100	210	350	205	220	-	100	15	515	5575	22251	7535	29275	+ 1960	+ 2824
255	-	850	290	300	285	210	-	150	50	805	5230	29481	7400	36875	+ 2175	+ 2994
205	-	400	205	490	285	105	35	200	65	1235	4705	32366	7100	43775	+ 2595	+ 9389
220	-	370	300	540	300	-	100	360	150	1300	5020	39406	7100	50875	+ 2080	+ 12269
220	-	300	30	540	300	-	200	360	240	1600	5270	44376	7100	57975	+ 1830	+ 13299
150	-	200	300	540	300	-	500	360	240	1900	5450	50126	7100	65975	+ 1650	+ 14949
100	-	100	30	540	300	-	500	300	240	2300	5640	55766	7100	72175	+ 1460	+ 16409
100	-	-	300	540	30	-	520	30	240	2600	5840	61006	7100	78775	+ 1200	+ 17009
100	-	-	300	540	300	-	520	360	240	2600	5840	67446	7100	86375	+ 1200	+ 17029
-	-	-	300	540	300	-	520	360	240	2600	5740	73186	7100	93475	+ 1300	+ 20289
-	-	-	300	540	300	-	520	300	240	2600	5740	78926	7100	100575	+ 1300	+ 21049



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 TABLE II

S. CONFIDENTIAL - BRITISH SECRET *a*

REQUIREMENTS AND SUPPLIES OF ENGINES FOR BRITISH LANCASTER AND YORK

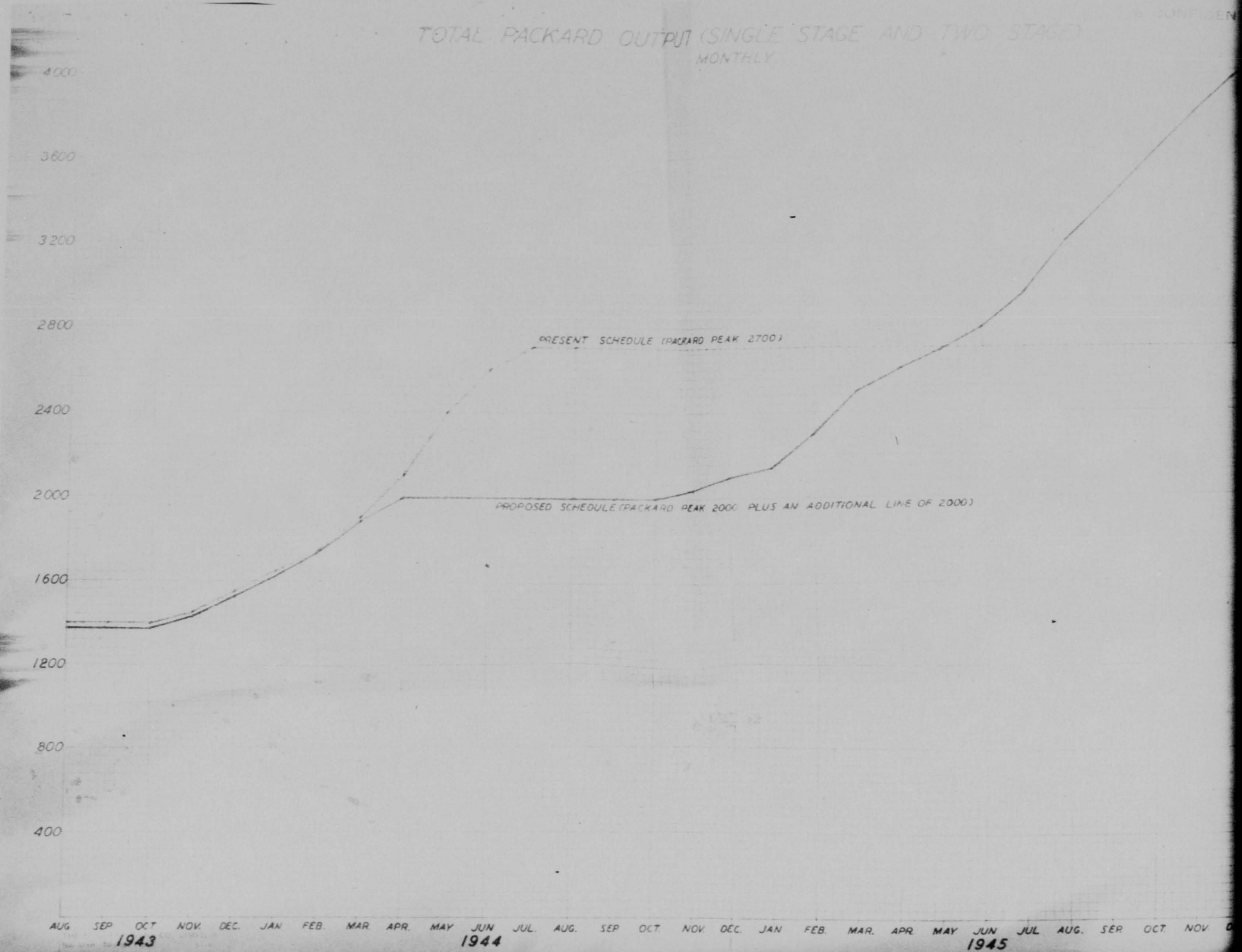
	: British : Lancaster : and York : Programme	: Engines Required *		: Engine Supplies				: Surplus or Deficit	
		: Quarterly	: Cumulative	: British Sources	: Packard	: Total Quarterly	: Total Cumulative	: Quarterly	: Cumulative
1943 3rd Quarter	411	2112	2112	293	3000	3293	3293	1181	1181
4th Quarter	440	3408	5520	961	2140	3101	6394	307	874
1944 1st Quarter	710	4224	9744	1610	1590	3200	9594	1024	150
2nd Quarter	880	4560	14304	1960	1690	3650	13244	910	1060
3rd Quarter	950	5280	19584	2170	3085	5255	18499	25	185
4th Quarter	1100	5760	25344	2395	3850	6245	24744	485	600
1945 1st Quarter	1200	6480	31824	2880	390	5980	30724	500	1100
2nd Quarter	1350	6720	38544	1830	3900	5730	36454	990	2090
3rd Quarter	1400	7200	45744	1650	3900	5550	42004	1650	340
4th Quarter	1500	7440	53184	1460	3900	5360	47364	2080	5820
1946 1st Quarter	1550	7440	60624	1260	3900	5160	52524	2280	8100
2nd Quarter	1550	7440	68064	1260	3900	5160	57684	2280	10380
3rd Quarter	1550	7440	75504	1360	3900	5260	62944	2180	12560
4th Quarter	1550	7440	82944	1360	3900	5260	68204	2180	14740

\* Including 20% Spare Engines

July 26/43



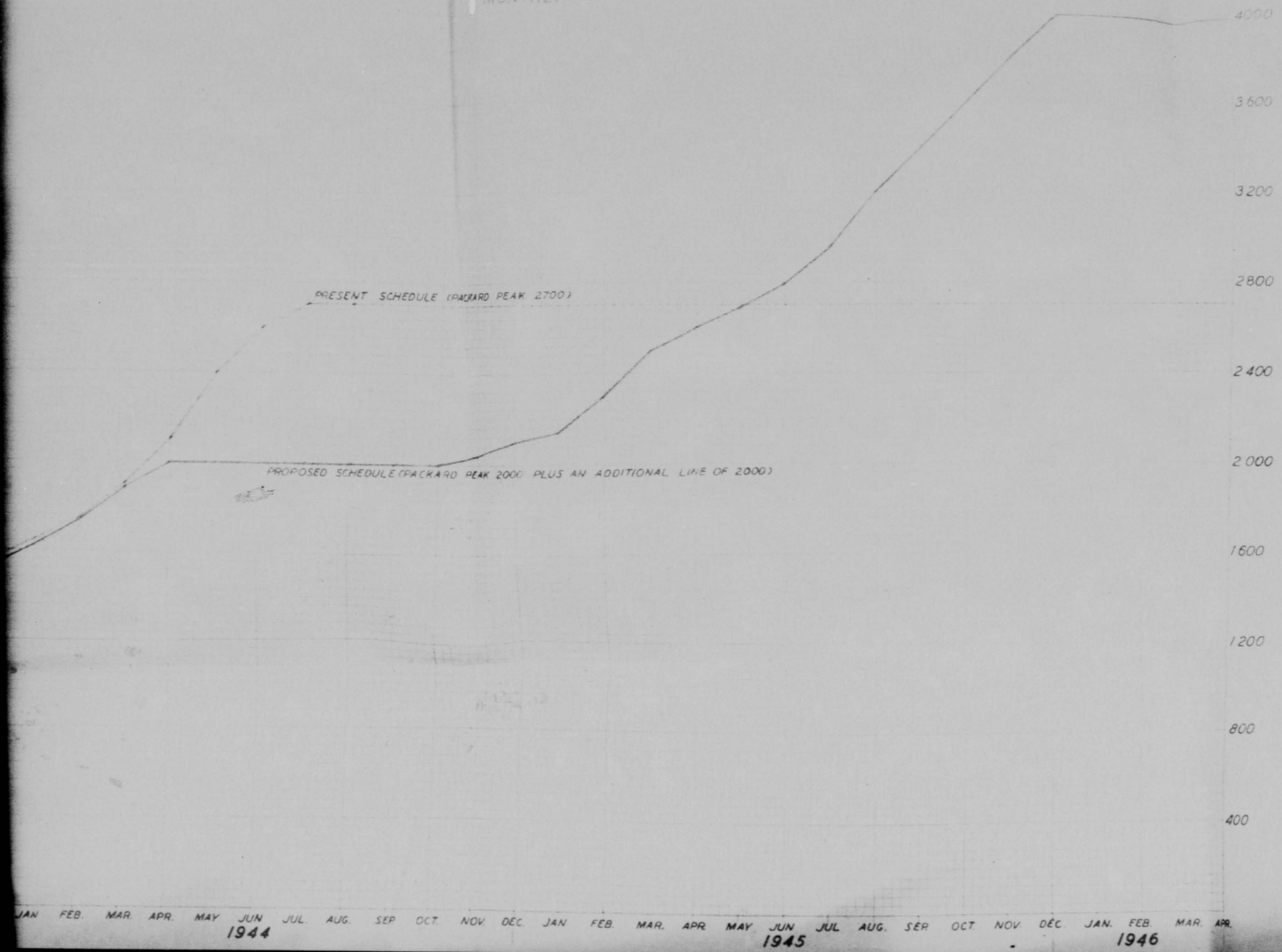
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TOTAL PACKARD OUTPUT (SINGLE STAGE AND TWO STAGE) MONTHLY

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P.S. and Proj. 22-14/77

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Requirements of Packard Merlin Engines all against Ex Works Engine Deliveries and Eng July 5, 1943, by Wright Field, Production

Black figures  
Red figures are

Recipient	Airplane		Quantity	Monthly Engine Lead Over Air-frames	Engine Model	Instal. or Spares	% Spare Engine Provis.	Total Quant.	Del'd Ex Works as of 6/30/43	To be Del'd as of 7/1/43	Engs. per Plane	Surplus or Deficit	1943					1944					
	Model	Manufacturer											July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.			
U.K.	Lancaster III	A. V. Roe	987	5	P.M. 28	Airframes		-	598	389	4	564	143	114	132								
					P.M. 28	Inst.		3948	*4132	0	-	Conv.											
					P.M. 28	Spares	25%	989	*1033	0	-	Parts											
			1786	5	P.M. 38/224	Airframes		-	0	1786	4	880	336	600	21	158	160	149	155	1			
		P.M. 38/224			Inst.		7144	2236	4908	-	880	336	600	640	596	640	640	640	6				
		P.M. 38/224			Spares, 25%		1786	560	1226	-	153	83	150	160	149	160	160	160	1				
	Lancaster V		9280	5	P.M. 68	Airframes		-	0	9280	4				4	4		24	40				
					P.M. 68	Inst.		37120	0	37120	-						2	6	10				
					P.M. 68	Spares 25%		9280	0	9280	-												
U.K.	Lancaster III	Victory Air Canada	6	3	P.M. 28	Airframe		-	0	6	4	1	1	2	3								
					P.M. 28	Inst.		24	24	0	-												
					P.M. 28	Spares 25%		5	5	0	-												
			294	3	P.M. 38/224	Airframes		-	0	294	4	56			5	7	9	12					
		P.M. 38/224			Inst.		1176	56	1120	-	56	28	48	56	64	72							
		P.M. 38/224			Spares 30%		353	17	336	-	17	8	14	18	19	22							
	(Fill In) (Lancaster V)		1943	3	P.M. 68	Airframes		-	0	1943	4												
					P.M. 68	Inst.		7772	0	7772	-												
					P.M. 68	Spares 30%		2331	0	2331	-												





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Schedules for 1943, 1944, 1945 and 1946  
as per J.A.C. Case No. 4250 Study of  
Production Control Sections.

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Items as listed

Item	1945												1946													
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	
10	160	160	44																							
8	1216	1240	1280	1320	1360	1400	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440
2	304	310	320	330	340	350	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360
26	28	30	32	34	21																					
128	136	84																								
38	41	25																								
1	60	148	148	152	160	180	200	240	280	300	340	360	400	400	400	400	400	400	400	400	400	400	400	400	400	400
1	18	44	44	46	48	54	60	72	84	90	102	108	120	120	120	120	120	120	120	120	120	120	120	120	120	120

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U.K.	York's	Victory Air Canada	50	3	P.M. 38 P.M. 38 P.M. 38	Airframes Inst. Spares	30%	200 60	0 0	200 60	4 -	8 2	4 2	4 1	8 2	12 4	12 3	
		(Airframe forecast from Briny 7198 of 6/22/43)										16	21	24	12			
USAAF RCAF U.K.	D.H. 98 Mosquito	DeHavilland Canada	108	2	P.M. 31 P.M. 31 P.M. 31	Airframes Inst. Spares	30%	216 64	216 64	73 0	2 -	72 22						
		(Airframe forecast from memo of Mr. Boddis of 7/7/43)	908	2	P.M. 33/225 P.M. 33/225 P.M. 33/225	Airframes Inst. Spares	30%	1816 544	0 75	908 469	2 -	250 75			18	38	46	
		(6084 P.M. 69 on Contract USAAF W-535 AC 15678 Supp's. 6 and 38)	484	2	P.M. 69 P.M. 69 P.M. 69	Airframes Inst. Spares	30%	968 290	0 0	484 290	2 -						2	
		(Fill In) D.H. 98 Mosquito	2750	2	P.M. 69 P.M. 69 P.M. 69	Airframes Inst. Spares	30%	500 350	0 0	2750 1650	2 -							

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16 21 24 12

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Recipient	Airframe		Quantity	Monthly Engine Lead Over Airframes	Engine Model	Instal. % Spare or Engine Provia. Quant.	Total Quant.	Del'd Ex Works As of 6/30/43	To Be Del'd As of 7/1/43	Engs. per Plane	Surplus or Deficit	1944											
	Model	Manufacturer										Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.			
R.A.A.F.	P.M. 68	DeHavilland Mosquito Australia	106	0	P.M. 61	Airframes	-	4	104	2		7	9	9	9	15	20	20					
					P.M. 61	Inst.	216	216	0	-	116												
					P.M. 61	Spare 30%	64	64	0	-	34												
		(Airframe Forecast from Aust. Programme of 6/3/43 to J.A.F.)	100	0	P.M. 61/225	Airframes	-	0	162	2													
					P.M. 61/225	Inst.	324	101	223	-	101			27	54	58	62						
					P.M. 61/225	Spare 30%	97	30	67	-	30			8	16	17	19						
					P.M. 68	Airframes	-	0	54	2			2										
					P.M. 68	Inst.	108	0	108	-													
					P.M. 68	Spare 30%	32	0	32	-													
		(Fill In)	678	0	P.M. 68	Airframes	-	0	878	2													
		P.M. 68			P.M. 68	Inst.	1756	0	1756	-													
		Mosquito			P.M. 68	Spare 30%	527	0	527	-													
USAAF	P-51	North American Mustangs Dallas & Inglewood (Airframe Forecast from 4-5 Mustang Schedules)	5342	2	V-1650-3	Airframes	-	22	5320	1		177	254	290	348	430	422	450	450	500			
					V-1650-3	Inst.	5342	54	5288	-	399	689	348	430	422	450	450	500	500	500			
					V-1650-3	Spare 40%	2137	22	2115	-	159	275	139	172	169	180	180	200	200	200			
USAAF	P-51	North American Mustangs Dallas & Inglewood (2000 on Tentative Contract No. 40063) (12501 Fill in)	12501	2	V-1650-3	Airframes	-	0	12501	1													
					V-1650-3	Inst.	12501	0	12501	-													
					V-1650-3	Spare 40%	5800	0	5800	-													
R.A.A.F.	P-51	Australia Mustangs (J.A.G. Case No. 4105 Aust. Proj. Notice No. 5)	750	0	V-1650-3	Airframes	-	0	750	1										1			
					V-1650-3	Inst.	750	0	750	-			1										
					V-1650-3	Spare 30%	225	0	225	-			1										
		(Check for 100 - 1650-3 or P.M. 68)	225	6	V-1650-3	Airframes	-	0	225	1													
		(225 Airframes Fill In in 1946)			V-1650-3	Inst.	225	0	225	-													
		(Fill In)			V-1650-3	Spare 30%	67	0	67	-													
		Lancaster V Australia	100	6	P.M. 68	Airframes	-	0	100	4													

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Year	1945												1946			
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
1944																
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<u>1945</u>												<u>1946</u>					Balance						
Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Due
29	31	11																					
		22	32																				
			3	3	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	210
70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	3000
500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	2000
200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	800
		20	19	31	30	31	31	31	31	31	39	40	40	40	40	40	40	40	40	40	40	40	15
31	31	31	31	31	39	40	40	40	40	40	40	40	40	40	40	40	15						
9	9	9	9	9	11	12	12	12	12	12	12	12	12	12	12	12	6						
																							225
																	25	40	40	40	40	40	40
																	7	12	12	12	12	12	12

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	P.M. 68	Spares	30%	120	0	120	684	564	Conv. Sets										
TOTALS				115927	8927	107000													
Total Monthly Requirements, Single Stage				19026	8851	10175	1806			10	425	791	872	905	1089	1162	1202	1245	
Total Accum. Requirements, Single Stage										8861	9286	10077	10949	11854	12943	14105	15307	16552	
Total Monthly Requirements, Two Stage				96901	76	96825	558			964	489	606	597	634	660	750	769	780	
Total Accum. Requirements, Two Stage										1040	1529	2135	2732	3366	4026	4776	5545	6325	
Total Packard Monthly Capacity Requirements										974	914	1397	1469	1539	1749	1912	1971	2029	
Packard Capacity Monthly Schedule, Single Stage					8851					1044	1000	800	800	800	800	750	700	700	
Packard Capacity Accum. Schedule, Single Stage										9895	10895	11695	12495	13295	14095	14845	15545	16245	
Packard Capacity Monthly Schedule, Two Stage					76					279	419	619	619	668	750	900	1050	1200	
Packard Capacity Accum. Schedule, Two Stage										355	774	1393	2012	2680	3430	4330	5380	6580	
Monthly Accum. Surplus or Deficit, Single Stage										1034	1609	1618	1546	1441	1152	740	238	307	
Monthly Surplus or Deficit, Two Stage										685	70	13	22	34	90	150	281	420	
Monthly Accum. Surplus or Deficit, Two Stage										685	755	742	720	686	596	446	165	255	

E.S. DUBBY  
JULY 28/43





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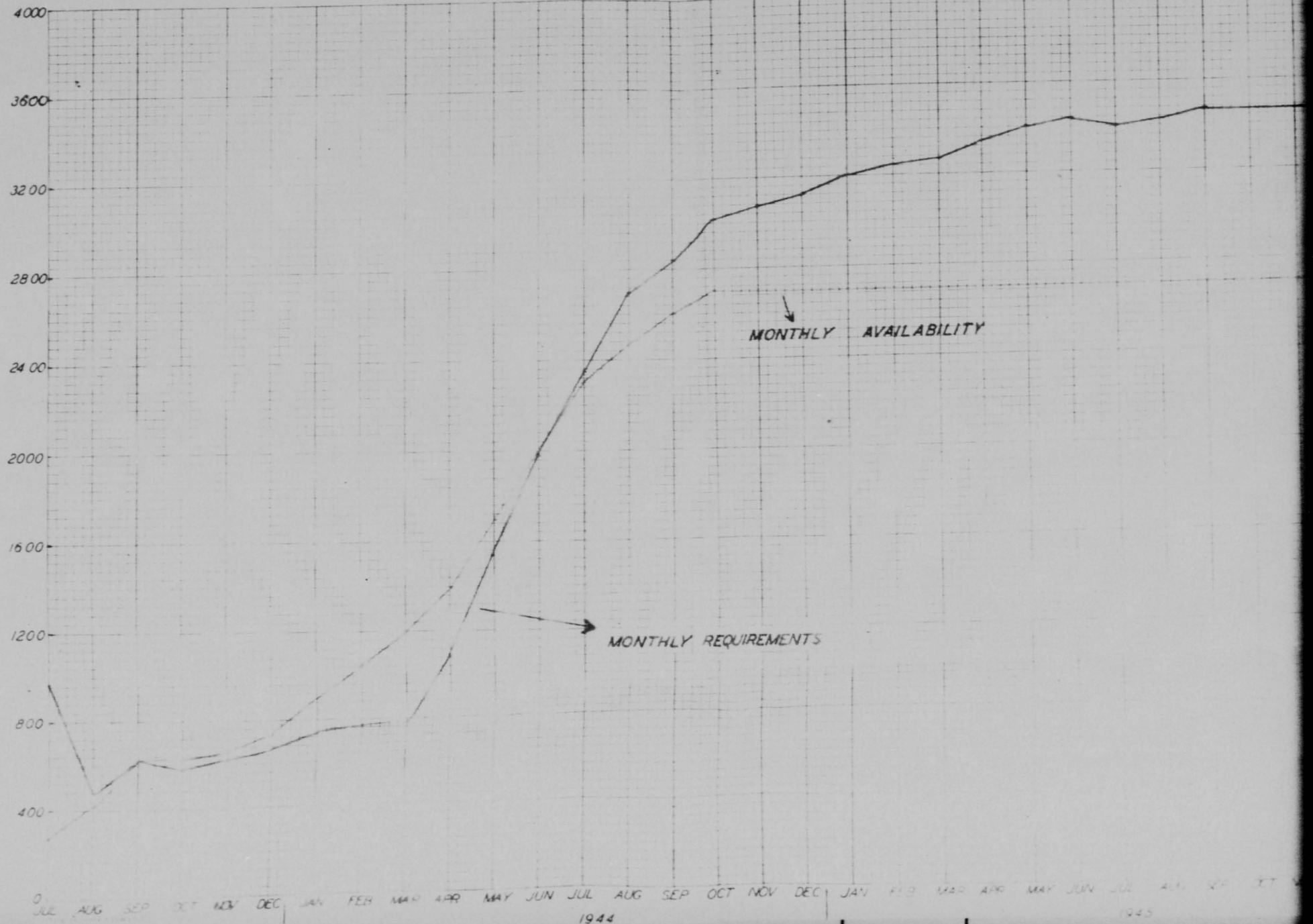
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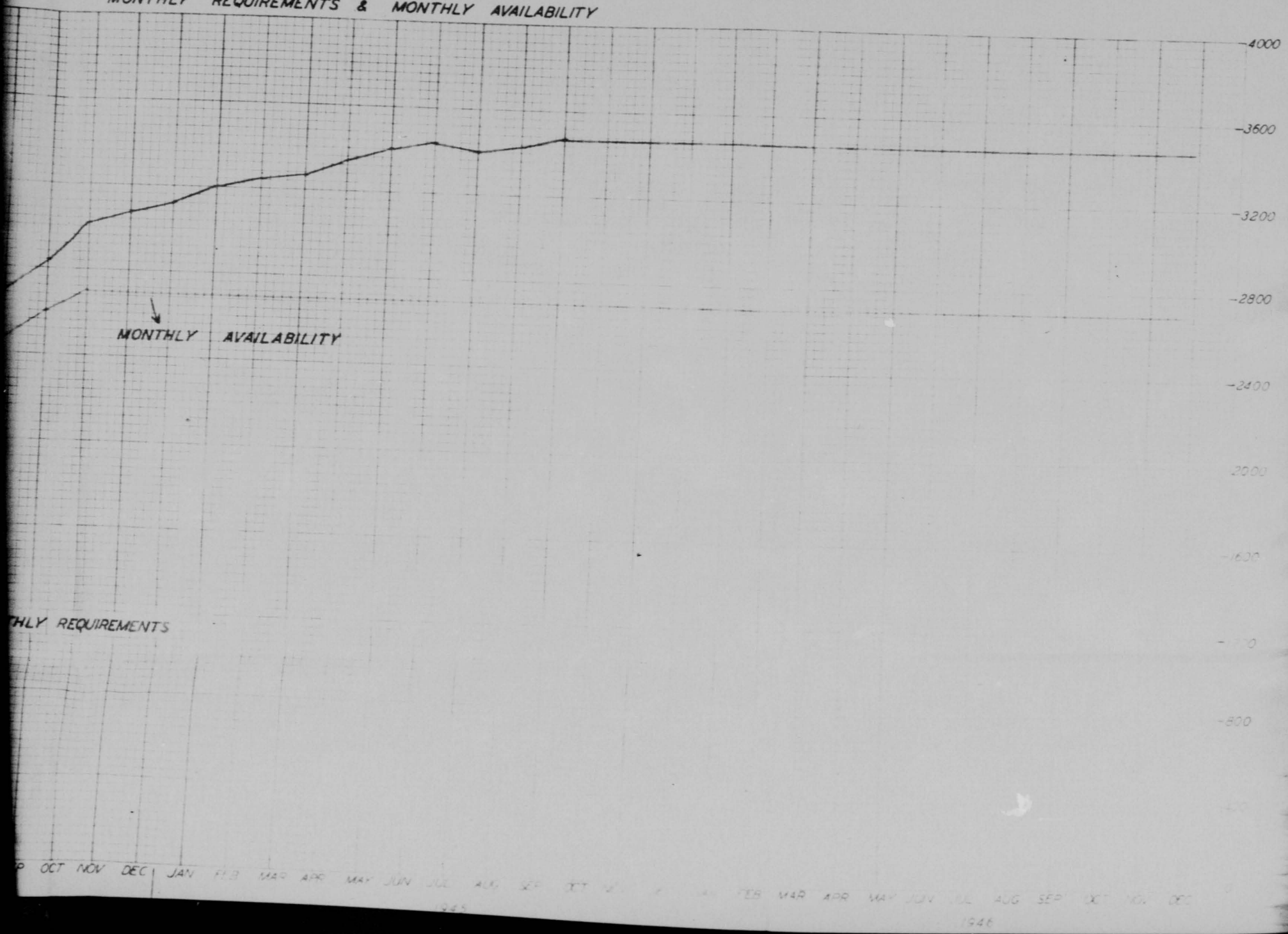
TWO <sup>163</sup> STAGE  
PACKARD MERLIN ENGINES  
MONTHLY REQUIREMENTS & MONTHLY AVAILABILITY



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TWO <sup>163</sup> STAGE  
PACKARD MERLIN ENGINES  
MONTHLY REQUIREMENTS & MONTHLY AVAILABILITY

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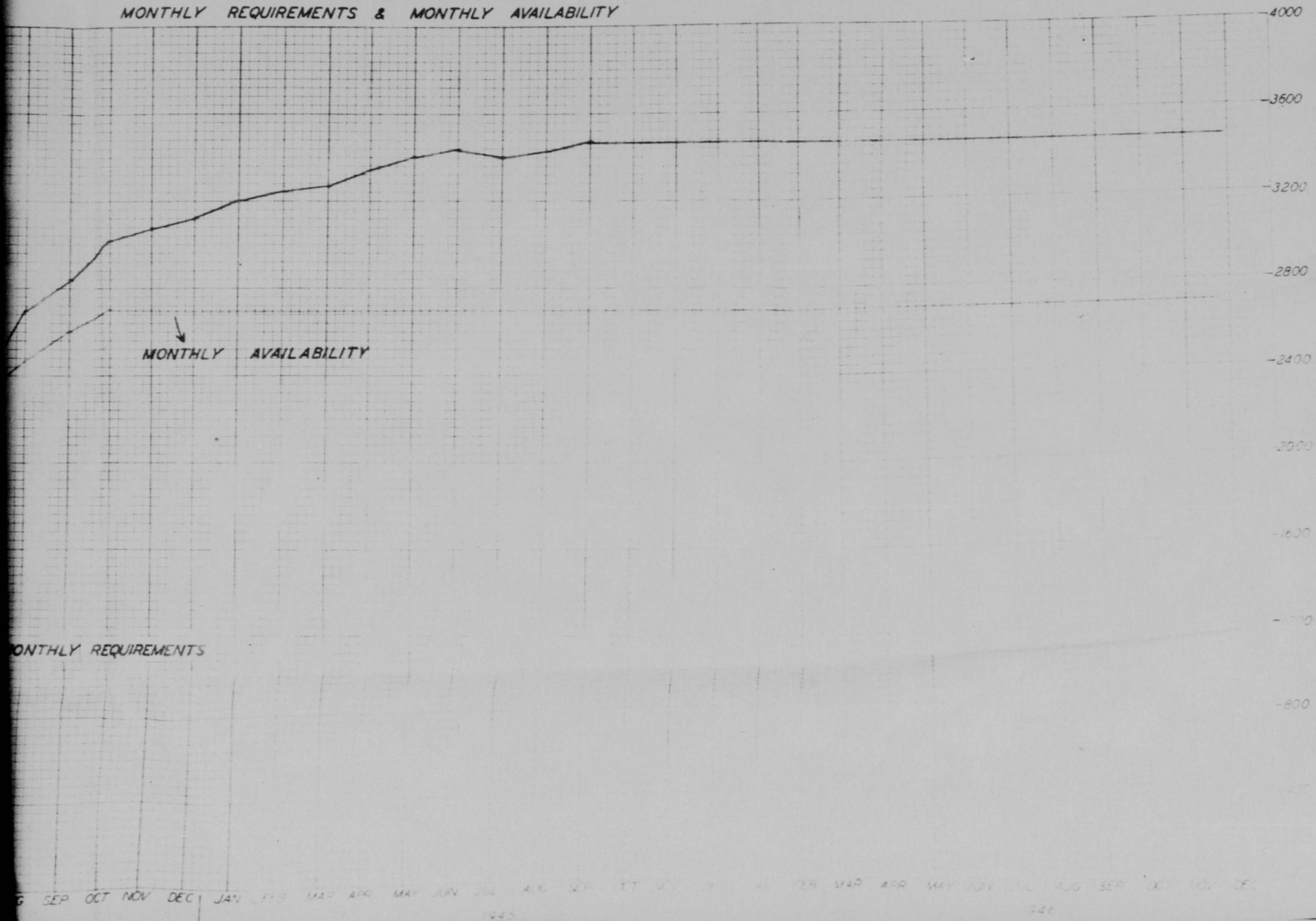




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PACKARD MERLIN ENGINES  
MONTHLY REQUIREMENTS & MONTHLY AVAILABILITY

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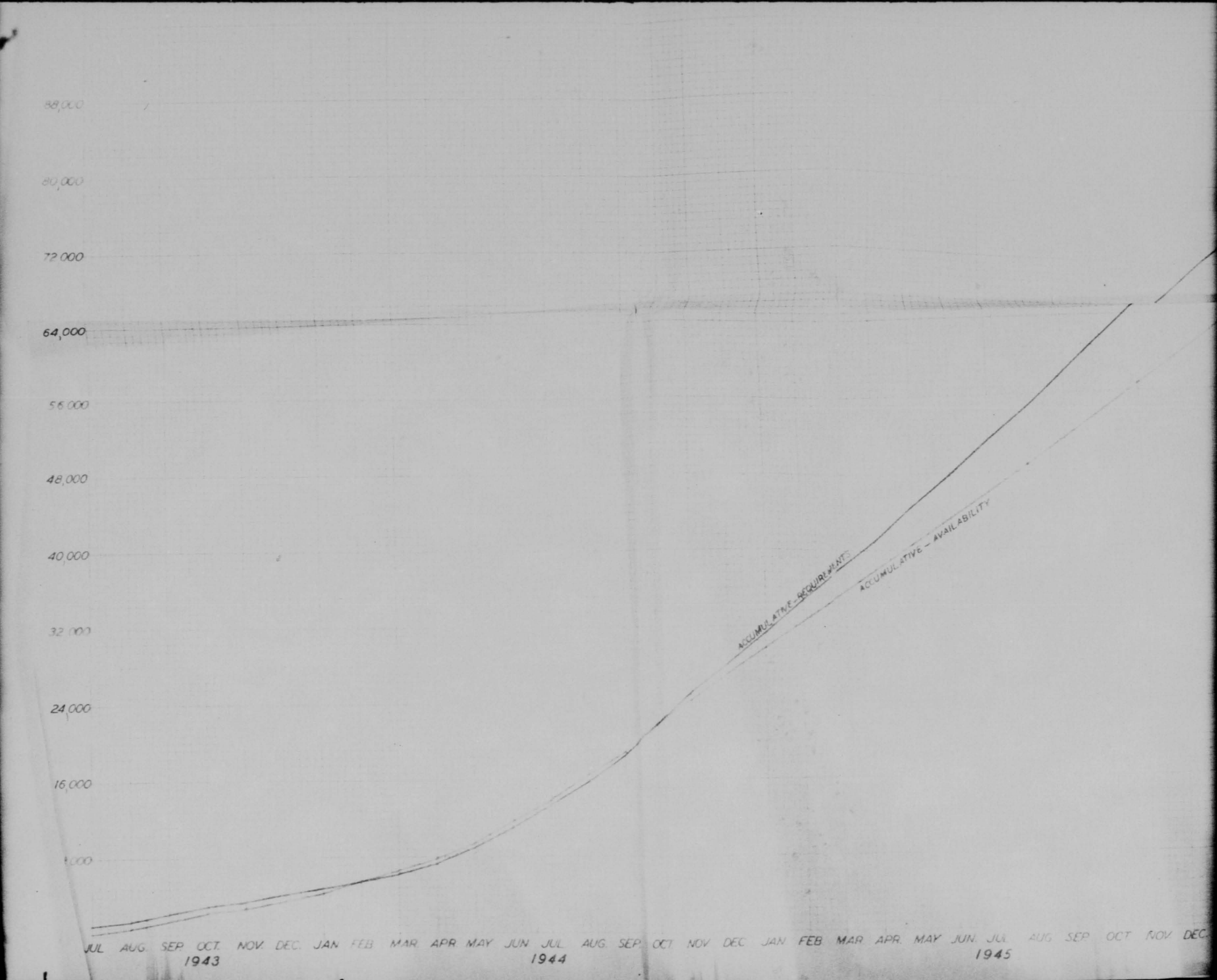
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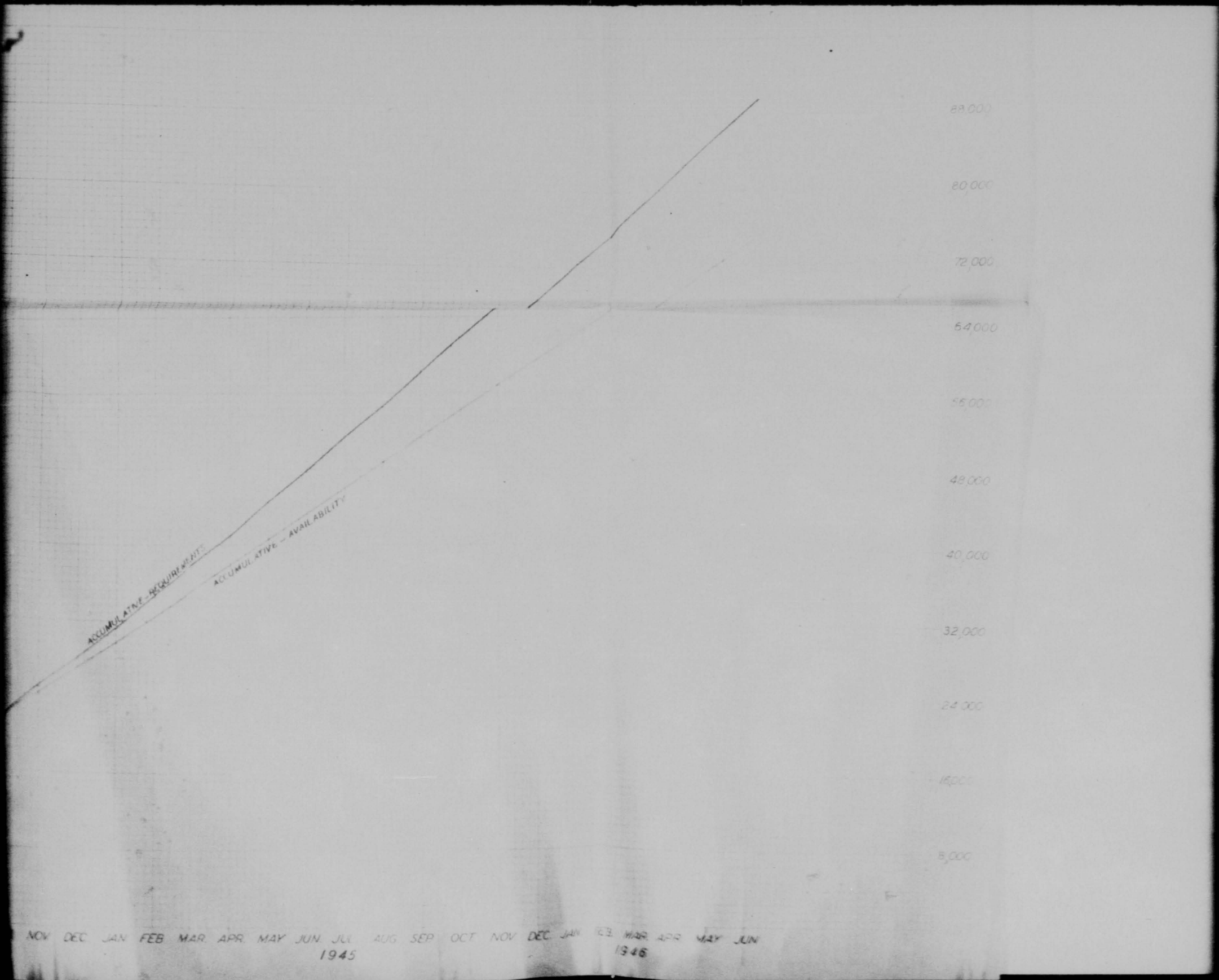
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ACCUMULATIVE REQUIREMENTS & ACCUMULATIVE AVAILABILITY

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Carter-Packard-Rolls-Royce Engine  
CP 111F-28-1/2 pp

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Conference with Packard Representatives

August 6, 1943

Commanding General  
Material Command  
Wright Field  
Dayton, Ohio

Attention: Colonel T. A. Sims

1. On August 5th, Colonel J. G. Vincent and Mr. Wm. N. Packer of the Packard Motor Car Company visited this office for a general conference regarding the situation at Packard relative to the current engine production program. As you are aware, action has been taken toward increasing the urgency standing on the machine tools for the 1400 engines built on the schedule. Such programs, of course, have to be carried out in phase with other programs equally critical.

2. During this conference, certain other matters were discussed, one of which was the set-up for development of the Rolls Royce 14 S. W. engine. Packard has discussed this with your people and the attached letter of July 17th carries certain proposals, costs in development, man hours, and estimated dollar and cents costs. It will be noted that the Packard proposal runs up to a grand total of \$1,728,266.00; however, out of this amount the machinery and tools costs run to \$1,278,000.00 so that in reality, the development program on this 14 S. W. engine would really amount to approximately one half million dollars, were the development engines to be practically "hand made".

3. It might be stated that there is a lot of "international" pressure here on this 14 S. W. development in this country, as well as a tremendous amount of interest being evidenced by higher Air Staff levels. This interest in the Air Staff stems from the estimated performance figures of the North American XP-51 type. In addition to the above, this office feels that we should in our Packard Rolls Royce development maintain at least parity with the British on their continuing developments.

4. The proposal contained in the Packard letter covers some five engines and certain spares, together with testing costs, etc. Whether this quantity should be five engines, ten engines, or 15 engines as being the number adequate for a development program is a decision of your Command. Likewise, just what nature the proposed developments will assume is also in your jurisdiction. This office

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CF, AAF-28 (2/2/43)

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Page Two

Commanding General, Materiel Command, Wright Field, Dayton, Ohio  
 Attention: Colonel T. A. Sims

erely wishes to indicate that we do feel that continued development in this particular line is worth while.

5. One other thought which might be considered at this time is the idea of establishing a separate organization within the Packard Company to carry out this "hand made" development in order to minimize interference with their production program. The opportunity presents itself in that Packard is now taking over the Toledo Lycoming plant. It might be advisable to talk with Packard as to the possibility of segregating a small portion of that new facility to be devoted exclusively to experimental and development work.

6. Packard assures this office that the machines, tools, etc. for such a set-up would be a very minimum; however, this is a question which might be worth considerable investigation inasmuch as we do know that additional tools are likely to be required.

7. Summarizing briefly, it is the opinion of this office that the L. S. M. (or such later developments as might be determined) is desirable. It is requested that this matter be taken up with Packard at an early date. It is further requested that this office be kept advised of any agreements reached with Packard on this subject.

By Command of General ARNOLD:

B. W. CHIDLAW  
 Brig. General, U. S. A.  
 Chief, Materiel Division  
 Office, Ass't. Chief of Air Staff,  
 Materiel, Maintenance and Distribution

2 Incls.

Ltr. to Gen. Echols, 7-27-43, fr. Packard  
 Ltr. to AAF Resident Rep., 7-27-43, fr. Packard

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Carton  
U-1500  
a/c/o S-M-6-7-11/399

7 August 1943

Report of Conference in Mr. T. P. Wright's Office August 6, 1943,  
on the Subject of Packard "Merlin" Engines.

Those Present:

Mr. W. H. Packer, Vice President, Packard Aircraft Engine Div.  
Colonel J. G. Vincent, Packard Aircraft Engine Division  
Sir Richard Fairey, British Air Commission  
Professor John Jewkes, British Air Commission  
Mr. T. P. Wright, Director, ARCO  
Col. C. S. Irvine, Office, AC/AS, WMAED  
Maj. A. E. Lovett, Office, AC/AS, WMAED

1. The conference was started by Mr. Wright who questioned Mr. Packer about the possibility of Packard's meeting the JAC approved production schedule for the Packard Merlin engines. Mr. Packer stated that Packard was still short some 464 machine tools for their 1400 per month engine schedule and that with their present urgency rating of 71 it would be all that Packard could do to make up the delinquencies in spare parts already on the books plus about 900 complete engines per month. Mr. Packer further stated that to make up the backlog of spare parts for both the British Air Commission and the Air Service Command his factory would have to devote approximately the equivalent of 1,000 engines in spare parts. Mr. Packer further stated that the quantity of money involved in the delinquencies of parts was now estimated at \$22,500,000.00

2. Mr. Packer was questioned as to the urgency rating they would require in order to obtain the tools needed and he informed the members of the conference that he would like to have as good a rating as he now has on the supercharger which is 1.4 urgency standing. Col. Irvine then stated that Packard was recommended for an urgency standing of 2 on the date of August 5 and that action was progressing to place it on this basis immediately. When Packard finally receives a No. 2 rating they will hold this rating until they have received tools for the entire 1400 program and for the 2700 program. Col. Irvine also stated that he expected to place Continental on the same urgency rating for their Merlin engine production.

3. Continental will begin production with parts in order to furnish help to Packard and then as soon as they are tooled up and have



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Report of Conference on the Subject of Packard "Merlin" Engines.  
Page Two

gained enough experience they will be required to produce at a rate of 1350 engines per month plus 38.5% in spare parts. It is believed that the help from Continental plus help from the Toledo plant will enable Packard to get out of the "red" very quickly on their parts delivery.

4. Mr. Wright was asked by Mr. Packer what action was being taken to revise the spare parts list for the Army and the British on Packard Merlin engines. Mr. Wright stated that he did not know but referred the question to Sir Richard Fairey and Sir Richard stated that the British were now accumulating data on their engines and would provide it to the Spares Sub-Committee as soon as available. He further stated that the engine production in England was receiving only about 15% spare parts. Mr. Packer was again approached upon the possibility of meeting the JAC production schedule and he stated that with the new rating which was assigned to him he would like to have time to make a study. Col. Irvine then suggested that he return to his plant and make a study on the following basis - first, on the basis of producing the quantity of completed engines required by the JAC approved schedule, and second, on the basis of producing the quantity of completed engines plus some quantity which Packer would have to state that he could produce of spare parts. When the completed engine schedule plus the spare parts percentages available from Packard are presented to Col. Irvine, the Spares Sub-Committee will be requested to consider a reduction in their spare parts requirements. Mr. Packer went so far as to state that a rough estimate on his part of the quantity of spare parts which could be made along with the complete engine schedule was about \$7,000,000.00 worth. When asked what Packard had produced in the preceding months, Mr. Packer stated that in the month of May, 1943, Packard shipped \$5,300,000.00 worth of spare parts, in June, \$5,300,000.00 and in July \$6,200,000.00. The above money value in spare parts represents approximately 30% of the quantity of complete engines produced.

5. Sir Richard Fairey was requested by Col. Irvine to place a requisition for some large quantity of Packard engines so that both Packard and Continental could go along with increasing their production and making plans for the future. Sir Richard stated that he thought he would be able to present Col. Irvine or the JAC with a requisition covering 15,000 engines within the next week.

A. K. LOVETT,  
Major, Air Corps

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AFDMA#43 ALLIANCE

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Col. Sessums

11 August 1943

Utilization of Additional Capacity Available in Jacobs Engine Plants.

Ref: IDW dated 9 July; IDW dated 13 July, with same subject.

1. Since the last IDW was written a new facility for providing additional Packard Merlin engines is being discussed.
2. The following steps are being considered to provide capacity for the production of the Packard engines at Continental Muskegon plant:
  - a. Continental will move their R-1340 production line from Muskegon to Dallas plant. This plant will not take care of the complete R-1340 requirements of 850 engines per month but Continental also intends to release part of their production of R-1340 engines to some other company. The present Dallas plant is being used for the manufacture of R-975 engines and it is contemplated that this engine production would be moved to the Detroit plant which is now being used for parts and experimental projects. If the above shifts were made, then it would be necessary to establish a new facility for the production of R-1340 engines. The presently proposed facility is Jacobs. Also the above plan would completely release the Muskegon plant of about 500,000 sq. ft. of floor space for the production of Merlin engines.
3. The undersigned is opposed to the above plan and recommends as follows:
  - a. That the R-1340 capacity at Muskegon be shifted to Dallas and Detroit plants requiring Continental to provide the entire quantity of 850 R-1340 engines. If this is done then Continental will be forced to cease production of R-975 type of engines due to lack of space, but that would still be all right because the present Jacobs plant #2 was planned and provisioned for 1000 R-985 engines per month, and at present they have stated that this capacity could be increased to 1200 engines per month. If this was allowed then Vultee BT airplanes would continue with only one type of engine which would be the R-985 and the Navy TB airplanes would have to be designed for the R-985 engine instead of the presently planned R-975 Continental built engine. Also, if this plan were followed it would be a considerable cheaper project due to the fact that Continental could release their present R-975 tools at Detroit for production of both R-1340 engines and the proposed Merlin engine. Jacobs would not have to retool for the R-1340 engine but would only utilize their complete plant, perhaps requiring a few additional tools, and provide sufficient engines of the R-985 type to meet all the presently planned requirements for both R-985 and R-975 engines.

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V-1650  
P+S, also Proj. - 51 (4/7/43)

17

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Col. Seamus

Jacobs (continued)

11 Aug 1943

4. Col. Irvine and Mr. Wild have been informed of the above plan and Mr. Wild is to submit studies of both plans when he arrives in Washington for a meeting in Col. Irvine's office on August 11, 1943.

Incls: 2  
#1, IDM dtd 9 July  
#2, IDM dtd 13 July

W. A. LOVETT,  
Major, Air Corps.

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2148

11 August 1943

EXTRA PRIORITY

COMMANDING GENERAL, MATERIEL COMMAND  
WRIGHT FIELD, DAYTON, OHIO  
ATTENTION: GEN. SHANAHAN

O. P. SCHOLE,  
Major General, U.S.A.,  
ACAS, MN&D

ARMY-1-28...THE ARMY AIR FORCE NOW HAS UNDER CONSIDERATION THE POSSIBILITY OF  
INCREASING P-51 MUSTANG AIRPLANE PRODUCTION. ALSO THE UK HAVE INFORMED THE AAF  
THAT THEY WILL REQUIRE CONSIDERABLY MORE PRODUCTION OF THIS TYPE ENGINE IN  
THIS COUNTRY FOR ALL TYPES OF WING AIRPLANES. IT IS, THEREFORE, NECESSARY  
TO ESTABLISH AN ADDITIONAL FACILITY FOR THE PURPOSE OF MANUFACTURING THE V-1650-3  
TYPE OF ENGINE. THE OPTIMUM MCKEEBON PLANT IS DESIRED FOR THE PRODUCTION  
OF THE P-51 ENGINE AND AIRCRAFT I HAVE ESTIMATED THAT THEY WILL BE ABLE TO  
PRODUCE UP TO 1200 ENGINES PER MONTH IN THEIR PRESENT MCKEEBON PLANT BY  
TRANSFERRING THE PRESENT P-51 ENGINE PRODUCTION TO DALLAS AND

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CONFIDENTIAL

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11 Aug

AFPMAS-1-65 continued

DETROIT. CONFIDENTIAL. PARAGRAPH. YOU ARE THEREFORE DIRECTED TO IMMEDIATELY ISSUE A LETTER OF INTENT TO CONTINENTAL TO COVER THE QUANTITY OF ENGINES THEY ESTIMATE THEY CAN PRODUCE BETWEEN THE MONTHS OF MARCH 1944 THROUGH JUNE 1945. THIS QUANTITY IS NOW ESTIMATED AT 8000 ENGINES. IT IS ALSO REQUESTED THAT PACKARD BE DIRECTED IMMEDIATELY TO RELEASE TOOL DRAWINGS, ENGINE DRAWINGS, ROUTING SHEETS, AND OTHER ENGINEERING DATA THAT WILL BE REQUIRED BY CONTINENTAL. IT WILL ALSO BE NECESSARY TO FURNISH THREE V-1650-4 ENGINES FROM PACKARD PRODUCTION AT THE EARLIEST POSSIBLE DATE TO CONTINENTAL TO BE USED AS FOLLOWS: ONE FOR MUSKOGEE PLANT; ONE FOR DETROIT PLANT; AND ONE FOR CONTINENTAL SUBCONTRACTORS.

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AFDWA-42-ALL:aa  
 2148

12 August 1943

MEMORANDUM FOR: T. P. Wright, Director,  
 Aircraft Resources Control Office

SUBJECT: Proposed Production of Merlin Engines in Continental  
 Muskegon Plant.

Ref: Memo to Col. Irvine from Mr. Wright dtd 11 Aug.  
 1943. AIA 8-178.

1. It is desired to point out that this office has now devised a new plan for the production of the Merlin engines from Continental. The plan now in process of approval is as follows:

a. Continental built R-1340 engines will be transferred from Muskegon to Dallas and Detroit plants.

b. Continental will still be required to manufacture 850 of the R-1340 type engines between the two plants and Muskegon plant will be utilized entirely for the production of the V-1650 engines at the rate of 1250 per month.

c. Continental will be relieved of R-975 aircraft type engines for the Army BT-15 airplanes but will be required to maintain production facilities for 200 of this type engine for the Navy TD program.

d. Jacobs will be required to increase production of the R-985's from presently approved schedule of 650 per month to approximately 1000 engines to take care of the TD program plus the other requirements for this type of engine.

e. Pratt & Whitney will go out of production on the R-1340 engine as now planned during the latter part of 1943 in order to relieve capacity for production of the R-2800 engine.

By Command of General ABBOTT:

RETURN TO PROD BRV, WAF DIV  
 ACAS, WAFD  
 ROOM ED-912 WAF Love t

HQ. AAF  
 AUG 14 1943  
 W M A D MAIL SECTION  
 C. B. IRVINE,  
 Colonel, Air Corps,  
 Asst. Chief, Resources Division.

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0-V-1010-100 Pack Car  
 Proc. Airc. Proj. - 54 (1/3pp)

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12 August 1943.

## REPORT OF CONFERENCE ON PRODUCTION OF PACKARD MERLIN ENGINES.

6 AUGUST 1943.

## THOSE PRESENT:

Mr. Ellor, Rolls Royce Corp.  
 Col. Vincent, Packard Motor Car Co.  
 Mr. Bill Packer, Packard Motor Car Co.  
 Gen. Chidlaw, Hqts. AAF, Wash., D. C.  
 Col. Sessums, " " " "  
 Col. Irvine, " " " "  
 Lt. Col. Bemler, " " " "  
 Major A. K. Lovett, " " " "

The conference began with a discussion of the possibility of Packard meeting the approved J.A.C. production schedule and Mr. Packer entered into a very detailed explanation as to why the schedules have not been met to date. He also analyzed possibilities of meeting the J.A.C. schedule in the future. During his discussion he stated that the flow of machine tools into his plant has been insufficient. Packard have a 1.4 group preference rating on their superchargers and only a 71 group preference rating on the power section of the engine. They are now 404 tools behind on their 1400 engine program and Mr. Packer attributed this to the present group preference rating. Packard, in building the quantity of complete engines that they have delivered to date, were forced to hold up manufacture and shipment of spare parts and will be \$22,500,000 behind by 1 September 1943. When questioned as to what Packard were doing to get a better group preference rating for the power section, Mr. Packer stated that he had informed Wright Field and the Aircraft Scheduling Unit of Packard's urgent need for a higher preference rating and that when these two agencies had recommended this to Washington some months ago it had been turned down because of the need of tools for Dodge, Chicago, WAC, Plant #7, and P&W, Kansas City plant. He further stated that unless they were given a better group preference rating on the power section Packard would not be able to build more than 900 engines plus concurrent spare parts, plus some additional parts to make up their arrears. It was stated that the quantity of parts they would be forced to build in order to make up their arrears plus concurrent requirements of parts, would be equivalent to 1000 engines per month.

Gen. Chidlaw requested that Packard forward a letter confirming the above statement to be used in obtaining a better group preference rating. He also questioned Mr. Ellor on the quantity of spare parts the British were actually using on their Merlin engines. Mr. Ellor estimated 15% as compared with 38.5% for U.S. The British have been requested to present a spare parts list based on their actual combat usages and when this list is received it will be used as a basis for a new A & B spare parts list. Mr. Packer was also requested to prepare a study on the quantity of spare parts Packard could deliver per month and still produce complete engines in accordance with the J.A.C. approved schedule.

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Pgs. also Aug. 54-6/1958

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The discussion then switched to the Continental proposal and the new Toledo plant. It was stated that 500,000 sq. ft. would be made available at Continental, Muskegon, Michigan plant for the production of Packard engines. It was further estimated that with this plant there would also be available approximately 15% of the quantity of machine tools which would be needed for 1350 engines per month. Present test cells would have to be converted to take the new engine also approximately four new test stands would be required.

Mr. Packer asked if there was any consideration being given to additional foundry capacity. It was his contention that the present foundry capacity is far too small for Packard alone without adding 1350 engines per month at Continental. Col. Irvine stated that International Harvester, United Shoe Machines, and other foundry capacities were being considered and that some additional capacity would be made available. It was the agreement of all present that Continental should start production on a small scale, possibly at first producing only parts to be used by Packard until such time as Continental were educated and tooled for complete engines. Mr. Packer again expressed his desire to completely tool Packard for the 2700 program before tools started flowing into Continental.

Col. Sessums brought out the point that due to a cut back and cancellation of requirements for Ordnance tanks in the last Ordnance program, considerable capacity should be available for other uses. When Mr. Packer was questioned as to whether or not he had made a survey of this situation, he stated that Packard had inspected over 400 plants of the type which was producing Ordnance equipment and that the machines used in these plants were not capable of handling the type work required for the Packard engines. Col. Sessums further stated that spare parts surveys being made by Lt. Col. Batchelder had indicated that the A & B as well as the A & N and other standard parts lists were not suitable for present day parts requirements, and a considerable quantity of parts could be out of the present list which would automatically cause a quantity of machine tools to become available for other uses. He further suggested that Mr. Packer base his study on the possibility of the reduced spare parts list which could be secured from the Spare Parts Subcommittee.

Discussion then shifted from production of the present type of engine to production of the new SM-14 and -15 engines. The SM-14 engine is now being released for production in UK. This engine incorporated better performance at high altitude, greater speed, better rate of climb, and about 1950 h.p. at War Emergent Rating. Col. Vincent is carrying on considerable research work on this engine in this country at the Packard plant and is getting ready to move to the new Toledo plant. The greater part of Toledo plant will be tooled for experimental work and only a few pieces will be built for Packard there. It is planned to shift the entire experimental laboratory away from Packard to Toledo so that a considerable amount of additional space and manpower will be made available to Packard for their 2700 engines per month program.

Col. Vincent wants to begin the SM-14 production and stated that Gen. Giles had told Mr. Christopher of Packard Motor Car Co. that he wanted to build 20 engines for testing. Col. Vincent was very disturbed about the drafting of his employees. He said that about 1/3 of his organization has already been taken away from him and this would greatly hinder the development expected on the new SM-14 project. When questioned about the quantity of machine tools required for



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the new Toledo plant Col. Vincent stated that he had not yet had time to make a complete survey, but he would like to have the new Toledo plant set up so that he could turn out a sufficient quantity of hand built engines for thorough testing. He stated he would like to build at least five engines to begin with.

Gen. Chidlaw stated he wanted the SM-14 engine to be absolutely interchangeable with the present -3 and further stated he wanted to go along with the development of the new SM-14 engine but would not tolerate any further interference with Packard production. Following this statement there was considerable discussion about the interchangeability of the engines and the progress which had been made on the SM-14 and -15 to date. Col. Vincent and Mr. Ellor both stated there would be no problems of interchangeability that could not be worked out to the satisfaction of all concerned and Col. Vincent stated again that he wanted the development work to be absolutely divorced from the Packard plant.

He went on to say that the Toledo plant if set up the way he wanted it would require at least two test stands. The only part of the test stands that is completed in the Toledo plant is the foundation and Col. Vincent is making a survey to find out which would be the cheaper, to complete the present stand or to begin anew with a cheaper type of stand than was required for the Lycoming 2470 engine.

Col. Vincent further stated that the major difference between the SM-14 and the -3 would be the carburetor. The SM-14 has fuel injection instead of carburation and should be entirely interchangeable with the -3 except for the larger radiator which would be required for better cooling when additional h.p. is taken out of this type of engine. The SM does not produce additional h.p. at lower levels but does maintain sea level rating at high altitude.

The conference closed after the following decisions were made:

1. 5 SM-14 engines will be built to begin with.
2. Col. Vincent will complete a study of the quantity of tools and modifications required for the Toledo plant.
3. Mr. Packer is to forward a letter covering the actual quantity of engines plus spare parts that Packard can produce with their present group preference ratings.

A. K. LOVETT,  
Major, Air Corps.

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C O N F I D E N T I A L

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TO: COMMANDING GENERAL, MATERIEL COMMAND  
ATTENTION: GENERAL BRANSHAW

EXTRA PRIORITY

FROM: MEYERS

AUGUST 12, 1943

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THE ARMY AIR FORCES NOW HAS UNDER CONSIDERATION THE POSSIBILITY OF INCREASING P-51 MUSTANG AIRPLANE PRODUCTION. ALSO THE UK HAVE INFORMED THAT AAF THAT THEY WILL REQUIRE CONSIDERABLY MORE PRODUCTION OF THIS TYPE ENGINE IN THIS COUNTRY FOR ADDITIONAL UK BUILT AIRPLANES. (AFMCD) IT IS, THEREFORE, NECESSARY TO ESTABLISH AN ADDITIONAL FACILITY FOR THE PURPOSE OF MANUFACTURING THE V-1650 TYPE OF ENGINE. THE CONTINENTAL MUSKEGON PLANT IS DESIRED FOR THE PRODUCTION OF THE ABOVE ENGINE AND CONTINENTAL HAVE ESTIMATED THAT THEY WILL BE ABLE TO PROVIDE UP TO 1350 ENGINES PER MONTH IN THEIR PRESENT MUSKEGON PLANT BY TRANSFERRING THE PRESENT R-1340 ENGINE PRODUCTION TO DALLAS AND DETROIT. CONFIDENTIAL, PARAGRAPH. YOU ARE THEREFORE DIRECTED TO IMMEDIATELY ISSUE A LETTER OF INTENT TO CONTINENTAL TO COVER THE QUANTITY OF ENGINES THEY ESTIMATE THEY CAN PRODUCE BETWEEN THE MONTHS OF MARCH 1944 THROUGH JUNE 1945. THIS QUANTITY IS NOW ESTIMATED AT 8500 ENGINES. IT IS ALSO REQUESTED THAT PACKARD BE DIRECTED IMMEDIATELY TO RELEASE TOOL DRAWINGS, ENGINE DRAWINGS, ROUTING SHEETS, AND OTHER ENGINEERING DATA THAT WILL BE REQUIRED BY CONTINENTAL. IT WILL ALSO BE NECESSARY TO FURNISH THREE V-1650 ENGINES FROM PACKARD PRODUCTION AT THE EARLIEST POSSIBLE DATE TO CONTINENTAL TO FOLLOW: ONE FOR MUSKEGON PLANT; ONE FOR DETROIT PLANT; AND ONE FOR CONTINENTAL SUBCONTRACTORS.

HLB  
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C O P Y

CTI-1418, dated 13 Aug 43, "Procurement of V-1650 Type Engines" has been issued as a result of this teletype. 53



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24  
CONFIDENTIAL

(Case No. 3484)

AIRCRAFT PRODUCTION BOARD

RESOURCE CONTROL OFFICE

Pentagon Building

Washington, D. C.

August 25, 1943

In Reply Refer To:  
W:R 8-322MEMORANDUM FOR: Recorder, Joint Aircraft Committee  
Room 8D 886, Pentagon Building

SUBJECT: Schedule of Packard "Marlin" Engines

Conferences have been held with representatives of the Packard Company, the Army Air Forces, British Air Commission, and Mr. Higgs of the Rolls-Royce Company, concerning the scheduling of output of the Packard Company in terms of complete engines and spare parts.

A schedule of engine deliveries necessary to meet airframe requirements has been established. The fulfillment of this schedule will permit the delivery of spare parts to the extent of approximately 38%. The sub-division of this 38% spares between the Army Air Forces and the U.K. for concurrent spares and such make-up spares on past delivery delinquencies as can be met is the subject of a conference which will be held between the above agency and representatives of the Air Service Command on the morning of August 26th. The representatives involved have been invited to attend the current meeting of the Joint Aircraft Committee so that the tentative agreements made may be discussed and ratified or modified with the objective in view of definitely establishing the installation and spares situation for Packard "Marlin" engines at this time.

The schedule of complete engines is attached.

(s) T. P. Wright

T. P. Wright, Director,  
Aircraft Resources Control Office

attachment

Approved by Joint Aircraft Committee  
On 8/26/43

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P+S [unclear] 25/6/43

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## PRODUCTION SCHEDULE FOR PACKARD MERLIN ENGINES

AS AMENDED

	PACKARD			CONTINENTAL		
	Merlin 33/228	Merlin 34/224	1650-3	Merlin 68	Merlin 69	TOTAL 1650-3 Grand Total
1943 Delivered up to July 31st	840	3447	260	-	-	4547
August	4	646	350	-	-	1000
September	0	600	592	6	2	1200
October	182	623	605	8	2	1400
November	0	750	700	-	-	1450
December	100	700	750	-	-	1550
1944						
January	100	650	900	-	-	1650
February	100	700	940	-	10	1750
March	200	600	850	50	200	1900
April	92	708	850	150	300	2100
May	1578	800	740	400	460	2400
June	-	800	740	600	460	2600
July	-	800	740	760	400	2700
August	-	800	740	780	400	2700
September	-	778	740	782	400	2700
October	-	-	740	1560	400	2700
November	-	-	740	1560	400	2700
December	-	-	740	1560	400	2700

Approved by Joint Aircraft Committee 8/26/43

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Carton V-1650  
P+S, Airc. Proj. - 24 (1/300)  
MRS

26

AIRCRAFT PRODUCTION BOARD  
RESOURCE CONTROL OFFICE

Washington, D. C.

Captain Squires

a

August 26, 1948  
W:R:R 8-887

Summary of Conference in office of T. P. Wright on August 25, 1948,  
on the subject of Packard "Merlin" Engines

## PRESENT:

Sir Richard Fairley	{ British }
Mr. H. W. Hives (of Rolls-Royce)	
Professor John Jenkins	
Brig. General B. E. Meyers	{ AAF }
Colonel G. S. Irvine	
Captain F. H. Squires	
Colonel J. G. Vincent	{ Packard }
Mr. M. W. Packer	
Mr. T. P. Wright	{ ARCO }
Mr. Myron Tracy	

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DETAILS

The engine schedule dated August 6, 1948, was discussed, and an agreement was reached that the following should be the schedule for the remainder of this year:

In -8 engines - August	800
September	800
October	815
November	700
December	750

For the combination of -88 and -89 engines, the exact sub-division to be considered, and furnished us later by the British, the following would maintain:

August	800
September	800
October	700
November	700
December	800

These give a total output from Packard of the following:

August	1,000	-	350
September	1,200	-	450
October	1,400	-	
November	1,400	-	
December	1,500	-	

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U-1650  
P+S, Air Prog - 24.6/3000

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It was further agreed that these complete engines should be delivered as scheduled above, and that with such production, an overall spare delivery of approximately 50% could be delivered. The exact distribution of this 50% is to be the subject of a meeting held on August 26th in Colonel G. S. Irvine's office.

It was further agreed that the matter would be brought before the Joint Aircraft Committee for consideration at its meeting of August 26th for final ratification.

#### TOOLS

Mr. Packer described the tools situation, advising that the 1.4 urgency rating on tools for the 1400 peak production had helped substantially so that the schedule could be met with this help.

In the case of the tools required for the 2700 peak, the 2 urgency granted to EIS tools should make their delivery satisfactory in connection with the meeting of the schedule. In the case of the Reserve of 455 tools required for this peak, the present rating is 71; although the delivery promises are satisfactory on this basis, past experience has shown that constant setbacks will occur with a 71 urgency rating and that, therefore, it is practically certain that a rating of 2 must be given to these 455 tools to have absolute assurance of delivery. Colonel Irvine agreed to bring this matter to the attention of the proper authorities with a view to obtaining the 2 rating if possible. Colonel Irvine warned, however, that in the case of tool classifications, which are now frozen due to scheduling, the change in rating would not help.

#### CONTINENTAL PRODUCTION

Mr. Hives advised that Mr. John Reed will be sent to this country to help Continental get under way. Colonel Irvine advised that it was the intention of the Army Air Forces that the Packard Company would "father" this project along, supplying the Continental Company with van dykes and other information necessary for them to get under way, costs of such help being deferred under a contract which would be awarded to Packard by Fright Field. Colonel Vincent advised that drawings are now being given to Continental, and that he was in agreement with Mr. Hives and others that the engineering contacts on the whole "Merlin" situation should be handled between Packard and Rolls-Royce, such information as is necessary being passed on to Continental by Packard. Colonel Irvine agreed with this arrangement.

#### GEAR BOXES

Sir Richard Fairley emphasized the need for establishing the source on Gear Boxes to go with the engines which are to go into Lancasters. Previous discussions with Spieer had indicated this as a possible source, although this company is somewhat concerned over introducing Army Air Force inspection in their plant. They are also fearful of going ahead and then finding the

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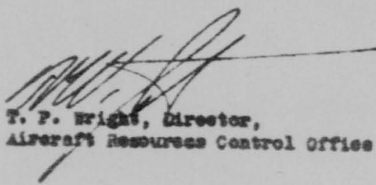
contract cancelled due to the war situation. Colonel Irvine suggested the possibility of placing this work with one of the M-S Director Companies which, under Ordnance, are being reduced in schedule. This matter will be discussed in Detroit Friday and Saturday with the Spicer Company and with the Director Companies if information can be sent to them by that time. Colonel Irvine advised that Colonel Mearns will carry on in this matter after this week.

POSSIBLE UTILIZATION OF PRATT & WHITNEY, KANSAS CITY ON "MERLIN" PRODUCTION

Before a decision can be made on this matter, it will be necessary to get the final schedule of R-2800 engines which must be coordinated with the Navy to see whether any surplus capacity will then be available. If it is, it is possible that this will be a suitable location for the manufacture of superchargers for the "Merlin" production of Continental.

INJECTION PUMPS

Mr. Hives brought up this forward program, indicating that eventually the injection pump will supersede the carburetor in "Merlin" engines. Plans along this line should be considered at this time. It was agreed at the conference that Bendix would be the proper source for the injection pumps and that the next step would be for Mr. Hives to discuss the matter with Mr. Frank Heck of Bendix.



T. P. Wright, Director,  
Aircraft Resources Control Office

Distribution - (Those Present)

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EXTRA PRIORITY

4 Sept 1943

J. W. SESSUMS, Jr.,  
Colonel, Air Corps

COMMANDING GENERAL, MATERIEL COMMAND, WRIGHT FIELD.  
ATTN: PROD. DIV.

APR 24-98... THIS OFFICE DOES NOT CONCUR IN THE RECOMMENDATION OF  
THE MATERIEL COMMAND THAT THE P & W KANSAS CITY PLANT BE UTILIZED  
FOR THE PRODUCTION OF PACKARD MERLIN ENGINES AND HAS DIRECTED THAT  
LETTER CONTRACT COVERING PRODUCTION OF PACKARD ENGINES BE ISSUED TO  
CONFIDENTIAL. RE TELETYPE 2626-P, 21 AUGUST 1943. CONFIDENTIAL.  
PARAGRAPH. IT IS DIRECTED THAT ARMY COMMITMENTS COVERING R-2600 C  
ENGINES FROM KANSAS CITY BE CANCELLED AS SOON AS POSSIBLE.

Ed  
no

ARNOLD

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0-81656  
P+S, Air. Prog. 24  
M12

~~Bl. Simon~~  
copy has been sent  
to my Smith  
for filing  
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32 Col. Barber: This is strictly a  
scheduling matter - see that 4 AF  
is processed

TELETYPE  
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OUT

1213 SEP 6 AM 9 25

AIR FORCE  
HEAD  
WASHINGTON, D.C.

RCS-6534

9/6/43

ASSISTANT CHIEF OF AIR STAFF

MA&D

IT IS REQUESTED BY MATERIEL COMMAND THAT THE FOLLOWING ACTION BE  
TAKEN IN REGARDS TO PRODUCTION OF V-1650-3 & 377 ENGINES : (1)  
THXX THAT THE REQUIREMENTS FOR V-1650-3 ENGINES BE SCHEDULED TO  
PACKARD MOTOR CAR COMPANY THROUGH DECEMBER 1944. THIS RECOMMENDATION  
IS MADE IN VIEW OF THE FACT THAG XXX THAT THE PROPOSED CONTINENTAL  
SCHEDULE IS CONSIDERED QUITE OPTIMISTIC. (2) IN THE EVENT THAT  
CONTIENATAXX CONTINENTAL SCHEDULE FOR V-1650\*XX V-1650-3 ENGINES  
SHOWS SATISFACTORY PROGRESS BY SEPTEMBER 1944, THE REQUIREMENTS CAN  
THEN BE SHIFTED OVER TO CONTINENTAL MOTORS. THIS WOULD IN TURN OPEN  
PACKARAXX PACKARD CAPACITY AT THAT TIME FOR ADDITIONAL MERLIN 68'S  
AND 69'S WHICH WOULD THEN BE BUILT BY PACKARD. END AFAMC

PRODUTIXX PRODUCTION DIVISION

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*Capt. C. W. Barnett*5  
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FWH:jr

Interoffice Memorandum

SUBJECT: Meeting Continental Motors  
and Industrial Service Branch, RCS, WF,  
Production Division, CPD  
at Wright Field, Dayton, Ohio  
7 September 1943

10 September 1943

1. Subject facility was represented by Mr. Arthur Wild and Mr. James W. Kinnaman.

2. Facility stated that it was renting office space on Henry Street, Detroit, for a period of six months to be used as engineering and procurement headquarters. A list of furniture and fixtures was submitted, and Lt. Col. Moriarty agreed that the office furniture, blue-print machine, and lighting fixtures with installation cost, could be included in the old Appendix using unexpended funds. Captain Barnett was processing this transfer.

3. The following general information was submitted by facility's representatives:

a. The R-1340 engine was to be moved to Garland, Texas, but final schedules had not yet been determined. Facility had previously submitted an Appendix in the amount of \$2,290,000. for additional facilities to increase schedule on R-1340 from 500 to 800 per month. In view of facility's intention to move the entire R-1340 program to Garland, this Appendix is now obsolete and Capt. Barnett is returning same to the facility.

b. It was mentioned that the 975 motor production was to be transferred to Jacobs.

c. Floor Space:

(1) The following approximate figures were given:

Garland, Texas Plant	165,000 sq. ft.
Muskegon Aviation Plant	500,000 sq. ft.
Continental Engine, Detroit	700,000 sq. ft.
" " Muskegon	1,250,000 sq. ft.

It was determined that Packard was using 2,847,813 sq. ft. of productive space and that approximately 450,000 sq. ft. of this space was used for assembly, tear-down and rebuild.

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Interoffice Memorandum  
Meeting Continental Htrs. at WF, 9/7/43

PWH:jr  
10 September 1943

(2) In discussing space required, it was brought out that facility's Ordnance schedule would be cut in half by the first of the year to under 1,000 engines per month.

(3) Facility stated that it would need twelve (12) more test cells in addition to the present fourteen (14), and that some additional construction would be required at Muskegon for inspection and receiving space.

(4) It was later intimated that additional space at Garland, Texas, would be necessary.

(5) Facility was requested to determine space requirements as quickly as possible in view of the War Production Board's attitude towards new construction. Facility stated that the building situation could be determined sometime next week.

(6) The Tank Automotive Center had made no definite commitments as to further outback and indicated a desire to retain a portion of this facility (Lt. Col. Moriarty later discussed this with Mr. Murphy, War Production Board, Washington, the latter stating that the entire plant would be made available if necessary).

#### 4. Machine Tools:

a. Lt. Col. Kassar brought out the fact that a large percentage of machine tool requirements would be special machines, and urged the facility to make up its list as quickly as possible and later on submit its list of conventional machine tools. He further stated that these would all be placed on Packard's urgency rating of 2.

b. There was some question as to availability of space for these machine tools and facility stated that, if necessary, everything could be moved out of the Aviation Engine Plant, Muskegon, by February 1944. It is facility's intention to only machine crankshafts, rods, camshafts and larger castings in the Aviation Plant. The adequacy of space for this work was questioned.

#### 5. Labor:

a. Facility's current employment is approximately as follows:

6,000 Ordnance Engine Plant, Muskegon  
3,000 Aviation Plant, Muskegon  
7,500 at Detroit

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Interoffice Memorandum  
Meeting Continental Wtrs. at WF, 9/7/43

PEH:jr  
10 September 1943

As far as it could be ascertained at this time, only half of the Ordnance employees would be available indicating that approximately 10,000 between Detroit and Muskegon were available for the Rolls-Royce project. It was pointed out that Packard was currently employing approximately 30,000 in the Aviation Engine Division which Continental representatives considered a high estimate of its requirements.

b. If the entire Ordnance program is to be gradually discontinued, there would ultimately be available a total of 19,500 employees. No definite labor deficit was determined but the Army Air Forces' representatives were of the opinion that it would be somewhere around 15,000 between Muskegon and Detroit.

c. In view of the importance of the manpower situation in regard to this project, facility was urged to submit its own estimates on additional labor requirements to this office.

#### 6. Foundry Facilities:

Lt. Col. Moriarty advised that Mr. Marks, Packard Motor Car Company, was submitting a detailed list of Packard's casting requirements at a meeting in Washington, Friday in Mr. Fred Ayres' office, and that Packard would require additional capacity of 15%; Continental's requirements could be estimated roughly as 90% of Packard's. Capt. Walker, Aluminum & Magnesium Subunit, is to follow-up the matter of aluminum foundry capacity and possible expansion with the Aluminum & Magnesium Branch, War Production Board, Washington. Lt. Col. Cook stressed the necessity of Continental having at least three sets of production patterns for all critical castings.

#### 7. Cams, Crankshaft, and Connecting Rod Forgings:

Mr. Frank Lyons, Industrial Service Branch, WF, is to investigate the possibility of Dodge-Chicago forging cam and crankshafts and connecting rods as well as Canton Drop Forge, and Tube Turns on cylinder sleeves.

#### 8. Bearings:

Bower is submitting an Appendix for additional machine tools for additional capacity to produce roller bearings. Major Paul W. Huston questioned Bower's ability to take on additional Rolls-Royce bearing requirements due to limited space; also, questioned present capacity on sleeve bearings. Captain E. J. Pask stated that a study was being made of sleeve bearing capacity, and he is to submit the roller bearing problem to the Bearing Industry Committee; and, it is requested that the Production Division, Central Procurement District, be advised as to progress.



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Interoffice Memorandum  
Meeting Continental Htrs. at WF, 9/7/43

PWH: jr  
10 September 1943

9. Carburetors and Magnetos:

Sources for carburetors and magnetos were considered as available.

10. There was a general discussion on subcontracting of engine parts, Continental stating that it intended subcontracting about 50%. Continental has asked Packard for a list of its subcontractors and prices being paid for the parts.

11. It was brought out that Continental intends to duplicate Packard tooling except where Packard's own experience has established better practices.

12. The following "paper" schedules have been determined:

1944	Engines	1945
		Jan. 700
		Feb. 900
		Mar. 1100
		Apr. 1350
Mar. 2		
Apr. 5		
May 15		
June 30		
July 50		
Aug 100		
Sept. 200		
Oct. 300		
Nov. 425		
Dec. 550		

PAUL W. HUSTON  
Major, Air Corps  
Chief, Resources  
Control Section

cc: Lt. Col. G. H. Moriarty, WF  
Chief, Facs. Unit, RCS, WF  
Col. G. E. Strong, Ind. Rel., CPD  
Facilities Branch, CPD  
(Original to Lt. Col. Cook, Prod. Div., CPD)

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C O P Y

September 22, 1943

To: District Supervisor  
Army Air Forces, Materiel Command  
Central Procurement District  
2505 West Warren Avenue  
Detroit, Michigan

Subject: Production Facilities for V-1650-3 Engines,  
Contract W33-038 ac-415 (11M2)

Reference: (a) C.A.F. Letter Dated September 17, 1943

1. In accordance with your request, we are furnishing herewith additional detailed information pertaining to the facilities necessary to produce V-1650-3 Engines, as outlined in the Summary Appendix "A" submitted with reference letter (a).
2. As mentioned in reference letter (a), the total of \$15,000,000 was established upon instructions from the War Production Board as an arbitrary figure to be used to obtain an immediate release. All present indications point to the fact that the final total, when details are available, will exceed this figure.
3. Buildings, etc., shown in Schedule II, totaling \$3,229,600, covers the following:
 

Twenty propeller test stands suitable for testing V-1650-3 Engines.

250,000 square feet of manufacturing, assembling, and office space; breakdown of which follows:

Receiving - 20,000 sq.ft.; Receiving Inspection - 40,000 sq.ft.; Service, Shipping, Packing, and Boxing - 60,000 sq.ft.; Stock Rm. - rough stock --25,000 sq.ft.; Bond Room - 40,000 sq.ft.; Rough Castings - burring, chipping, etc., preparatory to delivery to machine lines - 25,000 sq.ft.; Sub-Assembly--small parts--25,000 sq.ft.; Non-Productive Stores, shop offices, etc; -15,000 sq.ft.; Total: 250,000 square feet.
4. The type and construction of the test cells will be substantially identical to those now at Muskegon.

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Central Procurement Dist.  
Detroit, Michigan  
September 22, 1943

5. The manufacturing space will also be similar to that now at Muskegon, using a minimum of critical materials.

6. In arriving at an estimated cost of the twenty test cells, we obtained from the Defense Plant Corporation the cost of the existing eighteen cells, added a 10% contingency, as well as \$30,000 each for the two additional cells, making a total of twenty. It is estimated that the new test cells will total between 45,000 and 60,000 square feet.

7. The manufacturing space was estimated at a cost of \$5.50 per square foot.

8. An analysis of labor requirements for the Muskegon plant can only be estimated at this time, due to the items to be subcontracted not being fully known, however, it is only intended to manufacture the major castings, complete such sub-assemblies that can not be purchased as a completed unit, complete assembly of the engine test and ship.

Our present estimates show that the labor requirements for maximum production of R-1340 engines and spare parts to be (3906) employees of which quantity, (2894) are now employed, in addition to the (3906) estimated required for total output of R-1340 engines and spare parts, it is estimated that an additional (714) employees will be required to produce requirements of V-1650-3 engines or a total of (4350) employees at the Muskegon Plant.

9. It is expected that the additional (714) employees for V-1650-3 production will be required as follows: February-1944, (35), March, (95), April, (120), May (124), June (95), July (90), August (95), September (60), October (30); it is not anticipated that any difficulty will be experienced in obtaining this additional quantity of labor, and it is intended to use female labor wherever possible.

Equipment, etc.; The equipment requested for  
required to

Regarding telephone conversation between Mr. Chapman, Wright Field, and Major Paul Houston, Central Procurement District, Central Proc. District has received a letter from Continental Motors, Inc. stating that the total number of employees has been changed from 4350 to 4650 and that the additional number of employees required has been changed from 714 to 1014.

orders for machine tools, etc. The cost of such orders, including those for our organization as well as sub-contractors, amounting to \$1,000,000, is estimated to be far less than total requirements.

12. It is the intent to manufacture as many parts as possible in our Detroit and Muskegon plants of Continental Motors Corporation; such parts and quantities will be determined at such a time as more definite schedules are received from our sponsoring agents. We already have been notified that reduced schedules will be effective early in 1944.

13. The Summary of the proposed Appendix "A" was submitted at this time as a means of obtaining approval which would permit us to place orders for equipment,

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Central Procurement Dist.  
Detroit, Michigan  
September 22, 1943

ending the completion of the detailed Appendix "A", which will be available as soon as possible.

11. With reference to labor requirements for the balance of the items--both sub-contract and those which will be handled in our Detroit Plant--no particular difficulty is anticipated in this respect, in that insofar as our Detroit Plant is concerned additional labor will be available as a result of a reduced Ordnance schedule, and it is a requirement that sub-contractors will not be given work unless labor is available.

CONTINENTAL AVIATION AND ENGINEERING CORPORATION

A. Wild,  
Vice President

AW:ep

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C O P Y

APPENDIX A

DEFENSE PLANT CORPORATION  
EMERGENCY FACILITIES  
CONTINENTAL AVIATION AND ENGINEERING CORPORATION  
DETROIT, MICHIGAN

*file  
in response*

Nature of Facilities: Land, Buildings, Machinery, Equipment to constitute a machining and complete assembly and test plant for operation.

Location: Muskegon, Michigan.

## S U M M A R Y

Schedule	Description	Estimated Cost	Applicable Rate of Depreciation
Schedule I - Land and Land Improvements	(a) Land	None	None
	(b) Land Improvements		
	Total		
Schedule II - Buildings, Etc.	(a) Buildings	1,45,000.00	5%
	(b) Building Installations (Not Mechanical)	1,75,000.00	"
	(c) Leasehold Improvements	75,000.00	"
	(d) Off Leasehold Improvements	25,000.00	"
	(e) Service Costs	34,600.00	None
Total	4,89,600.00		
Schedule III - Machinery, Equipment, Etc.	(a) Machinery & Equipment	10,23,000.00	12%
	(b) Building Installations (Mechanical)	193,000.00	"
	(c) Laboratory & Testing Equip.	925,000.00	"
	(d) Furniture & Fixtures	175,000.00	"
Total	11,73,400.00		
Schedule IV - Portable Tools & Automotive Equipment	(a) Portable Tools	25,000.00	25%
	(b) Automotive Equipment	12,000.00	
	Total	37,000.00	

Grand Total: \$ 15,000,000.00

The itemizations of cost and individual prices as listed in these separate schedules are estimates only, and it is understood that with respect to machinery and equipment, there may be variations from the quantities and types set forth in such itemizations within the several schedules, provided that the total amount set up for each schedule is not exceeded."

C O P Y

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Carlton Packard 41650  
CS 887-29-1/PP

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9/23/49

X091719  
X091112  
Sir R. Stafford-Cripps  
Minister of Aircraft Production  
Ministry of Aircraft Production  
Whitehall, S. W. 1.

Dear Sir Stafford,

I was very pleased to receive your letter of August 5, expressing your appreciation of the visit of Brig. General Bennett to Messrs. The War Department is indeed glad to know that he was able to make a contribution to the solution of problems connected with our Air Forces and the Royal Air Force.

You have undoubtedly been informed of the progress that has been made since General Meyers' return in regard to the acceleration program for production of Merlin engines. The current Packard Company schedule, which will ultimately reach 2,700 engines per month, will be vigorously prosecuted. The Continental Motor Company is being retooled for an ultimate production rate of 1,000 Merlin engines per month. However, to assist you in carrying out your agreement with General Meyers to expand Ford Merlin production in England, we are giving high priority for the necessary machine tools as it is believed that the additional production can be realized in your Ford plant at an earlier date than from the new Continental line.

I was sorry that I did not have an opportunity of seeing you when I was in England but hope that I will have the opportunity one of these days.

Again thanking you, I am,

Sincerely yours,

V020  
Secretary of War

(1) 45-113-1000

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**CONFIDENTIAL**  
 WAR DEPARTMENT  
 CLASSIFIED MESSAGE CENTER  
**INCOMING MESSAGE**

COND  
 18 Sept  
 19273

From: USFOR, London  
 To: War

No. W 4642, 18 September 1943

Conferring with Harriman Mission and Sir Percy Mills on machine tools for Merlin and Meteor engines, I requested the British to send specially qualified machine tool man to United States to work with Colonel Kansar in scheduling of critical tools. For AFMD attention Brig General Meyers from Colonel Clarence Irvin signed Devers. Recommend that critical tools for Rolls Royce factories be delivered in following priority:

- 1st, Continental Pilot Line
- 2nd, Packard and Ford England production
- 3rd, Continental Production Line and
- 4th, Meteor Tank Plants.

Again advised that unless Meteor expansion requirements were delayed or reduced that interference with aircraft production would result.

No Sig.

ACTION: CG AAF  
 INFORMATION: OED

CG-IN-13865 (18 Sep 43) 2046Z ems

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THE MAKING OF AN EXACT COPY OF THIS MESSAGE IS FORBIDDEN

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AFDRE-2

12 October 1943

MEMORANDUM FOR: The Under Secretary of War  
Attention: Brig. Gen. E. S. Greenbaum  
Room 3F-724 Pentagon

THROUGH: Headquarters, Army Service Forces  
Room 4C-600 Pentagon

SUBJECT: Additional Funds  
Continental Aviation & Engineering Corp.  
Detroit, Michigan  
RCS Project 145 C

1. Reference is made to Defense Plant Corporation lease agreement with the subject company in the amount of \$15,317,035.
2. It has been determined that additional funds in the amount of \$11,770,400 will be required for this proposal. Data relative to the increased cost are included in Wright Field teletype dated 9 October 1943, copies of which are attached.
3. The Facility Committee, War Production Board approved a blanket authorization on Continental Aviation and Engineering Corporation on October 10, 1943, in the amount of \$15,000,000.
4. It is recommended that the increased cost of this project be approved, enabling this office to consummate an amended Defense Plant Corporation lease agreement with the subject company in the amount of \$11,770,400, which will make the total amount of the lease agreement \$27,087,435, and that the War Department enter into an agreement to reimburse the Defense Plant Corporation for 1/2 of the existing deficiency, but not in excess of \$5,865,200. It is, also, requested that an authorization be made from Expediting Production Funds, which will enable this office to transmit to Wright Field procurement authority for \$5,865,200.

For the Commanding General, Army Air Forces:

FREDERICK M. SOKINS, JR.  
Brigadier General, U.S.A.  
Chief, Resources Division  
Office, 10/AF, W. A. & D.

Encl: AFDRE-2  
By H. P. [unclear]  
#16178  
10-9-43

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**Distributions:**

Production Division  
 Budget Officer  
 Ch., Fac. Br., Proc. Div.  
 Inspection Section

Ref: OUB:joh:90-1-1-1

8 October 1943 1:30 PM

Resources Control Section

W. R. HEROD  
 Colonel, Air Corps

RESOURCES DIVISION

RCS 16175 OUB ..... CONTINENTAL AVIATION & ENGINEERING CORPORATION,  
 DETROIT, MICHIGAN HAS SUBMITTED TO THIS OFFICE THROUGH CENTRAL PROCUREMENT DISTRICT  
 RCS PROJECT 115 C/  
 AN APPENDIX "A" COVERING ADDITIONAL FACILITIES CONSISTING OF MACHINERY, EQUIPMENT AND  
 PORTABLE TOOLS TO BE LOCATED IN ITS EXISTING PLANT AT MUSKOGON, MICHIGAN AND WITH  
 APPROVED SUBCONTRACTORS.

**ITEMS TO BE PRODUCED:** SUBJECT FACILITY HAS BEEN SELECTED BY THE ARMY AIR FORCES TO  
 MANUFACTURE, ASSEMBLE AND TEST THE V-1650-3 PACKAGED ROLLS-ROYCE ENGINES ON FIDES CON-  
 TRACT W-33-038-ac-415(1145) DATED 15 AUGUST 1943. SUBJECT FACILITY IS NOT SOLE SOURCE  
 OF SUPPLY FOR THESE ENGINES.

**DATE OF PRODUCTION:** TENTATIVE SCHEDULES INDICATE THAT INITIAL OUTPUT OF R-1650-3  
 ENGINES WILL START IN MARCH, 1944 AND PEAK PRODUCTION OF 1350 ENGINES PER MONTH WILL  
 BE REACHED BY APRIL, 1946.

**JUSTIFICATION:** ARMY AIR FORCES LETTER CONTRACT W-33-038-ac-415 TO SUBJECT CORPORATION  
 CALLS FOR PRODUCTION OF 8,400 UNITS PLUS 27% SPARES AT AN ESTIMATED OVERALL VALUE OF  
 4230,122,232. IT IS THE DECISION OF HIGHER AUTHORITY THAT THE INCREASED PRODUCTION

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RCS 16176 OWS  
RESOURCES DIVISION

OF THE V-1650-3 ENGINE IS ESSENTIAL TO THE ARMY AIR FORCES PROGRAM AND THAT THE  
CONTINENTAL AVIATION & ENGINEERING CORPORATION, BY EXPANSION OF ITS PRESENT FACILITIES,  
AND THE EMPLOYMENT OF EXTENSIVE SUBCONTRACTING, IS IN BEST POSITION TO ACCOMPLISH  
THIS NECESSARY PRODUCTION IN THE SHORTEST PERIOD OF TIME. IN ORDER TO ACCOMPLISH THIS  
END THIS FACILITY HAS BEEN DIRECTED TO PREPARE PLANS FOR THE REMOVAL OF ALL ITS R-1340  
ENGINE PRODUCTION FROM THE SUBJECT MUSKOGEE, MICHIGAN PLANT TO ITS GARLAND, TEXAS  
PLANT. THE GARLAND, TEXAS PLANT IS PRESENTLY SPONSORED BY ORDNANCE BUT PLANS ARE NOW  
UNDER WAY BY THIS COMMAND TO INITIATE TRANSFER OF SPONSORSHIP TO ARMY AIR FORCES. NO  
COSTS ARE INCLUDED WITHIN THIS ESTIMATE FOR THE RELOCATION OF APPROXIMATELY 950 MACHINE  
TOOLS NOW LOCATED AT MUSKOGEE FOR R-1340 PRODUCTION TO GARLAND, TEXAS FOR THE CONTINUED  
PRODUCTION OF THE R-1340. FACILITY ESTIMATES APPROXIMATELY \$460,000 WILL BE REQUIRED FOR  
THIS RELOCATION.

FACILITY STATES THAT THE SUBJECT APPENDIX "A" IN THE AMOUNT OF \$11,770,400 WILL  
NOT BE SUFFICIENT FUNDS FOR FACILITIES TO COMPLETE THIS PROGRAM AND A TAIN PLANNED  
PEAK PRODUCTION. HOWEVER IMMEDIATE APPROVAL OF THIS AMOUNT IS NECESSARY IN ORDER TO  
PLACE ORDERS FOR CRITICAL MACHINE TOOLS.

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RCS 16178 G-2  
RESOURCES DIVISION

CLEARANCE HAS BEEN SECURED THROUGH WAR PRODUCTION BOARD FOR THE MACHINE TOOL MANUFACTURERS TO START WORK ON THESE CRITICAL MACHINES IMMEDIATELY UPON RECEIPT OF THE ORDERS, WHICH ARE TO BE PLACED IMMEDIATELY UPON APPROVAL OF THIS PROJECT AND LETTER OF INTENT RECEIVED FROM DEFENSE PLANT CORPORATION BY SUBJECT FACILITY.

FACILITY STATES THAT VERBAL APPROVAL HAS BEEN GIVEN THEM BY CHIEFMAN OF THE FACILITY'S SECTION, WAR PRODUCTION BOARD AND/GENERAL F. M. HOPKINS, CHIEF, RESOURCES DIVISION, WASHINGTON, D. C. TO PLACE ORDERS UP TO \$15,000,000 FOR CRITICAL MACHINES NECESSARY TO GET THE PRODUCTION UNDER WAY. HOWEVER THESE ORDERS CANNOT BE PLACED UNTIL LETTER OF INTENT IS RECEIVED FROM DEFENSE PLANT CORPORATION.

CAPACITY: THE PEAK CAPACITY IS PLANNED TO BE 1350 ENGINES PER MONTH PLUS 27% SPARES WITH AN ANNUAL SALES VALUE ESTIMATED AT \$500,000,000. HOWEVER, IT IS CERTAIN THAT THE FACILITIES COVERED BY THIS PROJECT ARE NOT SUFFICIENT TO ATTAIN THIS PRODUCTION.

OTHER EXPANSIONS IN PROCESS: NO OTHER SIMILAR EXPANSIONS ARE IN PROCESS BY MATERIAL COMMAND FOR FACILITIES FOR CONTINENTAL AVIATION & ENGINEERING CORPORATION. ADDITIONAL SIMILAR FACILITIES ARE, HOWEVER, BEING PROCESSED FOR PACKARD MOTOR CAR COMPANY FOR

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RCS 16178 Q18  
RESOURCES DIVISION

## PRODUCTION OF V-1650-3 ENGINES.

PREVIOUS EXPANSIONS:

<u>RCS PROJECT</u>	<u>PROCESSED</u>	<u>AMOUNT</u>
115 B	5-12-42	\$ 12,136,407
115 B-1	9-26-42	1,300,987
115 B-2	4-26-43	1,579,660

a. THE ABOVE EXPANSIONS WERE PROCESSED FOR THE SUBJECT FACILITY AT MUSKEGON, MICHIGAN FOR PRODUCTION OF R-1340 ENGINES.

ESTIMATED COSTS:

MACHINERY & EQUIPMENT	\$ 11,733,400.00
PORTABLE TOOLS & AUTOMOTIVE EQUIPMENT	<u>37,000.00</u>
Total	\$ 11,770,400.00

THE DETAILED BREAKDOWN OF THE ABOVE AMOUNTS IS NOT PRESENTLY AVAILABLE, CONSEQUENTLY, IT IS IMPOSSIBLE TO SEPARATE THE MACHINE TOOL COSTS FROM THE ABOVE FIGURES. DETAILED BREAKDOWN WILL BE PRESENTED THE COMAND AS SOON AS IT IS AVAILABLE.

a. THE ESTIMATED COSTS OF THE PROPOSED FACILITIES ARE BASED UPON PRELIMINARY ANALYSIS OF THE PROJECT AND ARE SUBJECT TO CHANGE. THE DEFENSE PLANT CORPORATION LEASE

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RCS 16178 OVB  
RESOURCES DIVISION

AGREEMENT SHOULD, HOWEVER, NOT EXCEED THE OVERALL ESTIMATE.

b. THREE COPIES OF APPENDIX "A" WHICH FORMS THE BASIS OF THIS PROCESSING TELETYPE WILL BE FORWARDED UNDER SEPARATE COVER.

c. AS SOON AS THE APPENDIX "A" HAS RECEIVED FINAL APPROVAL IN THIS OFFICE, ANY MATERIAL CHANGES AFFECTING THE PRELIMINARY ESTIMATE WILL BE SUBMITTED TO YOUR OFFICE IN ORDER THAT THE LEASE AGREEMENT MAY BE AMENDED ACCORDINGLY.

PLAN OF FINANCING: AMENDMENT TO DEFENSE PLANT CORPORATION LEASE AGREEMENT, PLANBOOK 166, IN THE AMOUNT OF \$11,770,400. PLAN IV.

SUBCONTRACTING: FACILITY PLANS TO SUBCONTRACT AS EXTENSIVELY AS POSSIBLE ALL ENGINE PARTS. IT IS CURRENTLY ENGAGED IN THE STUDY OF PACKARD SUBCONTRACTORS AND HAS OPENED A TEMPORARY OFFICE IN DETROIT, MICHIGAN IN ORDER TO DEVELOP SUBCONTRACTING SOURCES.

RAW MATERIALS:

<u>MATERIAL</u>	<u>SOURCE</u>	<u>ESTIMATED MONTHLY REQUIREMENTS MAX.</u>
ALUMINUM CASTINGS	BORN ALUM. CO-SINGER MACHINE UNIVERSITY CASTG. - BILMIRE FURY. ALUM. INDUSTRIES	607 T
ALUMINUM FORGINGS	BORN ALUM. - CHEVROLET	85 T

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RCS 16178 07B  
RESOURCES DIVISION

<u>MATERIAL</u> (Con't.)	<u>SOURCE</u>	<u>ESTIMATED MONTHLY REQUIREMENTS MAX.</u>
BRONZE FORGINGS	BRONZE FORGING COMPANY	12 T
STEEL FORGINGS	WYMAN-CORDON, CANTON - STEEL IMPROVEMENT	573 T
ALUM BAR	REYHOLDS METALS	45 T
BRASS BAR	CHASE BRASS - BRIDGEPORT	72 T
STEEL BAR	ROTARY ELECTRIC, REPUBLIC STEEL BETHLEHEM STEEL	1740 T

LABOR: THIS PROPOSAL DOES NOT INCLUDE ANY ADDITIONAL LABOR FOR EITHER THE MUSKOGEE OR DETROIT AREA, AND ALL EFFORT POSSIBLE WILL BE MADE TO ELIMINATE ADDITIONAL LABOR REQUIREMENTS IN CRITICAL LABOR AREAS IN CONNECTION WITH SUBJECT PRODUCTION. THIS IS TO BE ACCOMPLISHED BY DISPLACING PRESENT APPROVED PRODUCTION IN THESE TWO AREAS WITH THE V-1690-3 PRODUCTION, THEREBY MAKING PRESENT LABOR AVAILABLE FOR THIS PROJECT. IT IS ANTICIPATED THAT AT LEAST 3000 EMPLOYEES WILL BE MADE AVAILABLE AT THE MUSKOGEE PLANT BY THE TRANSFER OF THE R-1340 PRODUCTION TO GARLAND, TEXAS, THAT 7000 EMPLOYEES WILL BE MADE AVAILABLE IN CONTINENTAL MOTORS PLANT AT DETROIT, MICHIGAN BY ORDINANCE CUTBACK, WHICH PRODUCTION WILL BE REPLACED BY SUBCONTRACTS IN CONNECTION WITH THE

(Page 6, see Page 7)

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RCS 16278 ONE  
RESOURCES DIVISION

SUBJECT PRODUCTION, AND THAT AN ADDITIONAL 18,000 EMPLOYEES WILL HAVE TO BE ACQUIRED FROM OUTSIDE SUBCONTRACT SOURCES IN NON-CRITICAL LABOR AREAS.

TRANSPORTATION: FACILITY HAS A 16 FOOT SIDING FROM THE PERE MARQUETTE RAILROAD, IS AVAILABLE TO THE GREAT LAKES SHIPPING AND IS SERVED BY ALL HIGHWAYS IN AND OUT OF MUSKOGON, MICHIGAN.

UTILITY REQUIREMENTS:

	<u>MAXIMUM</u>	<u>AVERAGE</u>	<u>SUPPLY IS OBTAINED FROM</u>
TONS OF COAL	100	75	E. AMERICAN COAL COMPANY
GALS. OF OIL	10,000	8,500	SHELL, SINCLAIR, SUNOCO STD.
CU. FT. OF GAS	260,000	225,000	WEST MICHIGAN CONSUMERS POWER
POW. DEMAND IN KW	300	700	CONSUMER'S POWER COMPANY
POWER CONSUMPTION KWH	445,000	365,000	CONSUMER'S POWER COMPANY
GALLONS OF WATER	375,000	275,000	CITY OF MUSKOGON

SPECIAL REQUIREMENTS: THIS PROJECT WILL ASSUME PACKARD MOTOR CAR COMPANY URGENCY RATING #2 FOR THE SAME TYPE PRODUCTION.

THE APPENDIX "A" HAS BEEN PREPARED IN DUMMY FORM DUE TO LACK OF DETAILS AND IS SUBMITTED TO INDICATE THE APPROXIMATE FUNDS TO BE EXPENDED WITHIN EACH SCHEDULE. AS THE DETAILS ARE AVAILABLE THEY WILL BE SUBMITTED IN FORM OF APPENDIX "A" SHEETS TO BE

(Page 7, see Page 8)

290,000  
533,000  
343,000

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RCS 16176 OMB  
RESOURCES DIVISION

APPROVED BY THIS COMMAND AND FORWARDED TO PROPER OFFICES FOR INSERTION IN THE APPENDIX "A".

REIMBURSEMENT: THE CORPORATION HAS STATED THAT NO PART OF THE COSTS OF FACILITIES COVERED BY THIS PROPOSAL HAS BEEN OR WILL BE INCLUDED IN THE PRICES OF ARTICLES FURNISHED THE GOVERNMENT OR PRIME CONTRACTORS TO THE GOVERNMENT.

RECOMMENDATIONS: DUE TO THE URGENCY OF THIS PROJECT, IT IS BEING PROCESSED WITHOUT THE DETAILS NECESSARY TO MAKE EVALUATION. HOWEVER IT IS APPARENT THAT THE FUNDS INCLUDED IN THIS PROPOSAL ARE LESS THAN THE ULTIMATE AMOUNT NECESSARY TO ACHIEVE THE REQUIRED PRODUCTION. IT IS ANTICIPATED THAT SUFFICIENT DETAILS WILL BE AVAILABLE TO PROPERLY EVALUATE THE OVERALL PROJECT WHEN SUBSEQUENT PROPOSALS ARE SUBMITTED. IN ACCORDANCE WITH ARRANGEMENTS OF HIGHER AUTHORITY WITH THE SUBJECT FACILITY TO PROCEED WITH THE PRODUCTION OF THE V-1650-3 ENGINE, IT IS RECOMMENDED THAT APPROVAL OF ALL AGENCIES CONCERNED BE OBTAINED TO THIS PROPOSAL IN THE TOTAL AMOUNT OF \$11,770,400 AND THAT THIS COMMAND BE AUTHORIZED TO PROCEED WITH FINAL NEGOTIATIONS WITH THE CORPORATION. (END) AFAMC.

RESOURCES CONTROL SECTION

(Page 8 (END) )



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FORM 1-11-43-150M

RESTRICTED  
26ARMY AIR FORCES  
MATERIEL COMMAND  
CENTRAL PROCUREMENT DISTRICT  
OFFICE OF THE DISTRICT SUPERVISORAddress Reply To Atten:  
Resources Control Section  
Facilities Branch  
RFW:des3 November 1943  
8805 W. WARREN AVE.  
DETROIT, MICHIGANSUBJECT: Continental Aviation & Engr. Corp.  
Detroit, Michigan  
C-47 Project 145-CTO: Commanding General  
AAF Materiel Command  
Production Division  
Wright Field, Dayton, Ohio  
Attention: Chief, Resources Control Section  
Industrial Service Branch  
Facilities Branch 90-I-1-1

1. Reference is made to processing letter, dated 2 October 1943, and particularly to paragraph 4 a. in which it is stated that additional funds would be required in order to complete this project.

2. Enclosed are copies of revised Appendix "A" 30 October 1943 as submitted by subject facility. It is noted that Schedule III-a has been increased from \$10,443,400 to \$38,304,750. This represents facility's final estimate as to the number of machine tools which will be required for this project. It is estimated that it will be necessary to increase Schedules II-B, III-B, C, and D by from \$2,000,000 to \$3,000,000 in order to accomplish this project. The program has not progressed, however, to the stage where an accurate estimate can be made. It is anticipated that a complete list of total requirements will require at least two (2) more weeks of survey.

3. Subject facility has committed nearly all the \$10,443,400 previously allocated to Schedule III-a and requests an immediate amendment to its Defense Plant Corporation lease agreement in the amount of \$28,000,750 in order that purchase orders may be placed immediately to insure delivery of machine tools required for the project.

For the District Supervisor:

*Robert J. Way*  
for PAUL W. HUSTON  
Major, Air Corps  
Acting District  
Production Officer

2 Incl:  
Incl. 1 - Rev. App. "A" (3 cys)  
Incl. 2 - Ltr of transmittal fr  
subj. fa. dtd. 1 Nov. '43

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*Carlson Packard  
Sched Dec 22 80  
M.A. Shaw*

*104*

4 November 1943

MEMORANDUM FOR: Col. Brentnall

SUBJECT: Report on Meeting Held at Packard Motor  
Car Co. 1 November 1943.

THOSE PRESENT: Representatives of Packard Motor Car  
Co., Materiel Command, Air Service  
Command, British Air Commission,  
Hq. AAP.

The purpose of the meeting was to schedule Packard spare parts for both concurrent and back log items piece by piece. This scheduling brought out the fact that there are considerably more Packard parts in existence than previously was supposed. It is felt that the Packard spare parts situation is working itself out satisfactorily and that with the addition of a few more facilities they will be in a satisfactory position.

It is felt that this same procedure can be used with great advantage in other companies, notably Ford. The advantage of this system is that it obligates the Air Service Command to have complete inventory figures available as a cross check against company claims of shipments.

F. N. SQUIRES,  
Major, Air Corps.

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FORM-4E FNS:ar 2148

8 November 1943

MEMORANDUM FOR: Gen. Meyers

SUBJECT: Rolls Royce Engine Requirements and Availability  
for British Empire Program.

1. Below is summary of British Empire program requirements for Rolls Royce engines and summary of production progress for the Rolls Royce engine being produced in the U.S. and this country. Production from the Packard Motor Co. is shown as being entirely for British requirements with 325 engines per month from Continental being available to meet British requirements.

Requirements - Peak

U.S. Program	4426	
Canadian Program	832	
Australian Program	<u>91</u>	
Total		5349

Engine Production - PeakBRITISH

Ford	1000	
Rolls Royce, Gren	600	
Rolls Royce, Derby	600	
Rolls Royce, Glasgow	<u>700</u>	
Total		2900

U.S.

Packard	2700	
Continental	<u>325</u>	
Total		3025

Grand Total		<u>5925</u>
Monthly Available Surplus		576

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WA-48 PMS  
3148

MEMO FOR: Gen. Meyers -2-

8 November 1943

Notes:

1. Ford, U.S., now producing 700 engines per month; now procuring tools in this country for an additional 300 engines per month.
2. Other British engine factories now at peak.
3. 325 engines for British from Continental figured as follows:

Peak Production	1350
Required for P-51, U.S. 980	
Australia	<u>45</u>
Total	<u>1025</u>
	325

4. All figures include spare engines, 5% sea losses for British, and time allowances for shipment to airframe manufacturers.
5. British Empire program requirements based on secret schedule of Supplies and Requirements of Rolls Royce type engines for the British aircraft program brought from England by Gen. Meyers and cross checked with report issued by Professor Jeskes at time decision to put Continental into production was made. British engine production figures furnished by Mr. A. C. Boddis, British Air Commission, and cross checked with above listed documents.

S. W. BRENTNALL,  
Colonel, Air Corps,  
Chief, Prod. Br., Mat. Div.,  
Office, Asst. Chief of Air Staff,  
WPA.



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*O - Richard Packard*  
*Incl. Serial 214/6/44*  
*106*  
*Bozhan*  
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MOST SECRET

A

SUPPLIES AND REQUIREMENTS OF ROLLS ROYCE TYPE ENGINES

FOR THE EMPIRE AIRCRAFT PROGRAMME

1. The attached Tables give a purely arithmetical comparison between requirements of Rolls Royce type engines for the United Kingdom and Empire aircraft programmes and present scheduled supplies both from United Kingdom production and Packards.
2. These Tables show that on present schedules there is a small deficit in 1943 and 1944, but a large and growing deficit in 1945. In interpreting this paper comparison the following should, however, be taken into account:
  - (i) Only 20% spare engines have been allowed for the U.K. In view of the increasingly large part of the British Air Force which will be operating overseas in the next two years, this allowance will almost certainly prove to be too low:
  - (ii) Packards are already behind schedule and are unlikely to do the latest schedule on which the surpluses and deficits shown in Table 1 are based:
  - (iii) We require a substantial stock of Merlin engines as an insurance during the changeover to the two stage Lancaster in this country and the two stage Lancaster and Mosquito in Canada. The date of introduction of these aircraft is still so uncertain that we feel it essential to plan supplies of both single and two stage engines over a period of three months in 1944. To have this overlap we require about 7,000 engines in 1944 additional to those shown in the Tables:

*Change over to 2 stage*  
*Merlin*  
*3 Mustang*

For Explanation of the origin of this document see Memo for Gen Myers  
 From Col S. R. Brentnall  
 8 Nov. 1943

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Table 2.

REQUIREMENTS FOR THE MILLS WARE FOR A QUARTER  
 FOR THE MONTHS FROM JANUARY  
 1943 TO 1946 BY QUARTERS AND BY MONTHS FROM JANUARY 1943 TO DECEMBER 1946

	General Requirements:							Total	Programs
	Lancaster and York,	Halifax and Hurricane	Mosquito	Spitfire Seafire Windsor	Wolfin	Wirefly	Barracuda		
1943 3rd Qtr.	2,112	3,300	1,261	1,755	70	155	265	8,370	7,060
4th "	3,408	3,820	1,070	1,804	225	180	370	9,247	7,100
1944 1st Qtr.	4,224	1,700	935	2,230	225	150	420	9,244	7,200
2nd "	4,560	1,270	1,150	2,205	205	225	420	10,135	7,200
3rd "	5,280	620	1,350	2,340	265	265	470	10,510	7,400
4th "	5,760	220	1,345	2,040	285	260	555	10,265	7,200
1945 1st Qtr.	6,180	220	1,500	2,300	300	150	550	11,500	7,200
2nd "	6,720	220	1,500	2,480	300	240	520	11,990	7,200
3rd "	7,200	220	1,500	2,570	300	240	520	12,650	7,200
4th "	7,440	220	1,500	2,860	300	240	520	13,080	7,200
1946 1st Qtr.	7,440	220	1,500	3,060	300	240	520	13,280	7,200
2nd "	7,440	220	1,500	3,060	300	240	520	13,280	7,200

530 UK  
 100 Canada

50 Spit  
 100 Sea  
 50 Mand

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REQUIREMENTS FOR THE FISH WARE HOUSES  
 FOR THE FISH WARE HOUSES  
 (REQUIREMENTS FOR THE FISH WARE HOUSES)

Year	Mosquito	Spillfire Seafire Windsor	Wetkin	Wirefly	Barracuda	Total	U.S. Programs	Requirements from other sources.
1960	1,261	1,155	70	156	255	2,897	7,000	4,103
1961	1,070	1,000	205	150	370	2,847	7,000	4,153
1962	935	2,230	235	150	420	3,970	7,000	3,030
1963	1,150	2,235	205	235	420	4,285	7,000	2,715
1964	1,350	2,240	235	235	470	4,530	7,000	2,470
1965	1,525	2,240	285	260	555	4,865	7,100	2,235
1966	1,500	2,300	300	150	550	4,800	7,100	2,300
1967	1,500	2,400	300	240	530	4,970	7,100	2,130
1968	1,500	2,570	300	240	520	5,130	7,100	1,970
1969	1,500	2,860	300	240	520	5,420	7,100	1,680
1970	1,500	3,060	300	240	520	5,620	7,100	1,480
1971	1,500	3,060	300	240	520	5,620	7,100	1,480

510 Spill  
 140 Sea  
 20 Wind

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British Empire Requirements of Rolls Royce type Engines  
from the US compared with Packard Production Programs.

	Requirements (1)			Total	Packard Production (2)	Quarterly Surplus (+) or Deficit (-) (3)
	UK (See Table 2)	Canada (See Table 3)	Australia (See Table 4)			
1943 3rd Quarter	2,576	365	142	3,083	2,844	-239
4th Quarter	2,752	668	177	3,597	2,400	-1,197
1944 1st Quarter	2,737	985	226	3,948	2,610	-1,338
2nd Quarter	3,274	1,341	266	4,881	4,770	- 111
3rd Quarter	3,542	1,511	309	5,362	5,880	+ 518
4th Quarter	4,632	1,566	371	6,569	5,880	- 689
1945 1st Quarter	5,147	1,648	429	7,224	5,880	-1,344
2nd Quarter	5,842	2,032	503	8,347	5,880	-2,467
3rd Quarter	6,295	2,366	273	8,934	5,880	-3,054
4th Quarter	6,505	2,496	273	9,274	5,880	-3,394
1946 1st Quarter	6,505	2,496	273	9,274	5,880	-3,394
2nd Quarter	6,400	2,496	273	9,169	5,880	-3,289

NOTES: (1) These are the requirements ex factory USA. They are obtained by setting back the requirements shown in tables 2, 3 and 4 three, one and five months respectively to allow for transport, and incorporating a 5% margin for losses at sea in the case of UK and Australia.

(2) Excluding V1650-3 engines for P51 aircraft built in USA or assembled in Australia.

(3) The cumulative surplus as at 30th June, 1943 is estimated at 2,500 engines.

(4) This Table should be read in conjunction with the attached notes on Supplies and Requirements on Rolls-Royce Type Engines for the Empire Aircraft Programme.



THIS PAGE 1

School Book - 8/10/1944

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TABLE 3 -- IN CASH

	Lancaster	York	1849-1850	Total	Lancaster	1849-1850	Total
Jan.							
Feb.							
Mar.							
Apr.							
May.							
June.							
1943							
July.	18	5	20	43	-	20	43
Aug.	20	3	23	43	-	17	43
Sept.	33	0	70	133	-	22	133
Oct.	47	3	101	151	-	24	151
Nov.	62	10	150	192	-	22	192
Dec.	71	13	134	228	-	22	228
1944							
Jan.	93	13	130	236	-	22	236
Feb.	11	13	134	245	-	21	245
Mar.	108	13	200	321	-	21	321
April	114	13	207	334	-	22	334
May	130	10	200	340	-	22	340
June	146	13	220	385	-	20	385
July	156	13	312	481	-	22	481
Aug.	166	10	312	494	-	21	494
Sept.	173	10	200	503	-	22	503
Oct.	187	13	312	512	-	21	512
Nov.	190	13	312	525	-	21	525
Dec.	192	13	312	547	0	21	547
1945							
Jan.	130	13	312	555	13	21	555
Feb.	208	10	312	530	13	21	530
Mar.	201	-	312	543	13	21	543
April	200	-	312	512	20	21	512
May	312	-	312	324	20	21	324
June	301	-	312	270	47	21	270
July	340	-	312	702	47	21	702
Aug.	412	-	312	724	62	21	724
Sept.	406	-	312	720	62	21	720
Oct.	320	-	312	632	22	21	632
Nov.	320	-	312	624	24	21	624
Dec.	320	-	312	632	-	21	632

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/// MOST SECRET

Re. Requirements and Supplies of Bristol Engines.Hercules

		Requirements	Supplies <sup>(1)</sup>
1943	3rd qr.	5546	4764
	IV	5738	5430
1944	I	5876	5590
	II	6041	5610
	III	6506	5610
	IV	5819	5610
1945	I	5539	5610
	II	5401	5610
	III	5350	5610
	IV	5166	5610
Total		56982	55054
Monthly Peak Rate		1882	1870

(1) In addition we start with an available stock of about 2,000 engines.

Centaurus

		Requirements	Supplies <sup>(1)</sup>
1943	III	2	230
	IV	35	360
1944	I	211	545
	II	585	610
	III	1172	1035
	IV	1086	1110
1945	I	1190	1110
	II	1310	1110
	III	1050	1110
	IV	1271	1110
Total		8290	8530
Monthly Peak		512	370

(1) On the assumption that the present programme is fulfilled Bristol's have already indicated that they may be 800 - 1,000 engines down on this programme by the end of 1944.

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Carton Packard  
 Sched. Sect. - 84-4/1943  
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November 11, 1943

W:MR 11-132

MEMORANDUM FOR: Brig. General F. M. Hopkins  
 Room 5C 808, Pentagon Bldg.

SUBJECT: Packard Engine Schedule

Mr. Bill Facker of the Packard Company called November 10th to give the following information concerning Packard engine schedules and the difficulties that he is running into.

At the present time, he is about 320 engines in arrears on the previous promises for delivery of engines up to the first of October. During October he delivered 550 -3 engines instead of a promised 637. He expects to deliver 350 in November and 650 in December, so that he will be some 500 engines behind at the first of the year.

In the case of British -33 and -36 engines, he is actually about 174 engines ahead of previous promised schedule up to the first of October and did exceed his schedule in October by about 100 engines. He will meet the schedule quite well thereafter, until about March.

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He will not, however, be able to make the changeover to -224 engines as soon as promised, which was 100 in December and 100 in January. This will be delayed in February because of difficulty in securing pistons and rings. The new centrifugally cast ring is difficult to make and the sources are just being developed. If the British will permit the use of the old rings in the lower portion and the new ones at the top only, he then may be able to come in in January rather than February with the -224's.

In addition to the above difficulties, he will not get into the -68's and -69's quite as quickly as promised, although he does expect to get the 50 -69's in January and 140 in February. In February he will start his first 10 -68's. He will not, however, get the 10 -68's promised in November and December and the 4 -69's in December.

Packard is much concerned over the foundry situation and still feels that the Aluminum & Magnesium Division is not helping the picture by the combination of casting deliveries to Continental and others from facilities which Packard considers their own.

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- 2 -

Mr. Pecker expects to be in Washington on Tuesday or Wednesday of next week to discuss all of these problems with us, and it is hoped that at that time we can derive a schedule which Peckard will be sure of meeting and on which we can depend. He can then see where we are going to stand in relation to possible serious shortage of engines for installation in airplanes.

T. P. WRIGHT

T. P. Wright, Director,  
Aircraft Resources Control Office

cc - Mr. Byron Tracy  
Capt. Fred Squires ✓



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*JSP*

AIRCRAFT PRODUCTION BOARD  
RESOURCES CONTROL OFFICE

PENTAGON BUILDING  
WASHINGTON, D.C.

IN REPLY REFER TO

November 19, 1943  
WHD:Di-11-221

MEMORANDUM FOR: Brig. General B. E. Meyers  
Room 4C 864 Pentagon building

SUBJECT: Packard Merlin

Attached hereto is copy of a memorandum covering conference held in my office on November 18th on the above subject. The schedules resulting from this conference are carried through August of next year only, because starting in July the situation will be greatly altered by the final outcome of negotiations on the Continental schedule. This I understand, is being handled from Wright Field so that we may expect a new schedule within a short time. As soon as this is available I believe we should have another get-together on the whole Packard situation since it is more too good at best, and will be decidedly bad if Continental falls much behind the present starting date of July (this is already set back four months from what we had originally hoped for).

I shall appreciate your letting me know when anything concrete on Continental schedule is available.

*T. P. Wright*  
T. P. Wright, Director  
Aircraft Resources Control Office

Attachment

CC - Brig. General F. B. Hopkins  
Colonel G. B. Bedeans  
Colonel G. B. Irvine

*WHD*

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V-1650  
 P-51, P-51, P-51  
 CONFIDENTIAL

November 18, 1943

S:R:R 11-216

Conference on the Packard "Dwain" Situation, November 17, 1943.  
Held in the office of T. P. Wright

**P R E S E N T:** Mr. W. M. Packard - Packard Motor Company  
 Lt. Colonel M. S. Dunbar - AAF  
 Major F. H. Squires - AAF  
 Mr. Alon Soddie - RAC  
 Mr. H. A. Erary - RAC  
 Mr. H. Devens - MAP  
 Lt. F. G. Keck - BMAAF  
 Mr. Gordon Hall - AMSG  
 Mr. T. P. Wright - AMSG

REPORT

Mr. Packard explained the recent conferences that he has had with Air Service Command personnel, as a result of which the spare situation may be considered well in hand. Agreement has been reached to deliver concurrently with the complete engine two-and-a-half overhaul spare parts. This amount is about 25% spares. It was further agreed that part deliveries will not be made up on an overall basis, but on the basis of specific lists of such needed parts agreed upon from time to time. Spares will be decided upon at monthly meetings which will be attended between the Air Service Command, the AAF representatives, and the Packard Company. The next one will be in January. It was therefore agreed that, insofar as production schedules are concerned, holdups from the spare standpoint will not exist hereafter.

NOTE

Mr. Packard explained that the situation in tools, both for the 1600 and the 1700 engine-overhaul program, is in a satisfactory condition and holdups from this source need not be anticipated.

CONCLUDING REMARKS

Meeting adjourned at 11:30 a.m. on 11/17/43 and which is being continued by the Air Service Command on 11/18/43 at the direction of the Air Service Command.

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V-16:0, Agency 1/19/50

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- 2 -

being held, and will continue within the next week or two, in an attempt to untangle the rather complicated foundry situation. It was suggested as being desirable that Mr. Hunter go to Detroit with Colonel Irvine as soon as possible to reach a final settlement on this situation. It was also agreed as desirable that certain foundry men from vendors to Packard, such as National Bronze, Adams, and John, go to England in order to inspect the techniques used there on the complicated castings. This is in view of the very high rejections which are still being experienced.

From the standpoint of the current meeting, it was agreed that no action could be taken except to register the questions which subsequent action on castings should point towards helping the Packard situation to the maximum possible extent without immediate reference to the effect on the Continental and Allison situation, as the former is a future rather than a present need and the Allison situation is in good shape.

Model Changes - Mr. Pecker outlined the several model changes which are being introduced at this time, all of which make proper scheduling difficult because of special situations on vendor parts which themselves constantly fall behind schedule. The following points were mentioned:

- (a) The new Piston and Centrifugally Cast Piston Rings - This situation which threatened to be a bad one is, to a large extent, alleviated by the agreement reached with the British that the centrifugally cast ring need be used in the top position only.
- (b) Supercharger Drive Gears - There seemed an alternative but to delay the schedule in accordance with anticipated deliveries in January of the first complete sets of parts for this change.
- (c) Clutch Plates - Here again, the situation is up to Packard entirely to effect as much expediting as possible.
- (d) "Beefed Up" Super Crankcase - Also up to Packard.
- (e) Parts from Chicago Foundry - This includes the after cooler pumps, the bearing central and the piston pump. They are inter-related and it is necessary to get the best possible balance. As much help as can be given to Chicago Foundry should be given, so this threatens to be a bottleneck. The other vendors who are being brought into this picture are kept from off from being ready to make deliveries.

A schedule for the various lead number of castings was agreed upon at the conference carrying through 1/19/50. This appeared to be the best arrangement available in view of the falling off from previous ones that could be made. It was

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of the anticipated airplane deliveries which must be matched by these engines, and in view of the current surplus and deficit situations. The enclosed sheets show the deliveries in question, together with the surplus and deficit situation for each type. It will be noted that the deficit of -33 and -35 engines affects the "Mosquitos" and "Lancasters" being produced in Canada and Australia to a considerable extent. In this regard, Mr. Reddie agreed to obtain, as soon as completely realistic a schedule of airplanes into which these engines are to be fitted as possible, so as to see how badly the apparent deficits will work out in the final analysis. It should be understood that the schedules given here are final ones until after a further review may be made in view of Mr. Reddie's findings. These schedules appear to be the best that Peckard can promise; although, of course, Mr. Peckard said that they would attempt to do better. However, he did feel that these were realistic and could be relied upon. The current meeting discussed schedules through August only, as the influence of the Continental picture will enter into the disposition of deliveries between such numbers substantially after July. Therefore, the work concerned on Peckard consideration should be made in view of the Continental situation, which is now being studied in detail by representatives appointed by General Hopton.

There was some discussion as to the possibility of introducing more single stage engines into the British picture than present contracts contemplate. Mr. Peckard stated that the time had already passed when any change in numbers could be used effectively and that now a change might actually be detrimental to the general picture. However, Mr. Reddie agreed to look into this situation and bring it to the attention of those involved, if it appeared desirable to add any single stage engines.

E. F. Wright, Director,  
Aircraft Resources Control Office

Enclosure

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OASD:ms:bt:90-I-1-1

90-I-1-1

22 November 1943

SUBJECT: Continental Aviation & Engineering Corp.  
Detroit, Michigan  
RCS Project 145 C-1

TO: Commanding General  
Army Air Forces  
Washington, 25, D. C.

Attention: Assistant C/AS, MWD  
Resources Division

1. The Continental Aviation and Engineering Corporation, Detroit, Michigan, has submitted to this office, through Central Procurement District, an Appendix "A", RCS Project 145 C-1 in the amount of \$53,188,959.31, covering additional facilities consisting of land, building, machinery, equipment, portable tools and automotive equipment to be located in its existing plants at Muskegon, and Detroit, Michigan, and with approved subcontractors. Reference is made to teletype RCS 16178 OMB dated 8 October 1943, processing additional facilities in the amount of \$11,770,400 and more particularly to the statement contained in that teletype that the funds requested would not be sufficient for facilities to complete the Continental V-1650-3 Packard Rolls-Royce Engine program and attain planned peak production. The original project, RCS Project 145 C in the amount of \$11,770,400, is superseded by and included in the total amount of this subject project of \$53,188,959.31.

2. It was the decision of higher authority as indicated in confidential teletype 1-38 dated 12 August 1943 from Brigadier General E. B. Meyers to Major General C. S. Branshaw that the increased production of the V-1650-3 engine is essential to the Army Air Forces program and that the Continental Aviation and Engineering Corporation, by expansion of its present facilities, and the employment of extensive subcontracting, is in best position to accomplish this necessary production in the shortest period of time. CFI-1418, dated 13 August 1943, "Procurement of V-1650 Type Engines", has been issued as a result of the above teletype.

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Com. Cpn., AAF, Res. Div.  
SUBJECT: Cont. Avia. & Eng. Corp.  
22 November 1943

3. Items to be Produced: Subject facility has been selected by the Army Air Forces to manufacture, assemble, and test the V-1650-3 Packard Rolls-Royce engines on prime contract W-33-038-ac-415 (1185) dated 18 August 1943. Subject facility is not the sole source of supply for these engines.

4. Date of Production: Tentative schedules indicate that initial output of V-1650-3 engines by Continental Aviation and Engineering Corporation will start in March 1944 and peak production of 1350 engines per month will be reached by April 1945. The Materiel Command is of the opinion that the March initial delivery is optimistic and is doubtful that it can be attained. However, Continental feels reasonably assured that it will have produced 100 engines by December 1944.

5. Justification: Army Air Forces letter contract W-33-038-ac-415 to subject corporation calls for the production of 8,600 units plus 27% spares at an estimated overall value of \$230,182,232. In order to accomplish this end, the removal of the R-1340 engine production from the subject Muskegon, Michigan plant is necessary. Subject facility has been carrying out the transfer of said R-1340 engine manufacture to its Garland, Texas plant with additional subcontracting. The Garland, Texas plant is presently sponsored by Ordnance, but it is understood that plans could be effected by the Office of Assistant Chief of Air Staff, HQAD, and by the Materiel Command to transfer sponsorship to Army Air Forces. No costs are included within this estimate for the relocation of approximately 950 machine tools now located in the Continental Muskegon plant for R-1340 production, to Garland, Texas, for the continued production of the R-1340. Facility estimates that approximately \$160,000 would be required for this relocation. Meanwhile the Materiel Command has recommended the transfer of this R-1340 engine manufacture to Chevrolet. No costs for such move are included herein.

a. The subject facility used as a basis for the estimates included in this proposal, the Packard Motor Car Company V-1650-3 production facilities as set forth in RCS projects 43 B series and the estimates have been found, by this Command, to favorably agree with the Packard program, based on comparative production schedules.

b. The machinery and equipment in the amount of \$11,770,400 as approved under RCS Project 445 C has been substantially committed, and the subject facility states that immediate approval of the facilities requested in this proposal is essential in order that acquisition can be made and deliveries secured in time for the production program to proceed as presently planned.

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Com. Gen., AAF, Res. Div.  
 SUBJECT: Cont. Avia. & Eng. Corp.  
 22 November 1943

6. Capacity: The peak capacity is planned to be 1350 engines per month plus 27% spares, with an annual sales value estimated at \$44,000,000.

7. Other Expansions in Process: No other similar expansions are in process by the Materiel Command for facilities for Continental Aviation and Engineering Corporation. Additional facilities, however, have been processed under RCS Projects 143 B series for Packard Motor Car Company for the production of V-1650-3 engines.

8. Previous Expansions: The following expansions have been recommended by AAF for Continental Aviation and Engineering Corporation at Muskegon, Michigan.

<u>RCS Project</u>	<u>Date Processed</u>	<u>Amount</u>
145 B	5/12/42	\$ 12,436,407
145 B-1	9/26/42	1,300,967
145 B-2	4/26/43	1,579,660
<u>145 G</u>	10/8/43	<u>11,770,400</u>
Total		\$ 27,087,434

a. It is to be noted that RCS Project 145 G in the amount of \$11,770,400 is included in the subject proposal. RCS Projects 145 B, B-1, and B-2, listed above, were processed for the subject facility at Muskegon, Michigan, for the production of B-1340 engines.

9. Estimated Costs:

Land (14 acres)	\$ 2,000.00
Land Improvements	4,640.00
Buildings, Installations, Leasehold Improvements	3,683,509.00
Off-leasehold Improvements	120,000.00
Service Costs	653,458.31
Machine Tools	34,085,722.00
Other Machinery and Equipment	14,205,498.00
Portable Tools and Automotive Equipment	<u>233,932.00</u>
Total	\$ 53,188,999.31
Costs other than machine tools	\$ 19,103,237.31

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 Com. Eng., AAF, Res. Div.  
 SUBJECT: Cont. Avia. & Eng. Corp.  
 22 November 1943

a. The estimated costs of the proposed facilities are based upon preliminary analysis of the project and are subject to change. The Defense Plant Corporation lease agreement should, however, not exceed the overall estimate.

b. There are enclosed three copies of preliminary appendixes submitted by subject corporation, which forms the basis of this preceding letter. It is the understanding of this office that one copy will be forwarded to the Defense Plant Corporation for its information and guidance.

c. As soon as the appendix "A" has received final approval in this office, any material changes affecting the preliminary estimate will be submitted to your office in order that the lease agreement may be amended accordingly.

10. Plan of Financing: Amendment to Defense Plant Corporation lease agreement, Plan No. 155, in the amount of \$53,154,999.51, less the amount of \$1,770,000 which has been previously approved but which is included in the subject proposal.

11. Subcontracting: Facility plans to subcontract as extensively as possible all engine parts. It is currently engaged in the study of various subcontractors and subcontracting policies and has a temporary office in Detroit, Michigan, in order to develop subcontracting sources.

12. Raw Materials:

<u>Material</u>	<u>Source</u>	<u>Monthly Requirements</u>
Aluminum Castings	Behm Alum. Co.-Singer Machine, University Ctg.-Elixir's Fdry. Alum. Industries	607 tons
Aluminum Forgings	Behm Alum.-Chevrolet	85 "
Bronze Forgings	Bronze Forging Co.	12 "
Steel Forgings	Kyan-Gordon, Canton - Steel Improvement	575 "
Aluminum Bar	Reynolds Metals	65 "
Bronze Bar	Chase Brass - Bridgeport	72 "
Steel Bar	Rotary Electric, Republic Steel, Bethlehem Steel	1740 "





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Gen. Inv., AAF, Res. Div.  
SUBJECT: Cont. Avia. & Eng. Corp.  
22 November 1943

15. Utility Requirements:

	<u>Maximum</u>	<u>Average</u>	<u>Source of Supply</u>
Tons of Coal	100	75	W. American Coal Co.
Gals. of Oil	10,000	6,000	Shell, Sinclair, Sunoco, etc.
Cu. Ft. of Gas	260,000	225,000	West Michigan Con- sumers Power
Power Demand in KW	800	700	Consumers Power Co.
Gallons of Water	375,000	275,000	City of Muskegon

16. Floor Space: The present D-3 Continental plant at Muskegon consists of the total of 491,261 sq. ft., of which 396,423 sq. ft. are productive and 92,838 sq. ft. nonproductive. Additional floor area proposed in connection with this project consists of a total of 333,030 sq. ft.

17. Special Requirements: This project will assume Packard Motor Car Company urgency rating P/1 for machine tools for the same type of production. The D-31 Certificate should be mailed to Continental Aviation and Engineering Corporation, 21 Henry Street, Detroit, Michigan, Attention: Mr. D. E. Hostetter.

18. Certification: It is hereby certified that within the framework of the decision indicated in Paragraph 2 above the facilities herein proposed are essential to carry out the Joint Aircraft Committee MS-8 Working Engine Schedule; that no existing manufacturing buildings are available or susceptible of conversion; and that no existing structures can be made available for the purpose by purchase or lease.

19. Reimbursement: The Continental Aviation and Engineering Corporation has certified that no part of the cost of facilities covered by this proposal has been or will be included in the prices of articles furnished the Government or prime contractors to the Government.

20. Recommendations: The costs of the proposed facilities as submitted by the Continental Aviation and Engineering Corporation have been evaluated by this office and found to be not excessive. Therefore,

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Com. Gen., AAF, Res. Div.  
SUBJECT: Cont. Avia. & Eng. Corp.  
22 November 1943

In order to carry out the decisions of higher authority stated in Paragraph 2 hereof, it is recommended that approval of all agencies concerned be obtained to this proposal in the amount of \$53,188,999.31, and that this office be authorized to proceed with final negotiations of the subject corporation.

For the Commanding General:

W. R. HEROD  
Colonel, Air Corps  
Acting Chief, Resources Control Section

1 Incl.:  
Proc. App. "A"  
(In trip.)

Distributions:  
Production Division  
Budget Officer  
Chief, Fac.Br., Proc.Div.  
Inspection Division

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**ARMY AIR FORCES**  
HEADQUARTERS OF THE MATERIEL COMMAND

WRIGHT FIELD, DAYTON, OHIO

25 November 1945

Subject: Continental Aviation and Engineering Corporation  
Detroit, Michigan  
RCS Project 145 C-1

To: Commanding General, Army Air Forces  
Office, Assistant Chief of Air Staff  
Material, Maintenance and Distribution  
Washington, D.C.

ATTN: Resources Division

1. In accordance with request of Colonel Irvine of the Office, Assistant Chief of Air Staff, WOOD, and Mr. R. Murry of the Facilities Section, War Production Board, that the appendix of the Continental Aviation and Engineering Corporation be forwarded as quickly as possible to Washington there is forwarded two copies of the proposed plant expansion known as RCS Project 145 C-1.

2. There appears to be very serious doubt at this time among the personnel in the Procurement District and at Materiel Command Headquarters that Continental Aviation and Engineering Corporation will be able to produce 10,000 engines in accordance with requirements, especially if the 1,000 engines pending in production with Continental Aviation and Engineering Corporation. It is the opinion that the present management and supervisory personnel would not be adequate for both production program. It is recommended that General Scholes give personal attention to this situation before transmitting the enclosures with a favorable endorsement.

For the Commanding General:

*T. A. Sims*  
T. A. SIMS  
Colonel, Air Corps  
Deputy Chief of Staff



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WAR DEPARTMENT - ARMY AIR FORCE  
Office, Asst. Chief of Air Staff, Materiel, Maintenance, and Distribution

Inter-Desk Memorandum

TO: Gen. EcholsDate 27 Nov 1943SUBJECT: Continental Aviation & Engineering Corp.

- Approved*  
*Echols*
1. Attached is project for the Continental Rolls-Royce Engine Program for your approval prior to the initiation of negotiations for a Defense Plant Corporation lease.
  2. This proposal has been approved by the Facilities Committee, War Production Board, as submitted by Mr. Murphy and Col. Irvine.
  3. The Materiel Command apparently doubts the ability of Continental to produce the Merlin engine in accordance with requirements, especially if the R-1340 engine remains in production with Continental and has processed this project only in order to carry out "the decision of higher authority". As evidenced by the attached letters, they feel that the R-1340 production should be transferred to Chevrolet instead of being continued in Continental by transfer to their Garland, Texas, plant.

*for*  
*Fred W. Hopkins*  
FREDERICK W. HOPKINS, JR.,  
Brig. General, U. S. A.

*This matter has been reviewed by a special committee appointed by the Aircraft Production Board. This committee is of the opinion that Continental can produce engines as planned.*

THIS COPY WILL NOT BE USED OUTSIDE THE AC/AS, W. H. & D.

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28 November 1943

MEMORANDUM FOR THE ASSISTANT CHIEF OF AIR STAFF, HQAF

Subject: Rolls Royce Merlin Program

1. A series of conferences were held by Mr. W. B. Murphy and the undersigned in the New York area, with reference to subcontracting for Continental.

2. Preliminary agreements were reached involving the allocation of approximately 112,000 square feet of floor space by the Ranger Engine Company to sub-assemblies for the Rolls Royce program. The Ranger Company will furnish completely assembled and tested to the Continental Company, three major sub-assemblies as follows:

- a. Supercharger
- b. Accessory
- c. Reduction gear

3. As a result of a reduction in the originally-planned manufacturing program of the Ranger Company, capacity exists both in their plant and in certain important subcontractors such as Borg Warner. The facilities of these companies as well as others, such as Bullard, Singer and IBM, will be utilized for the manufacture of gears and splined parts for the three sub-assemblies. The foregoing program will reduce the requirements for labor at Muskegon, will place the assembly of important sub-assemblies in the hands of an experienced engine company familiar with a similar type of engine, and will at the same time permit the full utilization of the parts manufacturing "know-how" of the machine tool builders and others. The program will simplify the Continental supervisory problem very greatly.

4. The Ranger Company has what appears to be the most fully equipped laboratory of any engine company in this country. Their facilities for x-ray analysis, chemical analysis, both by x-ray and spectrograph stress analysis by both the stress point and visual measurement methods as well as plastic deformation methods, are outstanding. The facilities of this laboratory may possibly be of considerable assistance in the Rolls Royce program in the event that manufacturing difficulties are encountered.

C. S. IRVINE  
 Colonel, Air Corps

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DEC 30 1945 PM

TRANS BUDGET - TELETYPE MESSAGE

DY V OV NR E  
FROM ARNOLD WASHINGTON DC 301425Z  
TO RESOURCES CONTROL SECTION XXX SECTION  
WRIGHT FIELD  
CR43

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AFDRE-2 ~~TOWU~~ PD TAKEOUT LETTER HAS BEEN SIGNED FOR THE FOLLOWING  
PROJECT COLON

CONTINENTAL AVIATION AND ENGINEERING CORPORATION CMA  
~~MUSKEGON MICHIGAN CMA RCS PROJECT ONE FOUR FIVE C ONE CMA~~ IN THE  
AMOUNT OF FORTY MILLION DOLLARS DATED FOURTEEN DECEMBER NINETEEN  
FORTY THREE

1430Z  
PT

TRANS BUDGET - TELETYPE MESSAGE

*Used Distribution  
12/21/45*

ORIG: Moriarty - Information & Nec.Action (

*JM* Note: Original amount of expense  
cut down by O.P.B. to \$4,000,000

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a/c/a/p, m+L-104/3772  
ADDRESS ONLY TO  
HEADQUARTERS OF THE ARMY AIR FORCE  
WAR DEPARTMENT  
WASHINGTON, D. C.

AFMMD-3

WAR DEPARTMENT  
HEADQUARTERS OF THE ARMY AIR FORCES  
WASHINGTON 3 January 1944

SUBJECT: Report on Rolls Royce Production.

TO: Asst. Chief of Air Staff, M64D

1. Packard.

The following resume of Packard production for November and December is furnished:

	<u>American</u>	<u>British</u>	<u>Total</u>
November, 1943	495 -3's 50 -7's	2 -68's 0 -69's	
<u>Total</u>	<u>545</u>	<u>721 -38's</u> 723	1268
<u>Schedule</u>	525	775	1300
December, 1943	518 -3's 159 -7's	9 -68's 5 -69's	
<u>Total</u>	<u>678</u>	<u>576 -38's</u> 590	1265
<u>Schedule</u>	650	750	1400

2. Continental.

The present schedule calls for the delivery of the first five engines in July, 1944. Present indications are that this schedule will be met; however, there still remains a great deal of work to be done to assure not only the initial production but the rapid increase thereafter.

Attached hereto is a detailed report prepared at the direction of the undersigned by Continental. The following summary of the Continental picture is furnished.

a. Engineering Releases. - Progress satisfactory and approximately on schedule.

b. Requisitions and Purchase Orders to Sub-contractors. - Planning has covered some 1600 parts as against a schedule of 1900. Actual



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AC/AS, WOOD

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3 January 1944

purchases are behind schedule as a result of a failure of Lycoming to actually close negotiations with Continental. In this connection it is imperative that Air Service Command spare orders for the R-2600 engine on Lycoming be reduced to a schedule of actual minimum requirements and Lycoming so notified. Air Service Command has been requested by this office to submit final data by January 7. It should be possible to release 80% of Lycoming's capacity which would in great part make up the existing shortage in sub-contracting capacity. Ranger had held up placing purchase orders waiting for a copy of Continental's balance sheet. In a conference with Ranger personnel the undersigned advised Ranger that Continental's balance sheet was no concern of theirs but something that the Air Force would look after. Ranger was directed to proceed without delay in placement of purchase orders and at the insistence of the undersigned agreed to do so.

2. Aluminum Castings. - The present situation on patterns and placement of orders appears satisfactory; however, this is a very delicate situation and must be followed very closely.

1. Aluminum Die Castings. - Progress satisfactory.

2. Steel Forging Discs and Bars. - Placement of orders is slightly behind established schedule; however, this situation is reasonably satisfactory.

3. Machine Tools. - As of December 28 a total of 1749 machine tools out of a pilot line requirement of 2500 had been ordered. Promised dates indicate that of the machines which should be received in February, about 200 are promised for March, 100 for April and 30 for May with an additional 155 having no promise yet. This problem is being actively worked on at this time by Col. Kanear at Wright Field and Maj. Wood in this office with the WPB Tools Division. The 2500 pilot line machines form approximately the total requirement through September, 1944.

4. Durable Tools and Fixtures. - The durable tool picture looks all right on paper; however, the undersigned insisted that Continental add 200 additional engineers on the processing job to expedite this phase. Approximately one-half of Continental's own tool requirement of 260,000 man hours has been placed and a little over one-third of the contractors' requirement of 320,000 has been placed. The solution of this problem should be handled by the additional men at Continental as well as additional men and impetus with Ranger.

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AC/AS, MM&D

-3-


3 January 1944

b. Operation Sheets. - Over 2500 operation sheets have been received from Packard which comprise practically the entire job; however, at least 300 still have to be re-checked and re-worked to bring up-to-date obsolete or changed drawings. This phase is being followed closely.

i. Facility Revisions and Expansions. - This phase of the program appears to be on schedule.

Conclusions

- (1) The casting situation must be closely followed.
- (2) Timely delivery of machine tools presents, as usual, a difficult problem and will take a great deal of work.
- (3) The durable tool problem must be followed closely.
- (4) Completion of the sub-contract program must be accelerated. A decision is particularly vital in the case of Igcoming.

  
C. S. IRVINE,  
Colonel, Air Corps,  
Special Advisory Group.

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Mts.

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AIRCRAFT PRODUCTION BOARD  
RESOURCES CONTROL OFFICE

PENTAGON BUILDING  
WASHINGTON, D.C.

January 7, 1944

IN REPLY REFER TO:  
Ats 1-122

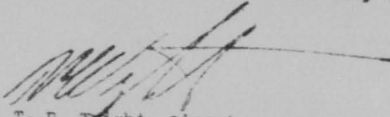
MEMORANDUM FOR: Colonel C. S. Irvine

SUBJECT: Aircraft Production Board meeting of January 4, 1944.

The following, relating to the proceedings of the Aircraft Production Board, is quoted from the Minutes of the meeting of January 4, 1944:

"ENGINES:

CONTINENTAL V-1650: Mr. Wright advised that Mr. John M. Reid, of the Rolls Royce Company, will be attached to the Office of the Deputy Assistant, Chief of Air Staff, MM&D, to assist in the production of Rolls Royce engines in this country. Mr. Reid will act as Technical Consultant on this program, and will operate under the supervision of Colonel C. S. Irvine. Mr. Reid will take permanent station in Detroit, with office and secretarial help to be furnished by the Continental Motors Corporation. General Knudsen commented that Mr. Reid had done a very useful job in assisting Packard in getting started on the Merlin. General Echols stated that the Continental program was going ahead quite nicely, machine tools being the principal difficulty. Continental has advised that they will meet their schedule."

  
T. P. Wright, Director  
Aircraft Resources Control Office

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Contin- U-7650 - subo Cont.  
 59  
 5A6-67  
 Ym S. a

January 8, 1944

MEMORANDUM

TO: Mr. W. B. Murphy  
 FROM: Geo. H. Lange  
 SUBJECT: Lycoming Division of American Aviation Corporation  
 Williamsport, Pennsylvania

Major Squires advised me on January 7 that the Army Air Forces would not consider cancelling out the PT-13 trainer using the R-680 Lycoming engine; that in addition to the spare parts program there would be a production requirement of 85 engines per month continuing through 1944. It is very desirable that the R-680 engine be completely cancelled out if at all possible. Furthermore, I believe it desirable to consider taking the spare parts requirements which would remain after this engine production is stopped and transfer this over to the Jacobs Plant #1.

Jacobs builds a 7 cylinder radial engine, their model R-755, which is somewhat similar to the Lycoming R-680. The Jacobs Plant #1 is not particularly suited for the Rolls Royce program but is adaptable for producing spare parts for the Lycoming 680. I am quite sure that I can get concurrence on the part of the Production Engineering Section of Wright Field as well as Army Air Service Forces on a move of this nature. This could be done gradually as Lycoming gets into production on Continental Rolls Royce engine parts.

In any event if the Lycoming facilities are to be available it must be known at once; otherwise there is going to be a delay in getting Continental started as many plans on engine parts hinge upon the use of the Lycoming Plant.

cc: Col. C. J. Irvine  
 5-C 360 Pentagon Bldg.

GML/hr



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Carton - U-1650 - Subc of cont.  
SAG-69  
Mrs.

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a

1. Col. J. W. Secombe  
2. Brig. Gen. B. E. Mayers

17 January 1944

## Lycoming R-680 Plant.

1. Continental has been unable to close any deal with Lycoming in view of the controversy that has arisen over PT-13 airplanes, R-680 spares, etc.
2. In discussing the problem with personnel in this office as well as the Production Division at Wright Field it appears to be the consensus of opinion that the complete release of the Lycoming R-680 plant can be readily made by the transfer of R-680 spare manufacture plus whatever engines are required to Jacobs.
3. The Lycoming organization has for some time past been highly non-cooperative in our efforts to utilize any of their plant capacity for other purposes.
4. We cannot afford to have both Jacobs and Lycoming running at far under their real productive capacity. In view of the foregoing the undersigned has this date instructed personnel of the Resources Control Section and Aeronautical Equipment Branch to take ~~whenever~~ action toward the removal of R-680 engines and spares from Lycoming to Jacobs in order that the entire R-680 plant may be available to act as a parts plant for Hollis Royce Merlin production.

C. S. IRVINE,  
Colonel, Air Corps,  
Special Advisory Group.

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cc: Brig. Gen. F. W. Hopkins, Jr.  
Lt. Col. E. S. Barber

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 EXTRA PRIORITY

2. GEN E  
 62  
 176

Capt. S. J. McManara  
 dh-70-52 - 26124

20 January 1944

PROD. ENG. SEC.

ORVAL R. COOK  
 Brig. Gen., U.S.A.

SPECIAL ADVISORY GROUP  
 MATERIEL DIVISION

S-2661-P.....RETEL AFMAD-3 3455 PD. POSSIBILITY OF JACOBS PLANT #1 AND #2 PRODUCING LYCOMING R-680 ENGINES AND SPARE PARTS IS BEING THOROUGHLY INVESTIGATED. UNKNOWN FACTOR WHICH CONTROLS FEASIBILITY OF SUCH A PROGRAM IS THE LIFETIME SPARES REQUIREMENTS FOR THE JACOBS R-755 ENGINES. AIR SERVICE COMMAND HAS BEEN REQUESTED TO EXPEDITE IN EVERY WAY POSSIBLE SUBMISSION OF R-755 LIFETIME SPARES LIST TO JACOBS FOR STUDY. THIS LIST HAS BEEN PROMISED TODAY. JACOBS WILL BE GIVEN TWO DAYS TO EVALUATE THE LOAD THAT R-755 LIFETIME SPARES WILL IMPOSE ON THEIR FACILITIES. UPON CONCLUSION OF SUCH STUDY, REPRESENTATIVES OF JACOBS AND LYCOMING AND AIR SERVICE COMMAND WILL BE REQUESTED TO ATTEND A CONFERENCE AT THE MATERIEL COMMAND TENTATIVELY SCHEDULED FOR 26 JANUARY 1944 IN ORDER TO ARRANGE SCHEDULES WHICH HAVE TO DO WITH THE ASSIMILATION BY JACOBS OF THE R-680 LOAD IF SUCH ASSIMILATION CAN IN ANY WAY BE ARRANGED. LYCOMING WILL BE INFORMED THIS DATE OF MATERIEL COMMAND'S DESIRE THAT THEY IMMEDIATELY UNDERTAKE SUCH SUBCONTRACTING IN THE CONTINENTAL MERLIN PROGRAM AS IS MUTUALLY AGREED UPON BETWEEN CONTINENTAL AND LYCOMING. THE SCHEDULED OF SUCH SUBCONTRACTING WILL OBVIOUSLY DEPEND ON THE ABILITY OF JACOBS TO ASSIMILATE THE R-680 LOAD AS STATED ABOVE. CONTINENTAL AVIATION AND ENGINEERING CORPORATION HAS BEEN INFORMED OF THIS PLAN AND WILL BE REQUESTED TO IMMEDIATELY START NEGOTIATIONS WITH LYCOMING. MATERIEL COMMAND WILL NOTIFY

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EXTRA PRIORITY

Capt. B. J. McManara  
dh-70-5P- 2612.

20 January 1945

PROD. ENG. SEC.

SPECIAL ADVISORY GROUP  
MATERIAL DIVISION

ASSISTANT CHIEF OF STAFF, MMAD OF THE PROGRAM IN DETAIL AFTER PROPOSED CONFERENCE  
OF 26 JANUARY 1945. IT IS UNDERSTOOD THAT AIR SERVICE COMMAND IS CONTEMPLATING  
A 25% REDUCTION OF THE LIFETIME SPARES REQUIREMENTS OF THE R-680 ENGINE.

TECHNICAL EXECUTIVE:

cc Resources Control Sec.  
Chief, Aero. Equip. Br.  
Chief, Prod. Eng. Sec.  
Chief, Prod. Div./Col. Boatner  
Tech. Exec.  
ASC/Maint. Div./Engine Br.  
ASC/Supply Div./Engine Br.  
Train. & Trans. Br./PEG

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U-1650  
SAG-7-(9/47)

EXTRA PRIORITY

Army Air Forces Mat'l Command  
Wright Field, Dayton, OhioCapt. B. J. McNamara  
dh;-70-5P - 26124

30 January 1944

ORVAL B. COOK  
Brig. Gen., U.S.A.Lycoming Division  
Aviation Division  
Williamsport, Pa.

PES-2662-P.....URGENT REQUIREMENT FOR ADDITIONAL FACILITIES TO ASSIST CONTINENTAL AVIATION AND ENGINEERING CORPORATION IN BUILDING MERLIN ENGINES WILL REQUIRE USE OF LYCOMING R-680 FACILITIES. IT IS THEREFORE REQUESTED LYCOMING IMMEDIATELY CONTACT CONTINENTAL AND EXPEDITE COMMENCEMENT OF SUBCONTRACTING PROGRAM MUTUALLY AGREEABLE TO CONTINENTAL AND LYCOMING. THE SCHEDULE OF SUCH PROGRAM WILL DEPEND ON HOW FAST THE R-680 PRODUCTION REQUIREMENTS CAN BE MOVED FROM LYCOMING TO JACOBS. IN THIS REGARD, IT IS PROPOSED TO HAVE A CONFERENCE AT THE MATERIAL COMMAND PRODUCTION ENGINEERING SECTION, DEPARTMENT 70-5P AT 1300 O'CLOCK 26 JANUARY 1944 BETWEEN REPRESENTATIVES OF JACOBS, LYCOMING AND THE ARMY TO ARRANGE A SCHEDULE FOR JACOBS TO ASSIMILATE WHATEVER UNDELIVERED PORTION OF THE R-680 REQUIREMENTS THAT ARE DEEMED FEASIBLE. YOUR ACKNOWLEDGMENT OF THE DATE OF PROPOSED CONFERENCE IS REQUESTED BY RETURN TELEGRAM. END AFAMG.

PRODUCTION DIVISION, WRIGHT FIELD

cc: AAF Rep.  
AAF E. Dist. Sup.  
Resources Control Sec./Col. Moriarty  
Chief, Aero. Equip. Br.  
Chief, Prod. Eng. Sec.  
Chief, Prod. Div./Col. Boatner  
Tech. Exec.  
Air Service Command/Maint. Div./Engine Br.  
Air Service Command/Supply Div./Engine Br.  
Train. & Trans. Br./PES

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Army Air Forces Materiel Command  
Wright Field, Dayton, Ohio  
Capt. W. J. McNamara:  
dh;70-5P 26124

20 January 1944

Jacobs Aircraft Engine Company  
Pottstown, Pa.

ORVAL R. COOK  
Brig. Gen., U.S.A.

PRS-2663-P....REQUEST YOUR ATTENDANCE AT A CONFERENCE TO BE HELD AT THE MATERIEL  
COMMAND 1300 O'CLOCK 26 JANUARY 1944 IN PRODUCTION ENGINEERING SECTION, DEPARTMENT  
70-5P. THE PURPOSE OF THIS CONFERENCE WILL BE TO ARRANGE A SATISFACTORY SCHEDULE  
FOR THE ASSIMILATION BY JACOBS OF THE LYCOMING R-680 ENGINE AND SPARE PARTS REQUIREMENTS  
IT IS DESIRED THAT YOU BE PREPARED TO DISCUSS SUCH A PROGRAM IN RELATION TO THE  
COMMITMENTS YOU HAVE FOR R-755 LIFETIME SPARE PARTS. IT IS FURTHER REQUESTED THAT  
AN EVALUATION OF THE UNUSED CAPACITY AT JACOBS PLANT #2 BE EVALUATED FOR ITS POSSIBLE  
USE IN THE LYCOMING R-680 PROGRAM. FOR YOUR INFORMATION, REPRESENTATIVES OF LY-  
COMING AND THE ARMY WILL BE ATTENDANT AT SUCH CONFERENCE. YOUR IMMEDIATE ACKNOWLEDGEMENT  
OF CONFERENCE DATE IS REQUESTED BY RETURN WIRE. END AFAMC.

PRODUCTION DIVISION, WRIGHT FIELD

cc: AAF Rep.  
AAF E. Dist. Sup.  
Resources Control Sec./Col. Moriarity  
Chief, Aero. Equip. Br.  
Chief, Prod. Eng. Sec.  
Chief, Prod. Div./Col. Boatner  
Tech. Exec.  
Air Service Command/Maint. Div./Engine Br.  
Air Service Command/Supply Div./Engine Br.  
Train. & Trans. Br./PES

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FORMS 8-51 AND 8-52 (REV. 10-1-53)

RESTRICTED

COMMANDING GENERAL  
 ARMY AIR FORCES  
 PRODUCTION DIVISION  
 WASHINGTON 25, D. C.

ARMY AIR FORCES  
 MATERIEL COMMAND  
 OFFICE OF THE COMMANDING GENERAL

SUBJECT: Ranger Aircraft Engine Division  
 Fairchild Engine & Airplane Corporation  
 Jamaica, Long Island, New York  
 RCS Project 22 B-1

TO: Commanding General  
 Army Air Forces  
 Washington 25, D. C.

Attention: Assistant C/AS, MMAD  
 Resources Division

1. The Ranger Aircraft Engine Division has submitted a proposal for additional facilities including additional land and buildings to be acquired under Plencor S10, at its Jamaica, Long Island, New York, the production of subassemblies for Packard-Rolls-Royce V-1650 engines to be manufactured under subcontract to Continental Engine and Engineering Corporation. This proposal has been reviewed by the Eastern Procurement District.

2. Items to be Produced: The principal products produced at subject corporation's plant at Jamaica are V-1650 engines and V-770 12-cylinder engines for aircraft. The corporation is the sole producer of these two engines and has been selected by the Army Air Forces to act as subcontractor for the Continental Engine and Engineering Corporation for the manufacture of engine crankcase and wheel case subassemblies and propeller shaft reduction gears for Rolls-Royce V-1650 engines.

3. Where to be Produced: Subject corporation presently has two modern airplane engine plants, one located in Jamaica and the other in Farmingdale, Long Island, New York.

4. Production Date: Subject corporation states that production can be reached in approximately 90 days after project start.

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FORM 8-51-WF-10-1-53-10M

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Com. Gen., AAF, Res. Div.  
 Subject: Ranger Aircraft Engine Division  
 21 January 1944

5. Justifications: With the proposed production of superchargers and other parts for the Continental Aviation & Engineering Corporation, the Ranger Aircraft Engine Division at Jamaica will require additional floor space. There is adjoining the Jamaica plant a one-story building with approximately 15,250 square feet of floor space in which it is proposed to construct a mezzanine, which the 35-foot ceiling will readily permit, to use for production stores and to use the first floor for shipping and receiving inspection. Rearrangement of the main plant will make available 50,000 square feet of manufacturing space in the main plant for installation of the machinery and equipment being furnished by Continental Aviation & Engineering Corporation for the manufacture of the above mentioned superchargers, etc. Investigation reveals that there is no other building that can be leased close enough to the main plant other than the above mentioned building at 184-02 Jamaica Avenue previously occupied by the Liberty Feed Company.

6. Capacity: The subject corporation's capacity now consists of 550 L-440 and 290 V-770 engines plus 36% spares per month, with an estimated annual sales value of \$62,302,400. With the proposed facilities and machinery to be furnished by Continental, subject corporation will be able to produce 1950 plus 25% spares each of superchargers, wheel case assemblies and propeller-shaft reduction gears with an annual sales value of \$15,780,000 for the Continental Aviation & Engineering Corporation for use on Packard Halls-Royce V-1650 engines.

7. Other Expansions in Process: At the present time there is in process another project for the same corporation in the sum of \$432,550 under Emergency Plant Facilities Contract at Farmingdale, Long Island, New York for testing facilities of the same items for Continental Aviation & Engineering Corporation.

8. Previous Expansions: Subject corporation has had the following previous expansions at Jamaica and Farmingdale, Long Island:

<u>RCS Project</u>	<u>Date Processed</u>	<u>Amount</u>
22 A	12-3-40	\$ 4,05,745.00
22 A-1	7-21-41	68,335.68
22 A-2	11-16-42	16,118.11
22 A-3	4-15-43	1,719.22
22 A-4	7-26-43	97,787.98
22 B	4-15-43	8,392,860.00
Total		\$ 9,481,998.01

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Com. Gen., AAF, Res. Div.  
 Subject: Ranger Aircraft Engine Division  
 21 January 1944

9. Estimated Costs:

Existing Land & Buildings	\$ 75,000
Building Alterations, Installations	100,690
Service Costs	<u>5,932</u>
Total	\$ 181,582

FEB 8 1944

a. The estimated costs of the proposed facilities are based upon preliminary analysis of the project and are subject to change.

b. There are inclosed three copies of preliminary Appendix "A" submitted by subject corporation which forms the basis of this processing letter. It is the understanding of this office that one copy will be forwarded to the Defense Plant Corporation for its information and guidance.

10. Plan of Financing: Funds are available under Planer 810. ✓

11. Location of Facilities: The additional building requested in this proposal is adjacent to subject corporation's plant at Jamaica, Long Island, New York.

12. Floor Space: The additional floor space contemplated in the new facilities will be approximately 30,500 square feet of productive area. 30,500 ✓  
 15,250 square feet of this area will be provided by the construction of a messanine. By rearrangement of the Building "B" an additional 50,000 square feet will be made available for production of subject parts.

13. Labor: To enable the proposed production, the following additional labor will be required:

Productive	675
Nonproductive	<u>405</u>
	1,080

080 ✓

a. Jamaica, New York is in Group IV classification of labor areas as defined by War Manpower Commission. Corporation states there is an available supply of labor and that approximately 40% of additional labor required will be female.

14. Housing: No additional housing will be necessary for the additional facilities requested.

15. Transportation: Transportation facilities are considered adequate for maximum capacity of the existing and proposed facilities.

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Com. Gen., AAF, Re. Div.  
 Subject: Ranger Aircraft Engine Division  
 21 January 1944

16. Additional Monthly Utility Requirements: The proposed monthly utility herein proposed are essential to carry out the Ranger Aircraft Engine Committee WR-8 Working Schedule.
18. Reimbursements: The corporation has certified that the cost of facilities covered by this proposal has been included in the prices of articles furnished the Government by the contractors to the Government.
19. Recommendations: It is recommended that approval be given to this proposal in the amount of \$131,582, for work done in accordance with in Plancer #10, and that this office be authorized to proceed with the negotiations with the subject corporation.

For the Commanding General:

*Alben R. Crawford*  
 ALBEN R. CRAWFORD  
 Brigadier General, USAF  
 Chief of Staff

1 Incl:  
 Pre. App. "A"  
 (in trip.)

Distribution:  
 Production Division  
 Budget Officer  
 Chief, Fac.Br., Proc.Div.  
 Inspection Division

- 4 -

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WAR PRODUCTION BOARD

WASHINGTON, D. C.

January 26, 1944

IN REPLY REFER TO:

C O N F I D E N T I A L

Colonel C. S. Irvine  
Office of Ass't Chief of Air Staff  
Material, Maintenance & Distribution  
Headquarters, Army Air Forces  
Room 4-C-885, Pentagon Building  
Washington, D. C.

Dear Colonel Irvine:

The Aircraft Production Board met today, attended by General Echols, General Knudsen, Admiral Pace, Mr. T. P. Wright and Mr. C. E. Wilson.

I asked that the Continental-Rolls Royce project be reaffirmed or cancelled, since Continental's efforts were being hampered by lack of full support from the Air Corps.

The attached memorandum summarizes the manner in which I presented this subject. It was the unanimous opinion of the Board that Continental must produce these engines and that there was no question but that full support must be given the Continental program by the Air Corps and the War Production Board.

General Echols will undertake to line up the Air Corps to get the necessary full support.

Very truly yours,

*M. B. Murphy*  
M. B. Murphy  
Deputy Vice Chairman  
for Production

Attachment



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Carbon U-1658  
SA G-80 (2/2 pp)

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January 25, 1944

MEMORANDUM

TO: Mr. C. E. Wilson

FROM: W. B. Murphy

SUBJECT: Rolls Royce Engine Production

Last Friday at Wright Field Major General Branchaw stated that there was some doubt in his mind as to whether the Air Corps should go through with the contract with Continental for Rolls Royce engines. He stated that this was also the opinion of Brigadier General Orval R. Ceck. Also, during this meeting General Branchaw stated that there was a tentative requirement for approximately 1,000 more Rolls Royce engines than are now provided for by the schedules at Packard and Continental.

As you recall, last summer Colonel Irvine and the writer were requested by the Aircraft Production Board to locate a facility to handle an increased requirement for Rolls Royce engines. After careful consideration and review with the Aircraft Production Board, it was decided by all concerned to have Continental manufacture Rolls Royce engines.

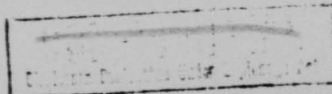
Since Continental received the contract there have been wide differences of opinion within the Air Corps as to Continental's ability to make Rolls Royce engines. This has tended to slow down Continental's progress by hampering the speed with which the Air Corps handles Continental matters, etc.

Last November a delegation, consisting of Colonel G. S. Irvine, Army Air Forces, Washington; Colonel Harrod, Colonel Meriarty and Captain Oviatt of Wright Field; Major Houston, Army Air Forces Detroit office; Messrs. Knud Engelsted, G. M. Lange and W. B. Murphy of the War Production Board, met at Detroit to review Continental's progress and determine whether this progress was sufficiently promising to justify the Air Corps' continuance of the contract. The entire delegation left this meeting, in agreement that Continental was moving ahead as rapidly as possible and apparently in agreement that Continental would meet their schedule. No one in this meeting expressed any doubt as to Continental's ability to do the job.

Colonel Irvine and the writer have been asked to watch Continental's progress and lend assistance in bringing them into production as early as possible. These efforts are largely nullified through lack of support by the Air Corps, because of doubt by the Air Corps as to Continental's ability to produce.

At this time it is again important to ask that the Continental-Rolls Royce project be reaffirmed or cancelled, since Continental's efforts are being hampered by lack of support from the Air Corps.

WBM:jw



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 mrs

(28) Continental  
 Rolls Royce  
 January 27, 1944

MEMORANDUM:

TO: Mr. W. B. Murphy  
 FROM: George H. Lange  
 SUBJECT: Lycoming Division  
 Aviation Corporation

At a conference held in the Production Engineering Section at Wright Field, which representatives of Army Air Forces, Continental, Lycoming, and Jacobs attended, a decision was reached regarding the use of Lycoming's facilities on the Continental Program.

Air Service Command and the Production Engineering Section of Wright Field advised Lycoming of a reduction in the requirements of the R-680 engine and that total requirements for this engine unshipped as of January 1, 1944, were only 363 engines which constituted a cancellation of approximately 880 engines from present contracts. This engine cancellation will also permit a cancellation in spare requirements.

On the basis of this program, Mr. Bert Conway who represented Lycoming stated that they could not only complete all of the assembled engines that were required but could also complete the major portion of the lifetime spares for the engines now in service, and that in his opinion it would not be necessary to bring Jacobs into the picture to take care of R-680 spares. A final decision in this matter, however, is dependent upon information from Air Service Command, which will be given Lycoming on February 7th as to the exact amount of lifetime spares required on the basis of the revised engine program.

Colonel Irvine, who presided at the meeting, stated that Lycoming should plan on getting underway on Rolls Royce Engine parts by April 1st and that if delivery of R-680 engines or spare parts interfered with the Rolls Royce Program, this work was to be immediately transferred to Jacobs.

In a subsequent discussion between Continental and Lycoming, Continental requested that Lycoming give first consideration to 13 gears, several pump assemblies, the after cooler house, Kecker



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SAG-71-(47pp)

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Mr. W. B. Murphy

- 2 -

January 27, 1944

Arms, and other miscellaneous parts. They stated that the machinery for the manufacture of these parts were available for shipment to the Lycoming plant.

The writer went on record that it was our wish that Lycoming be given work which would utilize the equipment in the Lycoming plant which will be made available by cancellation of the B-680 engine.

It may be necessary to provide Lycoming some additional floor space if they are to undertake the major portion of the gear requirements for the Rolls Royce Engine as to manufacture gears, they will need considerable new equipment and will not have sufficient floor space unless their present equipment is stored. It would seem sensible rather than to store their present machine tools to give them what additional floor space they may need and also utilize these tools on the Rolls Royce Program.

GML:smm

CC: Colonel Irvine  
Colonel Meriarty  
Captain Oviatt  
Major Houston

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WAR DEPARTMENT

HEADQUARTERS OF THE ARMY AIR FORCES

Washington, D. C.

29 January 1944

TO: Colonel Imison, Branch, Materiel Division  
Special Advisory Group

WEEKLY AIRCRAFT PRODUCTION BOARD MEETING.  
SUBJECT: Excerpts from ~~WWD-Daily-Staff-Meetings~~

1. Quoted below for your information and such action as may be indicated, is an excerpt from the minutes of the ~~WWD-Staff-meeting~~ WEEKLY AIRCRAFT PRODUCTION BOARD MEETING.

ENGINES: CONTINENTAL (V-1650): General Knudsen reported that, as a result of his recent trip to the Continental plant, it was his impression that progress on the production of the V-1650 engines at this facility was unsatisfactory. General Knudsen stated that, in his opinion, there had been far too many changes made in the original agreement which established the subcontracting arrangement. At Mr. Wilson's request, Mr. Murphy, of the War Production Board, appeared before the Board to outline the progress on this project to date. Mr. Murphy advised the Board that all tools are on order and scheduled, with 79 machine tools received to date and large numbers scheduled for delivery in the very near future. With regard to the subcontracting arrangements, Mr. Murphy said that 60% of the 1942 parts comprising the engines are already subcontracted, with plans to increase this to 75% under negotiation. Mr. Murphy pointed out that the slow handling of the test facilities at Ranger, necessary for its share of the sub-contract, and the lack of decision as to the extent which Lycoming will assist in this program, has caused some delay in the program. Mr. Murphy expressed the opinion that, to some extent, much of the delay mentioned above has been due to the attitude of the officials at Wright Field. These officials, Mr. Murphy stated still question the propriety of proceeding further with the V-1650 program at the Continental facility. General Echols reiterated the position of the Army Air Forces, with regard to the need for this production, pointing out that the combined peak production of Continental and Packard is in consonance with the requirements of the P-51 program, plus the expert commitment to England.

~~WWD-Staff-meeting~~  
~~WWD-Staff-meeting~~  
~~WWD-Staff-meeting~~  
~~WWD-Staff-meeting~~

The Board was unanimous in the opinion that action immediately be taken to insure the vigorous prosecution of this project. General Echols will take this matter up immediately with the appropriate officials at Wright Field.

EOM.

*WJ*

T. C. BALDWIN, Lt. Colonel, AC

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3 February 1944

*OPC Approval*

**MEMORANDUM FOR:** The Major Secretary of War  
 Machine Shop, Legal Division  
 Room 2000, Postage

**SUBJECT:** Proposed Lease Agreement, 1944, for  
 Major General Eugene M. ...  
 ...  
 ...

1. Reference is made to memorandum, dated November 14, 1943 for the Major Secretary of War, concerning the proposed agreement for the acquisition of facilities under the Air Forces Operating Program. In compliance with paragraph 4b thereof, it is recommended that negotiations be initiated leading to the completion of an agreement between the Defense Plant Corporation and the proposed company.

2. Data relative to this proposed acquisition are contained in memorandum from the Army Air Forces, Material Command, Wright Field. The attached card is found to be responsible and not pertinent.

3. As to the urgency of this project, it is requested that the Major Secretary of War obtain an authorization for the Major General Eugene M. ... from the Defense Plant Corporation, which will enable Major General Eugene M. ... to acquire the ... alterations to the building to not ... in the ... This building is ... as soon as possible as approximately seven ... of ... and ... are being held in ... pending ... in the above building. The Facilities Division, War Production Board approved this project 2 February 1944.

For the Commanding General, Army Air Forces:

*Ry ...*

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O-11110  
M.M.D. 7-11-6/77WAR DEPARTMENT - ARMY AIR FORCES  
Office, asst. C of Air Staff, Material, Maintenance, and Distribution

## Inter-Desk Memorandum

TO: Maj. Gen. G. P. Nichols

Date 4 February 1944

SUBJECT: Castings for Rolls Royce Production.

1. Mr. John Reid has prepared a study on the casting problems pertaining to Y-1800 Rolls Royce production. Attached hereto is a telephone draft of his study.

2. Mr. Reid confirms the position Mr. Murphy and I have taken that the casting situation for Merlin engines is not being satisfactorily handled.

## Attach.

cc: Gen. Hopkins  
Gen. Chidlaw  
Gen. Cook  
Mr. T. P. Wright  
Mr. W. B. Murphy

From   
C. S. IRVINE, Col., A. C.

THIS FORM WILL NOT BE USED OUTSIDE THE AG, AS, M. M. &amp; D.

M.M.D.-111

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DEPARTMENT - ARMY AIR FORCES

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Office, Asst. Chief of Air Staff, Materiel, Maintenance and Distribution

Inter-Desk Memorandum

To: Maj. Gen. O.P. EcholsDate 5 February 1944SUBJECT: Status of Continental Rolls Royce Program.1. SUBCONTRACTING

As of 1 February, 1944, final commitments, either to sub-contractors or on Continental shop orders, had been made for 1162 of 1922 finished parts or about 60%.

Of the parts not committed at that time approximately 216 units are included in the boost mechanism on which negotiations were practically complete. The complete release of the Lycoming plant has already enabled the coverage of some 18 critical gear items and present plans involving the complete leading of the Lycoming plant include the placement of various pumps, the blade connecting rod and a number of other items. The cylinder liners will be divided between the present producer for Packard, Kelsey-Hayes, and Triplex in Chicago. Negotiations now being carried on with Pontiac and Oldsmobile in addition to other operations should complete this job on schedule by 15 February.

2. Miscellaneous Production Items.

The placement of orders for patterns, castings, dies, forgings, bar stock, etc., is approximately 85% complete and well on schedule.

3. Machine Tools.

1934 machines are on order which include 1033 for the pilot line for prime and sub-contractors. For the pilot line approximately 100 are on hand with 181 promised for delivery as of this date. Machine tool shortages affecting the pilot line and the initiation of machining on April 7 number approximately 100 and these are being actively followed by Wright Field and the War Production Board.

4. Durable Tools and Fixtures.

The ordering of this material for use by Continental is on schedule. Orders for sub-contractors have been delayed as the result of final determination not being made on major sub-contractors such as Lycoming. Continental is now going ahead to clean up by their own action durable tools for sub-contractors. This phase must be closely followed.

5. Financial Problems.

The funds in the sum of approximately \$69,000,000. on the letter contract were over-committed as of 31 January. Authority for an additional \$20,000,000. letter of intent was requested as of 31 January but has not been received by the company as of 5 February. Delay is being encountered in the placement of orders for durable tools, sub-contracted parts, etc. Continental desires to give Lycoming a letter of intent for approximately \$6,000,000. but funds are not available. Further delay on

From \_\_\_\_\_

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DEPARTMENT - ARMY AIR FORCES

Copy

of 6

Office, Asst. Chief of Air Staff, Materiel, Maintenance, and Distribution

Inter-Desk Memorandum

PAGE TWO

Date \_\_\_\_\_

TO: \_\_\_\_\_

SUBJECT: \_\_\_\_\_

this letter of intent cannot be countenanced.

6. Floor Space.

With the exception of the space originally planned in the Hupp Building Continental's requirements at Muskegon and major sub-contractors such as Lycoming and Ranger are either established or in a satisfactory state of progress. A most unusual and unnecessary amount of follow-up from MM&D has been necessary; however, to get these projects out of the districts and through Wright Field.

Continental was promised facilities in Detroit of at least 200,000 sq. ft. for the manufacture of crankshaft, camshaft and forked connecting rod. This floor space which was initially established in Continental's own plant on East Jefferson was rendered unavailable as a result of the Ordnance requirement for the reconditioning of 300 engines per month. Arrangements were made by the Air Force for the use of 250,000 sq. ft. in the Hupp Building; however, this space was actually leased by the Briggs Company of Detroit for airframe fabrication. Every effort was made by Wright Field, the District, and by Mr. W. B. Murphy and the Undersigned to find alternative locations for either Continental or Briggs. The final solution of this problem has been the sub-lease from Briggs to Continental of approximately 125,000 sq. ft. in the Hupp Building. This area will be used by Continental for the pilot line and 50% of their ultimate production of the crankshaft, camshaft and connecting rod. The balance of the production requirements of these items will be placed by Continental according to present plans with either Oldsmobile or Pontiac.

C. S. IRVINE,  
Colonel, Air Corps

cc: Gen. Meyers  
Gen. Hopkins  
Gen. Chidlaw  
Gen. Cook  
Mr. Murphy

Incl. - 1tr fr Continental Avn. &amp; Engr. Corp.

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C/S Irvine 2/8

From \_\_\_\_\_

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HEADQUARTERS ARMY AIR

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ROUTING SLIP

TO: \_\_\_\_\_ DATE \_\_\_\_\_

OFFICE OR STAGE <i>Col C S Irvine</i>	BUILDING
ATTENTION	ROOM <i>4C858</i>

FOR:

<input type="checkbox"/>	COORDINATION	<input type="checkbox"/>	INVESTIGATION	<input type="checkbox"/>	REC. ACTION
<input checked="" type="checkbox"/>	INFORMATION	<input type="checkbox"/>	RECOMMENDATION	<input type="checkbox"/>	SIGNATURE
<input type="checkbox"/>	FILE	<input type="checkbox"/>	CONFERENCE	<input type="checkbox"/>	

REMARKS:

*Wire was sent to Lye today  
 cancelling engine. Spare  
 parts had previously been  
 taken care of.*

*23.*

*2-26*

FROM:

NAME <i>Maj Squires</i>	OFFICE OR STAGE
PHONE	ROOM <i>5D920</i>

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72

- 1 ~~Col BARBER~~ <sup>A</sup>
- 2 ~~Col BRENTNALL~~ <sup>B</sup>
- (25) 3 ~~Gen Meyers~~

February 7, 1944

8080 - Railroad  
Retirement Bldg.

*[Handwritten signature]*

MEMORANDUM:

TO: Mr. E. B. Murphy  
Deputy Vice Chairman for Production

FROM: George M. Lange

SUBJECT: Lycoming Division  
The Aviation Corporation

On checking with Mr. Conway by phone today, he advised me that while they were getting underway on the Rolls Royce Program that there were several very definite things delaying their progress as follows:

*Can now  
be cancelled  
no req. for  
frames of  
OT type.  
P.G.B*

(1) They have not received notice from Wright Field of a cancellation on their R-680 Engine Program or notice of the revised schedule permitting them to discontinue production of this engine in April.

*Who do  
I have to  
microform  
to get  
done:  
185*

If this cancellation is not received within a very short time, there will be a substantial increase in cancellation cost as they are continuing to receive material and other vendor supplied parts which they hesitate to cancel until they in turn have received the cancellation notice.

(2) Lycoming have hired an engineering company in Detroit to check machining operations at Packard, but this engineering company advise that they are delayed in this work because they are unable to secure the tool drawings and process sheets which were said to be available.

*Usual  
Packard  
cc-operation*

Mr. Conway took this matter up again with Mr. Hill on Saturday afternoon and Mr. Hill has promised to correct this difficulty; however, Continental are dependent upon Packard Motor Car Company for these drawings and process sheets.

TML:man  
cc: Colonel C. S. Irvine

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(20)

February 15, 1944

2080 - Ballston  
Retirement Bldg.MEMORANDUM

To: Mr. W. B. Murphy  
 Deputy Vice Chairman for Production

From: George H. Lange

Subject: Ranger Aircraft Engine Division  
 Fairchild Engine & Airplane Corporation

Date of Call: February 15, 1944

Interviewed: E. A. Stephens  
 Paul B. Gattilone  
 Burley E. Miller

This call was made in company with Captain S. A. DeFalt, Army Air Force, Dayton, Ohio, and Captain Becker, Army Air Force, New York District, for the purpose of determining the status of progress on the Continental Rolls Royce Program which Ranger have undertaken.

It was apparent from the discussions with representatives of Ranger that subject company was not planning to utilize much of their present facilities for the Rolls Royce Program and upon inquiring as to their reasons for this, we were advised that it was their feeling that there would not be a substantial outback on the several model engines which they were building and that it would be desirable for them to keep their present engine manufacturing facilities available for Ranger engines.

Orders for engines and spare parts on shipment as of January 21, 1944, are approximately as outlined below.

	Dollar Value
4,000 engines	50,000,000
spare engine parts	25,000,000
Total	75,000,000

January shipments were as follows:

700 engine units	5,700,000
spare engine parts	1,300,000
Total	7,000,000

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- 3 -

February 18, 1946

Mr. H. B. Murphy

Dugger have taken on the manufacture of the two-stage supercharger, final reduction assembly, and wheel case assembly. In these three assemblies, there are a total of 450 parts and Dugger propose to machine 25 of these parts in their own plant, the balance of the parts would be subcontracted to various sources:

Gears are one of the big problems at Dugger and they originally were planning on securing these gears from Stewart-Warner at Indianapolis; however, they have now decided that Stewart-Warner is not a satisfactory source and are attempting to develop other sources for the Packard requirements, such as the following:

1. Pittsburgh Machine Works (8 gears)
2. Aircraft and Diesel Equipment Company (8 gears)
3. American Type Foundries (4 gears)
4. Indiana Gear Works
5. Dugger Jamaica Plant (10 gears)

In the way of floor space, tabulated below is a breakdown of present floor space and floor space assigned to the Rolls Royce Program.

1. Farmingdale Plant

Total plant area	400,000 sq. ft.
Total manufacturing space	180,000 sq. ft.
Manufacturing space assigned to Rolls Royce Program	25,000 sq. ft.
Assembly space assigned to Rolls Royce Program	9,000 sq. ft.

2. Jamaica Plant

Total floor space	342,000 sq. ft.
Total manufacturing space	285,700 sq. ft.
Manufacturing space assigned to Rolls Royce Program	70,000 sq. ft.

At the present time Dugger have 24 test cells for the 6-cylinder engine and 8 test cells for the 12-cylinder engine and on the basis of present test procedure, the complete cycle for engine test, including mounting and dismounting, amounts to 9 1/2 hours. If we assume that the 9 1/2 hour figure is conservative and allow 12 hours for a test, Dugger have facilities for testing about 1400 engines per month. According to Army Air Forces, the Dugger schedule after April 1 will be 200 12-cylinder engines and 120 6-cylinder engines.

Dugger are now requesting S.P.O. facilities in the amount of \$35,000 to construct 10 test cells for testing the Rolls Royce wheel case

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Mr. E. E. Murphy

- 3 -

February 15, 1944

and supercharger assemblies. However, it is entirely possible that with the present program for Hanger engines, their present test cells can be converted over and the burden of this new construction eliminated.

The immediate problem of Hanger is to get some assistance as gear. Hanger planned to make 12 gears in their own plants; however, they are not producing any gears at all at the present time so that as far as gears are concerned, they should be considered a new source. As far as the balance of gears they have under consideration, the only one that has had any great amount of experience is Indiana Gear Works.

It is the writer's feeling that the first step that should be taken is to investigate facilities of Stewart-Warner and see why these facilities are not available. It may be that Hanger is holding this gear facility for their own engine program; however, the general report is that Stewart-Warner have a management and supervisory problem at this plant.

In any event, there should be some excellent machinery at this plant available for this program or for transfer as in 1941 they were given \$2,251,000 with which to provide facilities to take care of Hanger engine requirements.

EEL:gan

cc: Captain E. A. Oviatt  
Colonel C. B. Irvine

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AIRCRAFT PRODUCTION BOARD  
RESOURCES CONTROL OFFICE

PENTAGON BUILDING  
WASHINGTON, D.C.

IN REPLY REFER TO:

February 18, 1944

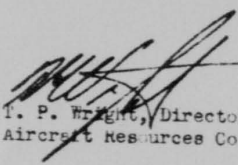
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MEMORANDUM FOR: Colonel C. S. Irvine  
Room 4C 885 Pentagon

SUBJECT: Castings - Packard "Merlin" in Particular

On February 9th I sent to Mr. Stanton Ballard a copy of your letter of February 4th which you had directed to General Echols together with its enclosure which was Mr. Reid's report of the casting situation in general. Reply has just been received from Mr. Ballard and copy is attached herewith for your information and file.

It appears that the meeting with Mr. Reid, which had been planned, did not come to pass and I suggest, as intimated in Mr. Ballard's letter, that it would be well to arrange for this discussion so that all those who are working on this important phase of the "Merlin" production can get together on procedures and actions necessary to effect the nearest approach to casting requirements in order to meet schedules.

  
F. P. Wright, Director  
Aircraft Resources Control Office

Attachment

cc - Mr. John Reid

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U  
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YU  
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YWAR PRODUCTION BOARD  
Washington, D. C.  
February 14, 1944Room 2218  
Tempo "R"Mr. T. P. Wright  
Aircraft Resources Control Office  
Room 50 915  
Pentagon Building  
Washington, D. C.

Dear Mr. Wright:

Thanks very much for your letter dated February 9th. We have been trying to locate Mr. Reid through Col. Irvine's office and through the manufacturers in Detroit, but as yet we have had no success so that we do not know when he plans to be in Washington. As soon as we can make arrangements we are very anxious to sit down with Mr. Reid and Mr. Wilson, Director of this Division, so as to go over Mr. Reid's opinion and plans in detail.

We recognize the value of Mr. Reid's suggestions in view of the fact that he was established so intimately with the problem of obtaining castings in England.

We cannot deny that current deliveries of castings on this program are seriously short in certain places. The immediate shortage is due to two main factors. (1) The delivery and installation of general foundry equipment to those sources which are either expanding their production or are new to the program and (2) the delivery of pattern equipment to all sources. The degree of shortage will depend on the point to which Packard and Continental meet their respective engine schedules, now set forth.

However, we feel that ample facilities have been established to take care of requirements not only at peak but also through the last two quarters of this year. It seems to me that perhaps the best way to show this is by the examination of the enclosed chart. The only thing which this does not indicate is the extra standby capacity which has been made available both at Acme and Packard. This capacity has purposely not been earmarked for any specific casting but rather held for any piece on which a critical shortage may develop.

As you know, we are receiving bi-monthly reports on the production, shipments and foundry returns by part number from each foundry. Inasmuch as these reports were instituted on the 1st of January 1944, our experience

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is not broad enough as yet to indicate a trend, and the figures given below may therefore be misleading. It should be explained at this time that when the requirements were set up by the Prime Contractors the following average allowances were made:

(1) Rejects within the foundry	20%
(2) Foundry returns from Prime Contractors	20%
(3) Machine Scrap	5%
Total	45%

For example, if 100 sets of castings are required for engines and spares, 105 sets must be machined if average machine scrap is 5%. Knowing that 20% of castings received are rejected for foundry defects, an additional 21 pieces must be scrapped. Knowing further that the foundry must pour 20% more castings than they will be able to ship, the foundries have been engineered to pour 151 castings.

Although the scrap factors were applied in different quantities for each individual part, based on Packard's machining experience and Acme Pattern and Tool's foundry experience, the figures given above have been condensed to an over-all piece basis.

The following table is a summary of the January experience of all the foundries based on piece production, based on pounds the ratios are identical compared with program allowances:

	Allowed by Program	Jan. Report
(1) Scrapped in foundry	20%	15.7%
(2) Foundry returns from Prime Contractors	20%	4.4%
(3) Machine scrap	5%	7.5%

Although this table indicates that the foundries have exceeded expectations as far as scrap production is concerned, it is impossible to deny the fact that they have not met their schedules. There are various reasons for this. Due to the fact that Packard is making more than one engine model, schedules set up have in some cases been interrupted at Packard's request in order that other parts more critically needed could be run. This of course involves "down time" on the machines, pattern shifts, and short runs. Several patterns are being altered to meet engine changes; others have needed major repairs in the middle of the run. Some pattern equipment or parts thereof have not been delivered; some samples made from new patterns are awaiting approval. There have been cases too, where schedules have been retarded because of non-delivery of foundry equipment for one or more reasons. In one case thirty hours were lost due to a strike. There is no doubt also that some of the foundries made optimistic estimations of their ability to produce and this is to be regretted, although the affect of this optimism are off-set in part by the smaller-than-expected rate of rejections.

So much for the January production. Mr. Reid's suggestions strike at many weak points in the entire system. The first suggestion, that the seriousness of the situation be recognized and that the production be put on the "highest priorities" is being carried out in the case of Metal Parts Corporation which is making the after-cooler housings. Air-cooled cylinder head orders received by this company for production in March are being cancelled, thereby allowing greater attention to the Hollis Royce Program. Similarly, we are

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attempting to persuade Acme Pattern and Tool not to overload their foundry at the present time.

The suggestion that all existing equipment orders, both foundry and pattern, be completed at the earliest possible time is certainly indicated. We are expediting all deliveries of the foundry equipment where orders have been placed. Pattern orders are being followed by the Prime Contractors and Aircraft Scheduling Unit.

The appointment of a full-time material control man, independent of either prime contractor and fully cognizant of the American foundry techniques involved would also be helpful.

Based on our experience with selective service, it seems quite unlikely that the foundries will be able to keep their "suitcase labor" or be able to get back people that have already been drafted.

Although it seems to be impractical at the present moment to centralize all salvage operations, it is definitely indicated that a single standard of inspection be instituted for all prime and sub-contractors. Finally, I would like to point out that the question of postponing the Bohn trial was discussed last summer by Mr. Bohn and Mr. Sunker at a meeting of the Aircraft Production Board.

We are extremely anxious to see that this program proceed with the greatest possible despatch and wish to discuss it in detail with you or Mr. Reid or anyone qualified to judge the difficulties in such a foundry program.

Very truly yours,

s/ Stanton W. Ballard

Stanton W. Ballard  
Casting Section  
Aluminum & Magnesium Division

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mrs

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28 February 1944

MEMORANDUM FOR - Mr. T. P. Wright, Director  
Aircraft Resources Control Office

SUBJECT - Castings for Rolls Royce Merlin.

1. With reference to your memorandum on above subject under date of February 18, arrangements are being made for a conference here in Washington next week.
2. Preliminary discussions have been held with Mr. Gregory of the Caterpillar Company with a view toward having him act as the WPA project officer to synchronize the activities of Mr. John Reid, representative of the Production and Inspection Division of the Material Command, Packard, Continental and their sub-contractors. Mr. Gregory requested that he be given a few days to straighten out his affairs with his company; therefore, initiation of effective action on this problem, as far as the casting committee is concerned, has been deferred until next week.
3. In the meantime the problem is being actively followed by both Mr. Knud Engelsted and Mr. John Reid at the request of both the undersigned and Mr. Murphy.
4. Incidentally, the utmost difficulty has been encountered by Continental in getting jig and fixture drawings for their own use from Packard. When I followed this problem up Monday, Kyeonung and Ronger had been unable to get any such drawings at all. Packard's reason for this apparent non-cooperative attitude was that they could not afford to make in less than three months in their own shop the thousands of drawing duplications necessary. As a result of conferences between Mr. Reese and Mr. Murphy, Mr. Wild and the undersigned, conferences have been held between Mr. Reese and Mr. Christopher, and Mr. Kinnison of Continental was requested to make arrangements with Packard for the loan of the necessary jig and fixture drawings that had not been so far received so that they could be duplicated by commercial concerns in Detroit.
5. The Ronger organization is still fanning the air somewhat, primarily due to violent fluctuations in schedules that they have been given, coupled with their desire to continue to build both six- and 12-cylinder engines in high production. It is my plan to take the results of such work

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C

Mr. W. P. Wright

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26 February 1944.

now under way and then mail down in writing, through the Aircraft Production Board and the Joint Aircraft Committee, a program schedule that will reduce their manufacturing to a minimum consistent with a reasonably orderly flow of production, bearing in mind that we must hold the organization together labor-wise so it will be available to do its part of the Merlin Program. It is imperative that the above be done so that we may be in a position to force Messer to re-arrange machinery and work floor space, equipment, and personnel available for Merlin sub-assembly production.

O. S. IRVING,  
Colonel, Air Corps,  
Special Advisory Group,  
Office, AG/AS, W. H. & D.

cc: 1. Gen. Meyers  
2. Gen. Nichols  
Gen. Hoyt  
Gen. Chidlaw

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Tripp J. E

MINUTES OF A MEETING HELD BY ARMY AIR FORCES REPRESENTATIVES WITH REPRESENTATIVES  
OF THE ALUMINUM-MAGNESIUM DIVISION, WAR PRODUCTION BOARD, FEBRUARY 25, 1944 ON THE  
V-1650 ROLLS-ROYCE MERLIN ENGINE ALUMINUM CASTING SITUATION

As a result of investigations by the Army Air Forces of the serious situation prevailing in the production of aluminum castings for the V-1650 Rolls-Royce Merlin Engine Program, it was decided to establish a committee to coordinate the production in the foundries and work toward the centralization of inspection and salvaging operations for the reclaiming of castings, many of which are now being rejected due to inconsistencies in inspection policies and a lack of proper salvaging technique. It is planned that this committee will consist of Mr. W. B. Murphy, Deputy Vice Chairman of Production, W.P.B.; Mr. M. J. Gregory, Foundry Consultant, W.P.B., and coordinator of the program; a representative of the Aircraft Scheduling Unit who will follow all matters concerning allocation of materials and statistical records in connection with production; an Army Air Forces Inspector who is thoroughly conversant with foundry practices and hospitalization of aluminum castings through welding processes; representatives of the Aluminum-Magnesium Division, W.P.B.; and Mr. John E. Reid, Special Consultant to the Army Air Forces on the V-1650 Rolls-Royce Merlin engine production. This plan has been approved by appropriate authorities in the Army Air Forces and the War Production Board and this meeting was called to present the plan to the Aluminum-Magnesium Division, W.P.B., and obtain their reaction to the plan and cooperation in its accomplishment.

Present at the meeting were Mr. Phillip D. Wilson, Chief, Aluminum-Magnesium Division, W.P.B., Mr. Frederick Ayer and Mr. Stanton W. Ballard of the same division; Mr. John E. Reid, Colonel C. S. Irvine and Major R. M. Wood, Army Air Forces.

Mr. M. J. Gregory, connected with the Caterpillar Tractor Co., an experienced foundry production executive, has been obtained to coordinate the production activities in the foundries and to work with this committee. It is planned to have him report on or about February 28 at which time he will be made conversant with the general production situation on aluminum castings for the V-1650 Rolls-Royce Merlin Engine Program and further detailed steps will be taken toward the appointment of the committee referred to above.

At the meeting this plan was outlined to Mr. Phil Wilson, Chief of the Aluminum-Magnesium Division, W.P.B., and his staff and their cooperation solicited and obtained in furthering the program. In addition to the above matters, the difficulties being faced in the production of adequate castings for this program was taken up and the plans of the Army Air Forces for correcting the current situation as well as increasing the production of castings for the program, outlined.

The production situation prevailing at Packard Motor Car Co. and the Continental Aviation & Engineering Corp. and its relation to the casting situation was discussed in detail. It appeared that the Packard Motor Car Co. is not taking aggressive action in placing the necessary orders with the foundries to enable them to operate efficiently and step up their production. It was thought that

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some of this difficulty stemmed from the fact that Packard was somewhat awed by the size of the project and was not absolutely certain that the production schedules submitted to them by the Army Air Forces were firm. The overall casting picture as it effects Packard from superficial observation would appear good, but when carefully analyzed does not appear so satisfactory, particularly in the matter of the production of critical castings and parts. It was felt that in scheduling castings and in procuring the necessary patterns for their production that Packard was following too cautious a policy.

It was the consensus of opinion of those present that current inspection standards for castings were inconsistent and in many cases castings were being rejected by the inspectors that could be readily reclaimed and that this condition was aggravated in no small degree by the psychological affect of the Bohn Aluminum & Brass Corp. and the National Bronze & Aluminum Corp. prosecutions.

Representatives of the Aluminum-Magnesium Division were advised of Mr. John E. Reid's and Mr. M. J. Gregory's connections with the program and their cooperation with them requested. It was pointed out that these gentlemen not having any direct connection with the aluminum casting industry at present, were in a position to more easily win the confidence of the industry and approach its problems with an entirely unbiased point of view.

The matter of encouraging the engine builders to procure a reserve bank of castings, particularly in the case of critical castings, to meet unforeseen contingencies, thereby avoiding stoppages in production, was discussed at length. The Aluminum-Magnesium Division representatives pointed out the stock objections made by engine builders to storing castings in excess of their immediate production requirements, namely, engineering changes, deterioration and breakage of castings in storage, as well as difficulties in obtaining adequate and convenient storage space. Colonel C. S. Irvine advised that the same objections were raised by Allison Division and General Motors Corp. in their programs but that they had finally seen the error of their position and had adopted a limited policy of stockpiling castings. Mr. John E. Reid advised that in England no objection was felt by engine builders in accumulating banks of castings to meet unforeseen production contingencies and that they attempted to carry a float of from two to three months' supply.

The matter of centrally scheduling castings was discussed and the Aluminum-Magnesium Division representatives stated that the Packard Motor Car Co.'s present policy of continually changing castings schedules would complicate any central scheduling policy and make it difficult to accomplish. Army Air Forces representatives stated that this practice of the Packard Motor Car Co. would have to be discouraged and steps looking toward central scheduling, taken.

It appears that surplus casting capacity now available at Packard can be utilized to take care of critical casting supply situations that may develop in the program.

Mr. Ayer thought that in general the engine builders and foundries should take care of their own difficulties so long as they were able to meet their production schedules and that no interference with their operations should be indulged in until such a failure had resulted, at which time he thought the Army Air Forces and the War Production Board should move into the situation.

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Mr. Ballard of the Aluminum-Magnesium Division advised that some difficulty in obtaining patterns had resulted from the fact that the Packard Motor Car Co. and the Continental Aviation & Engineering Corp. had been unwilling to go out of the Detroit area to have engine patterns produced. It appears that they feel that only facilities in this area can make satisfactory patterns. This policy was considered unsound by both the War Production Board and Army Air Forces representatives and action is planned to obtain a wider distribution of pattern production if delays were encountered in obtaining the equipment from sources presently being used by the engine builders.

Mr. Stanton Ballard advised that the working hours for pattern makers in the Detroit area in the past had been limited by the union to 40 hours per week but that a recent decision had been obtained which would permit them to work 50 hours per week and that this would materially relieve the present difficulties faced in obtaining adequate patterns for the program.

The following agreements as to future action were reached at the meetings:

1. That Mr. M. J. Gregory would be given wholehearted cooperation by the Aluminum-Magnesium Division of W.P.B. in his capacity as coordinator of aluminum casting production for the program.
2. That a meeting should be held upon Mr. M. J. Gregory's arrival on or about February 28, 1944 with the Aluminum-Magnesium Division, W.P.B., and Army Air Forces representatives at which time he would be made thoroughly conversant with the program and its problems.
3. After such meeting immediate steps would be taken to establish the committee for the coordination of the aluminum castings program and the necessary members appointed.
4. That Mr. W. B. Murphy would work on the labor supply situation and that steps would be taken, where possible, to have essential foundry help that had been drafted by the Armed Services placed on inactive status and returned to the foundries.

R. M. Wood

R. M. WOOD  
Major, AC  
Resources Division  
AC/AS, W.P.B.



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March 4, 1966

3090 - Railroad  
Retirement Bldg.MEMORANDUM:

To: Mr. W. B. Murphy  
Deputy Vice Chairman for Production

From: George M. Lange

Subjects: Ranger Aircraft Engine Division  
Fairchild Engine and Airplane Corporation  
Farthingsdale, Long Island, New York

Date of Call: March 1, 1966

The writer interviewed the following Ranger representatives at Continental Aviation and Engineering Corporation's Office, 21 Henry Street, Detroit, Michigan, in connection with the progress which Ranger are making on their portion of the Rolls Royce Engine Program:

John W. LaDue, Production Manager  
 E. L. Munnally, Production Engineer  
 E. E. Smith, Follow-up Department

Up until a short time ago, Mr. Munnally has been about the only permanent Ranger representative at Continental, balance of their engineers and production men being at Continental for only short periods.

As pointed out in my memorandum of February 10th, covering a call at Farthingsdale, up until recently Ranger have considered the Continental Rolls Royce Program as an additional program over and above their own engine production and were planning to provide a somewhat new organization to handle this program. Within the past 48 hours, Ranger have apparently realized that their own program is going to be substantially reduced and that their "bread and butter" in the future is going to be dependent upon the Rolls Royce Program rather than on Ranger's engine production and consequently, have started to give the Rolls Royce Program some attention.

Until recently they were counting upon the Allen Engineering Company of Detroit to check the process sheets for the three sub-assemblies which they are going to build, obtain from

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Mr. F. B. Murphy

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March 4, 1944

Continental all tool drawings, send out inquiries for the necessary jigs and fixtures, and also to place orders for these jigs and fixtures and to requisition from Continental the balance of machine tools which Continental have not already ordered.

As a result of the reduction in their own program, they are now going to take on the major portion of this work themselves and for the next several months, at least, Mr. LeDuc, who has recently been hired by Ranger to handle this program, will spend his time in Detroit and will set up an organization at 21 Henry Street to handle the procurement of the jigs and fixtures, the placing of orders, expediting of both jigs and fixtures and machine tools and also an inspection office to inspect jigs and fixtures before they are shipped to Farmingdale.

All that Allen Engineering Company will be asked to do in the future is to check the process sheets against operations as now being performed at Packard and also to check tool drawings against jigs and fixtures now in use at Packard.

In addition to the above people now in Detroit, Mr. LeDuc made arrangements with Farmingdale for their Mr. F. B. Hubbard, Director of Purchases, and John Scheuer to be in Detroit on March 2 to set up a Purchasing Office for jigs and fixtures. It is possible that within the next week or 10 days Ranger will have a force of between 10 and 20 people at 21 Henry Street for the next several months, at least.

In company with Major Paul Huston, Army Air Forces Central Procurement District, Mr. Funnally, and Mr. LeDuc a call was made on the Allen Engineering Company to check the progress being made by Allen on checking process sheets and tool drawings.

There are 450 different parts in the three assemblies which Ranger will manufacture. Up to recently Ranger were planning to make 50 of these parts in their own plant which are the major parts for which 1127 jigs and fixtures are required. Out of the 450 different parts in the three assemblies, there are 155 "special made" parts. The balance of the parts can be purchased from aircraft parts manufacturers, in many cases from sources now producing these parts for Packard.

There are a total of 601 machine tools required for the 155 parts which Ranger will make or subcontract to American Type Foundries and of these 601 machine tools, 369 have been requisitioned from Continental or the manufacturer who Continental placed orders with for some of the special machine tools some time ago.

Of the 1127 jigs and fixtures, Continental ordered about 400 along with the machine tools, inquiries have been sent out

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Mr. W. B. Murphy

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March 4, 1944

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by Allen Engineering Company for 120 more and orders have been placed by Ranger for about 6 or 7 out of the 120.

Allen Engineering Company have received all process sheets on the 450 parts and have about 95% of these checked at the present time. On the 25 parts which Ranger will make, they have completed checking the process sheets on 45, two are in the process of being checked at Allie Chalmers and the remaining five are waiting on Continental to decide whether or not changes will be made in Packard's methods.

There are approximately 10,000 machine tool drawings on the 450 parts which Ranger will make and up to the present time, Allen Engineering have received 3200 prints or about 30% of the total. At a conference held later on in the day with Mr. Remmie of Continental, it was arranged to deliver the balance of the tool drawings to Allen Engineering at the rate of 400 per day which is as fast as Allen Engineering can check these prints.

Allen Engineering Company stated that if they received the prints as fast as they could process them, they would complete all checking of process sheets and tool drawings within 30 days. In addition to tool drawings, Allen Engineering Company also stated they need a Packard's "Standard Book" and Mr. Remmie of Continental told Mr. Humally of Ranger that this Book would be available for Allen within the next 48 hours.

Allen Engineering Company have performed their job in a fairly satisfactory manner, taking into consideration the delays which have occurred in getting prints into their hands, with the exception of getting an order with Continental or the machine tool manufacturer about 100 machine tools and Mr. LeDuc has promised to take this up with Allen Engineering Company immediately and see that these machine tools are either placed by Allen or Ranger who expect to take over this part of the job.

Mr. LeDuc was inclined to criticize Allen Engineering Company's performance on this job; however, I pointed out to Mr. LeDuc that after all this was a Ranger Program and that Ranger themselves, up to the present time, had not given this program their earnest effort or support and that they should not rely on a company like Allen to handle this program.

There is no question that with the cut-back in Ranger's schedule, Ranger have actually done more on this program in the last 48 hours than they have done in any previous month and this no doubt is due to the fact they finally realized that from now on their income is going to be dependent upon the Rolls Royce Program rather than on their own engine program.

CC: Colonel C. S. Irvine  
Colonel G. H. Moriarty  
Major Paul Huston  
Mr. Fred Engstrom

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WAR DEPARTMENT - ARMY AIR FORCES  
Office, Asst. Chief of Air Staff, Material, Maintenance, and Distribution

73  
Inter-Desk Memorandum

20 March 1944

TO: Colonel Irvine

Date

SUBJECT:

Bev Murphy called me last week with respect to the unrest at the Continental plant due to the fact that the employes appear to feel that the program with Continental on Rolls Royce engines is not firm. He may have taken it up with you. He felt that the Army Air Forces should write a letter to Continental for publication indicating the extreme interest we have in this production. Inasmuch as you are the Continental "guy" around here, will you get in touch with Bev Murphy and take the necessary action to see that this situation is corrected?

*Frederick M. Hopkins Jr*  
FREDERICK M. HOPKINS, JR.,  
Brigadier General, U. S. A.

From

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(25)

March 20, 1944

2007 - Railroad  
Retirement Bldg.MEMORANDUM:

To: Mr. G. B. Murphy  
Deputy Vice Chairman for Production

From: George M. Lange

Subject: Continental Aviation & Engineering Corporation  
Bells Royce Engine Program

When the above program was initiated at Continental, you requested that the writer locate for Continental suitable sub-contractors, utilizing as much as possible companies that were familiar with aircraft engine parts manufacture, such as the trainer engine producers. We are outlining below the progress which has been made along these lines up to the present time:

(1) Hangar Aircraft Engine Division, Fairchild Engine and Airplane Corporation.

This company was originally set up to produce 550 6-cylinder Hangar engines and 290 12-cylinder Ranger engines. To accomplish this production, they were given Government funds in the amount of about \$10,000,000 for plants at Farmingdale and Jamaica, Long Island.

In order to make room for the Bells Royce Program, Army Air Forces have cancelled out the 6-cylinder engine production and reduced the 12-cylinder engine requirements to 50 engines per month. This reduction in the Hangar engine schedule releases about 3,000 of their total factory payroll of 4,000 and the major portion of this facility for subcontract work for Continental.

(2) Lycorning Division, The Aviation Corporation.

Lycorning have been producing the R-660 and O-435 series engine. They were given Government facilities in the amount of about \$7,000,000 to produce R-660 engines. Army Air Forces have cancelled out the R-660 Program at Lycorning entirely in order to release capacity and facilities for work on the Continental Bells Royce Program.

It was estimated that Lycorning will have available about 250,000 square feet of floor space, a considerable amount of machine tool equipment, and about 2500 people.

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March 20, 1944

(3) Oldsmobile Division, General Motor Corporation, Lansing, Michigan.

Floor space and about 3,000 trained employees become available at Oldsmobile due to the reduction in several Ordnance programs which will be used on subcontract work for the Continental Rolls Royce Program.

(4) Continental Aviation & Engineering Corporation Plant, Garland, Texas.

It was originally planned to shift the R-1840 engine from Continental's Muskegon Plant to Garland, Texas; however, Army Air Forces reduced requirements on the R-985 engine at Jacobs Aircraft permitting the shift of the R-1840 from Muskegon to the Jacobs Plant at Pittsburg so that Continental's Garland, Texas, Plant which has about 250,000 square feet of floor space and where they are now employing 1100 people becomes available for the Rolls Royce Program.

In addition to making available existing facilities, in the case of Ranger and Lycoming, there has been a cancellation of engine contracts in the amount of about \$50,000,000. To some extent, this was possible because we had other work which we could put into these plants when these contracts were reduced.

It is my feeling that Ranger, Lycoming, and Oldsmobile, in particular, could handle more Rolls Royce work and that these companies should be considered as possible subcontractors to Packard Motor Car Company as well as Continental.

G.M. man

CC: Colonel S. H. Moriarty  
✓ Colonel C. S. Irvine  
Commander Garrison Norton  
Major Paul Huston

P.S.

(5) Stewart-Warner Corporation, Indianapolis, Indiana.

As a part of the Ranger facility released for this program, we should also include the Stewart-Warner Gear Plant at Indianapolis which was set up by the Bureau of Aeronautics to manufacture gears for the Ranger engine. D.P.C. funds in the amount of about \$3,000,000 was given Stewart-Warner and this complete facility and approximately 500 people become available due to the reduction in the Ranger Program.

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*Cont. Merlin file*

General B. E. Meyers

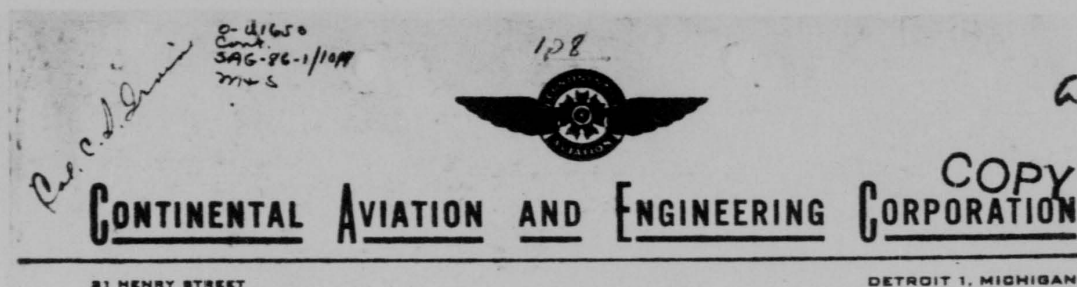
3 April 1944

Packard Merlin Engine Program

1. Continental are still hoping for July delivery of the first engine. Machine tool deliveries are progressing satisfactorily and of the 2447 tools on order 1279 have been shipped to date and all but 75 will have been shipped by the end of June. All tools for Continental's Pilot Line will be delivered by June.
2. Mr. Knud Englested has been appointed WPS consultant to follow up all bottle necks encountered. Chief difficulties recently experienced and overcome are:
  - a. Packard's inability to deliver prints as required. All but 5000 prints have been delivered and they are now being released satisfactorily. *As a result of so late a date for the prints, orders will only be placed when needed.*
  - b. Necessity for getting three prices for all subcontracted items. This has worked a hardship upon Continental, especially when they were negotiating for subcontracting of difficult pieces. However, it is no longer necessary for them to secure three bids before placing their subcontracting.
3. Recently the decision was made to move R-1340 engine production from Continental, Muskegon to Jacobs plant # 2 in Pottstown. The original plan had been to move R-1340 production from Continental, Muskegon to Continental's Texas plant as the Merlin engine program progressed. Continental are anxious to have assurance that Jacobs will be ready to take over production as soon as Continental desires to move production of the R-1340 engine from their Muskegon plant. This timing factor was a feature of the Materiel Command's proposal to have Jacobs take over R-1340 production and Jacobs will be ready when the time comes. Definite schedules for the move will be determined by Continental this week and given to Jacobs for their concurrence.
4. Lycoming and Ranger are the two chief subcontractors to Continental. Of the two, Ranger is the tougher job, but Lycoming has had a hard time getting going.
  - a. Lycoming have had trouble pricing the work and seem somewhat afraid of the close tolerances and complexity of the work. They are making 113 miscellaneous pieces of the Merlin engine and will have to be watched closely.
  - b. Ranger are making four difficult assemblies of the Merlin engine but recently have made excellent progress in their phase of the program. The assemblies to be made by Ranger are:
    1. Supercharger Assembly
    2. Wheel Case Assembly
    3. Propeller Shaft
    4. Reduction Gear Detail

B. E. Midlaw 193  
 Brig. Gen. U.S.A.

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June 8, 1944.

Mr. A. B. Murphy  
Deputy Vice Chairman for Production  
War Production Board  
2607 Railroad Retirement Building  
Washington D. C.

Dear Mr. Murphy:

- This refers to your letter dated March 30 addressed to Mr. C. J. Reese requesting information concerning the number of machine tools for the Merlin Engine Program put in place during the week at Continental Aviation, Oldsmobile, Ranger and Lycoming. Reports have previously been mailed to you on April 14 and May 3.
- The attached Exhibit A summarizes the situation to May 27 with respect to Continental, Oldsmobile, Ranger, and Lycoming, and the number of machines in location has increased from 326 on April 26 to 732 on May 27. The number of machines reported in operation has increased from 38 on April 26 to 135.
- The attached Exhibit B is a similar summary covering 66 additional important sub-contractors. In this exhibit it will be noted that many more machines are reported in place than will be supplied by Continental Aviation. The reason for this is that the sub-contractor is making use of his own equipment. In this group the number of machines reported in location has increased from 683 on April 26 to 1070 on May 27. The number of machines reported in operation has increased from 337 on April 26 to 676 on May 27.
- 671 Production engine parts are in the Muskegon Bond Room as of June 2. This is 33.5% of the total (2005). 202 of these are in sufficient quantities to build more than 5 engines.
- The following summary shows the overall picture with respect to shipments from the source of machine tools, durable tools, inspection tools, shop equipment, production gauges and cutting tools to June 5:

	<u>Ordered</u>	<u>Shipped</u>	<u>Percent</u>
Machines	2825	1767	62.5
Durable Tools	5476	2689	49.0
Inspection Tools-Capital Equipment	257	157	61.1
Shop Equipment	1140	340	29.8
Production Gauges	11784	5089	43.1
Cutting & Perishable Tools	4461	1048	23.3
	25943	11090	43.0

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CONTINENTAL AVIATION AND ENGINEERING CORPORATION

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Mr. W. B. Murphy  
War Production Board

6. The first Rolls-Royce test cell in the Muskegon Plant has been converted for prop testing and a school engine was installed and put into operation on May 21st.

The first pilot engine built in the Muskegon plant will be ready for operation on May 23rd.

7. The building expansion program has been delayed by a serious shortage of labor. Efforts to improve this condition have been only temporarily effective and the problem still remains. Receipts of structural steel from the Wisconsin Bridge & Iron Works are too slow and our efforts, aided by Mr. Engelsted's have not yet been effective.

As of May 27, the Manufacturing building expansion was 11.69% complete and the test cell addition 2.90% complete. It is expected that approximately 50,000 sq. ft. of the new manufacturing building will be useable by July 1. However, July engine production will be handled within the present buildings.

8. At this stage of the program the business of getting tools, jigs, and fixtures completed, and into sub-contractor's plants is of extreme urgency. Ranger and Olds have been following their own tools (and also productive materials and purchase finished parts) for some time direct with the tool builders. Lycoming has been slow to get into it. Wadell Engineering will follow their own tools starting today. Obviously all sub-contractors cannot be fully equipped with machines and tooling to start production, but practically all are doing their best with temporary set-ups and other expedients.

Yours very truly,

CONTINENTAL AVIATION &  
ENGINEERING CORPORATION

*ABW*

ALBERT B. WILLI  
Vice President &  
Works Manager

eb

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memo - 26610  
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 NOTE: Data is support by telegraphic  
 reports dated May 27

EXHIBIT A  
 #3 Issue

SUMMARY - STAT'S OF MACHINE TOOLS ALLOCATED TO CONTINENTAL AVIATION, WASKGAS, LYONING & OLDS  
 MOBILE VOICE V-1650 ENGINE PRODUCTION PROGRAM. CONTRACT #43-05-20-415 (1114.)

	Col. 1	Col. 2	Col. 3			Col. 4		
	No. of Machines to be supplied for C.A.A. Plants & Major Sub-Contractors May 27	Shipped by C.A.A. to Plants & Sub- Contractors to May 27	Machines in Location			Machines in Operation		
			Apr. 14	Apr. 26	May 27	Apr. 14	Apr. 26	May 27
<u>Sub-Contractor</u>								
CONTINENTAL AVIATION & ENGR. CORP. WASKGAS PLANT Upper & Lower crankcases, cylinder blocks, cylinder heads, cylinder head covers	202	156	19	29	62	1	6	18
CONTINENTAL AVIATION & ENGR. CORP. MILWAUKEE AVENUE, MILWAUKEE PLANT Crankshaft and second course on re- duction gears and propeller shaft	145	75	32	36	58	0	0	27
CONTINENTAL AVIATION & ENGR. CORP. TEXAS PLANT NOTE: R-1340 program revision came too late to establish this plant for initial production. Will use for second source on pistons, blade connecting rods, liners and crankshafts. (At expiration of present Milwaukee Avenue plant lease all crankshafts will be produced at this plant). incl. steel machined parts	390	390	34	104	257	0	6	28
OLDSMOBILE Crankshaft, connecting rod (work) cylinder liner 50%, crankshaft rocker arms (front & rear)								

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EXHIBIT A SA 6-26-46/10/48  
23 Issue

Sub-Contractor:	Col. 1	Col. 2	Col. 3			Col. 4		
	No. of Machines to be supplied for C. A. E. Plants & Major Sub-Contractors May 27	Shipped by C. A. E. to Plants & Sub-Contractors to May 27	Machines in Location Apr. 14 Apr. 26 May 27			Machines in Operation Apr. 14 Apr. 26 May 27		
(RANGER AIRCRAFT ENGINES ( Supercharger, wheelcase, reduction ( gears (1st source) propeller shaft	550	265	67	155	200	0	0	31
(AMERICAN TYPE FOUNDRIES—RANGER SOURCE	144	97	12	12	55	12	12	7
LYCOMING DIVISION Crankshaft rocker shafts, generator drive coupling, supercharger drain valve, reduction gear dual drive. 10 shafts, 3 gears shafts, 5 gears, crankshaft adaptor and flange, crank- case bearing liners	405	122	0	12	56	0	12	26
TOTALS — EXHIBIT A	1124	1055	152	326	732	25	38	135

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Sub-Contractor	Col. 1	Col. 2		Col. 3			Col. 4		
	No. of machines to be supplied by C.A.S.	No. of Single & C.A.S. to Nov. 26	No. of Single & C.A.S. to Nov. 27	Machines in location April 14 Apr. 26 May 27			Machines in location April 14 Apr. 26 May 27		
STRIBBS BROS. CO. OF AMERICA 20 Studs	5	5	5	5	5	5	0	0	7
VIA MACHINERY CO. 5 nuts, 2 wedges, 1 spacer, 2 plugs, 1 clevis	0	0	0	15	15	15	5	5	15
J. I. CADE CO. After Cooler Assembly	50	26	26	98	98	104	98	98	104
PARTON MACHINERY CO. Gen. Drive and Aftercooler Pump	17	9	10	14	16	16	0	0	0
SCOTT & FETLER 6 Oil Fittings, 3 nuts	4	0	4	5	7	9	1	1	9
ROYAL MACHINE CO. 4 exhaust valve guides 4 Intake valve guides	0	0	0	2	4	8	2	2	8
HARRY F. PHEL CO. 9 Studs, 3 Bolts	10	2	5	74	74	79	52	52	
TRIPLEX CORP. Pistons	47	31	40	12	12	12	0	0	4
ARMED METAL PRODUCTS CO. Valve Seats, tappets	16	10	12	16	16	16	16	16	16
PERKINS TOOL & ENGINEERING CO. Connecting Rod (Blade)	107	74	107	64	74	107	5	12	27
SMALL ENGINEERING Coolant Pump Assembly	4 (will require more) 0		1	31	31	32	0	0	12



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SAG-76 (6/10M)

EXHIBIT B

Company Name	Col. 1		Col. 2		Col. 3			Col. 4		
	No. of Locations	Supplied by G.A.S.	No. of Locations	Supplied by G.A.S.	Apr. 15	Apr. 20	Apr. 27	Apr. 15	Apr. 20	Apr. 27
WILCO MACHINERY										
JOHN KAPRINIS PHOSPHOR										
Crackshaft & roller shaft brackets										
Crackshaft arm, ca. a. ca. a. aft										
brackets (front & rear)	4		1	3	1	15	16	0	15	16
KINGO DIE CASTING CO.										
47 castings, 1 bracket	2		11	27	10				5	7
KORSY MACHINERY CO.										
Crankshaft hydraulic pump drive adaptor										
hydraulic pump drive assembly										
lower half and oil pump	2		0	0	4	4	4	0	0	
CRITICAL PRODUCTS, INC.										
11 tube assemblies	0		0	0	20	30	30	0	0	12
EXCELDA ENG. CO.										
1 pipe, 4 pipe connections	0		0	0	7	7	7	0	7	0
MACHISE ENG. CO.										
1 manifold flange	0		0	0	5	14	14	2	14	14
CG TOOL & MACHINE CO.										
22 studs, 11 bolts	13		5	8						
GEBO GAUGE & TOOL SHOP										
1 shaft	7		2	3	23	23	11	23	23	7
BURTON TOOL & MACHINE CO.										
36 spacers, 1 collar	2		1	2	5	5	5	5	5	5
BROWN TOOL & MACHINE CO.										
16 tube assemblies	0		0	0	0	15	15	0	0	0
DIVERSIFIED TOOL & MACHINE CO.										
21 spacers, 4 nuts, 1 plug, 1 pin	0		0	0	0	12	10	0	8	5
BARRY PIERCE & CO.										
33 stampings	0		0	0	0	8	8	0	1	5
AMERICAN SCREW PRODUCTS										
12 plugs, 5 connections, 14 safes	20		1	2	0	0	0	0	0	0
bushings, 12 bolts, 5 spacers										
SOLVENTE TOOL & MACHINE CO.										
21 bolts, 13 studs	17		0	14	0	38	50	0	38	42

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EXHIBIT 3

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Sub-Contractor	Col. 1 No. of machines to be supplied by C.A.A.	Col. 2 No. of machines Shipped by C.A.A. to May 27	Col. 3 Machines in Operation May 27	Col. 4 Machines in Operation May 27
AMERICAN INDEPENDENT CO. Oil Relief Body Assembly	6	0	42	
ACE MANUFACTURING CO. Washers & Spacers	0	0	4	4
LAUF TOOL & GAUGE Bearing	0	0	6	
LIBERTY BOLERS & S. GA. CO. Nut	0	0	13	0
ROSS TOOL & DIE Nuts, Washers, Bore Pins	1	0	1	21
RENO TAPE & W. MANUFACTURING CO. Standings	0	0	7	7
ROSS TOOL & DIE CO. Nut Washers	1	1	21	21
BOWEN MANUFACTURING CO. Nut	2	2	22	0
PERKINS INDUSTRIALS Guide Rings & Washers	0	0	2	2
LEVIN MANUFACTURING Generator Drive Cover	0	0	6	2
KEULEN CORPORATION Tachometer Drive Cover	0	0	1	0
ORLEY BROS Screw Machines	0	0	5	5
LATIMER BROS Bolts, Screws & Nuts	0	0	10	2
SHANKS MFG. CO. Jetc	0	0	1	1

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## EXHIBIT B

<u>Sub-Contractor</u>	<u>Col. 1</u> No. of to be supplied by D.A.B.	<u>Col. 2</u> No. of locations supplied by D.A.B. to 27	<u>Col. 3</u> Machines in Location to 27	<u>Col. 4</u> Machines in Operat to 27
SURCAT CO. Ass'y Crankcase Oil Filter	0	0	14	14
METAL BRASS CO. Str. Pins	0	0	5	2
WARREN RACHN E Adaptor	1	1	3	1
ICE TOOL Pins	2	2	20	20
R & B TOOL CO. Cover	0	0	1	1
RAY L. WYSE CO. Pipe	0	0	1	1
ARMSTRONG BROS Bolts	5	2	5	0
WARREN RACHN E & TOOL CO. Bushing	0	0	5	0
C.A.G. PRODUCTS Nuts & Brackets	0	0	2	1
W. S. MANUFACTURING CO. Pins	0	0	10	10
W. S. MANUFACTURING CO. Pins & Jets	0	0	10	0
ATLAS TOOL AND ENGINE CO. Nut	0	0		
QUALITY TOOL & MANUFACTURING CO. Nut	0	0	6	6
STANDARDIZED AIRCRAFT Screws	0	0	9	0

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SAS-86(9/10)pp

<u>Sub-Contractor</u>	<u>Col. 1</u> <u>no. of machines</u> <u>to be supplied</u> <u>by C.A.A.A.</u>	<u>Col. 2</u> <u>no. of machines</u> <u>Shipped by C.A.A.A.</u> <u>to May 27.</u>	<u>Col. 3</u> <u>machines in location</u> <u>May 27</u>	<u>Col. 4</u> <u>machines in operation</u> <u>May 27</u>	<u>Page 5</u>
HAY & SCOFFIELD Stampings	0	0	2	2	
ENGINE MFG. CO. Bolts	0	0	6	0	
LAVE ARLETTE & CO. Connections	0	0	12	12	
SENIORUS ARMOSCO DIS (All tool room operation to date) Booster control	0	0	0	0	
ARMOSCRAFT MACHINE CO. Nut Sleeve & Caps	0	0	5	5	
CAROL INDUSTRIES Gland Zipple Pipe	0	0	4	0	
THOM. WEBER CO. Spacer Bushings	2	0	8	0	
JEFFERSON TOOL & GAUGE CO. Insert	0	0	5	5	
BINKINS TOOL & MFG. CO. Spacers	1	0	9	9	
SCOTT MACHINES PRODUCTS Seats Spacers Washers	1	0	35	21	
LEURKAY CO. Oil Filter Housing	0	0	14	14	
CHAMPION GAGE & TOOL CO. Spacer Screw Bushings Gland	4	0	3	3	
H & E MACHINES & TOOL CO.	0	0	15	15	



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Sub-Contractor	Col. 1	Col. 2		Col. 3			Col. 4		
	No. of Machines to be Supplied by C.A.S.	No. of Machines Shipped by C.A.S. to April 26---May 27		Machines in Location April 14 April 26 May 27			Machines in Operation April 14 April 26 May 27		
PERACUTE MACHINES CO. 3 manifolds	21	11	16	0	9	12	0	0	0
CURTIS KEY CO. 1 sleeve	0	0	0	0	6	6	0	0	6
GENERAL PARTS ENG. & MFG. CO. 5 elbows, 1 collar, 1 dowel	5	0	0	0	12	8	0	5	4
MARVEL MACHINE & ENG. CO. 1 crankcase lower brackets	0	0	0	0	4	7	0	4	7
ALGONAC MFG. CO. 9 brackets, 1 bushing, 1 housing 10 spacers	1	0	0	0	10	12	0	2	12
BLAND PRECISION PRODUCTS CO. 5 studs	0	0	0	0	10	10	0	0	0
DALL STEEL PRODUCTS CO. Crankcase lower baffle, 2 connections	0	0	0	0	3	3	0	3	3
ADVANCE STAMPING CO. 4 washers, 1 gasket	0	0	0	0	5	5	0	5	5
MOBACH MACHINES PRODUCTS CO. 3 plugs, 1 nut, 1 spacer, 1 washer	0	0	0	0	10	10	0	10	10
BROOKSON BELL CO. 4 bushings, 1 throat washer	0	0	0	0	3	4	0	0	4
TOTALS EXHIBIT B	500	206	333	470	683	1070	215	337	676
• • • • •	•	•	•	•	•	•	•	•	•
GRAND TOTALS EXHIBITS A & B	2424	886	1388	634	1009	1802	240	375	611

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MUSKEGON MICH 11 303P

COL C S ~~RESE~~

AAS ROOM 4C 858 ARLINGTON VIR

FIRST PILOT ROLLS MERLIN 1650 FIRED AT 710 SUNDAY MORNING  
JUNE 11 AND HAS RUN UP TO 2200 RPM LOAD WITH 500 HORSEPOWER

WE ARE PROCEEDING FROM HERE SECOND ENGINE NOW COMING UP  
CONTINENTAL AVIATION AND ENGRG REESE KINNUCAN WINTERS.

1650 710 11 2200 500.

1015P.

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 m+s

Mr. Fred W. Squires/cs/2148

COPY

Colonel J. W. Sessums

17 June 1944

Continental Merlin Engine Production

1. An inquiry has been made as to the probable effects upon the Continental Aviation Corporation, and its subcontractors, if production of the Merlin engine by Continental was delayed until they could come in with the new V-1650-9 (Packard version of the British 145M) type.
2. To date approximately 24 million dollars of the 40 million dollars authorized has been committed for this project. Most of the equipment purchased with these funds could be utilized for production of the V-1650-9 engine. It is not felt that the Continental project has progressed to such an extent that an exorbitant loss would result if Continental were to be limited to V-1650-9 production.
3. It is estimated that 90% of the design of the V-1650-9 engine has now been set and Packard expect to commence manufacture about May 1945 and it is felt that Continental would be able to come in about this time.
4. The most important factor from Continental's standpoint probably would be the serious financial upset in their plans. They relinquished their production of the Pratt and Whitney R-1340 engine to Jacobs only after assurances were given that their financial interests would be protected. This was accomplished by timing the move to Jacobs so that Continental would have funds coming in on their Merlin production before the R-1340 production was turned over to Jacobs. The move of equipment to Jacobs has just started and will be completed by December 1944. It could still, however, be halted if necessary. If Continental's Merlin program is moved back, a corresponding shift in R-1340 production would have to be made. This would protect Continental but leave Jacobs' large plant #2 with just a small line of R-985 engines per month.
5. Another consideration is that Continental's two main subcontractors, Ranger and Lycoming would both suffer serious dislocation, even more than Continental, if the V-1650 program were to be pushed back. It is quite possible that Continental would lose both these subcontractors, particularly Ranger, if they were forced to remain idle for an additional six months, for both those companies have had their own engine programs cut and other work has been denied them on the strength of their participation in the Continental Merlin engine program.
6. Attached hereto is analysis of the status of funds, to 15 June 1944, of Continental's Merlin engine program as supplied by the Defense Plant Corporation.

1 Incl:  
 Table entitled:  
 Continental's Merlin  
 Engine Program

J. F. PHILLIPS

Colonel, A. C.

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Ats. Ans. Proj. - 35. (2/7/71)119  
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## Continental's Merlin Engine Program

<u>Estimated Costs</u>	Column 1 <u>Funds Authorized</u>	Column 2 <u>Funds Committed by DFC</u>	* Column 3 <u>Percentage of Com- pletion &amp; Delivery</u>
Land & Land Improvements	\$ 6,840.00	\$	
Buildings, Installations, Leasehold Improvements & Off-Leasehold Improvements	4,656,767.31	2,718,197.96	10% complete
Machinery & Equipment	36,102,280.69	21,631,759.26	37% delivered
Portable Tools	<u>233,932.00</u>	<u>40,841.30</u>	15% delivered
	<u>40,093,000.00</u>	<u>24,390,798.52</u>	

\* Based on Column 1, "Funds Authorized"

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Number V-1656  
 Pcs. Air. Eng. 40-5/7pp

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RANGER AIRCRAFT ENGINES

Meeting between Special Committee of Army Air Forces and War Production Board, Continental Aviation and Engineering Corporation and Ranger Aircraft Engines.

July 14, 1944

The following personnel were present at the meeting:

SPECIAL AD COMMITTEE

O. E. Mohler, Lt. Col., Chairman  
 W. J. Hajek, Lt. Col. A.C., E.P.D.  
 A. E. Dennis, Major A.C., A.A.F.R.R.  
 F. N. Squires, Major A.C., M. M. & D.  
 R. B. Clevering, Major  
 W. S. Cave, Col., B.A.C.  
 John Reid, Special Advisor to A.A.F.

CONTINENTAL

R. P. Brooks, Jr.  
 D. H. Hostetter  
 L. Kanaar  
 H. M. Parker  
 C. J. Reese  
 T. F. Rogan  
 A. B. Willi

RANGER

L. P. Ahlers  
 H. H. Budds  
 M. G. Demougeot  
 J. W. LeDuc  
 C. E. Smith  
 W. E. Speeler  
 H. van Gerbig

\* \* \* \* \*

Colonel Mohler opened the meeting by stating that the Special Committee wished to establish the potential schedule of Packard, Continental and Ranger in order to determine an overall picture of the Merlin Rolls Royce Engine output. The Committee's studies encompassed not only Packard, Continental and Ranger, but all subcontractors involved in the overall Rolls Royce program.

The first part of the meeting was devoted to the problem of finding out just exactly where Continental and Ranger stood in relation to the deliveries of all required facilities, equipment, materials, parts, etc., in order to determine what bottlenecks might exist, which would affect the present delivery schedule.

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After establishing these bottlenecks the balance of the meeting was devoted to determining what active measures could be applied to eliminate them and in cases where relief appeared impossible, what revisions would have to be made to the present schedules.

In the first part of the meeting it was brought out that Ranger was originally given to understand, when the program was first presented by Continental at a meeting attended by Colonel Irvine in December, that Continental as the prime contractor already had on order most of the necessary machine tools, tooling and material, particularly in respect to the pilot line requirements. It was also brought out that subsequently it was found that a great deal of this necessary equipment was not on order and that the final installation of the pilot line, together with the necessary tooling and material for manufacture, would be in many instances greatly delayed. It was pointed out in this connection that Ranger could in many instances improvise tooling, etc., in order to deliver initial quantities, but that such improvisation could not be carried to a point where the original scheduled requirements could be met in the quantities called for in the latter months of 1944.

When Ranger determined upon investigation that the progress of the program was several months behind schedule, in order to assist Continental it was agreed that Ranger would take over the follow-up of machinery and tooling although Continental was still left with the responsibility of taking action as required to meet delivery dates whenever bottlenecks were brought to its attention by the Ranger Follow-up Department.

Ranger also pointed out that in spite of the fact it was a subcontractor it had attempted in every way to carry as much of the load as possible in securing clearances from the necessary Government agencies and expediting not only the above mentioned materials and equipment, but also the necessary facilities. Ranger emphasized the fact that as of the date of the meeting no formal approval of any facilities listed in Ranger's letters to Continental dated June 29th and June 30th had been secured with the possible exception of small partial approvals on only two items.

Colonel Mohler, after the presentation of the overall situation, recognizing Continental as the prime contractor, summarized by stating that he believed it was apparent that the major difficulties which had occurred so far were primarily due to a lack of complete coordination by Continental with Ranger relative to its requirements and it was the consensus of the meeting that Colonel Mohler was correct in this appraisal.

In view of the fact that all representatives at the meeting concurred with Colonel Mohler's summary it was decided to take the following action:

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- I. That Ranger was to review all machine tool requirements in respect to both pilot and production lines and to match these requirements with Continentals so that both would coincide one hundred percent.
- II. That Ranger was to review, in the same manner, all other tooling, equipment and materials and likewise coordinate these requirements with Continental.

In this respect upon completion of such reviews Ranger will submit a complete status report to Continental which is to be concurred in by Continental and which will then be submitted by Continental to Colonel Mohler. This report is to be in such form that Colonel Mohler will have knowledge of the fact that it has been concurred in by both companies and also that he will be able to ascertain therefrom the potential abilities of these organizations to meet production schedules for the Merlin project.

Other miscellaneous items were discussed at the meeting and certain valuable and important suggestions were made by Colonel Mohler, John Reid and others. In general they are as follows:

- I. The Materials Review Committee are preparing a complete set of variations from standard, to be supplied by Packard, covering the assemblies to be supplied by Ranger and copies will be supplied to both Continental and Ranger by the Army.
- II. Due to bad deliveries from Heald, Continental is to immediately supply one or two 36" Bullards which are available as surplus D.P.C. equipment, for turning the cases, pending the arrival of the Healds. In view of the fact that tooling is a problem, Mr. Reid pointed out that Packard has the patterns on the necessary holding fixtures and Mr. LeDuc should make immediate arrangements with Packard to use these patterns, if necessary, to obtain prompt delivery of the fixtures.
- III. In respect to the fact that gears are one of the first bottlenecks, Ranger is to make every attempt to get Indiana Gear Works to make an additional 50 complete sets of gears which they are now making prior to assuming full production on a limited number of the gears. Mr. LeDuc of Ranger should either handle this in conjunction with the Ranger Purchasing Division, or should turn the matter over to them for complete handling.

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In addition, Colonel Mohler recommended and was strongly supported by Mr. Reid that Ranger take immediate steps to bring in the key personnel required for the gear line for preliminary training as soon as possible as it was fully recognized that this is very much of an art and that even if all equipment were available there would be a very considerable period before quality gears could be made in production quantities. Mr. LeDuc is to continue to push this program with the Ranger Personnel Division in order that every step be taken to meet this requirement.

IV. Mr. John Reid brought out several valuable points which are outlined herewith and in addition offered his help at any time and in any way, particularly in respect to any items which were extremely critical in manufacture, such as gears, etc.

(a) In respect to the delayed delivery of the quench presses and dies for the gear line, Mr. Reid stated that presses were immediately available, but that dies were the limiting factor. He stated that we should immediately investigate the die situation and if he could help he would be glad to do so.

(b) Mr. Reid also stated that all hobs were standard hobs and that in a pinch we could order hobs from Packard. He would be glad to help on this also.

(c) Mr. Reid also was interested in the fact that Swiss American were making the clutch gears for Ranger and he pointed out that the clutch shaft is an extremely difficult piece to manufacture and that Ranger should check this item over carefully.

Mr. LeDuc of Ranger will check this item and keep in close contact with Swiss American, particularly in respect to the initial parts manufactured.

V. During the discussion, in respect to facilities required by Ranger, Colonel Mohler stated that the approvals of the necessary facilities had been delayed, but would be forthcoming as soon as the Special Committee is able to establish definite overall Merlin Engine schedules in view of its survey of all contractors and subcontractors. As soon as the Joint Aircraft Committee have approved final



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schedules, Colonel Mohler's office will assist in securing whatever action might be necessary by various Government agencies. Colonel Mohler also stated that the Production Resources Control Section would re-open and review the Ranger request for air filtration in the final assembly area, particularly in view of the fact that such an installation was approved for Continental.

In summary, this meeting was held for the purpose of investigating Ranger's potential production relative to Continental's schedules and it was decided that it will be necessary for Continental as the prime contractor to take more aggressive steps towards supplying Ranger with the necessary machine tools, equipment and facilities. However, Ranger for its part will continue every effort to expedite the program and will cooperate with Continental to secure all such approvals and action as are necessary to make available the required machine tools, equipment and facilities to the end that production may be accomplished on schedule.

HVG/B

H. van Gerbig  
Howell van Gerbig

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AIRCRAFT PRODUCTION BOARD  
 RESOURCES CONTROL OFFICE  
 Pentagon Building  
 Washington, D. C.

In Reply Refer To:

WEL:mwe-358  
 20 July 1944

MEMORANDUM TO: Assistant Chief of Air Staff  
 Materiel and Services, Hq. AAF

SUBJECT: Report of The Ad Hoc Committee on Packard-Continental  
 Production

### 1. Organization

The Committee was set up on 4 July by memorandum of the Deputy Assistant Chief of Air Staff, M&S (Appendix A). Further instructions to the Committee were made on 15 July by the Assistant Chief of Air Staff, M&S, as in Appendix B. The Committee consisted of:

Dr. A. E. Lombard, Jr., ARCO, Chairman  
 Mr. John M. Reid, Special Advisor, AAF  
 Lt. Col. O. E. Mohler, PES, Materiel Command  
 Maj. R. B. Clevering, RCS, Materiel Command  
 Col. T. S. Cave, BAC  
 Maj. F. N. Squires, Hq., AAF, Observer

### 2. Purpose

The Committee was established to assess the capacity of Packard, Continental, and their subcontractors:

- a. As regards their maximum output and buildup, having regard to the types required, and
- b. To suggest the actual loading by types of the Packard and Continental facilities so as to meet the schedule of requirements presented with the terms of reference to the Committee, attached as Appendix C.

### 3. Recommendations

It is recommended that:

- a. Packard's peak capacity shall be considered potentially to be 2700 engines per month in March 1945, plus spares; and Continental's peak capacity shall be considered potentially to be 1300 engines per month in February 1946, plus spares;

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 Memo. to AC/AC, SAC, Hq. AAF (AF:lm-e-358)

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(2)

- b. Shipping schedules shall be established for complete engines as follows, with spare parts to be produced as outlined in Recommendations (d) and (e):

Months	1 Stage	PACKARD		Total
		-7,000-08, (-5,000-08)	(-5,000-08)	
July 1944 ...	700	1,700		2,400
August .....	700	1,700		2,400
September ...	600	1,800		2,400
October .....	500	1,900		2,400
November ....	195	2,205		2,400
December ....		2,400		2,400
January 1945.		2,400		2,400
February ....		2,400		2,400
March .....		2,350	50	2,400
April .....		2,150	250	2,400
May .....		1,900	500	2,400
June .....		1,600	800	2,400
July .....		1,200	1,200	2,400
August .....		400	2,000	2,400
September ...		0	2,400	2,400
October .....			2,400	2,400
Total .....	2,095	26,135	9,600	38,430

Months	CONTINENTAL		Total
	-17	-9	
August 1944..	5		5
September ...	5		5
October .....	10		10
November ....	10		10
December ....	20		20
January 1945.	100		100
February ....	100		100
March .....	100	5	250
April .....	200	50	300
May .....	200	200	400
June .....	50	450	500
July .....		600	600
August .....		700	700
September ...		800	800
October .....		800	800
Total .....	1,075	3,605	4,680

(The detail schedules by dash numbers for the two-stage types are given in appendix C, together with a comparison of schedules with requirements.)

- c. No schedules shall be set at this time for Packard or Continental production beyond October 1945, consistent with the Joint Aircraft Committee policy for VE-11.

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V-1450 Memo. to AC/AS, H&S, Hq. AAF (AEL:me-353)  
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(3)

d. Packard shall produce spare parts:

- (1) for all one-stage engines of Packard manufacture, as required for lifetime spares;
- (2) for all two-stage engines of Packard manufacture on a concurrent basis, on the scale established by the Army Air Forces, now set at 1.2 overhauls per engine;
- (3) in addition, as required by the British, in excess of scale established for AAF, to the extent that capacity exists for individual items.

e. Continental shall produce spare parts:

- (1) for all engines of Continental manufacture on a concurrent basis on the scale established by the Army Air Forces, now set at 1.2 overhauls per engine;
- (2) to supplement Packard production for additional spare parts required by the British to the extent that Packard is unable to produce these spares.

f. The Materiel Command shall follow the Continental-Ranger relationships to assure Ranger's meeting commitments to Continental.

4. Proceedings

The Committee met in Mr. John Reid's office in Detroit on Friday, 7 July, where Mr. Reid presented a report of the studies he had already made. These were discussed at some length and are attached as Appendix D. The method of approach to the problem was also discussed. On 8 July, the Committee proceeded to Muskegon and met with the top executives of the Continental Aviation and Engineering Company to discuss their part of the program. The Committee proceeded on the following Friday, 14 July, to Long Island and attended a meeting between Continental and Ranger. On Monday, 16 July, they met at the Packard Motor Car Company in Detroit. The Committee also availed themselves of the services of Mr. Burdick of the Manufacturing Methods Staff of Materiel Command, AAF, whose opinions regarding Packard in the main coincided with those of Mr. John Reid.

Attached as Appendix E, F, and G, are the records of the meetings of the Committee held at Continental, Ranger, and Packard, respectively.

5. Considerations

a. Requirements

The requirements as supplied to the Committee are shown in Appendix C. The Committee made no investigation of these requirements but accepted them as the operating basis in accordance with its original directive.

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Memo. to AC/AS, M&amp;S, "Eq. AAF (AEL:smw-358)

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As a matter of record, it is noted that the requirements for -7 and -9 engines are based on the P-51 and P-52 production schedules established by the Joint Aircraft Committee in Report 11. Two months lead time had been used. Spare engines at 40 percent were scheduled concurrent with installation engines. Requirements for P-51's for Australia were taken in accordance with schedules submitted by the British Air Commission.

The requirements for British type engines were used as submitted by the Director General of the British Air Commission, based on British production programs plus 20 percent spares, plus an additional contingency factor of 10 percent. These requirements for British engines include requirements for expansion of the Lancaster program in Canada and the United Kingdom in accordance with the British so-called "tentative" program, which program has not yet been firmly allotted to manufacturing facilities.

Requirements for British engines from the United States are based on shipment of installation and spare engines five months ahead of delivery of the airplanes in the U. K. (with the exception of the Spitfire in which four months is allowed).

b. Packard Production

The principal controlling factor at the Packard Motor Car Company was the quantity of spares which would be required for the life of the two-stage engine. A meeting was therefore held in Dayton on 12 July, at which the Air Service Command and Royal Air Force Delegation were represented, as a result of which a recommendation was made that Packard be allotted spares to the extent of 1.2 overhauls per engine, built to cover the life of the engine, and that spares in excess of this requirement by the British would be obtained from Continental, it being understood that where Packard had idle capacity beyond the 1.2, they would supply the spares to the limit of their capacity. For the purposes of this Committee, it is assumed that this arrangement will hold.

The Committee considers that Packard has sufficient facilities and subcontractors to eventually make their total monthly quantity of 2,700 engines, and that material is available. However, they are faced with certain labor problems, and a problem of providing more spares than can conveniently be scheduled. After hearing evidence from the various members of the company, it was considered that, in view of the spares position and the fact that the company would have to rationalize their present working hours, the probable peak would be around 2,400 engines per month for the time being.

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 Memo. to AC/AS, M&E, HQ. AAF (ASB:pmw-358)

(5)

Packard now plans to make the complete change-over to the 14SN (-9) in the six months from March to August 1945. The engineering of the new engine is now practically complete. The reason this change-over is difficult to effect earlier is that materials and tooling now in process will take some considerable time to prove. To facilitate production, Packard have arranged to carry 65 engines and parts through with their experimental engines. It is thought that this quantity should be increased as the engines are already flying in England and little or no basic development work is necessary at Packard.

c. Continental Production

Continental have assembled their first engine and it is now on test. This engine however has been assembled largely out of parts either from Packard or from Air Service Command. Another 50 engines are to be assembled in this way, thus educating the Continental assembly line.

The weakest spot in the Continental scheme is the production of wheel cases and supercharger assemblies by Ranger. For this reason, Ranger was studied in detail. It is the Committee's opinion that after the fifth engine, Continental and its subcontractors will be able to produce their own parts and that they will be able to exercise sufficient control over Ranger to enable Ranger to produce wheel cases and superchargers to meet the schedule proposed in this report.

So far as material and labor are concerned, Continental are in a thoroughly satisfactory position. They further are well organized and have a number of skilled engineers and mechanics available for this job. The cooperation between Packard and Continental seems to be complete, and no difficulty is anticipated on that score.

With regard to the conversion from the -17 to the -9, the Committee believe that it would be possible for them to produce not more than 100 engines of the -17 type and then change over to the -9, into which production they can get as early as Packard, if not before.

For the AD HOC COMMITTEE ON PACKARD-CONTINENTAL PRODUCTION

A. E. Lombard, Jr.  
 Chairman

Attachments:  
 Appendices A - G

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 Pe S. Address Reply to  
 Gen. For. Commanding General, Army Air Forces  
 W. G. P. Washington, D. C.

Appendix A

WAR DEPARTMENT  
 HEADQUARTERS OF THE ARMY AIR FORCES  
 WASHINGTON, D. C.

4 July 1944

MEMORANDUM FOR: Chairman, Ad Hoc Continental--Packard Engine  
 Production Committee

SUBJECT: Ad Hoc Continental--Packard Engine Production Com-  
 mittee

1. There is established an Ad Hoc Committee to study and report on the production of the merlin engine at Continental Aviation and Engineering Corporation and the Packard Motor Car Company. Members of the Committee are:

Dr. A. E. Lombard, Jr., ARCO, Chairman  
 Mr. John Reid, Special Advisor, AAF  
 Lt. Col. O. E. Mohler, PES, Materiel Command  
 Maj. R. B. Clevering, RCS, Materiel Command  
 Col. W. S. Cave, SAC  
 Maj. F. W. Squires, Hdqrs., AAF, Observer

2. Visits to such places and to such firms, as well as interviews with such people, as are deemed necessary for fulfillment of the duties of the Committee, are authorized. The first meeting will be held in the office of Mr. John Reid, 21 Henry St., Detroit, Michigan, at 9:00 o'clock Friday Morning, 7 July 1944.

3. The Committee shall study Packard and Continental production, including that of sub-contractors, in relation to requirements as set forth to the Joint Aircraft Committee (both as regards quantities and types) plus concurrent delivery of spare parts and making up of backlog and spares. Points in relation to the above to be considered particularly are:

a. Packard's rate of build-up and production capacity, considering introduction of the V-1650-9 and -11 (with British equivalents) models and any resulting loss of production.

b. Continental's rate of build-up to their presently established peak of 200 engines per month, considering introduction of the V-1650-9 and -11 models and any resulting loss of production.

1. An estimate will be made as to the number of V-1650-7 engines that will have to be made by Continental before they go into the V-1650-9 and -11 types.

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4 July 1944

c. Possibility of mutual assistance or interference between Packard and Continental in attaining most appropriate production schedules.

d. Any arrangements desirable or necessary under which Continental might concentrate on spare parts with fewer engines, leaving Packard to devote the bulk of their energies to complete engine production.

4. On the basis of its study as called for in Paragraph 3, the Committee shall recommend production schedules, for engines and spares, consistent with requirements and production possibilities to provide a minimum coverage.

5. The findings and recommendations will be set forth in writing to the Assistant Chief of Air Staff, A.A. & D., A.A.F., Washington, D. C.

For the Commanding General, Army Air Forces:

/s/

E. W. ROGERS  
Brig. General, U.S.A.  
Deputy Asst. Chief of Air Staff,  
Material, Maintenance and Distribution

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Address Reply to  
Commanding General, Army Air Forces  
Washington, D. C.

Appendix B

WAR DEPARTMENT  
Headquarters of the Army Air Forces  
Washington, D. C.

15 July 1944

MEMORANDUM FOR: Chairman, Ad Hoc Continental-Packard Engine  
Production Committee.

SUBJECT: Change in Requirements.

1. Instructions contained herein are supplementary to those contained in memorandum to the Committee dated 4 July 1944, subject: Ad Hoc Continental-Packard Engine Production Committee.
2. Since the original instructions were prepared, there have been some changes in British-Canadian requirements for Merlin engines. Major Squires has been furnished new requirements, and it is requested that these be used by the Committee in all their calculations.

For the Commanding General, Army Air Forces:

E. M. POWERS  
Brigadier General, U.S.A.  
Deputy Assistant Chief of Air Staff,  
Material, Maintenance & Distribution.

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REQUIREMENTS OF MERLIN ENGINES FROM U.S. PRODUCTION  
COMPARED TO PROPOSED PACKARD AND CONTINENTAL PRODUCTION  
(2 Stage Engines)

	As Of	1944									
		JUL. 1	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	M
Requirements	-7-9		981	1041	1048	976	1054	997	1060	1037	1
Packard Production	-7	1100	1100	1100	1100	1100	1100	1100	1100	1000	
Continental Production	-7			5	5	10	10	20	100	180	
Packard Production	-9										
Continental Production	-9										
Total Production		1100	1105	1105	1110	1110	1120	1200	1160	1180	1
Cum. Surplus or Deficit		-13	+106	+170	+227	+361	+417	+540	+600	+823	1
Requirements	-69-266P		140	140	195	195	221	222	200	200	
Packard Production	-69-266P		410	247	204	246	230	239	132		
Cum. Surplus or Deficit		+600	+870	+977	+986	+1037	+1046	+1063	+995	+795	
Requirements	-301										
Packard Production	-301										
Cum. Surplus or Deficit											
Requirements	-68-300						370	686	1042	1500	
Packard Production	-68		220	353	496	554	875	1061	1168	1400	
Packard Production	-300										
Total Production			220	353	496	554	875	1061	1168	1400	
Cum. Surplus or Deficit		0	+220	+573	+1069	+1623	+2128	+2503	+2629	+2449	+
GRAND TOTAL REQUIREMENTS			1121	1181	1243	1171	1645	1905	2302	2817	
TOTAL PACKARD PRODUCTION (2 Stage Engines)			1730	1700	1800	1900	2205	2400	2400	2400	
TOTAL CONTINENTAL PRODUCTION				5	5	10	10	20	100	180	
GRAND TOTAL PRODUCTION			1730	1705	1805	1910	2215	2420	2500	2580	
CUMULATIVE SURPLUS OR DEFICIT		+587	+1196	+1720	+2282	+3021	+3591	+4106	+4304	+4067	+

## Source of Requirement:

A.A.F. - Report W-11 (Spares at 40%)

British - As submitted by Director General - British Air Commission

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REQUIREMENTS OF MERLIN ENGINES FROM U.S. PRODUCTION  
 COMPARED TO PROPOSED PACKARD AND CONTINENTAL PRODUCTION  
 (2 Stage Engines)

APPENDIX C

CONFIDENTIAL

	As Of JUL.1	1944										1945					
		JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.
7-9		981	1041	1048	976	1054	997	1060	1037	1114	1093	1017	1015	956	951	961	817
-7		1100	1100	1100	1100	1100	1100	1100	1000	750	550	150					
-7			5	5	10	10	20	100	180	245	250	200	50				
-9										50	150	300	450	300	200	0	0
-9										5	50	200	450	600	700	800	800
		1100	1105	1105	1110	1110	1120	1200	1180	1050	1000	850	950	900	900	800	800
	-13	+106	+170	+227	+361	+417	+540	+680	+823	+759	+666	+499	+434	+378	+327	+166	+149
66P		140	140	195	195	221	222	200	200	161	160	115	70	82	82		
66P		410	247	204	246	230	239	132									
	+600	+870	+977	+986	+1037	+1046	+1063	+995	+795	+634	+474	+359	+289	+207	+125	+125	+125
001										104	286	286	286	286	286	368	368
001										100	200	350	400	350	350	350	350
										-104	-290	-376	-312	-198	-134	-152	-170
000						370	686	1042	1580	1567	1985	2144	2179	1988	2150	2196	2775
68		220	353	496	554	875	1061	1168	1400	1600	1600	1750	1600	1200	400	0	
000														500	1450	2050	2050
	0	+220	+573	+1069	+1623	+2128	+2503	+2629	+2449	+2482	+2097	+1703	+1124	+836	+536	+390	-335
		1121	1181	1243	1171	1645	1905	2302	2817	2946	3524	3562	3550	3312	3469	3525	3960
2 Stage Engines)		1730	1700	1800	1900	2205	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
ON			5	5	10	10	20	100	180	250	300	400	500	600	700	800	800
		1730	1705	1805	1910	2215	2420	2500	2580	2650	2700	2800	2900	3000	3100	3200	3200
CIT	+587	+1196	+1720	+2282	+3021	+3591	+4106	+4304	+4067	+3771	+2947	+2185	+1535	+1223	+854	+529	-231

Prepared by:  
 Aircraft Resources Control Office  
 19 July 1944

-11 (Spares at 40%)  
 Issued by Director General - British Air Commission

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14-30  
75.420 Proj - No. 60/1577APPENDIX DA REALISTIC FORECAST OF ENGINE DELIVERIES BASED ON THE  
ENGINE DELIVERY SCHEDULES SUBMITTED BY THE CONTRACTORS,  
PACKARD MOTOR CAR COMPANY AND CONTINENTAL AVIATION AND  
ENGINEERING CORPORATION.

The differences in the numbers of engines delivered each month and those scheduled are because of the inevitable contingencies which arise and which have revealed themselves during the production of engines both in America and Britain. To refresh the minds of those interested, the following are a few illustrations which have prevented manufacturers from meeting their schedules in the past.

Contractors' schedules are generally made up after very careful study, but, by the very nature of things, are based on the assumption that the many subcontractors dealing with material, equipment and tools, and finished machined parts will come through and that they themselves have allowed for all the contingencies that may arise. In addition, the more enthusiastic contractors are, the more optimistic they become, at the same time honestly believing that they have allowed for all possible setbacks and therefore will meet the schedule, but experience has definitely shown that the final result is that the customer is shy of many engines and spares at the date when the contract quantity of engines is scheduled to be complete.

MATERIAL

Demands for armaments which vary from time to time according to the progress of the war compel the Government to alter priorities accordingly, and consequently the different branches of industry are affected in turn and material shortages result. As an illustration, the production of heavy trucks at the moment is of paramount importance and therefore the material and tools required to satisfy the demands of the Services have been placed in the highest priority.

It is well known that the production of aluminum castings in the fall of last year and the beginning of this dictated the engine production schedule and it was necessary to reduce the existing schedule by many engines. During the summer months production is adversely affected by approximately 25% because of the heat and in the main it must be considered that the aluminum casting supply can only just be described as in a healthy condition, brought about by the Foremen's strike at the Packard plant, during which period the foundries continued to produce.

TOOLS, FIXTURES, PATTERN  
EQUIPMENT, ETC.

A review of the tool and pattern shops reveals that delivery promises are seldom kept and as a general rule are two to three months beyond the promised delivery date, and there has been a marked tendency



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on the part of the suppliers to ensure that work to the detriment of the work required for this program.

#### ENGINEERING CHANGES

It is well known that they are inevitable and that they have been the cause of much engineering work and much discussion since the inception of the contract. It is quite natural for the main contractors to question modifications sent by Britain from time to time and to be sure it is essential, particularly when it involves alterations in material, tools or equipment and the consequent drop in output if these modifications are insisted upon. Much time is therefore wasted in arriving at decisions, and there is a further delay when it has been proved necessary to carry out the work at some later date. The alterations necessary entail much work in the engineering, planning and tool equipment departments. It is necessary to have a period in the production lines for trying out new tools and getting the job on a productive basis. Meanwhile, while this is being done, such confusion and delay takes place and again the main contractor is more or less forced to ask permission to continue delivering the other type of engine, so that his overall quantity of engines is maintained. Consequently the delivery of engine types becomes out of balance and in the past it has been necessary to place additional orders with the aircraft manufacturers of types which were planned to be superseded, causing delay in supplying better fighting material to the Services.

#### SUBCONTRACTORS

The necessity of placing a large volume of work with subcontractors many miles away from the main contractor's plant plays its part in the general delay. In many instances work is placed with subcontractors who have received cutbacks and have been engaged on Government work not of the type and character of this Merlin engine. An extended educational period is therefore necessary, but the allowance for this is never fully realized. It is often a fact that the promised delivery date for finished material has gone by before the subcontractor has even commenced.

These circumstances and the lack of "know how" with some of the mushroom type of subcontractors contribute further delay, as their lack of initiative and failure to help themselves, due to their lack of experience, compels the main contractor to devote more time than he can spare in an attempt to get them going, and in so doing he neglects the work that he himself has in hand. This state of affairs has been consistently obvious both in Britain and America.

In the attempts made to meet the schedule by both main and subcontractors many bottlenecks are experienced and labor has been compelled to work excessive overtime and continued long hours. In Britain, as in America, it has been proved that the remedy is not long hours, for ultimately labor becomes weary and takes time off to recuperate, with the inevitable disruption of an orderly flow of production. Therefore,

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Mrs. Air. Proj. - 11-12/25 pp)

whatever advantage in production has been gained has been lost during the following weeks.

It has appeared in the Press that certain domestic requirements are necessary and that production of these is under consideration. Supervision at the two main contractors cannot be described as excessive and certainly could not stand any reduction. Consequently, none of it could be diverted and just as certainly no room could be found for additional work. If work is started in the foundries, or in the existing plants, to produce automobiles or spares, other sites will be necessary, and the transfer of personnel, machinery and equipment would have a detrimental effect on even the present accepted delivery schedule.

The Services have demanded the latest type of engine embodying many major modifications. Present schedules are based on a steady production of the older types. Therefore, if this request for the newer types of engines is insisted upon, the present schedule will be adversely affected and will probably, as in the past, cause the main contractors to request permission to deliver out-of-date engines, to keep their labor together whilst efforts are being made by an overworked staff to introduce the new types.

#### INSPECTION

From time to time epidemics of defective production or material have always been with us, both in Britain and America, and a review of the past indicates that these come along at regular intervals. In England they have at different periods affected most parts of the engine, and also in America when one recalls the setbacks experienced in gears, bearings, valve mechanism, pistons, piston rings, cylinder blocks, superchargers, faulty castings, etc., etc. We are entitled to believe that these will recur and allowance must be made for them. The delay not only affects the main contractor's engine schedule, but has its repercussions with the airframe manufacturer who finds his own schedule impossible to meet and is caused additional delay in finding other work to keep his labor.

#### SPARE PARTS

The irritating question of spare parts will always be with us and it is no different wherever they are made. The fact is they are always required and all contractors, whether British, American, or whatever nationality, never seem to get them out, and this has been the case with these contracts. Whilst admitting the requirements have never been specifically stated in the case of Britain, they still exist. Provision must be made for them and part of the capacity must be used for them, and as the contract for the single-stage engine has never been fully covered with spares, provision must be made in the overall picture of these. It is reported that in Britain today complete engines are being torn down to provide spares for those still in service.

It must also be recognized that lifetime spares for engines suspended should be completed in time.

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V-1650  
Pds. Rec. Form 16. (12/15/44)

## APPENDIX 2

## MEETING OF AD HOC COMMITTEE AT CONTINENTAL AVIATION AND ENGINEERING CORPORATION, MUSKEGON, MICHIGAN ON 5 JULY 1944

Members present: Dr. A. E. Lombard, Jr., ARCO, Chairman  
 Mr. John M. Reid, Special Advisor, AAF  
 Lt. Col. O. L. Mohler, PSC, Materiel Command  
 Maj. R. B. Clevering, RCS, Materiel Command  
 Col. W. S. Cave SAC  
 Maj. F. E. Squires, Hdqrs., AAF, Observer

Also present: Mr. C. J. Reese )  
 Mr. James Kinnucan )  
 Mr. G. E. Winters ) Continental Aviation  
 Mr. A. B. Willi ) and Engineering Corp.  
 Mr. Hostetter )

Maj. Thomas J. Sullivan, AAFRR  
 Maj. Al Manasco  
 Capt. McManara

1. Ordnance Engines. Mr. Reese was asked about the ordnance engine production in view of the recent request for additional facilities from the War Production Board. He stated that they are now building 1300 R-975 engines per month for tanks. The facility being requested was to permit the conversion to build 500 R-975 engines per month and 500 Ford tank engines per month. This conversion will require no change in the manpower. All of the work is to be done in the ordnance plant and it will have no effect on aircraft engines.

2. R-1340 Engines. Production has been proceeding on the WE-10 schedule as follows:

June 1944	..... (Actual)	450
July	.....	450
August	.....	450
September	.....	400
October	.....	300
November	.....	200
December	.....	100

Continental formerly made all the major parts for the R-1340 in this plant. The conversion is now being regulated principally for the convenience of the V-1650 production. Most of the tools will eventually be shipped to Jacobs. In the transitional period, Jacobs is making certain parts for Continental and Continental is making certain parts for Jacobs.

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U-1650  
 P. R. Rees Proj. - (14/3/50)

Meeting of Ad Hoc. Com. at Continental, Muskegon, 8 July, 1944 (2)

3. Employment

Gross Employment on 30 June 1944

	<u>Male</u>	<u>Female</u>	<u>Total</u>
<u>On R-1340 &amp; V-1650</u>			
Productive .....	1,220	477	1,697
Non-productive .....	1,126	413	1,539
Salary .....	195	189	384
TOTAL .....	2,541	1,079	3,620

On IV-1430

TOTAL .....	132	0	132
GRAND TOTAL .....	2,673	1,079	3,752

At the time of the visit, the total engaged on the V-1650 was as follows:

Productive employees .....	278
Non-productive employees .....	373
Total .....	651

The forecast of future mid-month employment is as follows:

Shop Personnel

	<u>R-1340</u>	<u>V-1650</u>	<u>Sal. Office</u>	<u>Total</u>
July .....	2,750	750	400	3,900
August .....	2,500	1,000	400	3,900
September .....	2,200	1,300	400	3,900
October .....	1,750	1,600	400	3,750
November .....	1,200	2,200	400	3,800
December .....	700	2,900	400	4,000
Peak .....				4,680

4. V-1650 Production Schedule. Mr. Rees stated that the company will make the following production schedule:

<u>Months</u>	<u>V-1650-17</u>	<u>V-1650-9</u>	<u>Total</u>
July 1944 .....	2		2
August .....	5		5
September .....	15		15
October .....	30		30
November .....	50		50
December .....	100		100



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Pres. Air Prog. - 16- (15/25FF)

Meeting of Ad Hoc Com. at Continental, Dayton, July 1944 (3)

Months	V-1650-17	V-1650-9	Total
January 1945 .....	200		200
February .....	300		300
March .....	415	10	425
April .....	250	200	450
May .....	123	500	623
June .....		900	900
July .....		1,100	1,100
August .....		1,350	1,350

Major Sullivan advised the writer that he felt the schedule would slip about two months, beginning in October.

5. General Progress Report. Attached as Exhibit I of the Appendix is a copy of General Progress Report dated 6 July covering most of the phasis of the Continental activity.

The first pilot engine was completed on 11 June, and now has ten hours' running time. The first so-called production engine with about fifty percent of the parts from Continental and its subcontractors was in the early stages of assembly at the time of the Committee's visit. Continental hopes to be able to start assembly of the model test engine with 100 percent Continental parts within 45 days and to have the model test completed and approved by 1 October.

6. V-1650-9 Engine. Continental is releasing parts now for the -9 engine. All major parts have been released from Packard except the cylinder head. Sample castings are expected to be ready in December and the machining to be done between December and 1 February. The model test engine is to be ready on 15 February. The conversion from -17 to -9 engines is a gradual one with many of the -9 features being incorporated in the -17 engines.

7. Plant Inspection. An inspection of the plant disclosed that most of the machine tools were in place and operating for the machining of the heads, blocks, and crank cases, which is the work done by Continental. A portion of the test assembly building will be completed by 15 July and the balance by 1 August. Some of the present test cells are being converted from the B-17 to the V-1650. There should be no bottlenecks in test cells.

8. Subcontractors. It is very important that the production of parts from Continental and its subcontractors be completed in a timely manner. The Ad Hoc Committee will meet with the subcontractors on Friday, 14 July, to discuss the progress and to approve the method by which the subcontractors will be paid.

Attachments

Exhibit I

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## CONTINENTAL AVIATION AND ENGINEERING CORPORATION

APPENDIX B

## INTER-COMPANY CORRESPONDENCE

TO Mr. C. J. Reese

FROM A. D. Willi

DATE 7/6/44

Messrs. Winters, Sheldon, Parker, Kolb, Hostetter, Brooks, Cawthon, Terfield, Rogers, Pix, Burke, Sullivan, Sampson, Wild, Major Sullivan, Major Given, J. Reid, MacLrsted, O'Drien, Tobin, Paul Williams, S.T. Williams, Niemen, Carter, Hackett, Gallagher, Cress, Sweet, Helmer, McPhail, Dreyer, Richter, McDermid, Connor, Dzielski, Kinnuon, H. Johnson, Neel, Solret, Peterson, Hile (A)

SUBJECT MEETING DETROIT, WEDNESDAY, JULY 6, 1944  
ROLLS ROYCE PROGRAM

1. MUSKOGEE PLANT EXPANSION

- a. The roadway has been formally approved by the D.P.C. Construction will be held up pending the work on the Manufacturing Building.
- b. The 50,000 sq. ft. of floor space in the Manufacturing Building will be ready for occupancy July 15. 85% of the floor slabs have been poured and should be complete by July 6. Additional brick has been obtained from another source and additional bricklayers have been hired. Installation of the wood block flooring is scheduled to start July 7. The labors situation is still bad. Architects report dated 7/3 shows the manufacturing building 27% complete and the test cell addition 5.52% complete. It is estimated that the full manufacturing building completion will be November 15th, a 60 day delay.
- c. Drawings and specifications covering the Facilities Expansion were forwarded to Wright Field June 15. Walter Powell has contacted Captain Barnett for approval but has advised that Captain Barnett is unable to find the letter from Major Sullivan covering same. Mr. Hostetter will check with Major Sullivan.
- d. Claim has been filed by Continental Aviation, as agents for the government for the Bausch machines and fixtures demolished in the train wreck. Mr. McPhail reported that it will probably take 60 days to obtain an adjustment.
- e. The Contract for the first dynamometer cell conversion was let June 20th. Mr. Hostetter submitted the following revised report on test cell conversions from 1340 to Rolls Royces:

CELL LOCATION	CELL NO.	START CON- VERSION	COMPLETE CONVERSION	R-1340 SCHEDULE	ROLLS ROYCE SCHEDULE
South Flight (1430)	(11) (10A)		complete	450 July	5 July
Dynamometer (1430)	(10A)		7-20	450 August	10 August
2 Prop Cells (1430)	(7A-7B) 11-12	7-1	8-18	400 September	30 September
Prop Cells (1340)	(6A-6B) 9-10	8-1	10-30	300 October	50 October
Prop Cells (1340)	(4-4A)	9-1	11-30	200 November	100 November
Prop Cells (1340)	7-8 (2-2A)	10-1	12-30	100 December	200 December
Prop Cells (1340)	5-6 (5-5A)	11-1	1-30		

1330

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	UNIT CON- VERSION	CO. PARTS CONVERSION	R-1360 ENGINE SCHEDULE	ROLLS ROYCE ENGINE SCHEDULE
	1-2 (1-2)	12-1	2-28	
	12-2 (1-2)	12-1	4-30	
<b>Rolls Royce Engines - Production Plans</b>				
Total Production	302	Pilot Line Complement		192
Total Received	182	Pilot Line Received		175
Forecast July	15	Forecast July		12
Forecast August	5	Forecast August		5
62 machines are in place at Mustang and connected at the following locations:				
41 - Head & Part Assembly				
27 - Head A & B Units				
14 - Blank				
30 - Upper Case				
18 - Lower Case				
13 - Case Assembly				
12 - Camshaft Housing				
9 - Crankcase Bushing				
62 machines are running. 66 machines have complete permanent tooling and permanent tooling is available for an additional 10 machines. 7 production machines are ready to spot with space available.				
<b>MACHINES REQUIRED TO COMPLETE PILOT LINE</b>				
P.O. NO.	Description	Part No. & Name	Forecast Dates	Remarks
R-324-1	W6 Hyd. Mult. Spindle Drill	615314 (Crankcase-lower half)	7-30	(fixture proc. 7/15)
R-235-1	W7 Hyd. Mult. Spindle Drill	608720-22 (Cylinder cover-A & B Units)	7-14	(fixture shipped 6/21)
R-275-1	2-Gay Hyd. Mult. Spindle Drill	600350-1	7-14	Held up account tryout parts from Packard
R-292-1	Comb. Radial Drill & Tapper	"	7-22	(fixt. proc. 6/10)
R-274-1	W7 Hyd. Mult. Spindle Drill	"	7-13	(fixt. shipped 6/24)
R-292-1	2 Gay Drill	600350-1 (Assembly Cylinder B Unit Head & Inserts)	7-30	
R-1962-1	W6 Hyd. Drill	600345 (Block-Cylinder A & B Unit)	8-10	(Replaces mach. lost in Train wreck)
R-1963-1	W7 Hyd. Drill	615820 (Crankcase-upper & lower)	8-10	" " "
R-1964-1	W7 Hyd. Drill	600350-1 (Assembly-Cylinder A & B Unit Heads & Inserts)	8-10	" " "

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Avia Proj 14-48/14/ff  
 R. C. J. Leese

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P. O. No.	Description	Part No. & Name	Delivery Dates	Remarks
R-115-1	<u>SCHELLO</u> 61 Cyl. Boring	607091 (Ass'y. Crankcase Upper & Lower)	7-15	held up account of tooling
R-190-1	#61 " "	" " " "	7-20	
R-114-1	'61 " "	" " " "	7-20	
R-1065-1	<u>GERMANY MILLING</u> 143-36" Spec. Vert. Mill.	615820 (Crankcase-Upper Half)	7-3	
R-1450-1	<u>HEAD</u> 458 Domestic	615611 (Ass'y. Crankcase Lower Half & Bushings)	7-20	
R-215-1	<u>LANG</u> 2-Way Hor. Hole Tapper	615852 (Ass'y. Unit)	7-7	
R-211-1	3-Way Comb. Vert. & Horiz. Hole Tapper	615852 " " "	7-31	
R-212-1	" " " "	" " " "	7-31	
R-213-1	Vert. Hole Tapper	615852-3 " " "	8-26	
R-1077-1	Vert. Tapper	" " " "	8-15	

1. SHIPMENTS OF 1340 ACHDAN

All machines have been shipped from Muskegon - 557 yet to go. Approximately 226 machines will go to Jacobs.

- 50 - to Milwaukee, Wis.
- 64 - to Wolverine Storage
- 129 - to CTC Farms
- 20 - to Sub-contractors
- 7 - to Continental Motors
- 116 - to Michigan Avenue
- 25 - to Jacobs

No more machines will go to Jacobs until the Head Line is moved.

4. OVERALL MACHINE ORDER DELIVERY AND PROMISE DATE

Machines on Order	QUANTITY		PROM. DATE	
	6/22	7/3	6/22	7/3
Machines promised June	2953	2966	1775	1775
Machines promised July	202	-	140	-
Machines promised August	251	400	50	99
Machines promised September	135	146	9	9
Machines promised October	60	60		
Machines promised November	30	36		
Machines promised December	21	22		
Machines promised January	12	12		
Machines promised February	24	25		
Machines promised March	24	24		
Machines promised April	1	1		
Machines with no promise	109	76		



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Mr. C. J. Roese

6-14-50  
SAC, New York - 100-89735 (P)OVERALL AGENT TOOL DELIVERY AND HOLDUP REPORT (cont)

	QUANTITY		TOTAL VALUE	
	6/22	7/3	6/22	7/3
Orders for Pool machines held for review of necessity	72	72		14
Machines shipped by Manufacturer	2012	2004	557	897
Machines shipped to Sub-contractors	1493	1525	719	751
Unassigned machines on hand	248	280		
Machine Tool released to date	3041	3122		
Releases approved to date	2650	2852		
	<u>6/22</u>	<u>7/3</u>		
a. Pool machines received at Milwaukee Ave. - Total	178	169		
Pool machines shipped from Milwaukee Ave. - Total	83	83		
Pool machines at Milwaukee Ave. on date shown	95	116		
Pool machines received at Michigan Ave. - Total	374	369		
Pool machines shipped from Michigan Ave. - Total	163	163		
Pool machines at Michigan Ave. on date shown	211	164		
Machines at Wolverine Storage	13	13		
Machines shipped from Wolverine Storage - Past Week	0	0		

b. The following is the number of machines supplied to all Continental plants and sub-contractors as of June 22 and July 3.

	6/22	7/3
C.A.E. Dallas	19	21
4086 Michigan Ave. (For Transfer)	96	97
CAE 3641 E. Milwaukee Avenue	85	94
CAE 3641 E. Milwaukee - Storage	76	88
CAE Muskegon	243	250
Arrow Metal Products	18	18
J. I. Case	23	26
Ceco Gauge	3	4
Commercial Tool	10	10
Duplex Printing	39	40
Ferracute	22	22
Koe to Die Casting	5	5
Lycoring	159	166
Morey Machine	50	51
Oldsmobile	404	411
Oliver Machine	5	5
Parten Machinery	10	10
Peerless	100	96
Broderick	6	6
Triplex	43	45
Burton Tool	2	2
Ranger - Farmingdale	168	171
Ranger - Jamaica	164	196
Aircraft & Diesel	9	9
American Type Foundry	103	105
Indiana Gear Works	14	14
Liberty Aircraft	1	1

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b-1650  
 Mr. C. J. Reese

#5

	6/22	7/3
Stewart Warner	3	1
Bennett Mfg. Co.	4	4
Fitchburg Grinding Machine	6	6
Swiss American	15	15
Kerlin	4	4
Harry F. Pahl	9	11
C & G Tool Co.	1	1
American Screw Products	9	9
Rossin Tool Works	2	2
Wolverine Tool	15	15
Maddell	12	13
Stainless Ware	6	6
Grand	1	1
Dexter	8	10
Coos & Delesus	1	1
Thorres & Mass	4	4
Scott & Fetzer	4	4
Hike Tool	1	2
American Thermometer	3	3
Algonac	1	1
General Parts	1	1
Burkey	3	3
American Tool & Die	1	1
Diversified	1	1
Edison Tool	1	1
Motion Picture		1
	<u>2012</u>	<u>2084</u>

5. PARTS TO BE INCLUDED IN INVENTORY

615820 - Crankcase - Upper	Receipts - 2nd set of castings 50 - Received (Note: First 8 inspected by X-ray were rejected)
615314 - Crankcase - Lower	50 - shipped - 3 - 6/27 20 - 6/28 20 - 6/29 7 - 7/1
600345 - Cylinder Block (AEB Unit)	100 - Received
615850 - Cylinder Head B Unit	50 - Received
615851 - Cylinder Head A Unit	50 pieces shipped 6/12-6/16 (From Acme Pattern)
620710 - Cylinder Head Cover A Unit	50 pieces received 6/30
620711 - Cylinder Head Cover B Unit	50 pieces shipped 6/30

6. PRODUCTIVE MATERIAL SHORTAGES

a. Bar Stock	June 22	June 29
Request for shippers at Michigan Ave.	5	3
Shipped from Michigan Ave. Total items	963	784
Request for shippers at Muskegon	0	0
Shipped from Muskegon	302	215
Requests being processed by Planning	0	0
b. Forging Shortage	3	1
	(worst date 7/1)	(worst date 7/8)

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r. C. J. Reese

#6

1. At Muskegon

	June 25	July 3
Bond Room	* 903	955
Laboratory	182	199
Inspection	175	168
Quality Review Inventory	121	91

\* Bond Room Inventory dated 7-3 submitted by Mr. Sheldon shows 955 items, 476 of which were in sufficient quantity for 5 engines. 282 items are in sufficient quantity for 100 engines.

r. Sheldon reported that 233 items were moved out of quality review inventory and 183 items were moved in quality review inventory.

SUMMARY OF ENGINE PARTS PROMISE LIST DATED 7-5  
JULY 5 ENGINE BUILDING SCHEDULE

*for first 5 engines*

a. Total number of individual parts and sub-assemblies to be received or made in Muskegon Plant - 829

	June 16	June 23	July 3
In Muskegon Bond Room	x	171	171
In Muskegon Plant-not reported in Bond Room	x	170	243
Waiting sample O.K.	50	24	14
Obtain from Dayton	272	204	194
In Transit	(9)	115 (662)	126 (750)
*****			
Promise (to 6-20)	75		
(6-21 to 6-25)	54	(6-21 to 6-25) 39	(To 7-5) 44
(6-26 to 7-7)	35	(6-26 to 7-1) 99	(7-6 to 7-11) 28 (72)
		(7-2 to 7-5) 3	
	164	141 (147)	72 (72)
*****			
Delayed - Material	1	0	0
Delayed - Purchase Negotiations	2	0	0
Delayed - Engineering Changes	0	0	0
Delayed - Lack Tools & Equip.	3	5	0
Hold Up - Material Review	3	3	2
No Promise	26	15 (23)	5 (7)

b. Procurement of 100 Engine Sets of Parts

Review on June 26  
484 - 50.6%

Review on July 3  
320 from C.A. & W. Sources  
210 from A.S.C.  
530 on July 7 - 63.9%

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R. C. J. Keene

47

- c. On 6-10 a Special Critical Shortage List showed:  
 96 Parts to be obtained from Packard or Packard sources  
 56 " which could be obtained only from C. A. & E. sources  
 152 Total

As of July 3 this score stands as follows:

At Muskegon - 5  
 In Transit - 8  
 Promised to  
 7/5 - 9  
 6 - 7/11 - 9  
 No Promise - 1  
 32

7. SUMMARY: TOOL & EQUIPMENT DELIVERIES TO C.A.E. (including subcontractors)

As	Ordered		Shipped		Percentage Shipped	
	to 6/22	7/1	to 6/22	7/1	6/22	7/1
Machines	2961	2961	2002	2084	67.6%	69.9%
Durable Tools	5720	5770	3318	4684	57.0%	81.1%
Inspection Tools (Capital Equipment)	329	357	177	185	53.8%	51.8%
Shop Equipment	1317	1405	374	427	28.4%	30.3%
Production Gauges	12411	12406	8369	8005	67.4%	64.5%
Cutting & Perishable Tools	4550	4597	2274	2380	50.0%	51.7%
	25,8	26,0	15514	19749	60.2%	71.3%

*Packard has  
these made.*

8. FUTURE DELIVERY SCHEDULE FOR TOOLS

*For -T Engine.*

	<u>FIXTURES</u>	<u>GAUGES</u>	<u>CUTTING TOOLS</u>	<u>ME. INC. TOOLS</u>
Promised 7/1-7/15	845	2101	821	212
Promised 7/16-7/31	270	762	241	12
Promised 8/1-8/15	111	60	90	25
Promised 8/16-8/31	24	35	10	3
Promised 9/1-9/15	31	72	4	5
Promised 9/16-9/30	21	10	6	0
Promised 10/1-10/15	20	3	1	0
Promised 10/16-10/31	13	0	0	0
Promised 11/1-11/15	17	1	1	0
Promised 11/16-11/30	0	0	0	0
Tools with no promise	21	2	2	1

*Durable  
Tools*



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10-1400  
 Proc. Order Form - 16-21/25/29  
 T. C. J. ROOSE

9. FUTURE DELIVERY SCHEDULE ON INSPECTION E-QT.

Promised 7/1-7/15	46
Promised 7/16-7/31	63
Promised 8/1-8/15	17
Promised 8/16-8/31	8
Promised 9/1-9/15	11
Promised 9/16-9/30	5
Promised 10/1-10/15	5
Promised 10/16-10/31	1
Promised 11/1-11/15	2
Items with no promise	88

4. FUTURE DELIVERY SCHEDULE ON SHOP EQUIPMENT

Promised 7/1-7/15	156
Promised 7/16-7/31	73
Promised 8/1-8/15	64
Promised 8/16-8/31	28
Promised 9/1-9/15	18
Promised 9/16-9/30	14
Promised 10/1-10/15	12
Promised 10/16-10/31	4
Promised 11/1-11/15	6
Promised 11/16-11/30	0
Promised 12/1-12/15	3
Items with no promise	153

a. Tool Design Report

47 requisitions remain to be issued b. Tool Design (was 67)

7 are ordered for the first time - due to engineering changes

40 are Receiving Inspection Tools - will be in float at all times

There will also be a number of additional orders for gauges for Tear Down Inspection.

6. TOOLS AT MUSKOGON INSPECTION - JULY 3, 1944

a. 1. Total No. Tools, Gauges & Fixtures RECEIVED AT MUSKOGON	10451
2. Total No. Tools, Gauges & Fixtures inspected to date	10264
3. No. items from Col. 1 which will remain in Muskogon	2343
4. No. Tools, Gauges & Fixtures inspected during past 10 days	1160
5. Total No. Tools, Gauges & Fixtures WELDEST FOR SHIPMENT	3999
6. No. Tools, Gauges & Fixtures shipped to date from Muskogon	3735
7. No. items waiting for shipment to Ranger	20
8. No. items waiting for shipment to Lyonning	0
9. No. items waiting for shipment to Olds	4

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r. J. J. Jones

9. SPECIAL ILS PROGRAMS - ROLLS ROYCE

- a. There are 1994 Non-productive Stores cards typed with the required information. 104 Receiving Slips are not yet posted.
- b. No. of Employees on Rolls Royce at Muskegon - 651 (276 Productive  
(375 Non Productive)
- No. of Employees on Rolls Royce at Milwaukee Ave. - 109 (27 Productive  
(82 Non Productive)
- No. of Employees on Rolls Royce at Michigan Ave. - 66
- No. of Employees on Rolls Royce at Henry Street - 508

10. MILWAUKEE AVENUE PLANT

- 74 Machines are spotted
- 53 Machines are ready to run
- 33 Machines are running
- 41 Machines are spotted in the emergency machine shop and four are being run on Rolls Royce Production
- 119 Machines are wired

Because of the trouble encountered on the carburizing of crankshafts, Mr. Hostetter suggested that we do the carburizing in our own plant. Mr. Winters reported that the Muskegon Plant could handle a maximum of 750 crankshafts per month. Mr. Brooks will prepare a list of heat treat operations and specifications for equipment and submit same to Messrs. Hill and Backett. Mr. Brooks will furnish a print of the fixture now at Dallas for carburizing crankshafts.

11. MICHIGAN AVENUE PLANT

- |   |      |
|---|------|
| a. 1. Total No. Tools, Gauges & Fixtures RECEIVED AT MICHIGAN AVENUE                          | 3267 |
| 2. Total No. Tools, Gauges & Fixtures inspected to date                                       | 1861 |
| 3. No. Tools, Gauges & Fixtures inspected during past 7 days                                  | 599  |
| 4. Total No. Tools, Gauges & Fixtures "Request for Shipper" received at Michigan Avenue Plant | 3789 |
| 5. No. Tools, Gauges & Fixtures shipped to date from Michigan ave.                            | 3511 |
- b. Paving work started 7/1

12. PILOT ENGINES

The first engine has finished the final acceptance run.

The second engine is now being prepared for the final acceptance run.

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Mr. C. J. Reese

13. MISCELLANEOUS

- a. Mr. Kinamon will assume the responsibility of making disposition of the MPC material now in the Muskegon Plant.
- b. Mr. Brooks complained about the delay in the placement of Purchase Orders on Shop Equipment. Mr. Willi requested a summary on all shop equipment requisitions. Special effort should be made to order all shop equipment and sub-contractor requirements within the next two weeks. Mr. Sullivan will prepare a list of all shop equipment on order and their existing promise dates.
- c. Mr. Rogan advised that the crankcase castings now in Muskegon will be examined and inspected by a Packard Inspector. If the castings come up Packard acceptance we will use them in our engines.
- d. Two additional men have been assigned to Fielding Avenue to prepare facilities for storage and keep them in orderly condition.
- e. A total of 67 machines have been shipped out of Muskegon and have been declared surplus. Paper work is in process but declaration will be delayed one week. Mr.inters will be furnished with a copy of the machine list.

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APPENDIX F

MEETING OF THE AD HOC COMMITTEE AT RANGER AIRCRAFT ENGINE COMPANY  
AT FARMINGDALE, NEW YORK, ON 14 JULY 1944

Members present: Dr. A. E. Lombard, Jr., ARCO, Chairman \*  
Mr. John M. Reid, Special Advisor, AAF  
Lt. Col. G. E. Mohler, PES, Materiel Command  
Maj. R. B. Clevering, RCS, Materiel Command  
Col. W. S. Cave, BAC  
Maj. F. N. Squires, Hq., AAF, Observer

Also present: Mr. J. Carlton Ward \*)  
Mr. Harold Budds ) Ranger Aircraft  
Mr. John Le Duc )  
  
Mr. C. J. Reese ) Continental  
Mr. A. B. Willi )  
  
Maj. Dennis, AAFRR  
Lt. Col. Hajek, EPD, AAF

1. Merlin Production

Ranger is to produce, as a subcontractor to Continental, the entire supercharger assembly and wheel case for the Merlin V-1650. In addition, it is to produce the propeller reduction gear assembly, obtaining certain gears from subcontractors.

The production on the supercharger assembly was proceeding very slowly. Many of the machine tools were not yet installed or in operation. Mr. Budds estimated that it will be between 15 August and 15 September for the pilot line machines to be set up and running. Schedule for delivery of supercharger assemblies is as follows:

	Present Sched.	Estimated Shipments	
		Certain Parts from Packard	100% Ranger
July ....	10	3	
August ..	30	10	
Sept. ...	50	(10)*	
Oct. ....	100	(20)*	
Nov. ....	200		50
Dec. ....	300		100

\*Subject to arrangement by Packard to supply additional parts, principally the wheel case.

The proposed production above for the "100% Ranger" appears reasonable.

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(2)

Mtg. of Ad Hoc Committee at Ranger, Farmingdale, N.Y. on 14 July '44

The supercharger test stand is to be ready on 1 September for temporary testing and on the 1st of November for permanent testing. It is expected that Ranger will make performance tests on each supercharger, which is the standard British practice although not standard American practice.

Mr. Budds stated that the reduction gear production was not as critical as the supercharger and that the five reduction gear cases were shipped last week.

2. Subcontracting for Packard

Ranger has taken on a number of subcontracting items for Packard, using the present Ranger engine machine-tools for this purpose. This work is serving to some extent to hold the employment together during the period in which the company is tooling up for the V-1650 for Continental.

3. Progress Report

Attached as Exhibit I to this appendix is a "Progress Report" prepared by Ranger, as of 1 July.

- \* Dr. Lombard and Mr. Ward went over the picture with Mr. Budds and Mr. Le Duc on 13 July, but were not present at the meeting on 14 July. This report covers points discussed on both the 13th and 14th.

Attachment:  
Exhibit I

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APPENDIX F  
EXHIBIT IPROGRESS REPORT  
CONTINENTAL PROJECT

TO

MR. HAROLD BUDDS

JULY 1, 1944

INFORMATION FROM CONTINENTAL

Our status on purchase orders covering machine tools ordered by Continental Aviation for Ranger and Ranger subcontractors shows we still have 110 purchase orders, covering 169 machines, to be received. All of these machines have been assigned to Ranger and the purchase orders would be of great assistance to our follow-up department. We have also been advised that purchase orders on gages are still being placed by Continental.

MACHINE TOOLS

	<u>Pilot Line</u>	<u>Full Schedule</u>
Machines required	286	558
Machines received	173	320
Machines spotted- in place	138	268
Machines wired	138	268

A.T.F.

Machines required	144
Machines received	102
Machines installed	81

Other Subcontractors

Machines required	298
Machines received	150
Machines installed	124

The following status refers to other subcontractors:

Machine Tools released by Continental - but not shipped	1
Machine Tools requested by R.A.E.; "R" numbers have been assigned, but our records do not show that the vendors have received purchase orders covering machines	4

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Prog. Report, Continental Project to Mr. Harold Budds, July 1, '44

(2)

Machines requested by R.A.M., C.A.B. Tools Committee has approved, "R" numbers have been assigned, but the purchase orders have not been mailed to the vendor 2

Machines passed by Tool Committee, but "R" numbers have not been assigned 10

BLUEPRINTS

The shortage on Packard tool prints, other than gages, has now been reduced to 56. We have approximately 136 gage prints, to receive from Continental. This represents the vendor inspection gages processed by Continental, which is one of our most serious handicaps at the moment. We also have an approximate requirement of 86 Packard gage prints.

ANODIZING

The anodizing equipment, amounting to \$36,000 has been approved by Continental. Requisitions and proposals will be released on July 7th. Casting Impregnations equipment including installation amounting to \$50,000 has also been approved, and specifications and proposals will be available by Daylite, the supplier, by July 8th. Because of their previous experience, we are using this same Company who made the Packard installation.

Approvals have also been received on the following equipment:

Final Assembly Line Conveyor installation -- \$35,000.00  
Requisitions and proposals will be submitted to Continental by July 12th.

Alemite filter unit for coolants, chip buggies- 10,000.00  
Requisitions and proposals will be submitted by July 7th.

Compressors, Motor Generator Sets and Transformers -- 40,000.00  
Requisitions and proposals will be submitted by July 14th.

HEAT TREAT EQUIPMENT

This equipment has been approved by Continental and is now on order. The heat treat equipment required by A.T.F., however, is not on order and this means that delivery will not be made in time for our production schedule.

TEST EQUIPMENT

The temporary set-up for the testing of wheelcases and superchargers will be ready for operation on July 15th.

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Prog. Report, Continental Project to Mr. Harold A. [redacted], July 1, 1944

(3)

TOOLROOM EQUIPMENT

Orders have been placed for all required toolroom equipment.

CUTTER GRINDER EQUIPMENT

The required cutter grinding equipment has been approved and is now on order.

BONDROOM

Requisitions for bondroom equipment have been forwarded to Continental, have been approved, and are now on order.

SALVAGE AND RE-WORK EQUIPMENT

Machine tools are all on order, however, delivery dates on some items have been scheduled for August. This is not satisfactory.

MISCELLANEOUS FACILITIES

The required facilities for this Project are becoming more critical daily. It is impossible to complete our plant lay-out because of lack of work benches, wash booths, tanks, stands, tool cribs, stock bins, etc. We also have, at the present time, 96 people who do not have office facilities with which to work — desks, typewriters, and filing equipment. Filing equipment is particularly acute. The Packard tool prints which have played such an important part in the entire program are now at the Farmingdale and Jamaica plants in bundles and we are unable to file them because of the lack of cabinets.

In a conversation with Mr. Kanaar today, he advised me that he was confident he had secured a commitment of \$54,000.00 for office furniture — \$44,000.00 to come from the Ranger Plancor and \$10,000.00 from the Continental Plancor. He also advised me that the following appropriations were approved by Wright Field:

Exhaust system for dust control	\$ 50,000.00
Wash booths, tanks and stands	66,000.00
Stools	3,500.00
Tool Cribs and Stock Bins	23,000.00
Work and inspection benches	37,500.00
Lift trucks, jacks and jacks	20,000.00



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10-51/3777  
 Prog. Report, Continental Project to Mr. Harold E. [redacted], July 1, '44

(4)

All this is to be provided through the Ranger Planco, however, and while Mr. Kanar advised he has the approval of Wright Field, the details of the transaction must be forwarded by the Eastern District of D.P.C. for final approval.

In our report of June 1st we referred to a \$40,000.00 allocation for office furniture and automotive equipment. As previously informed, this arrangement did not materialize. The delay in clearing this situation has brought it to the point where it has become a serious handicap and has made the starting of the program unnecessarily difficult.

PURCHASED PARTS

All purchased parts are on order and deliveries are being made by approximately 50% of the vendors at the present time.

TWO PILOT ASSEMBLIES - V-1650-7

The two pilot assemblies have already been shipped June 17th.

PILOT LINE PRODUCTION

The first unit of Model V-1650-7 will be shipped on July 8. The other four will follow in approximately the next ten days. These five have been produced with production equipment, tool-room and other improvised methods. We have some critical factors effecting our July schedule -- the most serious of which is the 9 Spindle Barnes, used on the wheelcase. While we are making every possible effort to secure these tools, I do not believe they will be available in time to meet the July schedule of 10 units. While we have other tooling problems in the way of machine tools and jigs and fixtures, that have late deliveries on other parts, we are planning to overcome these with improvised tooling.

SUB-CONTRACTORS' FACILITIES

The situation on sub-contracting facilities is also critical. These sources should be able to start shipment during the month of September and their equipment should be available to them in August. There are a number of items they still require which have not been released by Continental. We have discussed this with Continental management and plans are being made to expedite the handling of these machine tools. It must be borne in mind, however, that the jobs still have to be tooling by the sub-contractor.

We have made a survey of our parts available in the Bond room against our schedule and we are setting up priority lists on all parts with the idea of assisting in securing the items that are first required. We are strengthening our Follow-up Department both on machine tools, and jigs, fixtures, perishable tools and gages, and are making every effort to improve delivery dates where necessary.

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0-14.00  
P+S, date Aug. 14. (Pz/100P)

Prog. Report, Continental Project to Mr. Harold F. [redacted], July 1, '44

(5)

CASTINGS

On Mr. Willi's visit to Jamaica on June 28th, the subject of Continental control on patterns, and sources on castings being used by Ranger, was discussed. He agreed that this method of handling our supply of castings did not lend itself to placing Ranger in a position where they were in control of their raw materials. He will discuss this with Mr. Richter and arrange for the transferring of equipment and sources to us.

SUBMITTED BY:

John W. LeDuc  
Ass't. Mfg. Mgr.

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U-1450  
P's, and P's - 16-82/877

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APPENDIX G

MEETING OF AD HOC COMMITTEE ON PACKARD-CONTINENTAL PRODUCTION  
AT THE PACKARD MOTOR CAR COMPANY, DETROIT, ON 17 JULY 1944

Members present: Dr. A. E. Lombard, Jr., ARCO, Chairman  
Mr. John Reid, Special Advisor, AAF  
Lt. Col. O. E. Mohler, PES, Materiel Command  
Maj. R. B. Clevering, RCS, Materiel Command  
Col. W. S. Cave, BAC  
Maj. F. N. Squires, Hq., AAF, Observer

Also present: Mr. William Packer, Packard  
Mr. Robert Brown, Packard  
Maj. Raymond Anthony, AAFRR, Packard  
Maj. Houston, Central Procurement Dist., AAF  
Mr. Burd, Production Advisor at Materiel Command

Shipments this month through the 15th were as follows:

-7 .....	571
-68 .....	85
000 .....	0
69 .....	115
2 Stage .....	771
225 .....	140
224 .....	192
1 Stage .....	332
Total .....	1,103

Packard's normal operations involve 50 days per week. The above represents 11½ days production, with July containing a total of 23½ days. On this basis, in view of the fact that the daily production over the 4th of July was not up to full strength, the production of 2400 engines this month appears assured. Packard is shooting for 2700 engines next month. Attached as Exhibit 1 to this appendix, is Packard's proposed shipping schedule by model through October 1945.

The spares situation was discussed and it was agreed that Packard will build all the 1-stage engine spares that are needed. On the 2-stage engine, the British and U. S. will receive from Packard spares equivalent to 1.2 overhauls per engine. The balance of the British requirement for spares which may be required to raise the British total to 2.5 overhauls per engine will be delayed to start in March 1945. It is expected that these spares will be shipped from Continental in those cases where Packard is unable to make delivery.

On the -9 engine, Packard is building twelve experimental engines. The -9 model test is scheduled to be completed by 15 September or 1 October. Packard is building 65 production engines along with the experimental engines and expects to have these completed by the middle of May. (Colonel Vincent advised Lt. Col. Mohler that the first production engines would be shipped in March).

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 17 June 1944  
 Mr. Burd's Report of Ad Hoc Committee at Packard, Detroit, 17 June 1944

(2)

Packard had planned to make the conversion from -7 to -9 during the period from May through August 1945. Mr. Brown stated that the conversion would have to be made rapidly because in certain cases, such as in the camshaft line, a surplus of parts will be built up on the old engine to tide over until the new engine comes into production. Once the camshaft line is converted for the -9, it will be useful only for that engine.

The limiting factor on the manufacture of the 68 engines for the British Lancaster is the accessory drive which is manufactured by an outside concern. Present sources limit accessory drive production to 1500 engines per month of the Model 68 and Model 300.

As noted above, Packard is now operating two ten-hour shifts, 5½ days per week, except the test cells which are on three eight-hour shifts, seven days per week. There has been considerable discussion of changing the plant, except the test cells, to two ten-hour shifts, five days a week, eliminating all Saturday operations, now relatively inefficient because of absenteeism.

At the conclusion of the meeting with the Packard Representatives, the Committee held a closed session with the other Government Representatives present to discuss probable performance. Mr. Burd who had been at Packard for four days surveying the general picture, felt confident that Packard would meet the July schedule of 2400 and should be able to produce about 2500 a month thereafter for a few months. He felt that the crank case line was the most critical line from a tooling point of view.

The Chairman walked through the shop with Major Anthony at about five o'clock in the afternoon (one hour before the end of the first shift). A mild sit-down strike was in evidence in Building D, where the crank case and crank shafts are machined, in protest of an action by the Manager in that building who fired about 700 persons the day before for loafing. Even in other departments there was considerable evidence of loafing, the worst that the Chairman has ever seen in any aircraft facility. Major Anthony stated that he had called this to the attention of the Management and the Union, pointing out that the Contracting Officer would refuse to make payments on the cost-plus-fixed-fee contract, if this loafing was not stopped. Major Anthony requested that the Committee do nothing. He felt it would be much more effective to work out the problem locally with the Management and Union without outside action or interference.

Attachment:  
 Exhibit I

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APPENDIX G  
EXHIBIT I

RESTRICTED  
ENGINE SHIPPING SCHEDULE BY MODEL

Thru	Merlin 33 Mosquito		Merlin 226 Mosquito		Merlin 38 Lancaster		Merlin 224 Lancaster		Total Single Stage Merlin 33, 38, 224, 225		Merlin 69 Mosquito		Merlin 266P Spitfire		Merlin 68 Lancaster		Total Merlin 69, 266P, 68		Total 68 Merlin 33		U.S. 7-1650-13		U.S. 7-1650-7		U.S. 7-1650-17		Total 1650-13, 1650-7, 1650-17		Total 1650-13, 1650-7, 1650-17	
	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.	No.	Accu.
Apr. '44	890		138		7901		2054		10970		478				6		532		11002		2649		3342							
May			92	227			480	2494	822	11492	130	806			98	144	218	750	740	12242		338	3477			558	705	705	1275	
June			121	348			474	3158	795	12287	250	856			28	172	278	1024	1075	15515		2302	3224			1702	2874	2874	475	
July			493	841			212	3370	708	12992	179	1038	193	193	195	365	568	1893	2270	14345		3191	3380			1153	2941	2941	434	
Aug.			500	1341			200	3870	700	13692	368	1393	119	312	573	436	1050	2643	1750	16335		2098	2483			1150	1141	1141	1794	
Sept.			400	1741			200	3770	600	14292	182	1675	127	439	601	1539	910	3563	1810	17945		2136	3638			1130	1141	1141	474	
Oct.			328	2066			178	3945	500	14792	131	1706	249	688	804	2343	1194	4737	1994	19529		2136	3638			1070	1141	1141	274	
Nov.			104	2170			104	4049	208	15000	82	1788	148	856	1125	3468	1355	6040	1163	21092		2136	3638			1130	1141	1141	474	
Dec.											231	2019	8	844	1271	4739	1810	7802	1810	22602		2136	3638			1130	1141	1141	474	
Jan. '45											232	2261			1452	6191	1644	9296	1684	14296		2136	3638			1130	1141	1141	474	
Feb.											247	2499			1288	7442	1807	10748	1802	25748		2080	14036			1080	1141	1141	474	
Mar.											282	2780			1630	8976	1792	12580	1792	27840		2080	15036			1080	1141	1141	474	
Apr.											282	3012			2366	10342	1618	14178	1618	24198		423	12911			423	12911	12911	474	
May											256	3267			1504	11846	1759	15957	1759	30457		1225	17143			1225	17143	17143	474	
June											255	3822			1446	13292	1701	17658	1701	32558		1025	18103			1025	18103	18103	474	
July											306	3827			1413	14706	1718	19376	1718	34276		450	19128			450	19128	19128	474	
Aug.											356	4182			1893	16300	1852	13226	1950	36326		350	20038			350	20038	20038	474	
Sept.											368	4850			1226	17524	1594	22920	1594	37920		200	13923			200	13923	13923	474	
Oct.											368	4918			1782	19306	2100	25070	2100	40070		720	21734			720	21734	21734	474	
Unscheduled											175	5091			411	27426	7291	33361	7291	48361										
Total Authorized	890		2170		7901		4049		15000		8091		844		27426		33361		48361		2649		15911		4		13744		1975	

\* Special parts to build these 4 V-1650-17 engines will be furnished by the Engineering Department.

See Figures A-1 to A-4 for Totals Authorized.

E. T. Phillips

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minus - V.1650  
 Pts. Ains. Proj. 41-6/49  
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Ref: S.A. ~~131~~ 90-1-2

Special Orders #165  
 Paragraph #17  
 Dated 17 July 1944

23 July 1944

Production of Merlin V-1650 Engines at  
 Packard Motor Car Co. and Continental  
 Aviation & Engineering Co. Plants

Resource Control Section

ISB-M-632

8184

A. Purpose of Visit:

1. To investigate and report on production expectancy as of October 1943 of Merlin V-1650 engines, and also whether the introduction of new models will affect the delivery schedule. This investigation is at the request of a member of a committee appointed for a study of Merlin engine production. Members of this committee are:

Colonel W. S. Cave	.....	British Air Commission
Lt. Col. O. E. Mohler	...	Prod. Engr. Section, AAF Material Command
Major R. B. Clevering	...	Res. Cont. Sec., AAF Mat- erial Command
Major F. N. Squires	.....	Headquarters, AAF, Observer ✓
Dr. A. E. Lombar, Jr	...	A.R.C.O. Chairman
Mr. John Reid	.....	Special Advisor, AAF

B. Factual Data:

1. After viewing the circumstances of V-1650 engine production in the subject plants, an overall picture was apparent which will be presented in order in the following paragraphs:
2. Packard Motor Car Company, Engine Division, Detroit, Michigan.
  - a. At the Packard plant the AAFER furnished a list of the items critical as to production in the Packard plant. The production lines in these departments were reviewed, and also several others, in order to get a general picture.
  - b. Packard has 37,000 employees on aviation engines, utilizes 2,483,600 square feet of factory space, and the entire plant is converted 100% to war work. The plant is operated on a five day week with two shifts of ten hours each.

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P&S. Airo. Proj. - 41- (2/10 pp) R = RESTRICTED <sup>130</sup>

Memorandum Report IAS-M-632  
 Subject: Merlin V-1650 Engines  
 Dated: 25 July 1944

- g. In going through the departments it was noticeable that all machines are not being utilized. Including the assembly lines, which have a capacity of 3,000 engines per month, all production lines have ample equipment and tooling for 2,700 engines per month, with the exception of the upper crank case line. Quantities required from this line are maintained by Saturday and Sunday work.
- d. Packard officials expect to meet the July 1944 schedule of 2,430 engines, and also expect to begin producing an average of 2,700 engines per month in September 1944. The writer does not believe the July schedule can be met or that it is possible to reach 2,700 per month before early in 1945, due principally to labor conditions. The company now must hire 300 women before they are permitted to put on any more men. The morale of the direct labor is very low, resulting in much loafing and stalling. A quota for the average day's work has been set on each operation and when the faster men reach that quota they quit and loaf the remainder of the day. Patriotism and other incentive appeals failed to break up this practice. A considerable portion of direct labor has been recruited from distant states. These employees, knowing their jobs will end with the termination of war, take many liberties and even defy their union leaders, who, however, will not permit them to be discharged. It is estimated by the Labor Relations Office that Packard is receiving eight hours work for ten hours pay. An instance occurred just before the change of shifts Monday afternoon - 17 July 1944, in one of the departments. The regular union stewards were absent attending a convention. When the department superintendent attempted to secure the names of loafing employees, in order to dock their wages, he was forcibly ejected from his own department by substitute union stewards.
- e. Packard is presently sub-contracting about 100 additional items in order to release their men to bolster weak departments. This could not provide any immediate relief as it requires four to six months for a new sub-contractor to become a satisfactory source.
- f. The spare parts situation, while not good, is not serious and can be expected to be resolved soon after a present downward revising of spares requirements is completed.
- g. The introduction of pending model changes is being gradually effected by Packard with the exception of the carburetor furnished by Bendix, who propose to begin production deliveries in April 1945.

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U-1650  
P+S. Air. Proj. 41. (2/6 pp) 131  
RESTRICTEDMemorandum Report IEM-432  
Subject: Merlin V-1650 Engines  
Dated: 25 July 19443. Continental Aviation & Engineering Corporation  
Muskegon, Michigan.

1. Continental was set up in the engine picture at a time when it appeared Packard would not be able to supply the program.
2. The present production space of 350,000 square feet has been and is still being largely used for manufacture of the Pratt & Whitney R-1740 engine. A new building providing 225,000 square feet of additional production space is under construction, but will not be ready for occupancy before three months.
3. In the available space in the present building, incomplete pilot lines have been set up for machining six large engine castings. These castings are:

Crankcase - Lower half  
Crankcase - Upper half  
Production Gear Casing  
Cylinder Block  
Cylinder Head  
Crankshaft Neck Mechanism Cover

A limited amount of these castings are now being processed through the Pilot lines. The operations not yet provided for in the pilot lines are being performed in the tool room for the present. Considerable machinery is setting on the floor waiting for installation in the space to be vacated by the Pratt & Whitney R-1740 engine December 31st 1944.

1. This machining of major castings, their sub-assembly operations, and the final engine assembly is planned to fully occupy the plant, the remainder of the sub-assemblies and parts being sub-contracted. The program is approximately 75% sub-contracted.
2. As new building space for final assembly will not be ready for three months, the two engines scheduled for delivery in July 1944 are being assembled in a small corner of the present plant, principally of parts secured from outside sources.
3. The plant is being operated at present on an inefficient and entirely unsatisfactory basis. When the program was first started, Continental set up the planning, engineering and purchasing departments in a leased building at 21 Henry St., Detroit, Michigan, utilizing several hundred personnel.



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U-1650  
P+S. Ainc. Proj 41-9/6pp137  
UNRESTRICTEDMemorandum Report ISB-M-632  
Subject: Merlin V-1650 Engines  
Dated: 25 July 1944

This set up had an initial advantage but at the present stage of progress of the program the fact that planning, engineering and purchasing are not housed in the production plant at Muskegon provides a condition that is detrimental to production practices, costly to maintain, and is affecting the best interests of the Government.

- a*
- g. Information was obtained at the Muskegon plant that the Detroit office does not cooperate with the production plant on planning, engineering and expectancy of sub-contracted sub-assemblies and parts. This is causing only a partial utilization of the direct labor, which totaled 3,756 employees as of 30 June 1944. A potential situation exists that can very easily get the attention of the Senate Investigating Committee.
  - h. Continental has been scheduled to deliver two engines in August 1944, gradually stepping up to 1,350 per month in August, September and October 1945. The committee, mentioned in Paragraph A-1 above, on July 20 1944 recommended that the present schedule be reduced, arriving at a peak of 800 per month in September and October 1945. This recommendation is concurred in by the writer as being the maximum expectancy from Continental, but it brings up for consideration the fact that production tools and machine tools are on order for the production of 1,350 engines per month and that construction of a building is in progress, which cannot be fully utilized. Also, the installation of test cells, some new and some converted, can be reduced.
  4. Overall picture of production of V-1650 engines:
    - a. After looking at both Packard and Continental production programs it is evident that both are weak in certain respects, though not necessarily along the same lines. Also, there are some items, in particular the camshaft and the existing final assembly line at Packard, where there are capacities in excess of the overall engine requirements. A re-grouping and combining of the two separate programs could result in increased overall efficiency, and reduction of unnecessary overhead. No detail study has been made of the overall picture, but it is quite possible that through re-grouping, one of the present sources could lose identity as a prime contractor.

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U-1650  
 P+S, Air. Proj. 41 5/1/44 <sup>133</sup> RESTRICTED

Memorandum Report IES-M-632  
 Subject: Merlin V-1650 Engines  
 Dated: 25 July 1944

**C. Conclusions:**

1. Packard Motor Car Company:

- a. It is concluded that Packard cannot, under present labor conditions, reach and maintain production of 2,700 engines per month, but can produce an average of 2,400 per month. This should have a beneficial effect on labor morale.
- b. The introduction of the -9 and -11 models will not retard production.

2. Continental Aviation & Engineering Corporation:

- a. Because of the circumstances related in Paragraph B-3 above, Continental cannot meet the present schedule and a more realistic schedule is necessary.
- b. The production control of Continental is, at present, on an insufficient basis.

3. Overall picture of production of V-1650 engines:

- a. It is concluded that consideration of re-grouping of Packard and Continental responsibilities could result in considerable advantage to the Government.

**D. Recommendations:**

- 1. It is recommended that a monthly schedule of 2,400 engines per month be set up for Packard.
- 2. It is recommended that a realistic schedule be set up for Continental arriving at a peak of 800 per month in September and October 1945.
- 3. That an investigation be initiated immediately into the merits and possibilities of re-grouping the V-1650 engine program as a whole. Purpose -- increase of efficiency, reduction of unnecessary costs, and economical production.

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P.S. circ. Proj. 41 (20)

134  
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Memorandum Report IEM-4-632  
Subject: Merlin V-1650 Engines  
Date: 25 July 1944

*Elmer A Burdy*

Prepared by: ELMER A BURDY  
Manufacturing Methods Staff

*T. F. Trimach*  
Approved by: T. F. TRIMACH, Chief  
Manufacturing Methods Staff

*Bowling*  
Approved by: G. L. BOWLING, Lt. Colonel, A. C.  
Chief, Industrial Service Branch

*H. A. Watson 1st Lt. H.Q.*  
Approved by: G. H. WELBART, Colonel, A. C.  
Acting Chief, Res. Control Section

Distribution:

- Chief, Production Division
- Chief, Fighter Br., PES
- Chief, Aero Equip. Br., PES
- Chief, Resources Control Section
- Chief, Procurement Division
- Chief, Inspection Division
- Merlin V-1650 Committee (6)
- Central Procurement Dist., Major Huston
- Supply Division, ASO
- AAFER, Continental A & B Corp.
- AAFER, Packard, Engine Division
- Chief, Components Br., RCS
- Manufacturing Methods Staff (5)

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Lt. Col. G. E. Wobler:  
33-70-5A Ext. 2-2254

//////

1 August 1954

Chief, Resources Control Section  
Wright Field, Dayton, Ohio  
Attn: Lt. Col. G. J. Mason

*WTR*

Bomber-Continental Coils-Boycott Program.

1. Your attention is invited to the attached copy of the letter received from the Resident Representative at the Bomber Facility.

2. It is recommended that a study be made as suggested in paragraph 5 of the aforementioned letter. As major flexing will affect the machine tool and tooling activities at Bomber in connection with the Continental program is not likely to result in anything but a healthy state. It is felt that close supervision and control by this headquarters is necessary at this state to assure Bomber meet all their commitments to Continental.

3. Any information or suggestions made as a result of the requested study should be a priority.

Colonel, Air Corps  
Chief, Production  
Engineering Section

Encl:  
copy from WTR at Bomber.

cc: Capt. W. P. Mason, Bomber Facility.

COM. GEN.
TECH. EXC.
ADM. EXC.
C. O.
BUD. OFF.
EXP. ENG.
CONTRACT
INSPECTION
PROD. DIV.
PROD. ENG.
PROD. CONT.
I. P. S.
A. S. C.
TECH. DATA
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OTHERS

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Carson V-1650  
P.S. Airc. Proj. - 18-1/2/44  
YMS

140 CONFIDENTIAL

2 SEP 1944

Packard Two Stage Engines for British

Director, A.A.F., Materiel and Services,  
Wright Field, Dayton, Ohio.

Attention: Major General B. E. Meyers

1. The British Air Commission have agreed to a further cut in the quantity of Merlin engines to be supplied them from this country with the stipulation that the Continental schedule not be cut at this time. Their stated requirements, as presented in PE-11, have not changed although a substantial deficit will be shown.
2. The following quantities of British 2-stage types will meet their requirements, while the V-1650-7/-9 production will meet revised P-51 and P-82 requirements if the Continental schedule remains as in E-11:

	<u>V-1650-7</u>	<u>V-1650-9</u>	<u>PM-68</u>	<u>PM-300</u>	<u>PM-69</u>	<u>PM-301</u>	<u>Total</u> <u>Packard</u>
July 1944	1100		220		410		1730
Aug.	1100		353		247		1700
Sept.	1100		496		204		1800
Oct.	1100		554		246		1900
Nov.	1100		775		130		2005
Dec.	1000		861		139		2000
Jan. 1945	1000		868		132		2000
Feb.	888	12	1000		100		2000
Mar.	680	20	1200		100		2000
Apr.	567	33	1400				2000
May	350	0	1650				2000
June		450	1300			250	2000
July		350	600	800		250	2000
Aug.		-	-	1750		250	2000
Sept.		-	-	1750		250	2000
Oct.		-	-	1750		250	2000

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V-1650  
P+S, Air Force - 11/2/77

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Ltr to Director, AAF, H & S.  
Attn: General Meyers

8. Concurrence of the Materiel Command is requested with respect to inclusion of the above Packard schedule in WE-11, the Continental schedule remaining firm.

By Command of General ARNOLD:

(Signed) O. P. Echols

O. P. ECHOLS  
Major General, U.S.A.,  
Asst. Chief of Air Staff,  
Materiel and Services

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RESOURCES CONTROL  
SECTION

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104 SEP 13 21 12

SEP 15 57 PM '44

WB310

RD V WARE NR154 WD P

FROM ARNOLD CG AAF WASHINGTON DC 152036Z

TO DEPUTY DIR AAF ATSC WRIGHTFLD DAYTON OHIO

GREENWICH TIME

GRNC

AFDNO 3837 PD THE PROBLEM OF MERLIN PRODUCTIONS WAS DISCUSSED BY  
 GENERAL ECHOLS WITH MR JOHN REID THIS DATE PD IT IS GENERAL ECHOLS  
 DESIRE THAT THE PRODUCTION OF THE LATER MODEL CMA THE DASH NINE CMA  
 BE ACCELERATED BOTH AT CONTINENTAL AND PACKARD PD MR REID OUTLINED  
 THE STEPS NOW BEING TAKEN BY PACKARD AND CONTINENTAL TO POOL NOT ONLY  
 THEIR OWN RESOURCES BUT ALSO THOSE OF THEIR BETTER SUBCONTRACTORS PD  
 IT IS HIGHLY DESIREABLE THT THIS PROGRAM BE ACCELERATED SO THAT THE  
 COMBINED CAPACITY OF PACKARD AND CONTINENTAL BE HELD TO THE  
 PRODUCTIONS OF THOSE ENGINE MODELS OF WHICH THERE IS A REAL NEED  
 PD CONSIDERATION WAS GIVEN TO THE POSSIBILITY OF AN ACCELERATED PRO-  
 GRAM INVOLVING THE FOLLOWING STEPS PD FIRST EXPEDITING THE TRANSFER  
 OF THE THIRTEEN FORTY FROM CONTINENTAL TO JACOBS OR ITS TERMINATION  
 AS SOON AS POSSIBLE PD SECOND ACCELERATING THE TRANSFER OF MACHINE  
 LINES FROM PACKARD TO CONTINENTAL TO BOTH HOLD THE CONTINENTAL LABOR  
 FORCE RELEASED FROM THE THIRTEEN FORTY LINE AND ALSO TO RELEASE THE R  
 FLOOR SPACE IN THEIR OWN FACTORY DESIRED BY PACKARD PD

BUYING OFFICE  
INFORM

202.

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IT IS HIGHLY DESIREABLE TMT THIS PROGRAM BE ACCELERATED SO THAT THE  
 COMBINED CAPACITY OF PACKARD AND CONTINENTAL BE HELD TO THE  
 PRODUCTIONS OF THOSE ENGINE MODELS OF WHICH THERE IS A REAL NEED  
 PD CONSIDERATION WAS GIVEN TO THE POSSIBILITY OF AN ACCELERATED PRO-  
 GRAM INVOLVING THE FOLLOWING STEPS PD FIRST EXPEDITING THE TRANSFER  
 OF THE THIRTEEN FORTY FROM CONTINENTAL TO JACOBS OR ITS TERMINATION  
 AS SOON AS POSSIBLE PD SECOND ACCELERATING THE TRANSFER OF MACHINE  
 LINES FROM PACKARD TO CONTINENTAL TO BOTH HOLD THE CONTINENTAL LABOR  
 FORCE RELEASED FROM THE THIRTEEN FORTY LINE AND ALSO TO RELEASE THE R  
 FLOOR SPACE IN THEIR OWN FACTORY DESIRED BY PACKARD PD

202.

PAGE 2 GRNC

THIRD IN VIEW OF THE HIGH COST OF THEIR PRODUCTIONS CMA INVESTIGATE  
 THE POSSIBILITY OF COMPLETELY TERMINTING RANGER AS A SUBCONTRACTOR  
 ON THE MERLIN PROGRAM PD IN THIS CONNECTION IT WOULD BE NECESSARY  
 FOR CONTINENTAL AND PACKARD TO MUTUALLY WORK OUT AN ARRANGEMENT  
 WHEREBY CONTINENTAL AT MUSKEGON IF RELIEVED EARLIER OF THE THIRTEEN  
 FORTY LOAD WOULD HAVE FLOOR SPACE AND PERSONNEL AVAILABLE TO TAKE ON  
 THE MANUFACTURE AT REASONABLE COST OF THOSE ITEMS AND QUANTITITES  
 NOW SET UP FOR RANGER THAT ARE ABSOLUTELY NECESSARY PD PARAGRAPH MR  
 REID HAS BEEN REQUESTED TO DISCUSSTHE FOREGOING PROBLEM IN DETAIL  
 WITH GENERAL COOK PD IT IS DESIRED THAT THE SERVICES OF MR REID BE  
 FULLY UTILIZED IN THE PROSECUTION OF THE ABOVE PROGRAM BOTH WITH  
 PACKARD AND WITH CONTINENTAL IN VIEW OF HIS FULL AND COMPLETE  
 UNDERSTANDING OF THE MANUFACTURING RPOBLEMS INVOLVED

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Mr. E. C. Thomas (as:TSBHD)  
Telephone - 2-6112

ICM TO: Brig. Gen'l O. R. Cook, Chief, Procurement Division  
Subj: V-1650 Engine Production Planning, Packard Motor & Continental  
Date: 10 November 1944

engines to maintain production through 1944, from Packard or Packard subcontractors.

(2) The Continental estimated production cost is \$36,500.00. The present cost of engines from Packard is \$14,663.00, which will be reduced to \$12,678.50 (Supplement #76 of their Contract). However, reduction at Packard Motor Company to 1200 engines per month in order to maintain Continental production at 800 engines per month, would undoubtedly cause drastically upward revision in actual cost of engines from Packard.

2. RECOMMENDATIONS:

a. It is recommended that consideration be given to concentrating all production under the reduced program requirements of V-1650 and Merlin Type Engines in the Packard facilities.

b. It is recommended that all procurement of V-1650 engines from Continental be terminated.

c. It is recommended that no further moneys be expended by Continental or its subcontractors in providing facilities.

G. H. MURPHY  
Colonel, Air Corps  
Chief, Resources Central Section

G. E. MULLER  
Lt. Colonel, Air Corps  
Chief, Aero Equipment Sub-Section  
Production Section

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F. N. Squires/es/2248

Brig. General E. M. Powers

20 November 1944

## Packard-Continental Engine Schedules

1. The ATSC has forwarded their recommended schedules for Packard and Continental Merlin engine production reflecting the decrease in British Stage I requirements. The ATSC recommends that Continental be kept in at the established peak of 800 engines per month, all of the production for AAF P-51 aircraft. This action would cut Packard's peak production from 2000 to 1000 engines per month, all production going to the British after July 1945.

2. The proposed schedules, compared with present schedules, for Packard and Continental are as follows:

	Packard			Continental		
	Proposed	Present	Increase or Decrease (-)	Proposed	Present	Increase or Decrease (-)
<u>1944</u>						
Nov	2247	2200	47	50	50	-
Dec	<u>2000</u>	<u>2000</u>	-	<u>75</u>	<u>75</u>	-
Tot. 1944	4247	4200	47	125	125	-
<u>1945</u>						
Jan	1900	2000	-100	105	100	5
Feb	1600	2000	-400	180	180	-
Mar	1400	2000	-600	250	250	-
Apr	1250	2000	-750	400	300	100
May	1250	2000	-750	605	400	205
June	1250	2000	-750	255	500	-245
July	1250	2000	-750	500	600	-100
Aug	1000	2000	-1000	550	700	-150
Sept	1000	2000	-1000	675	800	-125
Oct	1000	2000	-1000	780	800	-20
Nov	1000	2000	-1000	780	800	-20
Dec	<u>1000</u>	<u>2000</u>	<u>-1000</u>	<u>800</u>	<u>800</u>	-
Tot. 1945	14900	24000	-9100	5880	6230	-350

3. The above schedules meet Army Air Forces and British requirements with the exception that British P-301 production will start in June 1945, rather than May as requested.

4. Permission is requested to use the above proposed schedules for Packard and Continental in the SE-12 report.

J. F. PHILLIPS  
Colonel, Air Corps

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AIR MAIL

**ARMY AIR FORCES  
HEADQUARTERS  
AIR TECHNICAL SERVICE COMMAND**

Ref: Capt. E.M. Deckman  
rb: TSBPRH2  
Tel. 21297

WRIGHT FIELD, DAYTON, OHIO

9 December 1944

*Packard V1650  
same as  
MS*

IN EVERY MESSAGE - BOTH  
COMMUNICATIONS AND EN-  
TELETYPE TO ATTENTION OF  
FOLLOWING OFFICE SYMBOL.  
TSBPRH2

**SUBJECT:** Packard & Continental  
Engine Schedules.

**TO:** Commanding General  
Army Air Forces  
Washington 25, D.C.

**Attn:** Asst. Chief of Air Staff, M. & S.  
Chief, Materiel Div., Production Br.,  
Plans & Scheduling Section,  
Major F. N. Squires.

1. Confirming telephone conversation of 4 December 1944, the attached engine schedule has been established by A.T.S.C. at the Packard and Continental facilities for the V-1650 engines.
2. The Packard Motor Car Company confirmed by telephone on 4 December that they will furnish -7 parts to Continental as requested in order to meet the attached production schedule. However, it will be impossible for Packard to furnish any -9 parts to Continental prior to July 1945. Furthermore, Packard has agreed as requested by A.T.S.C. to maintain tooling for 1950 V-1650 engines per month. However, the present Packard production peak is scheduled for 1975 which automatically covers Packard's agreement.

For the Director:

*for* *E.M. Deckman*  
H. A. SHEPARD  
Colonel, Air Corps  
Acting Chief, Production Sect.,  
Procurement Division.

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Attach:  
Packard & Continental  
Engine Schedule.

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RESTRICTEDPackard & Continental Engine Schedule

	<u>'44</u> <u>Dec.</u>	<u>'45</u> <u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>'46</u> <u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>
<u>Packard</u>																	
V-1650-7	1010	1330	1330	1230	1174	819	126										
V-1650-9			12	20	33	72	752	813	716								
V-1650-11						2	3	100	620	550	550	550	550	550	550	550	550
V-1650-21						2	4	10	30	80	100	100	100	100	100	100	100
<u>Merlin</u>																	
88	610	620	608	700	743	1045	974	542									
69	111																
266-P	120																
300							41	115	234	1030	1100	1100	1130	1130	1130	1130	1130
301							30	90	100	130	195	195	195	195	195	195	195
<b>Total Packard</b>	1851	1950	1950	1950	1950	1940	1930	1670	1700	1790	1945	1945	1975	1975	1975	1975	1975
<u>Continental</u>																	
V-1650-7	50	70	70	100	100	100	100	100									
V-1650-9		5	50	75	100	100	100	100	100								
V-1650-11			30	70	100					100	200	200	200	200	200	200	200
<b>Total Continental</b>	50	75	120	175	200	200	200	200	200	200	200	200	200	200	200	200	200
<b>Grand Total</b>	1901	2025	2070	2125	2150	2140	2130	1870	1900	1990	2145	2145	2175	2175	2175	2175	2175

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**CONFIDENTIAL**HEADQUARTERS ARMY AIR FORCES  
Office, Asst. Chief of Air Staff, Material and Services

Inter-Desk Memorandum

TO: Major General G. P. Babin

Date: 13 December 1944

SUBJECT: Packard-Continental Engine Schedules

1. The ATSC has forwarded proposed Packard and Continental engine schedules for inclusion in WE-12 which reflect the Macgregor British Stage I requirements and the E-51 increase recently authorized. This schedule also provides for the 1500 additional spare V-1650-7 engines recently authorized for procurement by this Headquarters and the Deputy Director, ATSC.

2. The recommended schedules which have been compared with both manufacturers show a combined decrease in production between Packard and Continental of 5465 engines for the calendar year 1945. As Continental have been cut from 800 to 200 engines per month, they will absorb 76 per cent of the reduction. Packard has agreed to furnish Continental with sufficient V-1650-7 parts to meet the proposed schedule, but will not be in a position to furnish V-1650-9 parts prior to July 1945.

3. The proposed schedules, compared with present schedules for Packard and Continental, are as follows:

	PACKARD			CONTINENTAL		
	Proposed	Present	Decrease	Proposed	Present	Decrease
1944						
Dec	1851	2000	-149	90	75	-25
1945						
Jan	1950	2000	-50	75	100	-25
Feb	1950	2000	-50	100	180	-80
Mar	1950	2000	-50	120	250	-130
Apr	1950	2000	-50	175	300	-125
May	1940	2000	-60	200	400	-200
June	1930	2000	-70	200	500	-300
July	1670	2000	-330	200	600	-400
Aug	1700	2000	-300	200	700	-500
Sep	1790	2000	-210	200	800	-600
Oct	1945	2000	-55	200	800	-600
Nov	1945	2000	-55	200	800	-600
Dec	1975	2000	-25	200	800	-600
Total '45	22695	24000	-1305	2070	6230	-4160

4. The above schedules meet AAF and British requirements with the exception that British PW 301 production will start in June 1945 rather than in May as requested.

5. Authority is requested to use the above proposed schedule for Packard and Continental in the WE-12 engine report.

THIS FORM WILL NOT BE

**CONFIDENTIAL**

AC/AS, 1st Colonel, Air Corp.

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RESTRICTED1/Sgt. R. W. Akard  
ep Phone 26253

TSBRCLC

14 December 1944

Packard Motor Car Company  
 Detroit, Michigan  
 Freezing of Available Funds  
 Within Plancors 1, 978, and 995  
 Commanding Officer  
 Central District, ATSC  
 West Warren Avenue and Lonyo Street  
 Detroit 32, Michigan  
 Attention: Resource Section

1. The following information is submitted for your guidance toward submitting recommendation pertaining to the advisability of freezing uncommitted funds in subject plancors.

a. Plancor 1 - Amount Authorized	\$10,212,350
Amount Gross Committed	9,155,491
Amount Available	56,859
Status of Completion	Complete
b. Plancor 978 - Amount Authorized	\$47,752,564
Amount Gross Committed	36,504,196
Amount Available	1,144,388
Status of Completion	
Construction	100%
Machinery & Equipment	87%
Probable Completion	15 January 1945
c. Plancor 995 - Amount Authorized	\$ 3,264,100
Amount Gross Committed	2,622,506
Amount Available	661,594
Status of Completion	100%

2. The above figures were taken from the respective Defense Plant Corporation Status Reports for the month of November, 1944.

3. In reference to Plancor 995, records in file indicate that this plancor was sponsored and processed by the Aluminum and Magnesium Division of the War Production Board. If such is proven to be the case, this Command will take no action in freezing any funds remaining in this plancor.

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Commanding Officer, Central District, ATSC, Detroit, Michigan  
Subject: Packard Motor Car Co., Detroit, Planors 1, 978, & 995  
14 December 1944

4. Your recommendations in this respect are requested at the earliest practicable date.

By Command of Lieutenant General KNUDSEN:

G. H. MORIARTY  
Colonel, Air Corps  
Chief, Resources Control Section  
Procurement Division

- 2 -

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*Carbon - Perkinco 01650 H*  
*Sched. Sect. - 221/2*  
*Mar 1944*  
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PRIORITY

HQ AAF, AFDMA-48

2148

22 December 1944

Major F. W. Squires/lia

**ALIX**

DIRECTOR, AIR TECHNICAL SERVICE COMMAND  
WRIGHT FIELD, DAYTON, OHIO

JOINT AIRCRAFT COMMITTEE HAS APPROVED REQUEST FOR PACKING MERLIN ENGINES  
REQUIREMENTS APPROVED AND CONFIDENTIAL TO BRITISH, ATTENTION WOODS, TSOEP,  
FIELD OFFICE, STONE ANDWOOD. FOR COMMENTS APPROVED ARE AS SUBMITTED BY  
AFMA 21 2212 2212 2212 1944 SIGNED SQUIRE AS DESCRIBED IN OUR  
TELETYPE WAS TOLSK DATED 12 DECEMBER 1944, WITH THE EXCEPTION THAT SIX  
MERLIN 300 ENGINES COMPLETE WITH WHEEL DENSITY PUMPS ARE TO BE DELIVERED  
TO THE BRITISH FROM WRIGHT FIELD IN APRIL 1945. ALSO AN ADDITIONAL 100 PM 300  
ENGINES ARE TO BE ALLOCATED TO THE BRITISH IN AUGUST 1945 AND RETURNED IN  
JANUARY 1946. THIS WILL INCREASE V-1650-9 PRODUCTION IN AUGUST 1945 AND  
INCREASE V-1650-11 PRODUCTION IN JANUARY 1946. IN CONNECTION WITH THE SIX  
PM 300 ENGINES RECEIVED IN APRIL, EVERY EFFORT IS TO BE MADE TO MEET OR  
EXCEED THIS DATE AS THEY ARE URGENTLY REQUIRED BY THE BRITISH. THE JOINT  
AIRCRAFT COMMITTEE HAS REQUESTED THAT A COMPARATIVE STUDY BE MADE OF THE

~~CONFIDENTIAL~~

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<sup>12</sup>  
CONFIDENTIAL*Sched. Sect. - 22 (6/70)*

PRIORITY

HQ AAF, AFMA-4S

7148

22 December 1944

Major I. N. Squires/ndia

XXX

SPEED DENSITY PUMP PROGRAM AT BENDIX AND IT IS DIRECTED THAT A STUDY BE  
 SUBMITTED TO THIS OFFICE ON OR ABOUT 15 JANUARY 1945 OUTLINING PROGRESS  
 BENDIX IS MAKING AS OF THAT ~~DATE~~ <sup>TIME</sup> PROGRAM. IT IS UNDERSTOOD THAT A  
 MEETING IS SCHEDULED FOR 10 JANUARY 1945 WITH BENDIX AND PACKARD PERSONNEL  
 CONCERNING THIS PROGRAM. USING THE PRESENT SPEED DENSITY PUMP REQUIREMENTS  
 AS A MINIMUM, THE STUDY SHOULD CONTAIN INFORMATION AS TO POSSIBILITY OF  
 BETTERING THE SCHEDULE AS THE SPEED DENSITY PUMP IS DESIRED FOR INSTALLATION  
 IN ALL POSSIBLE P-51H AIRCRAFT AND THE BRITISH WOULD LIKE 10 ADDITIONAL P-51  
 301 ENGINES IN MAY 1945. THE STUDY DIRECTED ABOVE SHOULD BE AS COMPLETE AS  
 POSSIBLE AND SHOULD COVER EVERY PHASE OF THE SPEED DENSITY PUMP PROGRAM.

No Distribution

E. M. POWERS, Brig. General, USA

AFMA-4S

AFMA-1

AFMA-2

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January 9, 1945

Via: Army Air Forces - Resident Representative  
 To: Army Air Forces Air Technical Service Command  
 Central District Headquarters  
 Air Force Control Section  
 Facilities Branch  
 West Warren Avenue, Detroit, Michigan

attention: Mr. J. E. Gray

1. In accordance with the provisions of a letter of Mr. G. M. Herman, Supervising Engineer - Defense Plant Corporation, dated December 5, 1944 addressed to Mr. J. E. Gray, Executive Vice-President, Packard Motor Car Company, we are submitting for your approval ten (10) copies of a forecast in connection with the Sustaining Capital Expenditures Program for Blencor No. 1 and No. 222.

2. The schedule for Blencor No. 1 covers additional equipment and facilities estimated to be required for major overhaul or replacement of facilities which have, or will, become obsolete, worn out, damaged, or destroyed for reasons other than normal maintenance, as outlined in the provisions of our lease agreement with the Defense Plant Corporation dated September 2, 1940.

3. The schedule for Blencor No. 222 covers additional building alterations, machinery, equipment and facilities, and rearrangements estimated to be required to complete this project as originally contemplated, including changes necessitated by development of unforeseen circumstances.

4. In forecasting requirements for Blencor No. 222, consideration has been given to the following:

- (a) Additional requirements to complete capital facilities necessary for the production of the following items:

V-1650-9  
 V-1650-21  
 Merlin-300  
 Merlin-301

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Subj: P.M.C. Continuing  
Capital Expenditure  
Fund, Plancors 1 & 978

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1st Lt.

Rains

Office of the AAF Plant Representative, Packard Motor Car Company, 1580 E.  
Grand Blvd., Detroit 32, Michigan. 19 January 1945

TO: Commanding Officer, Central District, Air Technical Service Command  
44 Warren & Longo Bldg., Detroit 32, Michigan.  
Attn: Capt. Robert F. May, Chief, Facilities Branch, 3BPhd2A

1. In answering basic communication, a meeting was held 18 January, attended by the writer, Mr. R. K. Brown, Manager of Packard Aircraft Division, Mr. K. R. Parker, Packard General Plant Engineer, Capt. C. F. Jones, Contracting Officer, and Lt. F. J. Pontello, P.M.C. Liaison Officer.

2. It will be recalled that P.M.C. had notified Packard that after certain dates now expired, its local office would no longer approve commitments on Plancors 1, 978, and 995. Packard was offered the use of a continuing Capital Expenditure Fund by the submission of a supplementary appendix "A", approved by the AAF as sponsor.

3. The Packard Company has submitted a supplementary Appendix "A" on Plancor #1 as per copy attached, calling for estimated expenditures in the first quarter \$19,473.25 and for the year \$77,893.00.

4. There is also submitted a supplementary Appendix "A" on Plancor #978, calling for estimated expenditures of \$526,730.75 and for the year, \$2,105,723.00. Estimates for Plancor #975 are included in #973. A separate appendix for Plancor #1 is submitted inasmuch as this Plancor, unlike the others, according to the Contractor, contains a provision for replacement expense.

5. The Plant Representative and members of his staff in the meeting referred to above, discussed the basis of the estimates of Supplementary Appendix "A" Plancor #1 and Supplementary Appendix "A" Plancor #978 and consider the funds requested as fair and reasonable.

6. Letter of 9 January from Mr. J.H. Marks, Executive Vice President of Packard and 9 copies of proposed supplementary appendices forwarded to this office with basic communication are attached herewith.

7. It is therefore recommended that these funds be made available to the Contractor at the earliest possible time.

cc:  
Capt. C.F. Jones  
Lt. F. J. Pontello  
Messrs:  
J.H. Marks  
R.K. Brown  
K.R. Parker  
J. W. Laisbeck

MARKED ANTHONY  
Lt. Col., Air Corps  
AAF Plant Representative

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Page -2-

- (c) Capital facilities contemplated to be required as a result of numerous engineering alterations affecting production.
- (d) Additional facilities and repair shops estimated to be necessary in order to improve production efficiency and reduce costs.

3. Your cooperation in securing approval of these projects will be greatly appreciated and we shall be glad to submit any further information if required.

Yours very truly,

WILLIAM WELLS COMPANY

J. H. Marks  
Executive Vice-President

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January 31, 1945

Defense Plant Corporation  
1127 Penobscot Building  
Detroit 26, Michigan

Attn: Mr. C. E. Herman, Division Engineer

Gentlemen:

This will acknowledge receipt of your letters of January 27 and January 29, 1945, relative to the decision on the part of Defense Plant Corporation that they will permit no more expenditures under Plancor 978, except they are covered by the so-called "Continuing Capital Expenditures Program".

As I have commented before, the United States Army undertook to furnish the Packard Motor Car Company with facilities to carry out the contracts that Packard took. The U.S. Army elected to furnish facilities through the D.P.C.

Packard's program is not yet finished. We are engaged in the production of new models of engines and require new facilities. Obviously, if the D.P.C., fails to furnish us the facilities we need we will be unable to carry out these programs.

We have cooperated with the planning for the Continuing Capital Expenditure Program to the extent of laying out a program for 1945, but despite the fact that many days have gone by nothing has been done to make this the means for furnishing us the facilities by the Army.

I am making this rather lengthy resume of the whole situation because I want this record to file again so that the responsibilities for delays because of lack of equipment, if they occur, will be properly placed.

Yours very truly,

PACKARD MOTOR CAR COMPANY

Jas H. Marks  
Executive Vice President

JHM:br

cc: Colonel Raymond Anthony  
AAF Plant Representative

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16-WF-12-27-43-100M

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Address Reply to Attn:

CDPD2A  
J.S.Gray:ae  
Ext. 116

ARMY AIR FORCES  
Air Technical Service Command  
~~WRIGHT FIELD~~  
CENTRAL ~~POST OFFICE~~ DISTRICT  
OFFICE OF THE ~~COMMANDING OFFICER~~  
Commanding Officer

10 February 1945

1006 W. WARREN AVE & Lonyo  
DETROIT, MICHIGAN

SUBJECT: ~~Packard Motor Car Company~~ 43a  
Detroit, Michigan  
Continuing Capital Expenditure Fund  
RCS Project 43 A-4, Plancor No. 1

TO: Director  
Air Technical Service Command  
Wright Field, Dayton, Ohio

Attention: TSERC4C

1. Packard Motor Car Company, Detroit, Michigan has submitted Appendix "A", RCS Project 43 A-4 covering Continuing Capital Expenditure Funds required for the ensuing year in the amount of \$77,693.
2. Production: Subject company is currently engaged in the manufacture of V-1650 Packard-built Rolls Royce aircraft engines on prime contract to the Army Air Forces.
3. These funds are to be utilized for and shall be limited to expenditures normally charged to direct engine cost (Supply Contract) such as equipment and facilities estimated to be required for major overhaul or replacement of facilities which have or will be obsolete, worn out, damaged, or destroyed for reasons other than Packard's negligence, in accordance with the provisions of Lease Agreement with the Defense Plant Corporation dated 19 August 1940.
4. Previous Expansions: Attention is invited to previous projects recommended by the Army Air Forces and approved under Plancor No. 1 in the amount of \$10,212,350, (Plancor No. 1 also involves British Air Commission's funds in the amount of \$20,424,700, a ratio of approximately 2 to 1), which form the basis for this processing.
5. The total dollar value of the Lease Agreement is at present \$10,212,350. The amount requested for annual Continuing Capital Expenditure Fund is approximately 0.70% of such overall Government investment and is well within the limits established by paragraph 1011-A of Procurement Regulation No. 10.
6. Justification: Packard Motor Car Company at the request of the Defense Plant Corporation, letter 5 December 1944, submitted to this office

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Subj: Packard Mtr. Car Co.  
CCE Fund, RCS Project 43 A-4  
To: Director, ATSC, WF, Dayton, O.

J.S.Gray:aen  
10 February 1945

Appendix "A" for consideration for the establishment of a Continuing Capital Expenditure Fund on Plancor No. 1. The Defense Plant Corporation was prompted to take this action in order to provide for the following phase incorporated in the Lease Agreement dated 19 August 1940, page 2 under Memorandum of Agreement, paragraph (FIRST) which reads in part as follows: ".....should any machinery, equipment, or facilities so furnished by Defense Plant Corporation require overhaul or replacement (except when due to Packard's negligence) Defense Plant Corporation further agrees to make such replacement and pay the cost of such overhaul."

a. It is believed that within the cognizance of the Defense Plant Corporation and this office no other plancor contains the above described provision. In consultation with the Defense Plant Corporation it was brought out that the establishment of a Continuing Capital Expenditure Fund would be the most feasible medium to accomplish final accounting on all reimbursible certificates covering expenditures incurred for account of the project, invoices now on hand, and billing on all outstanding commitments.

b. Other possibilities for the final disposal of this plancor also were discussed by this office, such as, absorption of this phase of the Lease Agreement by the Supply Contract but this was found to be impractical.

6. Estimated Costs:

Land and Land Improvements	-0-
Buildings, Installations and Leasehold Improvements	-0-
Off Leasehold Improvements	-0-
Service Costs	-0-
Machinery and Equipment	\$ 19,473.25
Portable Tools	-0-
Estimated total, 1st Quarter	\$ 19,473.25
Remainder of year total	<u>58,419.75</u>
Total for year	\$ 77,893.00

a. Forwarded herewith are eight copies of Appendix "A" Summary Sheet which reflects a breakdown of estimated expenditures for the first quarter for various schedules and subdivisions.

7. Plan of Financing: Uncommitted funds are now available under Plancor No. 1.

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Subj: Packard Mtr Car Co  
 CCE Fund, RCS Project 43 A-4

To: Director, ATSC, WF, Dayton, O.

J.S.Gray:ae  
 10 February 1945

8. This matter was discussed with the Resources Control Section, Air Technical Service Command 30 January 1945 and it was agreed that subject Appendix be forwarded to Headquarters for review. The Continuing Capital Expenditure Funds as determined by the contractor only after careful consideration and the estimates therein are considered by this office to be reasonable and not excessive. It will be noted that subject proposal provides for major overhaul, repairs, and replacement of facilities which is not in accordance with Procurement Regulation 10 and F. O. Memorandum 87-2 under authority of which the Continuing Capital expenditure funds are administered by this office. Attention is invited, however, to the extenuating circumstances that exist. In view of the fact that Continuing Capital expenditures are limited to items normally classed as capital charges subject proposal is forwarded for consideration and further action.

For the Commanding Officer:

*Robert H. Wright*  
 Capt ACJ  
 CHRISTOPHER WRIGHT  
 Major, Air Corps  
 Chief, Resources Section

## Incls:

- Incl. 1 - cy 1st Ind. fr AAFPR  
 to CD;RA:ns, 1-19-45
- Incl. 2 - Packard Mtr ltr to DPC  
 1-31-45
- Incl. 3 - Packard Mtr ltr to CD  
 1-9-45
- Incl. 4 - AAFPR ltr to CD, 11-21-44
- Incl. 5 - Packard Mtr ltr to DPC 11-13-44
- Incl. 6 - DPC ltr to Packard 11-10-44
- Incl. 7 - Appendix "A" (8 cys)

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41,008-A2  
No.

March 1, 1945  
Date

UNITED KINGDOM  
Requisitioner

FORM 15 - AMENDMENT  
REQUISITION FOR DEFENSE ARTICLES  
(Under the Act of March 11, 1941)

ROUTING  
(Not to be filled in by requisitioner)

War       Maritime Comm.  
 Navy       State  
 OPM       Treasury  
 Agriculture     

British Ref. BACT 1012-11      Air No. 6651

Section      Describe fully nature of amendment desired state whether substitution, addition, cancellation, etc.

AMENDMENT NO. 2  
FOR ITEM NO. 1, NEW AIR FORCES  
REQUISITION FOR DEFENSE ARTICLES

This Amendment is made to request that the total quantity 14,000 Packard Merlin 24 Two Stage engines requested at Item 1 of the subject requisition may be reduced by quantity 13,935 to quantity 1,665, so that the requisition will now read as follows:

Item No.	Description	Quantity
1.	Merlin 24 Two Stage engine for Lincoln aircraft	1,665
2.	Spares parts for the above engines in accordance with the approved schedule under J.A.C. Case No. 1850.	
	Spares engines and spares to be packed for export and consigned as follows:	

The above reduction is designed to bring the subject requisition into line with latest British requirements of Packard Merlin '68' engines. The total number of that type engine now on requisition is 6,875, made up as under:-

Article No.	Quantity
FIG 1902-A5	297
RFDA 41,091-A5	4520
RFDA 41, 53-A1	393
RFDA 41,008-A2	1,665 (hereunder)
	6875

This quantity accords with the British and Canadian aircraft production programmes.

Deliveries are requested to be made in accordance with the latest Two Stage Merlin Engine schedule as authorized by the J.A.C. under Case No. 1852.

(Signed) P. W. Musson,  
BRITISH AIR COMMISSION

GOVERNMENT OF THE UNITED STATES

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 L-10-1-24  
 31st Div

CONFIDENTIAL

Colonel V. G. Schuler/114/100

(Written 27 March 1945)

Continental ~~114/100~~  
 114/100

27 MAR 1945

## Continental V-1650 Engine Production

Director, AAF - Air Technical Service Command  
 Wright Field, Dayton, Ohio

Attention: TSCM

1. A recent reduction in British requirements for Packard Merlin engines has led the War Production Board to question the policy of continuing production of the V-1650 engine at Continental. Requirements as recently submitted to ATSC indicated that combined Packard and Continental production should be reduced by 4,000 engines during the period 1 March 1945 and 31 October 1946. These 4,000 engines comprise the total quantity of engines on schedule at Continental during same period. Consequently, the W-15 schedule now in effect at Packard can meet the Army Air Force and British requirements without aid of production from Continental.

2. The War Production Board has suggested that Continental be taken out of the Merlin engine program at this time because it would require no change in Packard's present schedule and because criticism has recently been leveled at Packard for not utilizing to the fullest extent their present available manpower. Further, implementation of W-15 schedule will bring an immediate reduction in the quantity of Packard engines required by the Army Air Force. It is thought that all possible reductions in manpower requirements should be made at this time in order to cushion the eventual shock as much as possible.

3. It is requested that ATSC review the Merlin Engine schedules recommended by your office in teletype AT 3911, dated 22 March 1945, in view of the desires of the War Production Board and forward recommendations and comments to this Headquarters.

By Command of General ARNOLD:

(SIGNED) O. P. Schuler

O. P. SCHULER  
 Major General, U.S.A.,  
 Asst. Chief of Air Staff,  
 Material and Services

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AFIMA-45

AFIMA-4

AFIMA-1

AFAMS-2

AFAMS-2

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STANDARD FORM NO. 64

39

*Office Memorandum* • UNITED STATES GOVERNMENT

TO : TSBRC<sub>4</sub>C, Attn: Major Walsh

DATE: 30 April 1945

FROM : TSBRC<sub>4</sub>C-1, Mr. D. H. Filbert

SUBJECT: Packard Motor Car Company  
Detroit, Michigan  
RCS Project 45 A-4  
Plancor #1  
Continuing Capital Expenditures

*ga*

1. Pending receipt of instructions from Resources Division, M & S, regarding the processing of the above project, it is recommended that it be temporarily suspended and removed from the list of active projects.

*D. H. Filbert*

D. H. FILBERT  
Chief, Project Control Unit

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*Cantora-Packard-Merlin engine 4 occurrences 31*  
*Schedule Tech-16*  
*max 2*

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Packard Merlin Engines for the British.

AS/AS, HQS, Control Office, Attn: Lt. Col. May

10 May 1946

AS/AS, HQS, Material Division

Major Squires/AS/AS

1. Present agreement with Packard for production of Merlin engines, being produced to satisfy Lead Lease Requisitions, extends through June 1946. It is planned at this time to continue production beyond that period for the British Lead Lease at the rate of 1,000 engines per month.

2. To the present time the Joint Aircraft Committee has been the only official body to review and approve production of Merlin engines for the British. The presently approved program would call for production of approximately 1200 engines per month after June 1946, but a proposal, prepared by the Army Air Force, is now being considered by the British whereby production could be extended beyond June at the previously mentioned rate of 1,000 engines per month.

3. It is understood by this office that the Munitions Assignment Board will review Lead Lease Requisitions for Merlin engines placed by the British, and this review could conceivably alter the picture with respect to Merlin engines beyond June 1946.

H. S. SHARR  
 Colonel, Air Corps  
 Chief, Aircraft Projects Branch

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WAR DEPARTMENT  
CLASSIFIED MESSAGE CENTER  
OUTGOING CLASSIFIED MESSAGE

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Headquarters AAF, AFDMA-4S  
Maj F N Squires 2148

4 May 1945

Director, AAF-Air Technical Service Command,  
Wright Field, Dayton, Ohio

DTG: 051913Z (paraphrase of:)

To Knudsen, attention Cook, Tsbuy, from Powers signed  
Arnold.

It is directed that the Continental Motors Corporation production  
of V-1650 engines be terminated by 31 May 1945. Upon release of  
revised P-51D and H schedules at Dallas and Inglewood, V-1650  
Packard production schedule will be submitted for Joint Aircraft  
approval.

End of paraphrase

AF 544

Note: This message transmitted without serial number for  
reasons of cryptographic security. The above date time  
group should be used as the basic reference number in  
future correspondence.

ORIGINATOR: CG AAF

CM-OUT-77717

(May 45)

DTG: 051913Z hb

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TSBRC4C-1/DNF/mjv

TSBRC4C-1

6 August 1945

Continuing Capital Expenditures  
RCS Project 43 A  
Plancor #1

Packard Motor Car Company  
Detroit 32, Michigan  
Attention: Mr. J.G. Gilland  
Chief Accountant  
Aircraft Engine Division

1. Reference is made to your letter of 25 July 1945 in connection with submission of a proposal for continuing capital expenditures under Plancor 1, the object of which would be the repair, maintenance and/or replacement of facilities acquired under Plancor 1, provision for which is made in the lease agreement between your company and the Reconstruction Finance Corporation.

2. Attention is invited to the fact that the use of funds which might be set up for continuing capital expenditures, for such repair, maintenance and/or replacement would constitute a direct violation of existing procurement regulations for such projects. After careful consideration by this Headquarters and coordination with other interested offices, it is believed inadvisable to attempt to set up a project of this kind.

3. It is requested, therefore, that requests for use of presently uncommitted and available funds in Plancor 1 for the purpose of repairing, maintaining or replacing facilities acquired under Plancor 1, be referred to this Headquarters, through the Central District Office, Chicago, Illinois, for appropriate action.

For the Commanding General:

Copy to:  
Cent. Dist.  
(Prod. Div.)  
Detroit Reg. Office  
AAEPR, Packard, Detroit  
Mr. C.E. Herman

G. H. MORLARTY  
Colonel, Air Corps  
Chief, Resources Control Section  
Procurement Division

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PACKARD MOTOR CAR COMPANY  
1580 East Grand Boulevard - Box 117  
DETROIT 32, MICHIGAN

July 25, 1945

Via: Army Air Forces Plant Representatives  
To: Army Air Forces Technical Service Command  
Central District Headquarters  
Resources Control Section  
Facilities Branch  
211 East North Water Street  
Chicago 11, Illinois  
Attention: Mr. J. S. Gray

1. We refer you to letter dated January 9, 1945 from Mr. J.H. Marks, Executive Vice-President with which was submitted copies, for your approval, of our forecasts in connection with the Continuing Capital Expenditures Program for Planor No. 1 and No. 978.
2. We were advised through a letter from the Army Air Forces Headquarters, Air Technical Service Command, under date of March 2, 1945 that continuing capital expenditures under Planor No. 978 had been approved by the Command in the sum of \$1,500,000.00 for the year 1945.
3. To date we have not been informed whether our forecast for continuing capital expenditures under Planor No. 1 meets with your approval.
4. Will you please advise us as to present status of this program at your earliest convenience.

Yours very truly,

PACKARD MOTOR CAR COMPANY

J. G. Gilland  
Chief Accountant  
Aircraft Engine Division

cc: Mr. J. H. Marks, Executive Vice-President

Mr. C. E. Herman,  
Division Engineer  
Reconstruction Finance Corporation  
Office of Defense Plants



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C.B. ATSC  
CWT  
30 OCTOBER 1945

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PART II

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C.B. ATSC  
CMT  
30 OCTOBER 1945

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PART II

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