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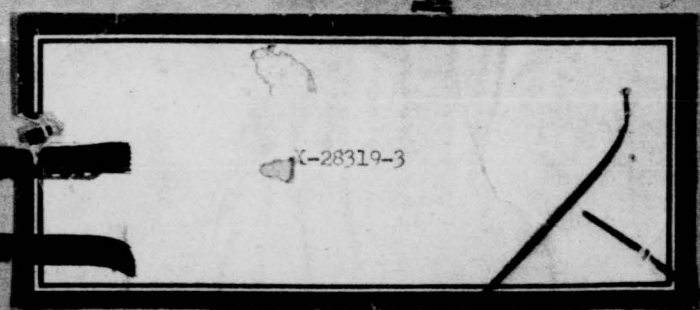
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SUMMARY OF THE XP-77 CASE HISTORY

(2) \*The conception of the XP-77 grew out of a desire for a light, high speed, high altitude interceptor pursuit airplane. The development of existing American pursuit series airplanes had been tending along heavily-armed, high-speed, and rugged structure lines, at the expense of fast rate of climb and maximum maneuverability. The conspicuous demonstrations made in combat by the British Spitfire, the German Messerschmitt 109, and, later, by the Japanese Zero, emphasized the importance, for certain tactical operations, of having such an interceptor.

(2) Materiel Division personnel discussed with representatives of Bell Aircraft Corporation, Buffalo, New York, the design of an airplane incorporating the interceptor conception, at a meeting at Wright Field 30 October 1941. On 8 December, the day after Pearl Harbor, Bell requested release of information as to the Ranger engine which was to be used in the projected airplane. The Bell designation for the model originally was "Tri-4", and later "D-6". On 16 May 1942, Lieutenant General H.H. Arnold, Commanding General, Army Air Forces, authorized the procurement of twenty-five Tri-4 design airplanes; he specified that (3) provision be added for carrying one 325 pound depth charge or one 300 pound bomb. Brigadier General C.P. Echols, Commanding General, Materiel Command, Washington, advised General Arnold, however, that only six Ranger V-770-6 engines could be made available to the Army by the Bureau of Aeronautics, which had the production of these engines under contract, so he suggested that the negotiations with Bell be for six (4) airplanes. He stated further that the Ranger engine equipped with supercharger was at least one to one and one-half years away, but that for altitudes less than 12,000 feet, the engine as then available (5) carried about the same horsepower. The Chief, Air Staff, approved the project, after coordination, 10 June.

(1,11) The new plane was to have a high speed of 410 miles per hour at 27,000 feet, at 500 horsepower, when equipped with the supercharged XV-770-9 engine. Its design gross weight was 3700 pounds. Its rate of climb at sea level was to be 3200 feet per minute. It was to carry a 20 mm. cannon firing through the propeller hub, and two caliber .50 (9) synchronized machine guns. The airfoil was to be of the laminar flow type. Because of the critical situation that had developed as to the supply of aluminum, Bell planned to use wood for the wings, but metal for the fuselage and tail surfaces.

Bell submitted a proposal 29 May 1942, to build six airplanes of the type discussed at a cost, including a 5% fixed fee, of \$4,773,358. Bell estimated that the first airplane could be delivered within six months after the contract was approved, and that the next five could

\*The numbers placed in parentheses in the margin refer to documents found in the Document File attached.

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- (6) be delivered within two months after the first. Materiel Division,  
 (8) Washington, issued CTI-715 on 16 June 1942, initiating the project.  
 (13) The APP was written 20 August; the estimated amount, including fee,  
 (14) had risen to \$698,761.88. The cost plus fixed fee contract, AC-30864,  
 was approved 10 October.

- (9) The first problem encountered had to do with the kind of materials  
 (10) to be used. The original Bell D-6 specification called for a wood  
 wing, but metal fuselage and tail surfaces. A second Bell specification  
 prescribed all wood. On 24 June 1942, Experimental Engineering  
 Section, Wright Field, reviewed the matter for Colonel B.W. Chidlaw,  
 Chief, Experimental Engineering Section, Washington, and recommended  
 the wood and metal combination; the return to the original specification  
 would cause a delay of 3 months, since engineering work had already  
 been accomplished on the all wood version. On 25 June General  
 Echols directed that the airplane be built to the all-wood specification.

- (11) On 29 June 1942, Colonel F.O. Carroll, Chief, Experimental  
 Engineering Section, Wright Field, submitted detailed comments on  
 the proposed Bell airplane. The report, addressed to Colonel Chidlaw,  
 contained no formal conclusions or recommendations, but it directed  
 attention to several aspects of the design which were not favorable.  
 In particular it pointed out that the design gross weight had been  
 revised upward to approximately 3650 pounds and that the resultant  
 effects on wing loading and power loading would defeat in considerable  
 measure the object for which this interceptor type airplane was being  
 designed. It pointed out difficulties which could be anticipated with  
 the landing gear and with the engine. It suggested that the design  
 gross weight be reduced to 3000 pounds and it listed several suggested  
 design improvements.

- (15) The mock-up committee conducted its inspection of the XP-77 on  
 21 and 22 September 1942. It pronounced the mock-up "fairly complete,  
 and, in general, very satisfactory for the purpose intended." It  
 recommended, however, fifty-four changes; fourteen of these were  
 classified as aircraft, fifteen armament, fifteen equipment, and ten  
 power plant. Radio changes were left in abeyance.

- (16,17,18) The schedule of the XP-77 project received its first setback in  
 January, 1943, when Mr. O.L. Woodson, Vice President and Assistant  
 General Manager, Bell Aircraft Corporation, advised the Materiel  
 Command that the first flight airplane would be completed 1 May, 1943,  
 and that the balance would follow at a rate of about three per month.  
 This represented a four-month set back from the schedule specified in  
 the contract. Mr. Woodson gave as reasons for the delay the fact that  
 the new airplane incorporated materials [wood, plastic, magnesium alloy]  
 and processes entirely foreign to Bell's experience, and that it had  
 (18) been advisable to subcontract work to specialists in those types of  
 construction.

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- (21) Bell requested a second schedule setback three months later, and applied for an increase in price. The first airplane was to be delivered 11 July 1943, the second 30 August, and each of the four remaining at two week intervals thereafter. The increase in allowable cost which was requested was from the \$698,761.88 specified in the contract, to \$2,543,540.45 with no increase in the fixed fee. This was 365% of the original cost estimate. Mr. R.P. Whitman, Bell first vice-president, who submitted the request, reviewed the reasons for this tremendous increase in cost: (a) the necessity to subcontract wood sub-assemblies at a time when the Army Air Forces glider program was being pressed actively and was occupying capacity in the wood-working industry, (b) the long training period required for Bell and subcontractor's personnel to meet high Army Air Forces inspection standards, (c) subcontracting required a greater amount of engineering and a higher degree of completeness of drawings than if Bell were to do the work itself, and (d) the Ranger engines had presented serious cooling problems.

- (21) On 4 May 1943, Brigadier General D.E. Meyers, Deputy Assistant Chief, Air Staff, Materiel, Maintenance, and Distribution, wired Wright Field for the "particular attention General Carroll," expressing alarm at the serious overage on the XP-77 contract, and requesting that immediate action be taken to investigate the matter, even to the extent of considering the possibility of cancelling the Bell contract. General Chidlaw, Chief, Materiel Division, Washington, wrote a memo to General Nichols, Assistant Chief, Air Staff, Materiel, Maintenance, and Distribution, the same day, in which he called attention to the tremendous overage. General Carroll wired the same day in reply to General Meyers stating that his office had been much concerned not only with the XP-77 but also with the overages running to such high percentages on the XP-62, XP-60, XP-19A, XB-29, and XA-26. He stated that he was proposing to the Procurement Division, Wright Field, that a method of control be worked out for contracts of this type; he stated further that action had been taken to send a project officer and a representative of the Procurement Division to the Bell Company to investigate the XP-77 situation thoroughly. He commended the fixed price basis used by North American Aviation, Incorporated, on experimental contracts. In an Inter-Office Memorandum the same day to Procurement Division, General Carroll requested that Bell be allowed the additional funds.

- (26) On 26 May 1943, Engineering Division, Wright Field, recommended that the XP-77 contract be terminated immediately. The reason given was that Bell had undertaken more experimental development than it could satisfactorily handle. Unless relief was afforded, work on higher priority Bell projects, the P-53A and the P-59A, would suffer. About two weeks later, however, General Carroll told General Chidlaw that he thought one or two of the six airplanes under contract should be finished, to see what it cost to build a wooden airplane. This suggestion was adopted, and Bell was requested to submit estimates accordingly. On 29 July, Lieutenant General W.S. Knudsen, Director
- (27)  
(28,31,33)

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- (29) of Production, War Department, sent a memo to General Echols asking  
 (30) him why the XP-77 should not be cancelled. General Echols explained  
 2 August the plan to reduce the project to two airplanes.
- (40) Bell estimated 5 August that it would cost \$1,853,540.46 to  
 (32) complete two airplanes. This represented an outlay beyond that already  
 made of \$370,753.96. CTI-1429, 26 August 1943, initiated action to  
 (34) change the XP-77 project from six to two airplanes. On 29 November,  
 Engineering Division, Wright Field, forwarded Bell's proposal of 5  
 August to Procurement Division, Wright Field, with a recommendation  
 (40) that the contract changes be made. The partial cancellation of the  
 (41) contract, and the increase in the cost from \$698,761.88 to \$1,853,540.46  
 (42) were accomplished by change order 6 December 1943, and Bell was advised  
 of the change 20 December. The delivery schedule given by Bell 5  
 (38) November specified that the first flight article would be delivered  
 31 January 1944, and the second 1 March 1944.
- The production schedule encountered new difficulties, and on  
 4 February 1944, the office of the Army Air Forces Resident Represent-  
 (43) ative at the Bell plant reviewed the situation and estimated that  
 the first plane might be ready by the end of the month. The first  
 wing panel had not been supplied to Bell by the subcontractor until  
 (35,36,37) 3 February. In October 1943, Bell had been obliged to arrange to  
 change its source for these wing panels, with consequent delay. Bell  
 submitted a revised delivery schedule 19 February; it set 5 March for  
 the delivery of the first airplane and 6 April for the second. On 6  
 (46) March the office of the Army Air Forces Resident Representative at  
 (47) Bell reported that the first plane was due at the airport that day or  
 the following day. On 7 March, however, Bell's Chief Engineer wrote  
 Wright Field stating that it had been determined that the manual landing  
 gear actuating system on the XP-77 was a hazard to both airplane and  
 pilot, and that an electrical landing gear retraction system was  
 (48) necessary before a test flight could be made. Engineering Division  
 (49,50) took exception to this determination, but Bell won its point.
- The first flight was made 1 April 1944. The pilot reported that  
 (51) the airplane handled very satisfactorily. Tests at Eglin Field were  
 conducted in late July and early August; the high speed attained was  
 316 miles per hour at 5,000 feet, instead of the 346 miles per hour  
 contained in the model specification; the rate of climb at sea level  
 was 2900 feet per minute as compared with the 3050 contained in the  
 model specification. The gross weight was 3857 pounds as against design  
 (60,61) gross weight of 3700 pounds. The Ranger engine used was not the super-  
 charged model.

As a result of these tests, the Assistant Chief, Air Staff,  
 Operations, Commitments, and Requirements, recommended that no further  
 consideration be given to the production of the XP-77. General Arnold

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- (61) and General Meyers approved this decision. The possibility of using the plane for training purposes was given brief attention; Eglin Field reported specifically on this proposal 17 October, and its conclusion was in the negative. On 26 October Colonel R.C. Wilson, Chief, Aircraft Projects Branch, Materiel Division, Assistant Chief, Air Staff, Materiel and Services, Washington, advised Wright Field that there would be no additional procurement of the P-77 type airplanes.
- (70) On 26 October Eglin Field reported that the second XP-77 had been destroyed in a crash.
- (71)

- (52) Bell requested a second increase in allowable cost on the XP-77 project 14 July 1944. Mr. Whitman reported that there would be an additional cost over-run of \$933,358.94, making a total cost for the two airplanes, not including fee, of \$2,753,224.07. The three principal elements of the extra cost he gave as (a) overhead \$182,000 additional, (b) tools \$211,000 additional, (c) direct materials \$361,000 additional. He reviewed in considerable detail the "headaches" encountered with reference to new materials and new processes. The Contracting Officer at the Bell plant recommended 18 July the approval of the requested increase.
- (53)

- (57) Engineering Division commented on the unexpected addition of \$1,000,000 to the cost of the project, and suggested that Procurement Division investigate the "huge expenditure" of funds, with a view toward closing out the contract as soon as the two airplanes were accepted. Procurement Division requested the Contracting Officer at Bell to make such an investigation; on 2 September he replied recommending that \$100,000 be cut from the Bell request. On 23 September 1944 Engineering Division requested Procurement Division to complete the project by issuing an Authority for Purchase for \$833,335.23 to cover the estimated overrun. The Change Order was written 14 October in that amount.
- (63) (64) (67)

- (66) Engineering Division, Wright Field, advised Washington 11 October 1944 that all recent activity concerning the XP-77 contract had been directed with a view to an early termination. When Colonel Wilson, Materiel Division, Washington, informed Wright Field 26 October that there would be no further procurement of the airplane, steps were initiated to dispose of the special tools, templates, jigs, fixtures and dies. On 28 October Bell requested a complete termination of the contract. Production Section, Procurement Division, Wright Field went on record 2 November 1944 as favoring the Bell proposal.
- (68) (72,73) Engineering Division, Wright Field, agreed to this proposal procedure 6 November 1944, and advised the Property Disposal Section to dispose of special tools and fixtures.
- (74) (76) (77)

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Date 6 January 1944

AIRCRAFT MODEL XP-77 TYPE Fighter, InterceptorContract date 29 September 1942 No. On Contract: two (2)  
(1) Feb. 1944  
Contractor Bell Aircraft Corp. ~~Contract~~ Delivery Date (2) March 1944Contract Number W-535-AC-30864 Project No. MX-272Cost \$1,853,540.46 Spec. No. 32-947-001 dated 4-1-42  
revised 10-1-43**I. POWER PLANT**

- (1) Number of Engines 1 (Mfr. & Type Engine) Ranger XV-770-17  
 (2) Supercharger Internal  
 (3) Propeller Aeroproducts, 9' 6", 2-blade  
 Red. Gear Ratio 39:21

(4) Engine Ratings:	B. H. P.	R. P. M. (Eng.)	FT. ALT.	SUPERCHARGER
a. Take Off	520	3150	S.L.	
b. Military	520	3150	8,500	
c. Normal	450	3000	S.L.-12,000	
d. War Emergency	670	3300	S.L.	

**II. PERFORMANCE**

(1) Speed in Level Flight	M. P. H.	ALT. FEET	B. H. P.		
a. High Speed—critical alt.	350	8500	520		
b. High Speed—sea level	323	S.L.	520		
(2) Rate of Climb	FT/MIN.	ALT. FEET	B. H. P.		
a. War Emergency Power	4035	S.L.	670		
b. Military Power	3020	S.L.	520		
(3) Time to Climb	MIN.	ALT. FEET	B. H. P.		
a. War Emergency Power		8500	520		
b. Military Power	3.0				
(4) Range or Endurance	Gr. Wt. lbs.	Miles or Hours	M. P. H. or B. H. P.	Fuel Gals.	Bombs lbs.
a. Design Gr. Wt. no bombs	3583	2.3	270	56	-
b. Design Gr. Wt. Max bombs	3940			56	325
c. Alt. Gr. Wt. no bombs	3857			94	
d. Alt. Gr. Wt. Max bombs	-				
(5) Service Ceiling	FT. ALT.	B. H. P.			
a. With all Engines	30,250	520			
b. With 1/2 Engines	-	-			
(6) Take-off & Land Over 50' Obs.	TAKE-OFF	LANDING	WEIGHT		
a. Design Gross Wt.	1281	1797	3583		
b. Alt. Gross Wt.					

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Date 6 January 1944

AIRPLANE MODEL XP-77

TYPE Fighter, Interceptor

III. CHARACTERISTICS

(1) Weight Empty	2760	lbs.	(4) Length	22' 10.5"
(2) Design Gr. Wt.	3583	lbs.	(5) Span	27' 6"
(3) Alt. Gross Wt.	3940	lbs.	(6) Wing Area	100 sq. ft.
(7) Wing Loading (#/Sq. Ft.)			Design Gr. Wt.	35.8
(8) Power Loading (#/BHP) at Mil. Power			Alt. Gr. Wt.	39.4
				6.9
				7.6

IV. ARMAMENT

(1) Guns and Cannons:	No.	Cal.	Type or Position	Rds. per Gun
a. Normal	2	.50	Fuselage	200
b. Alternate				
(2) Bombs	No.	Size		
a. Normal				
b. Alternate	1	100 lb.		
	1	300 lb.		
	1	325 lb., depth		

V. CREW Normal 1 Alternate

VI. ARMOR & FUEL PROTECTION (Describe) Armor Plate fore and aft, Bullet-proof glass, leak-proof tanks.

VII. OTHER ITEMS (Radio, Oxygen, Etc.) Low pressure demand type oxygen system.

VIII. SPECIAL FEATURES Wood fabrication.

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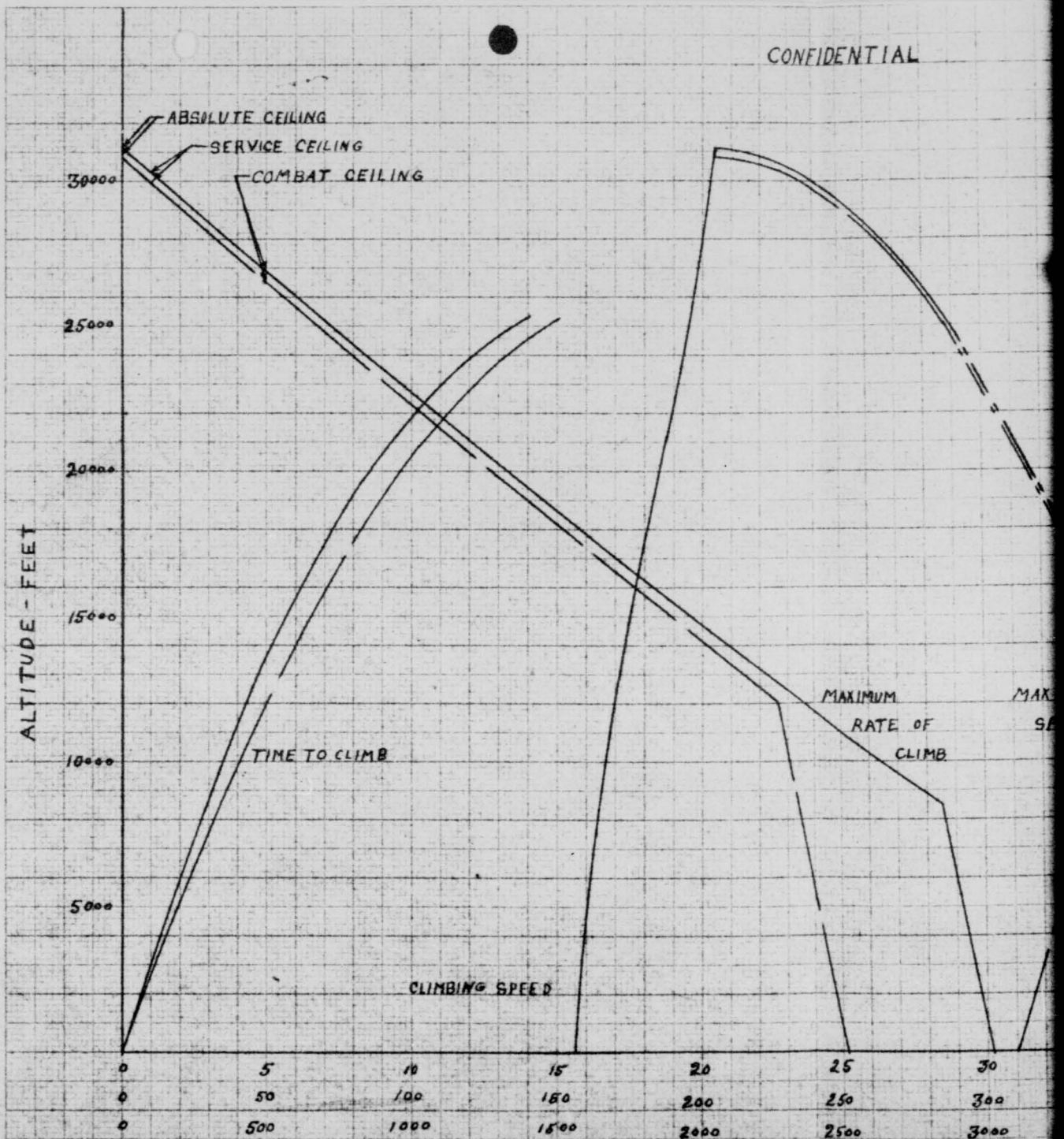
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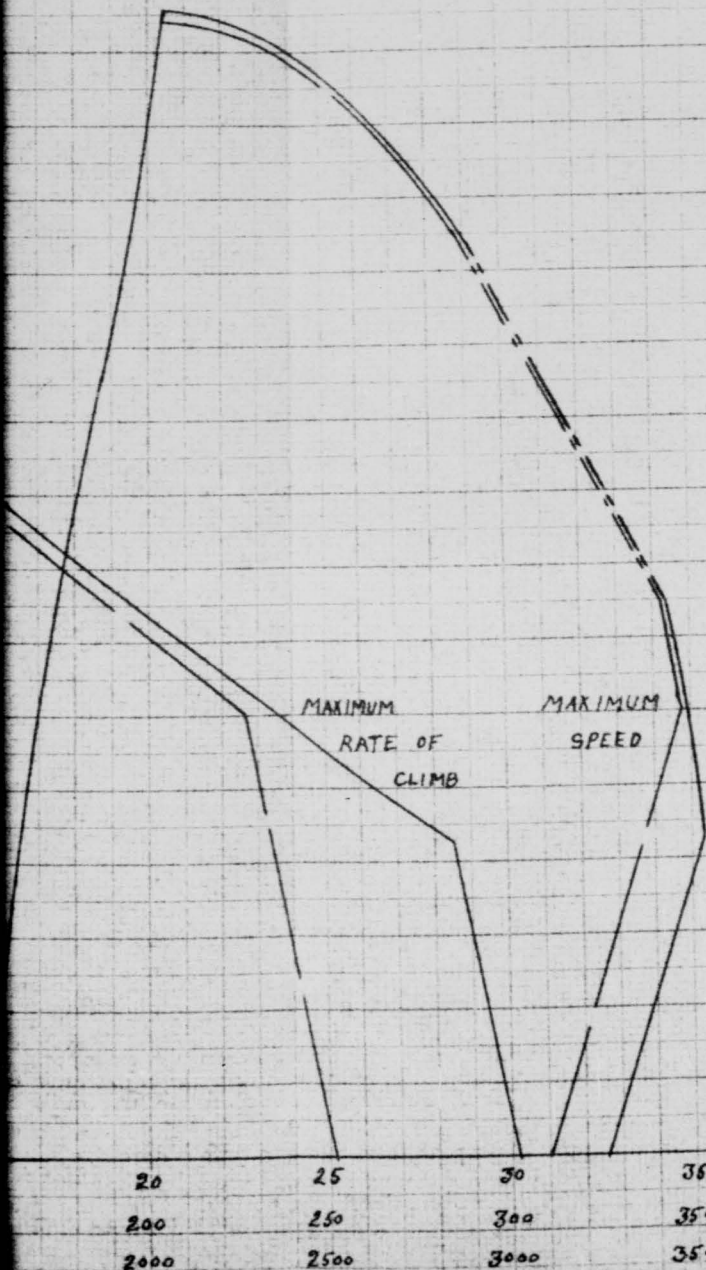
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MODEL XP-77 PERFORMANCE CURVES  
 FROM:  
 MODEL SPEC 32-947-001  
 REV #2

BASED ON:  
 ENGINE RANGER XV-770-17  
 NORMAL POWER  
 450 BHP @ 3000 RPM @ SEA LEVEL TO 12000 FEET  
 MILITARY POWER  
 520 BHP @ 3150 RPM @ SEA LEVEL TO 8500 FEET



PROPELLER DATA  
 AEROPRODUCTS A-15-132-6 2 BLADES  
 9.5 FEET DIAMETER 1.857:1 GEAR RATIO

GROSS WEIGHT - 3583 POUNDS

WING AREA - 100 SQUARE FEET

LEGEND -

- MILITARY RATING
- - - NORMAL RATING
- - - - TRANSITION FROM LOW TO HIGH DRAG

20	25	30	35
200	250	300	350
2000	2500	3000	3500

TIME TO CLIMB - MINUTES  
 TRUE AIR SPEED - MILES PER HOUR  
 RATE OF CLIMB - FEET PER MINUTE

GDC 8 JAN 1944

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Authr: *Dir. ATSC*  
Initials: *CMH*  
Date: *30 Jan. 45*

CASE HISTORY

of

XP-77 AIRPLANE PROJECT

A lightweight, highly maneuverable wooden interceptor built to test the practicability of small fighter theory and to study feasibilities of mass production of a wooden fighter at a fraction of the time and cost of the average all metal fighter.

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 1944

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U. S. STEEL NEWS, U. S. A.  
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1. (C) Condensed from eng. handbook "Research & Development Projects of the Engineering Division." By: Tech. Staff, ED, WF (File: Fighter Br., ED)  
The Air Force envisioned a small, highly maneuverable fighter which could be produced for a fraction of the cost and time of the average fighter airplane. A design proposed by Bell Airc. Corp. (hereinafter referred to as Bell) called for a light weight interceptor fighter airplane which would have a high speed of 410 m.p.h. at 27,000 ft. at 500 h.p., equipped with a Ranger XV-770-9 engine and a 20 mm. cannon. Design gross weight was 3700 pounds.
2. (C) Ltr. 8 Dec. 1941 Fr: Bell Airc. Corp. To: Asst. Chief, MD, WF (File: Fighter Br., ED)  
Bell requested that specifications and drawings of Ranger engine be released to them since these were necessary for preliminary proposal studies.
3. (S) R&R-1, 16 May 1942 Fr: Gen. Arnold To: Mat. Com., Wash. (File: MM&D)  
On 16 May 1942 Gen. Arnold authorized the procurement of 25 Bell small pursuit (Tri-4) airplanes incorporating provision for carrying one 325 lb. depth charge or one 300 lb. bomb and expressed the desire that these airplanes be service tested as soon as practicable.
4. (S) R&R-2, 29 May 1942 Fr: Gen. O.P. Echols CG, Mat. Com., Wash. To: CG, AAF (File: MM&D)  
Gen. Echols, CG, Mat. Com., informed Gen. Arnold that the Bell Tri-4 design hinged on a modification of the Ranger, Navy Type V-770-6 engine which would not become available for at least one year. Pending receipt of a service test quantity of the modified engines, the V-770-6 standard could be substituted, but the maximum number then available from the Navy was six. In order to obtain an accelerated test which would permit an early evaluation of the small, pursuit airplane idea, Gen. Echols recommended procurement of six of these airplanes in lieu of twenty-five using available Ranger engines.
5. (S) R&R-7, 10 June 1942 Fr: C/AS To: CG, Mat. Com., Wash. (File: MM&D)  
Gen. Harmon, Chief of Air Staff, on 10 June 1942 approved Gen. Echols' recommendation of procurement of six Bell Tri-4 airplanes.
6. (C) Ltr. 29 May 1942 Fr: Bell Airc. Corp. To: CG, Mat. Center, WF Att: Chief, Exp. Eng. Sect. (File: Fighter Br., ED)  
Bell stated that the first airplane would be delivered within six months after the contract was approved and the next five airplanes would be delivered within two months after delivery of the first airplane. Bell gave an estimated unit cost of \$275,673 for the first airplane; the figure per airplane gradually decreasing to \$33,713 for the sixth article.

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7. (U) Ltr. 8 June 1942  
Fr: Comdr. A.F. Bonnalle  
Chief, BuAero.  
To: CG, Mat. Center, WF  
(File: Fighter Br., ED)  
BuAero. authorized diversion of six Ranger model V-770-6 engines from Navy allotment to AAF on 8 June 1942.
8. (C) CTI-715, 16 June 1942  
Fr: Gen. B.E. Meyers, Wash.  
To: Tech. Exec., WF  
(File: Fighter Br., ED)  
CTI-715 dated 16 June 1942 initiated action for the procurement of six Bell D-6 airplanes.
9. (U) TT 24 June 1942  
Fr: Exp. Eng. Sect., WF  
To: Exp. Eng. Sect., Wash.  
Att: Col. Chidlaw  
(File: MM&D)  
Bell D-6 original specification called for a wood wing, metal fuselage, and metal tail surfaces. A second specification was submitted which called for all wood construction. Study of both specifications revealed that there were several advantages to the original design. Bell agreed to make either design, but indicated a delay of one month could be expected if original design were selected. Therefore, the Mat. Center informed AF Hdqs. (Wash.) that this latter airplane was the one proposed for construction.
10. (U) TT 25 June 1942  
Fr: Exp. Eng. Sect., Wash.  
To: Exp. Eng. Sect., WF  
Att: Col. Swofford  
(File: Fighter Br., ED)  
On 25 June 1942 General Echols directed that these airplanes be built to all wood specifications.
11. (C) ICM 29 June 1942  
Fr: Col. F.O. Carroll  
Chief, Exp. Eng. Sect., WF  
To: CG, Mat. Com., Wash.  
Att: Col. B.W. Chidlaw  
(File: MM&D)  
WF stated that the airplane could be built for a weight of about 3,700 to 3,750 pounds. Bell found it necessary to revise the guaranteed design gross weight to approximately 3,650 pounds due solely to errors in original equipment weight estimates. The D-6 at this revised weight had no appreciable advantage in speed, climb, maneuverability or firepower over current production airplanes. It was believed that the landing and ground run characteristics of the D-6 would be unsatisfactory due to the high wing loading. The best solution to this problem appeared to be to lighten the airplane to 3,000 pounds by drastic departure from current requirements. WF recommended that current design be continued, flight tests run and stripping resorted to if improved performance was required.

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12. (C) Ltr. 2 July 1942  
Fr: Bell Airc. Corp.  
To: CG, Mat. Center, WF  
Att: Chief, Exp. Eng. Sect.  
(File: Fighter Br., ED)
- In answer to a request from Mat. Center, contractor submitted detailed quotations which were to be made a part of proposed contract: i.e., a. one skeleton airplane; b. one full scale model equipped with required wind tunnel fitting; c. one free spinning model; d. one model for WF five-foot wind tunnel.
13. (C) AFP #217680, 20 Aug. 1942  
(File: Fighter Br., ED)
- AFP dated 20 Aug. 1942 authorized the purchase of six XP-77's totaling \$698,761.88.
14. (C) Contract W535 ac-30864  
10 Oct. 1942  
Bell Airc. Corp.  
(File: Fighter Br., ED)
- CFFF contract, entered into 29 Sept. 1942 by Bell and approved 10 Oct. 1942 by Gen. Vanaman, stated that Bell would manufacture six XP-77's and two static test articles for \$698,761.88; the first airplane to be delivered six months after contract approval; the next five airplanes to be delivered two months after delivery of the first airframe.
15. (C) Memo Rpt. EXP-M-50-768  
22 Oct. 1942  
(File: MM&D)
- Detailed report recording results of the Mock-Up Inspection of the Bell XP-77 airplane. "The mock-up was fairly complete and, in general, very satisfactory for the purpose intended." Certain design changes were necessary to improve the utility and serviceability of the XP-77 airplane. These changes are listed in detail in Exhibit A of this memo report.
16. (C) Ltr. 14 Jan. 1943  
Fr: Bell Airc. Corp.  
To: CG, Mat. Center, WF  
Att: Gen. Carroll  
(File: Fighter Br., ED)
- Bell stated on 14 Jan. 1943 that the first flight article would be completed 1 May 1943 and static test airplane would be completed 22 April; second static test airplane built for the AF would be delivered 15 May, and remaining flight articles would follow about three per month.
17. (C) Ltr. 21 Jan. 1943  
Fr: Gen. A.E. Jones,  
Chief, Proc. Div., WF  
To: Bell Airc. Corp.  
(File: Fighter Br. ED)
- Mat. Center concurred in the deliveries of these airplanes but requested justification for delays in scheduled deliveries.

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18. (C) Ltr. 30 Jan. 1943  
Fr: Bell Airc. Corp.  
To: CG, Mat. Center, WF  
(File: Fighter Br., ED)
- Bell stated the XP-77 airplane of wood and plastic design incorporated considerable magnesium alloy and involved material processes and procedures entirely foreign to their experience. Contractor had also found that the original schedule was inconsistent with the ability of sub-contractors to develop the work.
19. (C) Ltr. 11 March 1943  
Fr: Col. H.Z. Bogert,  
Chief, Tech. Staff, ED, WF  
To: Bell Airc. Corp.  
(File: Fighter Br., ED)
- The Mat. Center negotiated with Aeroproducts for two propellers for use in test installations in XP-77 airplanes. Aeroproducts stated that propellers would be available 1 June 1943, which date would allow Bell to test the first flight article with this propeller installed without causing too much inconvenience to scheduled flight test work.
20. (C) ICM 25 March 1943  
Fr: Col. H.Z. Bogert  
Chief, Tech. Staff, ED, WF  
To: Chief, Power Plant Lab., WF  
Att: Mr. R.E. Roy  
(File: Fighter Br., ED)
- In order to absorb the new and higher horsepower rating of the Ranger engines by utilizing recently developed Aeroproducts propellers, the Power Plant Lab. (WF) was requested to have Ranger change the current 3 to 2 ratio nose reduction gear to one having a ratio of 1.857 to 1. Ranger agreed to this change.
21. (C) Ltr. 29 April 1943  
Fr: Bell Airc. Corp.  
To: CG, WF  
Att: Contracting Officer  
(File: Fighter Br., ED)
- On 29 April 1943 Bell informed Contracting Officer (WF) that their original quotation, based on an airplane incorporating all metal fuselage and empennage with wood wings, was too low. When instructions were received from AAF to change design to wood, lack of experience in this type construction made it impossible to submit an accurate estimate covering the change. Bell further stated the cost was greatly increased due to subcontracting, and training of personnel and subcontractors in new fabrication methods. Contractor therefore requested a change order covering increase in price from \$698,761.88 to \$2,548,540.46 or an increase of \$1,849,778.58. Contractor also requested approval of a revised schedule showing delivery of first flying article 31 July 1943 to sixth article on 30 Oct. 1943.
22. (C) TT 4 May 1943  
Fr: Gen. F.O. Carroll  
To: Chief, Mat. Div.,  
AC/AS, MM&D, Wash.  
(File: Fighter Br., ED)
- Gen. Carroll proposed that each of the manufacturers engaged in major AAF experimental contracts submit monthly their costs and balances on AAF projects. (It had previously been considered essential that the contractor be permitted to carry out an experimental development without the handicap of too much regulation.)

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action was taken to send a project officer and a representative of the Proc. Div. (WF) to Bell to thoroughly investigate the situation on the XP-77 to determine why such a tremendous overage had been submitted and whether or not the AAF should continue with this contract.

23. (C) TT 4 May 1943  
Fr: Chief, Mat. Div.,  
AC/AS, MM&D, Wash.  
To: Chief, Eng. Div., WF  
Att: Gen. Carroll  
(File: Fighter Br., ED)

On 4 May 1943 in a conference with Gen. Chidlaw, Mr. Bell and Mr. Whitman stated that the original contract had grown from approximately 1/2 million to 2 1/2 million dollars and offered many reasons therefor; however, none seemed to justify the astounding 300% increase in cost. Gen. Carroll was directed by Gen. Chidlaw to investigate this matter and consider the possibility of cancellation.

24. (C) IOM 4 May 1943  
Fr: Gen. F.O. Carroll,  
Chief, Eng. Div., WF  
To: Chief, Proc. Div., WF  
(File: Fighter Br., ED)

In answer to the above request from Bell the Proc. Div. (WF) was requested by the Eng. Div. (WF) to investigate the increase in cost and negotiate a change order if cost increases were considered reasonable.

25. (C) IDM 4 May 1943  
Fr: Gen. B. W. Chidlaw  
To: Gen. Echols  
(File: MM&D)

Gen. Chidlaw advised Gen. Echols of recent developments on this airplane -- one which had started out principally to test the practicability of the small fighter theory.

26. (C) IOM 26 May 1943  
Fr: Eng. Div., WF  
To: AC/AS, MM&D, Wash.  
(File: Fighter Br., ED)

Project Officer recommended that contr. W535 ac 30864 for the XP-77 airplane be terminated immediately since Bell had undertaken more experimental development than they could satisfactorily handle at the time.

27. (C) Tel. Conv. 15 June 1943  
Gen. F.O. Carroll and  
Gen. B.W. Chidlaw  
(File: Fighter Br., ED)

Bell's sub-contract with Goshen Veneer was being cancelled as Bell had someone else to build the wings. Gen. Carroll suggested to Gen. Chidlaw that one or two airplanes be completed to determine what it would cost to build a wooden airplane. He further stated that if construction were stopped before completion of one airplane it would cost the Gov't. \$1,200,000 and the AAF would have nothing, whereas it would cost but a fraction more to have two airplanes completed.

28. (C) Ltr. 20 July 1943  
Fr: Gen. A.E. Jones,  
Chief, Proc. Div., WF  
To: Bell Airc. Corp.  
(File: Fighter Br., ED)

On 20 July 1943 Proc. Div. (WF) requested Bell to submit a quotation to cover estimated cost of completing the work on the basis of two flight articles based on initial flight dates.



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29. (U) Memo 29 July 1943  
Fr: Gen. W.S. Knudsen,  
Director of Production  
To: Gen. O.P. Echols  
(File: MM&D)  
Gen. Knudsen stated in a memo to Gen. Echols,  
"Bell, Buffalo, is working on a wood aeroplane with  
Ranger engine, numbered as XP-77. Why not cancel it?"
30. (U) Memo 2 Aug. 1943  
Fr: Gen. O.P. Echols  
To: Gen. W.S. Knudsen,  
Office, Under Secy. of War  
(File: MM&D)  
Gen. Echols advised Gen. Knudsen that action had been  
initiated to terminate the XP-77 project except for  
the completion of tests on the static test airplane,  
and the completion of two flight articles. This  
action was considered advisable in order to obtain  
valuable flight data for this type of plywood aircraft.
31. (C) TT 3 Aug. 1943  
Fr: Gen. A.E. Jones,  
Chief, Proc. Div., WF  
To: Bell Airc. Corp.  
(File: Fighter Br., ED)  
On 3 Aug. 1943 contractor was instructed by Proc.Div.  
(WF) to proceed with construction of two XP-77  
flying articles in lieu of six required by Item I  
of basic contract, pending receipt of quote letter.
32. (C) TT 10 Aug. 1943  
Fr: Col. H.Z. Bogert, ED, WF  
To: Dev. Eng. Br., Mat.Div.,  
Wash.  
Att: Gen. B.W. Chidlaw  
(File: Fighter Br., ED)  
As a result of an Army audit and based on cost  
estimates submitted by Bell, it was determined that  
an immediate cancellation at the time would only save  
the Gov't. several hundred thousand dollars; therefore,  
the Mat. Com. (WF) recommended that two airplanes be  
completed as a matter of academic interest.
33. (C) Ltr. 11 Aug. 1943  
Fr: Col. H.Z. Bogert,  
Chief, Tech. Staff, ED, WF  
To: Bell Airc. Corp.  
(File: Fighter Br., ED)  
WF notified Bell that in an effort to reduce additional  
costs and engineering work it was considered advisable  
to proceed with the construction of two airplanes  
incorporating the production Ranger V-770-7 engine  
(Navy Type V-770-6) and the Hamilton-Standard nine-  
foot diameter propeller.
34. (S) CTI-1429, 26 Aug. 1943  
Fr: Col. T.A. Sims,  
Dep. Chief of Staff, WF  
To: Eng. Div., WF  
(File: Fighter Br., ED)  
CTI dated 26 Aug. 1943 initiated action to cancel  
four XP-77 airplanes based on a letter of authority  
signed by Gen. Echols on 18 Aug. 1943.

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35. (U) Ltr. 4 Oct. 1943  
Fr: Col. G. Keehn, F.D.  
Liaison Officer  
To: Col. R.P. Swofford, Jr.  
ED, WF  
(File: Fighter Br., ED)

Eng. Div. (WF) was advised that Bell planned to enter into a contract with Vidal for the remaining three XP-77 wings, and was negotiating with Goshen Veneer for cancellation of their contract, "for fault of Goshen and not for convenience of the Government." Eng. Div. was further advised that inasmuch as this was a matter of dispute and might result in a sizeable claim by Goshen against Bell, approval of this change of source by AF, if given, should be subject to Bell remaining liable therefor.

36. (U) TT 12 Oct. 1943  
Fr: Proc. Div., WF  
To: Goshen Veneer Co.  
(File: Fighter Br., ED)

Mat. Com. (WF) informed Goshen that Bell's contract with Vidal had been approved, and requested that Bell and Vidal representatives be permitted to enter the Goshen plant.

37. (U) TT 13 Oct. 1943  
Fr: Proc. Div., WF  
To: Dist. Supv.  
Mid-Central Proc. Dist.  
(File: Fighter Br., ED)

Proc. Div. (WF) informed Dist. Supv., Mid-Central Proc. Dist., that Bell had cancelled Goshen's contract and had placed a new contract with Vidal. Goshen was not cooperating in making the necessary change over and the Dist. Supv. was directed to contact Goshen and secure their cooperation in order to avoid further delay.

38. (C) Ltr. 5 Nov. 1943  
Fr: D.D. Brubaker,  
Mgr. Dayton Office  
Bell Airc. Corp.  
To: Eng. Div., WF  
(File: Fighter Br., ED)

Delivery schedule quoted by Bell on 5 Nov. 1943:  
First flight article.....31 Jan. 1944  
Army static test article.....15 Feb. 1944  
Second flight article..... 1 March 1944

39. (C) Memo Rpt. 11 Nov. 1943  
Fr: Col. M.F. Cooper  
Eng. Div., WF  
To: Tech. Staff,  
Eng. Div., WF  
(File: MM&D)

Detailed report on XP-77 project submitted by Col. Cooper, project officer, gives reasons for cancellation of four airplanes and status of this project at time of this partial cancellation, on 3 Aug. 1943: i.e., six flight article fuselages and two static test fuselages were completed by Vidal, which left one static test and six flight wings to be constructed; all GPE, with exception of V-770-7 engines, was on hand. The following estimates were made at this time: Three wings would be completed in 60, 90, and 120 days; first airplane would be completed in Jan. 1944; static test article would be completed in Feb., and second airplane in March. Contractor had expended \$1,590,404.38 up to 3 Aug. 1943; it was estimated

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that total cost of partially cancelled contract would be approximately \$1,900,000; total cost to complete project as originally planned would have been \$2,800,000; this represented a savings of approximately \$900,000 by delivery of two instead of six airplanes. (These estimates cover cost of contract and do not include costs of GPE.)

40. (C) IOM 29 Nov. 1943  
Fr: Brig.Gen. F.O. Carroll  
Chief, Eng. Div., WF  
To: Chief, Proc. Div., WF  
Attn: Airc. Proc. Br.  
(File: Contract Files)

Proc. Div. (WF) was requested to undertake necessary negotiations to cover an increase in the estimated cost of contr. ac-30864 in the amount of \$1,154,778.58. This was the increase in estimated cost submitted by Bell on 5 Aug. 1943 based on the partial cancellation involving reduction in the number of planes to be completed.

41. (C) Chg. Order #4 to  
Contr. ac-30864  
6 Dec. 1943  
Bell Aircraft Co.,  
Buffalo, N.Y.  
(File: Contract Files)

Chg. Order #4 to contr. ac-30864 amended contract by increasing total estimated cost in amount of \$1,154,778.58. Contractor's original estimate was too low and additional money was needed to complete the project.

42. (C) Ltr. 20 Dec. 1943  
Fr: Proc. Div., WF  
To: Bell Airc. Corp.  
(File: MM&D)

Contracting Officer (WF) officially notified Bell on 20 Dec. 1943 that effective immediately contr. 30864 was partially terminated by reducing number of airplanes called for from six to two. Contractor was directed to discontinue all work and placing of all orders and to cancel all subcontracts pertinent to partial termination.

43. (C) Monthly Prog. Rpt.  
4 Feb. 1944  
Fr: AAFRR, Bell Airc. Corp.  
To: Chief, Eng. Div., WF  
(File: Fighter Br., ED)

Office of AAFRR at Bell stated progress on XP-77 contract had fallen behind schedule in Jan. 1944, due to delay in obtaining wings from Vidal. First wing was delivered 3 Feb.; estimated that second wing would be delivered 1 March; no estimate could be given on third wing. Chief Army Inspector reported quality and workmanship greatly improved over former wings obtained from another subcontractor. Bell stated first flight article would be ready 24 Feb.

44. (C) Explanatory Comments  
By: Col. M.F. Cooper,  
Asst. Chief, Fighter Br.,  
ED, WF  
To: k.l.m.  
(File: Fighter Br., ED)

Explanatory comments by Col. M.F. Cooper, former XP-77 project officer: The progress of this project has been disappointing both in time as well as cost. One of the original selling points for this type airplane was the opinion of Bell that a wooden airplane of light weight construction could be produced with a minimum of man hours and cost as compared to

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present day conventional fighter types. This has proven a mistaken idea for numerous reasons: i.e., the majority of this airplane was subcontracted by Bell to manufacturers who were supposed to be familiar with wooden fabrication methods; yet, due to the nature of high strength requirements of fighter airplane construction, training of fabrication personnel and trial of new methods, construction was considerably delayed. The wing contract with Gosen Veneer ran to such a high cost as well as delayed deliveries on the wing to such an extent that Bell, on 1 Oct. 1943, cancelled their subcontract with Goshen and turned over the wing subcontract for two flight wings and one static test plane to Vidal Corp.

45. (U) TT 11 Feb. 1944  
 Fr: Col. H.Z. Bogert,  
 Chief, Tech. Staff  
 Eng. Div., ATSC, WF  
 To: Bell Airc. Corp.  
 Thru: AAPRR  
 Buffalo, N.Y.  
 (File: Fighter Br., ED)
46. (C) Ltr. 19 Feb. 1944  
 Fr: T.A. Haertel, Mgr.  
 Contracts Dept.  
 Bell Airc. Corp.  
 To: Mat. Com., Eng. Div.,  
 Tech. Staff, WF  
 (File: Contract Files)
47. (C) Ltr. 6 March 1944  
 Fr: Lt.P.H. Bronnenkant,  
 Asst. Exp.Eng. Officer,  
 Office of AAPRR,  
 Bell Airc. Corp.  
 To: Mat. Com., WF  
 Attn: Chief, Eng. Div.  
 (File: Fighter Br., ED)

Eng. Div. (WF) authorized Bell to use first set of wing panels furnished by Vidal for first XP-77. Bell was to inform Vidal that next two sets of wing panels would be acceptable only if the assembly time was reduced to not exceed 25 minutes.

Vidal had indicated to Bell that delivery of wing panels would be delayed, and therefore Bell submitted the following new schedule of deliveries: First plane - 5 March 1944; second plane - 6 April 1944; third plane (static test model) - 30 April 1944.

AAPRR at Bell recommended to WF that first XP-77 be restricted from strenuous maneuvers because the first wing panel arrived at Bell from Vidal and had been found to be 1/4-inch too thick at front spar, and thus had necessitated cutting fuselage and moving the attaching fittings up 1/4-inch. The wing panel on this model would not be interchangeable with those on subsequent models. AAPRR stated that Vidal was taking precaution to correct gluing condition and dimensions on second wing panel. First XP-77 was due to arrive at Niagara Falls Airport, N.Y. on 7 or 8 March.

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48. (C) Ltr. 7 March 1944  
 Fr: Bell Airc. Corp.  
 To: Mat. Com., WF  
 Attn: Lt.Col. M.Cooper  
 (File: Fighter Br., ED)

Bell requested Mat. Command's approval to allow for application of an electrical retracting system to the XP-77 prior to initial flight demonstrations since it had been determined that on a take-off or a forced landing it would not be possible for the pilot to retract the gear in time to make a belly landing, thus creating a greater hazard to pilot and plane.

49. (C) Ltr. 20 March 1944  
 Fr: Col. M.S. Roth,  
 Actg. Chief, Tech. Staff,  
 Eng. Div., WF  
 To: W.A. Plourde  
 Bell Aircraft Corp.  
 (File: Fighter Br., ED)

Mat. Com. (WF) believed that the plane should be initially flown with manual retraction for the landing gear, as had been discussed at a conference between Bell and AAF representatives on 13 Oct. 1943, and that this was the most logical way to ascertain whether or not a power operated gear was required.

50. (C) Ltr. 29 March 1944  
 Fr: W.A. Plourde  
 Exec. Chief Engr.  
 Bell Airc. Corp.  
 To: Mat. Com., WF  
 Attn: Eng. Div., Tech.  
 Staff  
 (File: Fighter Br., ED)

As a result of a telephone conversation between Col. M.F. Cooper of Eng. Div.(WF) and Bell representative decision was made to flight test XP-77 with electrical retraction system for landing gear which had been installed for both pilot and plane safety for initial flight tests. Bell stated that after these initial tests the manual system would be checked out and evaluated by Bell and Army pilots in order to ascertain whether or not a power operated gear was required.

51. (U) Ltr. 3 April 1944  
 Fr: Lt. P.H. Bronnenkant,  
 Asst. Exp.Eng. Officer,  
 Office of AAFRR,  
 Bell Airc. Corp.  
 To: Mat. Com., WF  
 (File: Fighter Br., ED)

Bell submitted a progress report of XP-77 on 3 April 1944 which stated that first XP-77 arrived at Bell Niagara Falls Plant on 11 March where electrical landing gear was installed, and that initial flight test, lasting 25 minutes, was made by Bell test pilot on 1 April 1944. This test was a shakedown test and no attempt was made to obtain exact performance data. Pilot reported that the plane handled satisfactorily, engine operation was normal and cooling system very effective. Static test article was about 79% complete; and second XP-77 was about 78% complete and 1 May 1944 was estimated completion date. In order to avoid the difficulty which was encountered with first wing panel from Vidal, additional precautions were being taken by Vidal and also work on second wing was being closely supervised by Eastern Procurement District.

52. (C) Ltr. 14 July 1944  
 Fr: R.P. Whitman, First Vice-  
 Pres., Bell Airc. Corp.  
 To: Mat. Com., WF  
 Attn: Contracting Officer  
 (File: Fighter Br., ED)

On 14 July 1944 Bell suggested that a change order be issued in the amount of \$933,358.94 to cover the estimated over-run of costs of Ccntr. ac-30864. A breakdown of this indicated over-run was submitted. The principle items upon which Bell costs over-ran the original estimate were: overhead, tools and

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materials. Considerable time and expense had been devoted to finding method for using magnesium in aircraft construction; failure of subcontractors to find method of bonding metal to wood had forced Bell to take over this development; and unsatisfactory results from first subcontractor on wing panels had forced Bell to find another subcontractor.

53. (C) Ltr. 18 July 1944  
Fr: Capt. H.B. Davies,  
Contr. Officer,  
Office of AAPRR  
Bell Airc. Corp.  
To: Mat. Com., WF  
Attn: Contr. Officer  
(File: Contract Files)

Contracting Officer, Office of AAPRR at Bell, recommended the issuance of Change Order for \$933,358.94 as requested by Bell on 14 July 1944.

54. (C) R&R-1, 15 July 1944  
Fr: Col. K.B. Bergquist,  
Exec., AC/AS, OC&R,  
Wash.  
To: AC/AS, MM&D, Wash.  
(File: M&S)

AC/AS, OC&R (Wash.) advised MM&D (Wash.) that by directive from CG, AAF, P-77 was to be tested for fuel consumption and operational suitability at AAF Proving Ground Command, Eglin Field. OC&R desired the three XP-77's to be made operational and delivered to Eglin Field and stated that these tests would be made without prejudice to the acknowledged inferiority of this plane to other standard current fighters.

55. (C) R&R-2, 21 July 1944  
Fr: Col. R.C. Wilson,  
Chief, Devel. Eng. Br.,  
Mat. Div., M&S (Wash.)  
To: AC/AS, OC&R, Wash.  
(File: M&S)

OC&R (Wash.) was informed that only two flight articles plus a static test article of XP-77 were being procured on the experimental contract. Mat.Com. (WF) had been directed to make the two flight articles available to Eglin Field and since the third article was a static test item it would not be available for flight.

56. (C) IOM 22 July 1944  
Fr: Col. D.C. Swatland,  
Chief, Proc. Div., WF  
To: Chief, Eng. Div., WF  
Attn: Fighter Br.  
(File: Fighter Br., Eng.Div.)

Proc. Div. (WF) desired to know if Eng. Div. wished to continue with contr. ac-30864 for XP-77's since additional sum of \$933,358.94 had been requested by Bell as an over-run expenditure.

57. (C) 1st Ind., 3 Aug. 1944  
Fr: Brig.Gen. F.O. Carroll,  
Chief, Eng. Div., WF  
To: Chief, Proc. Div., WF  
(File: Fighter Br., Eng.Div.)

Eng. Div. (WF) advised Proc. Div. (WF) on 3 Aug. 1944 that they desired to complete contr. ac-30864 as soon as acceptance flights had been completed and suggested that Proc. Div. investigate this huge expenditure with view to closing out the contract as soon as airplanes had been accepted.

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58. (C) Ltr. 4 Aug. 1944  
 Fr: Lt. P.H. Bronnenkant,  
 Exp. Eng. Officer, Mat. Com.,  
 Office of AAFRR,  
 Bell Airc. Corp.  
 To: Mat. Com., WF  
 Attn: Chief, Eng. Div.  
 (File: Fighter Br., Eng. Div.)
- Exp. Eng. Officer, Office of AAFRR at Bell, stated on 4 Aug. 1944 that contr. ac-30864 had been completed; second XP-77 delivered to WF on 21 July and static test article delivered to WF on 20 July 1944. During July Bell pilots flight tested second XP-77. During spin tests, all spins were violently oscillatory, but by observation and pilot's report, recovery was rapid and positive.
59. (C) Ltr. 9 Aug. 1944  
 Fr: Col. D.C. Swatland,  
 Chief, Proc. Div., WF  
 To: AAFRR,  
 Bell Airc. Corp.  
 Attn: Capt. H.B. Davies,  
 Contracting Officer  
 (File: Fighter Br., Eng. Div.)
- Chief, Proc. Div. (WF) requested on 9 Aug. 1944 that a careful study of Bell's request of 14 July for additional money be made by Contracting Officer, AAFRR at Bell.
60. (S) Memo 18 Aug. 1944  
 Fr: Col. K.P. Bergquist  
 Exec., AC/AS, OC&R, Wash.  
 To: C/AS, Wash.  
 (File: M&S)
- C/AS (Wash.) was advised that: speeds of 316 mph at 5,000 ft, 295 mph at 20,000 ft and 258 mph at 30,000 ft., and combat radius of action of 280 miles at 10,000 ft. and 173 miles at 25,000 ft. had been obtained on XP-77 at Eglin Field. OC&R considered the performance and armament inferior to other AAF types and enemy fighters and concluded that it should not be used in combat. OC&R recommended to C/AS that no further consideration be given to production of this plane.
61. (S) Memo 23 Aug. 1944  
 Fr: Brig. Gen. E.M. Powers,  
 Dep. AC/AS, M&S, Wash.  
 To: C/AS, Wash.  
 (File: M&S)
- Performance estimates, with XV-770-9 engine installed on XP-77, as submitted by manufacturer in Model Specification were forwarded to C/AS. Plans for installation of this engine had been cancelled and therefore the performance data obtained at Eglin was the only data available. Brig. Gen. E.M. Powers, Dep. AC/AS, M&S (Wash.) stated that M&S concurred with conclusion and action recommended by OC&R that this plane not be considered for combat or production. Gen. Giles, C/AS, approved these recommendations on 2 Sept. 1944. Gen. Arnold's approval was noted on this document and with the following notation: "Inform those at requirements meeting of the above decision."
62. (C) 1st Ind., 2 Sept. 1944  
 Fr: Capt. H.B. Davies,  
 Contr. Officer, Office of  
 AAFRR, Bell Airc. Corp.  
 To: Mat. Com., WF  
 Attn: Chief, Proc. Div.  
 (File: Fighter Br., Eng. Div.)
- Contr. Officer, AAFRR at Bell, submitted the following views regarding Bell request for additional funds:  
 (1) Bell had expended as of 6 Aug., \$641,856.29 in excess of original estimated cost due mainly to their inexperience in constructing plywood plane and poor experience of their principal vendor, Goshen Veneer Co., who was not able to deliver satisfactory material

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(2) Bell had requested \$168,000 to cover a claim of Goshen Veneer Co. but Contracting Officer, AAFRR at Bell, did not believe Bell was obligated to pay this amount since Contracting Officer had inspected the claim.

(3) Open purchase commitments on contr. ac-30864 as of 1 Aug. 1944 were \$25,478.94. Contracting Officer stated that Bell would exceed the estimated cost in amount of \$833,335.23 when all costs had been accumulated.

63. (C) 2nd Ind., 5 Sept. 1944  
Fr: Brig. Gen. O.R. Cook,  
Chief, Proc. Div., WF  
To: Chief, Eng. Div., WF  
Attn: Col. M.S. Roth  
(File: Fighter Br., Eng. Div.)

Proc. Div. (WF) informed Eng. Div. (WF) that a thorough investigation of the Bell overrun request had been made by Contracting Officer at Bell. Contracting Officer recommended an increase of \$833,335.23, a figure which Bell agreed to accept with the understanding that Air Technical Service Command must realize this was a close estimate and that if any costs were greater than anticipated then another overrun request would be necessary to complete the project. Overrun request of \$168,000, covering claim of Goshen Veneer, was receiving attention of AC/AS, M&S (Wash.) and would be settled in near future. Eng. Div. was requested to advise Proc. Div. regarding making these funds available as recommended by Contracting Officer at Bell.

64. (C) 3rd Ind., 23 Sept. 1944  
Fr: Brig. Gen. F.O. Carroll,  
Chief, Eng. Div., WF  
To: Chief, Proc. Div., WF  
(File: Fighter Br., Eng. Div.)

Proc. Div. (WF) was advised by Eng. Div. (WF) to prepare an Authority for Purchase in amount of \$833,335.23 to cover estimated overrun as Eng. Div. desired to complete the project.

65. (U) TT 2 Oct. 1944  
Fr: Brig. Gen. F.O. Carroll,  
Chief, Eng. Div., WF  
To: AC/AS, M&S, Wash.  
Attn: Devel. Eng. Br.,  
(File: Fighter Br., Eng. Div.)

AC/AS, M&S (Wash.) was advised on 2 Oct. 1944 that second XP-77, stationed at Eglin Field for evaluation testing, had crashed.

66. (C) Ltr. 11 Oct. 1944  
Fr: Brig. Gen. F.O. Carroll,  
Chief, Eng. Div., WF  
To: CG, AAF  
Attn: AC/AS, M&S, Wash.  
Devel. Eng. Br.  
(File: Contract Files)

Information was requested from AC/AS, M&S (Wash.) by WF regarding the effect the evaluation testing of the XP-77 at Eglin Field would have upon the disposition of tools, fixtures and Kirksite dies used in production of these planes.



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67. (U) Chg. Order # 10 to  
Contr. ac-30864  
14 Oct. 1944  
Bell Aircr. Corp.  
Buffalo, N.Y.  
(File: Contract Files)
- Chg. Order #10 dated 14 Oct. 1944 amended contr.  
ac-30864 to allow for an increase of \$833,335.23.
68. (U) 1st Ind., 16 Oct. 1944  
Fr: Col. M.S. Roth  
Chief, Airc. Proj. Sect.,  
Eng. Div., WF  
To: Property Disposal Sect.,  
Readjustment Div., WF  
(File: Fighter Br., Eng. Div.)
- Eng. Div. (WF) advised Property Disposal Sect., Readjust  
ment Div. that disposition of tools, dies and fixtures  
pertaining to XP-77 plane be held in abeyance pending  
decision from AC/AS, M&S (Wash.). There had been a  
revived interest in the plane on part of Training  
Command and decision should be made by AC/AS, M&S  
since that office had directed development of this  
plane.
69. (C) Ltr. 17 Oct. 1944  
Fr: Col. C.B. Overacker,  
Dir., Proof Div.,  
AAF Proving Ground Com.,  
Eglin Field, Fla.  
To: CG, AAF TSC, WF  
Attn: Eng. Div.  
(File: Fighter Br., Eng. Div.)
- AAF Proving Ground Com., Eglin Field, submitted the  
following comments regarding capabilities of XP-77 as  
an advanced trainer: poor take-off and landing  
characteristics were observed; plane had unsuitable  
handling characteristics; poor visibility over the  
nose and extreme sensitiveness of plane made it unsuit-  
able for gunnery work; fighter trainer of this type  
should provide good altitude performance in order to  
be used for oxygen indoctrination and the XP-77 only  
gave good performance up to 15,000 ft.; the whole  
airplane was too delicate to stand the rough handling  
that a trainer would be required to withstand.
70. (C) 1st Ind., 26 Oct. 1944  
Fr: Col. R.C. Wilson,  
Chief, Aircr. Proj. Br.,  
Mat. Div., AC/AS, M&S,  
Wash.  
To: Director, AAF, ATSC, WF  
Attn: Eng. Div.  
(File: Fighter Br., Eng. Div.)
- AC/AS, M&S (Wash.) informed WF that evaluation report  
for XP-77 indicated that this plane did not meet  
military requirements and that no additional procure-  
ment would be made.
71. (C) IOM 26 Oct. 1944  
Fr: Col. M.S. Roth,  
Chief, Airc. Proj. Sect.,  
Eng. Div., WF  
To: Chief, Proc. Div., WF  
(File: Fighter Br., Eng. Div.)
- Eng. Div. (WF) requested Proc. Div. (WF) to take action  
to accept the second XP-77 since this plane had been  
completely destroyed at Eglin Field and the Government  
did not desire to have it repaired or replaced.
72. (U) Ltr., 28 Oct. 1944  
Fr: T.A. Haertel, Mgr.,  
Contr. Dept., Bell Airc.  
Corp., Buffalo, N.Y.  
To: Proc. Div., WF  
(File: Fighter Br., Eng. Div.)
- On 28 Oct. 1944 Bell requested a complete termination  
of contr. ac-30864 in order that a final settlement  
of the contract could be made.

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73. (U) 1st Ind., 30 Oct. 1944  
 Fr: Capt. H.B. Davies,  
 Contr. Officer, Bell  
 Aircr. Corp., Buffalo, N.Y.  
 To: Director, ATSC, WF  
 Attn: Proc. Div.  
 (File: Fighter Br., Eng. Div.)  
 Contracting Officer at Bell forwarded Bell letter of 28 Oct. and stated that it was the belief that the Govt. would be better protected and the termination better negotiated under a complete termination rather than the termination as it existed.
74. (C) R&R-1, 2 Nov. 1944  
 Fr: Col. G.E. Price,  
 Chief, Prod. Sect.,  
 Proc. Div., WF  
 To: Eng. Div., WF  
 Attn: Maj. J.F. Aldridge  
 (File: Fighter Br., Eng.Div.)  
 Proc. Div. (WF) forwarded to Eng. Div., the Bell letter of 28 Oct. which requested that instead of accepting the crashed plane that the contract be totally terminated and thus allow the contractor to enter into an overall settlement agreement so a cleanup of the contract could be effected. Proc. Div. believed the total termination would simplify administrative problems of handling the remainder of the contract.
75. (U) IOM 2 Nov. 1944  
 Fr: Maj. G.V. Walls,  
 Eastern Br., Field Service  
 Unit, Terminations Sect.,  
 Readjustment Div., WF  
 To: Capt. C.V. Koons,  
 Tech. Exec., Terminations  
 Sect., Readjustment Div., WF  
 (File: Terminations Sect.,  
 Readjustment Div.)  
 Fighter Br., Eng. Div. (WF) advised Terminations Sect., Readjustment Div. (WF) on 2 Nov. 1944 that procedure had been started to accept the first plane which crashed and that the other plane which was in a hangar at WF would be accepted in the near future. Thus Terminations Sect. stated that there appeared to be no basis for securing a total termination of this contract.
76. (C) R&R-2, 6 Nov. 1944  
 Fr: Brig. Gen. F.O. Carroll,  
 Chief, Eng. Div., WF  
 To: Fighter Br., Proc. Div., WF  
 Attn: Maj. R.E. Hunt  
 (File: Fighter Br., Eng.Div.)  
 Eng. Div. (WF) concurred in recommendation from Prod. Sect., Proc. Div. of 2 Nov. for total termination of contr. ac-30864.
77. (C) IOM 6 Nov. 1944  
 Fr: Col. H.Z. Bogert,  
 Chief, Service Eng. Sect.,  
 Eng. Div., WF  
 To: Property Disposal Sect.,  
 Readjustment Div., WF  
 (File: Fighter Br., Eng.Div.)  
 Property Disposal Sect., Readjustment Div. (WF) was advised that AC/AS, M&S (Wash.) had authorized that disposition be made of special tools, dies, fixtures and jigs used in construction of XP-77 planes as all activity on this contract had been directed toward an early termination.

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MDAC-265-A-WF-12-22-41-500M  
C.437--XP-77  
DEB-1-(1/6pp)  
Mat. Div.  
M.M. & D  
Wash.

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

RPS:mah:50

Wright Field, Dayton, Ohio  
Date: June 27, 1942

~~CONFIDENTIAL~~

TO: Commanding General,  
AAF Materiel Command,  
Washington, D. C.  
Attention: Colonel B. W. Chidlaw

SUBJECT: Comments on Proposed Bell Model D-6.

1. A thorough study of the Bell Model D-6 airplane has been completed, and the results thereof were discussed with representatives of the Bell Company on June 24 and 25, 1942. The Bell Company has found it necessary to revise the guaranteed Design Gross Weight to approximately 3,650 pounds. It is the opinion of this office that the airplane can be built substantially as proposed for a weight of about 3,700 to 3,750 pounds. The increase in guaranteed weight was due solely to errors in equipment weight as listed in the Model Specification and to the use of wood for fuselage and tail surface construction. Assuming 500 B.H.P. at 30,000 feet, this office is of the opinion that the guaranteed high speed is about 20 M.P.H. optimistic, and the rate of climb slightly optimistic.

2. Certain characteristics of the Model D-6 are listed below, and for comparison the corresponding characteristics of several production and development models are also shown.

	<u>D-6</u>	<u>P-40E</u>	<u>P-73D</u>	<u>P-47B</u>	<u>XP-63</u>
Wing Loading	36.5	35.6	35.8	45.5	30.5
Power Loading					
(1) Based on Take-off	6.4	7.3	6.65	6.5	5.68
(2) Based on Military Power at Critical Altitude	7.3	7.3	6.65	6.84	6.56

3. To better visualize the size of the proposed airplane, there is inclosed herewith a table comparing the D-6 with the P-9 and the P-26A.

4. There is likewise inclosed a curve sheet showing the guaranteed performance of the subject airplane as compared with that of the P-47B and P-63.

MX-176

Signature.....

2-6-407

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AP.77  
D.E.B.-1-(2/4pp)

~~CONFIDENTIAL~~

Commanding General, AAF Materiel Command  
Comments on Proposed Bell Model D-6  
June 29, 1942.

5. A survey of these data leads to the following conclusions:

a. As guaranteed the D-6 has no appreciable advantage in speed, climb, maneuverability, or firepower over airplanes now set up for production. Further, the rate of climb and speed guarantees seem optimistic in view of the power loading as compared with that of the other airplanes listed in the above table.

b. It is believed that the landing and ground run characteristics of the D-6 will be unsatisfactory due to the high wing loading. While difficult to explain, there is a definite relation between the wing loading which a pilot can comfortably handle and airplane size. It is easier to land a large airplane at 100 M.P.H. than a small airplane at this same speed. Ground run characteristics are much affected by size; a large airplane with big wheels and wide landing gear tread will easily roll over ruts and irregularities which would bury the nose wheel of a very small airplane. The fore and aft wheelbase of the D-6 is only 70 inches, the width of the main gear is 7 feet 10 inches. The airplane will land at approximately 90 M.P.H. At take-off in the over-loaded condition the wing loading will be in excess of 42 pounds per square foot.

6. Distinct from the design features discussed above there is the matter of the engine development involved. While current plans call for the temporary installation of the production engine rated at 450 H.P. at 12,000 feet, such action is purely an expedient to get the airplanes into the flight test phase of development. The airplane will be utterly useless for combat until the improved engine is available. It should be recognized that the V-770-7 engine as proposed for the final version of the Model D-6 embodies several improvements that may be difficult of achievement. The special supercharger has not yet been developed to give the expected efficiency; the engine-supercharger combination has never been tested; the basic engine has not been tested at indicated horsepower outputs as great as those necessary to produce the guaranteed ratings; and development will undoubtedly be necessary to obtain satisfactory cooling at 27,000 - 30,000 feet. It is believed that at least one year will be required to bring the proposed engine to the flight stage.

7. It is suggested that the best solution to the above criticism is to lighten the airplane to a Design Gross Weight of about 3,000 pounds. This will,-

MX-176

x P.77  
DES-1-(5/6pp)

CONFIDENTIAL

Commanding General, AAF Materiel Command  
Comments on Proposed Bell Model D-6  
June 29, 1942.

a. Give a wing loading of 30 pounds per square foot, which may not be an adequate but is certainly a desirable step in improving handling qualities, maneuverability, and rate of climb.

b. Reduce the power loading to a value indicative of superior rate of climb and maneuverability.

c. Allow some leeway, i. e. in case the engine does not develop its full guaranteed power at altitude, or in case certain small weight items must eventually be added, the airplane might still be of combat value.

8. The means whereby the airplane weight could be reduced to the appropriate value would require a drastic departure from current requirements. Consequently, it may be best to proceed with the design as now proposed. Flight test will prove or disprove the above opinions. If necessary, the airplane can be appreciably lightened by stripping.

9. The following comments may be of interest. They are distinct from the opinions expressed above in that they concern detail design features.

a. The nose wheel type of alighting gear is questionable. It adds complication to the engine compartment and reduces accessibility of the engine and accessories. It adds weight. With the short fore and aft tread and small nose wheel, it may not increase safety to the degree usually expected of the tricycle gear. Bell representatives stated that a change to conventional gear was impossible due to difficulty of housing main wheels in forward portion of laminar flow airfoil; delay that would result from design change, and difficulties that would result from tail wheel cut-out in aft portion of wood fuselage.

b. Turnover protection consists of reinforced vertical tail surfaces which cannot meet A.A.F. requirements.

c. Angularity of windshield is too great and the angle of vision downward over the nose is too small judged on recent combat experience.

d. The wing is constructed in one piece which is undesirable from the standpoint of replacement and repair.

e. Forward armor protection is extremely limited.

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XP77

DES-1 (S/11)

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Commanding General, AAF Materiel Command  
Comments on Proposed Bell Model D-6  
June 29, 1942.

No changes in the above features will be made at this time due to the delay or increased weight that would result, except that some improvement in item g, may be possible without penalty.

F. O. CARROLL,  
Colonel, Army Air Forces,  
Chief, Experimental  
Engineering Section.

2 Incls.

1. Table (Ref. par. 3) (In dupl.)
2. Curve Sheets (Ref. par. 4) (In dupl.)

EX-176

~~CONFIDENTIAL~~  
Signature \_\_\_\_\_

T. A. DMS  
Colonel, Army Air Forces  
Technical Executive

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DEB-1-6/47

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COMPARISON OF D-6 WITH PQ-9 AND P-26A

	<u>D-6</u>	<u>PQ-9</u>	<u>P-26A</u>
Gross Weight	3,557	1,550	3,012
Engine B.H.P.	515*	150	500
Wing Area	100 sq. ft.	103 sq. ft.	149.5 sq. ft.
Wing Loading	35.57	15.05	20.1
Power Loading	6.9	10.33	6.0
Span	27ft. 6 in.	30ft. 0in.	27ft. 11-1/2in.
Length	22ft. 4 in.	16ft. 8-3/8in.	23ft. 10in.

\* - Military Power in low blower - representative of average value.

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OCT. 1943

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XP-77 Airplane

450-112  
Expenditure Order No.

Bell Aircraft Corporation  
Org. or Activity charged  
with development

MX-272  
Classification Project No.

W335 AC-30864  
Contract No.

**DESCRIPTION:** A single engine, single place, light-weight interceptor fighter constructed principally of wood and having a high speed of 410 m.p.h. at 27,000 feet with 500 horsepower. The airplane is powered with a Ranger XV-770-9 engine which is equipped with a gear-driven supercharger of the Flanial type and is installed in front of the pilot. This model will be equipped with a 20 mm. cannon mounted for firing through the propeller hub and two (2) caliber .50 caliber machine guns. A laminar-flow type airfoil and tri-cycle landing gear will also be incorporated in this design. Design gross weight is 3700 pounds.

**PURPOSE:** To develop a small, highly maneuverable fighter which can be produced for a fraction of the cost and time of the average fighter type airplane.

**AUTHORITY:** C.T.I.-715 dated 16 June 1942 authorized the procurement of (6) airplanes and obtained the release from the Navy Department of (6) Ranger V-770-6 engines for use in these airplanes.

**REMARKS:** In May, 1942 a preliminary engineering conference was held at the Materiel Command to discuss the proposed design and consider the development of the Ranger engine. In view of the time required to develop the XV-770-9 engine the government will furnish the V-770-7 engine (Navy type V-770-6) for installation in order that the airplane flying qualities may be investigated. The -7 engine is similar to the -9 except it does not incorporate a Flanial type supercharger and an offset reduction gear suitable for use with a hollow propeller hub. Six airplanes, static test article, models and engineering data are being procured on Contract AC-30864 approved 10 October 1942. This procurement was directed by C.T.I.-715 dated 16 June 1942. Present status of V-770-9 engine development indicates that there will be an appreciable delay in the delivery of these engines. The Ranger Engine Company has completed War Emergency Rating tests on V-770-7 engine with the result that if this rating is applied to first engines the airplane should have superior performance at sea level. As a result of the contractor's request for additional funds late in April, 1943, it has been decided to hold up work on this project until the contractor has completed tests on the first static test article.

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BELL AIRCRAFT CORP  
2080 ELMWOOD AVENUE  
BUFFALO, N. Y.

C-972

**CONFIDENTIAL**

December 8, 1941

**Subject:** Authorization for Release of Engine Installation Drawings and Specifications of High Altitude Ranger Engine.

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

**Reference:** (a) Conference of October 30, 1941 held at Dayton, Ohio and attended by:

- Major Craigie of the Materiel Division
- Major Swofford of the Materiel Division
- Mr. Whitman of Bell Aircraft
- Mr. Payer of Bell Aircraft
- Mr. Strickler of Bell Aircraft

**Through:** Air Corps Resident Representative  
Buffalo, New York

1. It is requested that the Materiel Division of the Air Corps authorize the Ranger Aircraft Engines of Farmingdale, Long Island, New York to release available specifications and engine installation drawings of the Ranger High Altitude engine to the Bell Aircraft Corp. of Buffalo, New York.
2. These specifications and drawings are necessary for preliminary proposal studies being prepared by us for a light, high speed, high altitude interceptor pursuit. The airplane under consideration incorporates features brought up in the conference, Reference (a).
3. It is requested that action on this release be taken as soon as possible in order to expedite proposal studies.

BELL AIRCRAFT CORP.

**RESTRICTED**

Robert J. Woods  
Chief Design Engineer

RJW:RMT

**CONFIDENTIAL**

See Bu. file to Research  
4 Bell Corp 12/18/41

WILLIAM J. HINDRICKS

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D.P.B-1 (6/16)

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MATERIEL COMMAND - 132

Bell Tri-4 Design.

1 AFACG AFAMC 1942  
5/16

1. You are authorized to purchase 25 of the air-  
planes described on attached photo, with one additional  
feature added; i.e., provision for carrying one 325 pound  
depth charge or one 300 pound bomb.

2. It is desired that these 25 airplanes be service  
tested as soon as practicable.

Incl: 2 photos as of  
above subject.

H.H.A.

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AF 77-4927  
36-1 (56)

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MATERIEL COMMAND - 132.

*File*

**Bell Tri-4 Design.**

2. AFAMC-9 AFACC 1942  
(THRU: 5-29  
AFDMR)

1. Reference above directive regarding procurement of twenty-five (25) Bell small pursuit (Tri-4) airplanes, it should be brought to your attention that the engine around which this design hinges is a modification of the standard Ranger V-770-6 with a new offset reduction gear, hollow shaft for cannon installation, and supercharger. This engine is at least 1 to 1½ years away. The present Ranger engine, without supercharger, carries just about the same horsepower to 12,000 feet, and to obtain an accelerated test of the small pursuit airplane idea it is deemed advisable to procure a lesser number of the small Bell jobs around the now available engine, consideration being given in the design so that the supercharged engine can be installed at a later date when it becomes available.

2. Discussion with representatives of the Bureau of Aeronautics discloses that the maximum quantity of Ranger V-770-6 engines which can be made available to the Army without seriously interfering with the Navy program of SO3-C aircraft deliveries is six (6). It may be possible at a later date to divert 2 or 3 more of such engines for spares. Accordingly, the program as now considered is as follows:

- (a) Immediate negotiations with Bell for procurement of six (6) small pursuit aircraft (Tri-4 design) around the present Ranger V-770-6 engine.

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- 1 -

4.

XP-77-6437  
DEB-1046P

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MATERIEL COMMAND - 132.

JWS:ah

**Bell Tri-4 Design.**

2. AFANG-9 AFACG 1942  
(THRU: 5-29  
AFDNR)  
(Continued)

- (b) Letter to Bureau of Aeronautics, Navy Department, formally requesting six (6) engines for this project.  
(Note: Arrangements will be made at a later date for spare engines.)
- (c) Initiation of negotiations with Ranger for a service test quantity of the modified engines with offset reduction gear, hollow shaft and supercharger installation around which the Bell airplane was originally designed.

3. Such a program, while it does not bring out immediately the full possibilities of the Tri-4 design, is the best bet, under the circumstances, considering the present status of the engine, and will permit an early evaluation of the "small pursuit airplane idea". This airplane will be constructed primarily of wood, and while the first article delivery date is unknown at this time, preliminary conferences with Bell representatives indicate that it may be possible to obtain the first flight article in approximately six months from date of contract.

4. Your approval of the above program, which is a deviation from your original directive, is requested.

Incls. w/d

O. P. E.  
Commanding General, Air Force Materiel Command.

SS.

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3. AFRAD AFIMR 1942  
6-2

BCP/mlp

1. Recommend that two (2) of these airplanes be sent as soon as possible after they have been procured to the Fighter Proving Ground Detachment, Eglin Field, Florida, for accelerated service test, the original directive amended and the above program approved.

W.F.M. /s/  
Exec., Air Def.

Incls.  
N/C

Page -2-

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10/1/43

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R/R

Subject: Bell Tri-4 Design

4. AFDMR AFACG 1942 Recommend approval of the program set forth in item 2  
6-3 above.

M.E.G. /s/  
for  
M.S.F.  
Dir. Mil. Req.

-----  
AFADS ECL:mhh

5. AFADS AFACG 1942 1. Recommend approval of the program set forth in Item 2  
(THRU: 6-6 above.  
AFDMR)

2. Concurrently with the development project the Materiel Command should conduct an exploratory study of facilities which may be used for the production of Ranger V-770-6 engines. The present expansion of Ranger plant will provide V-770 engines to meet Navy requirements only. The Army equity in the Ranger plant must be continued through 1943 in production on the L-440 six-cylinder model engine for the PT-19A which is the preferred type of primary trainer airplane.

Incl. missing.

T.J.H., JR  
C/A-4

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EG:ab

6. AFDMR AFACG 1942 1. Concur with A-4's paragraph 2, item 5, above.  
6-8 2. Recommend approval of General Echols' program set forth in item 2, above.

M.E.G./s/  
for  
M.S.F.  
Dir. Mil. Req.

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R&R

SUBJECT: Bell Tri-4 Design

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7. AFCAS Commanding 1942  
General 6-10  
Materiel  
Command.  
THRU:  
(A-4 and  
AFDMR TO  
Note).

AFCAS AFH:mwb

1. This project is approved in accordance with  
your Item #2 and General Fairchild's Item #6.

M.F.H. /s/  
Chief, Air Staff

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-4-

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**BELL AIRCRAFT CORP**  
 2050 ELMWOOD AVENUE  
 BUFFALO, N. Y.

**CONFIDENTIAL**

May 29, 1942.

**Subject:** Quotation on Bell Model D-8 Airplanes  
 (Experimental Order)

**To:** Commanding General, Army Air Forces  
 Materiel Center.  
 Wright Field, Dayton, Ohio

**Attention:** Chief, Experimental Engineering Section

1. Confirming our negotiations of May 29, 1942 at Wright Field, we quote as follows on your experimental procurement of six of our Model D-8 interceptor pursuit airplanes built to our specification D6-947-001, Appendix III A incorporating Ranger engine V-770-8 (Standard production engine):

Breakdown of estimated unit costs.

	1st Airplane	2nd Airplane	3rd Airplane	4th Airplane	5th Airplane	6th Airplane
Direct Labor	\$ 20,460	18,600	18,860	16,720	14,530	13,440
Tools	17,500	---	---	---	---	---
Overhead 110%	41,756	20,460	18,546	17,292	16,033	14,704
Engineering Labor	123,700	760	760	760	760	760
Eng. Overhead 40%	49,430	304	304	304	304	304
Direct Material	6,300	4,850	4,220	3,800	2,750	2,320
Tool Material	2,850	---	---	---	---	---
Direct Expense	500	500	500	500	500	500
<b>Total Est. Unit Cost</b>	<b>\$262,546</b>	<b>45,474</b>	<b>41,190</b>	<b>36,376</b>	<b>34,932</b>	<b>32,108</b>
<b>Fixed Fee 5%</b>	<b>13,127</b>	<b>2,274</b>	<b>2,060</b>	<b>1,819</b>	<b>1,747</b>	<b>1,605</b>
<b>Total Unit Prices (Flyaway - our factory)</b>	<b>\$275,673</b>	<b>47,748</b>	<b>43,250</b>	<b>40,295</b>	<b>36,679</b>	<b>33,713</b>

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**BELL AIRCRAFT CORP**  
2050 ELMWOOD AVENUE  
BUFFALO, N. Y.

-2-

2. We estimate that we can deliver the first airplane within six months after the contract is approved and can deliver the next five airplanes within two months after we deliver the first airplane. We believe that we can meet this schedule without seriously affecting our present experimental program.

BELL AIRCRAFT CORPORATION

First Vice President.

WPT:LU

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NAVY DEPARTMENT  
BUREAU OF AERONAUTICS  
WASHINGTON

Copy to:

NAVY DEPARTMENT  
BUREAU OF AERONAUTICS  
21(V-770-3)

June 8, 1942

From: The Chief of the Bureau of Aeronautics.  
To: The Commanding General, Army Air Forces,  
War Department.

Subject: Procurement of Ranger Model V-770-6 Engine.

Reference:

(a) War Department, Headquarters Army Air Forces,  
Washington, D.C. ltr. AFAMC-9 to BuAer  
dated 30 May 1942.

1. As requested in reference (a) diversion of delivery  
of six (6) Ranger Model V-770-6 Engines from the Navy allotment in  
favor of the Army Air Forces for use in an experimental project is  
satisfactory to this Bureau.

2. These six (6) engines will be scheduled accordingly,  
and it is requested that procurement for these engines be initiated  
so that contract arrangements can be completed as soon as possible.

/s/ A. F. BORNALIE  
Lieut. Comdr. U.S.N.R.  
By direction Chief of Bureau

Copy to:

Captain A. H. Lovett,  
Army Air Force.

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AFAMC-9

TECHNICAL INSTRUCTIONS

Washington, D.C.  
June 16, 1942

Serial No.: CTI-715

Subject: Bell D-6 Airplanes

To: Technical Executive, Wright Field

1. Problem Presented:

- a. To develop a light, low-powered, single place fighter.

2. Factual Data:

a. On May 16, 1942, General W. H. Arnold had a Routing and Record Sheet directed to the Chief of the Materiel Command authorizing the purchase of twenty-five (25) Bell D-6 airplanes. After discussions with the Bureau of Aeronautics of the Navy as to availability and status of the engines, it was determined that the proposed engine is in development and will not be available for approximately one year. In order to start development of the airplane frame, it was deemed advisable to install the current engine, which has a lower altitude rating but approximately the same power to 12,000 feet.

b. The Navy could make available only six (6) engines of this type without seriously affecting delivery schedules of this SO-3C airplane.

c. General Arnold's Routing and Record Sheet was returned to his office with the suggestion that we procure the six (6) planes as outlined above and was approved.

3. Action Desired:

a. Initiate procurement of six (6) Bell Aircraft Corp. airplanes (originally their Model D-6)

b. Initiate action to furnish Ranger engines. Bureau of Aeronautics release June 8, 1942, of engines was forwarded with I.O.M. dated June 11, 1942, subject: "Procurement of Ranger Model V-770-6 engine.

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CTI-715  
Subj: Bell D-6 Airplanes  
(Continued)

By command of Major General Echols:

B. E. MEYERS,  
Brig. General, U.S.A.  
Executive

Att:  
Copy R&E Sheets  
No. 1 thru 7  
(4 pages)

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DEB-2-Cl/pt  
Mat Div  
MMBD  
Wash

EXP-T-965

6-24-42

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EXPERIMENTAL ENGINEERING SECTION

ATTENTION: COLONEL CHIDLAW

P R I O R I T Y REMOVE FROM RECORDS

CONCERNING BELL MODEL D-6 ORIGINAL SPECIFICATION CALLS FOR WOOD WING AND METAL FUSELAGE AND TWIL SURFACES. A SECOND SPECIFICATION WAS SUBMITTED SOMEWHAT LATER WHICH CALLED FOR ALL WOOD CONSTRUCTION AND THE MATERIEL CENTER WAS INFORMED THAT THIS LATER AIRPLANE WAS THE ONE PROPOSED FOR CONSTRUCTION. STUDY OF THE SPECIFICATIONS IN CONJUNCTION WITH THE BELL COMPANY REVEALS THAT THERE ARE THE FOLLOWING ADVANTAGES TO THE ORIGINAL DESIGN:

- (1) SAVING IN WEIGHT IS A MOST CRITICAL CONSIDERATION IN THIS PROJECT, AND THE SUCCESS OF THIS SMALL LIGHT AIRPLANE WILL DEPEND UPON HOLDING ITS WEIGHT TO SPECIFICATION VALUE. THE METAL FUSELAGE AND TAIL SHOULD BE ABOUT 25 POUNDS LIGHTER THAN THE WOOD.
- (2) THERE ARE MORE UNKNOWN FEATURES IN THE WOOD DESIGN. METAL CONSTRUCTION WOULD PERMIT A MORE SURE APPROACH.
- (3) DUE TO THE LARGE NUMBER OF CUT-OUTS AND IRREGULARITIES NECESSARY IN A FUSELAGE AND THE DIFFICULTY OF HANDLING THE RESULTING LOAD CONCENTRATION IN WOOD CONSTRUCTION, METAL OFFERS GREATER ASSURANCE THAT THE FIRST ARTICLES WILL BE SATISFACTORY AND WILL REMAIN SATISFACTORY IN SERVICE.
- (4) METAL FOR FUSELAGE AND TAIL WILL ALLOW USE OF PRESENT TOOLS AND PERSONNEL FAMILIAR WITH METAL CONSTRUCTION WHICH IS OF IMPORTANCE WHEN CONSIDERING PRODUCTION QUANTITIES.
- (5) THE COMBINATION OF WOOD WING WITH METAL FOR FUSELAGE AND TAIL OFFERS A DESIRABLE INTERMEDIATE STEP IN CHANGING A PRODUCTION SET-UP FROM ALL METAL TO ALL WOOD. IT IS BELIEVED THAT THE WOOD WING IS A SIMPLER PROBLEM, AND THE BUILDING OF THIS STRUCTURE WILL AFFORD SOUND INFORMATION FOR PROCEEDING FURTHER, AND ALLOW THE BELL COMPANY TO TRAIN PERSONNEL IN THE CONSTRUCTION TECHNIQUE INVOLVED.
- (6) THE BELL COMPANY IS AGREEABLE TO PROCEEDING EITHER WITH THE ORIGINAL DESIGN

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OR WITH THE ALL WOOD CONSTRUCTION, AND STATE THAT THEIR QUOTATION IS APPLICABLE TO EITHER. HOWEVER, AS SOME ENGINEERING WORK HAS ALREADY BEEN ACCOMPLISHED ON THE ALL WOOD VERSION, A DELAY IN DELIVERY OF FOUR WEEKS WILL RESULT FROM A DECISION TO PROCEED WITH ORIGINAL DESIGN. THIS DELAY SHOULD NOT BE CRITICAL IN VIEW OF DELIVERY DATES FOR ALTITUDE ENGINES.

EXPERIMENTAL ENGINEERING SECTION

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EX-623

6-25-42

EXPERIMENTAL ENGINEERING SECTION

ATTENTION: COLONEL SWOFFORD

RE YOUR EXP T 965 DATED 6-24-42, PERTAINING TO BELL MODEL 1-1

SPECIFICATION AND CONFIRMING TELEPHONE CALL CHIDLAW-SWOFFORD THIS

MORNING GENERAL ECHOLS DIRECTS THAT AIRPLANE BE BUILT TO ALL-WOOD

SPECIFICATION. REQUESTION MENTIONED BY SWOFFORD RE MATERIEL *detail 4/1/42*

CENTER STUDIES AND OPINIONS REGARDING LIKELY OUTCOME OF THIS

PROJECT BE FORWARDED AS SOON AS CONVENIENT SO THAT THIS OFFICE AND

GENERAL ECHOLS WILL BE IN FULL POSSESSION OF FACTS REGARDING ENTIRE

PROJECT.

EXPERIMENTAL ENGINEERING SECTION

TC

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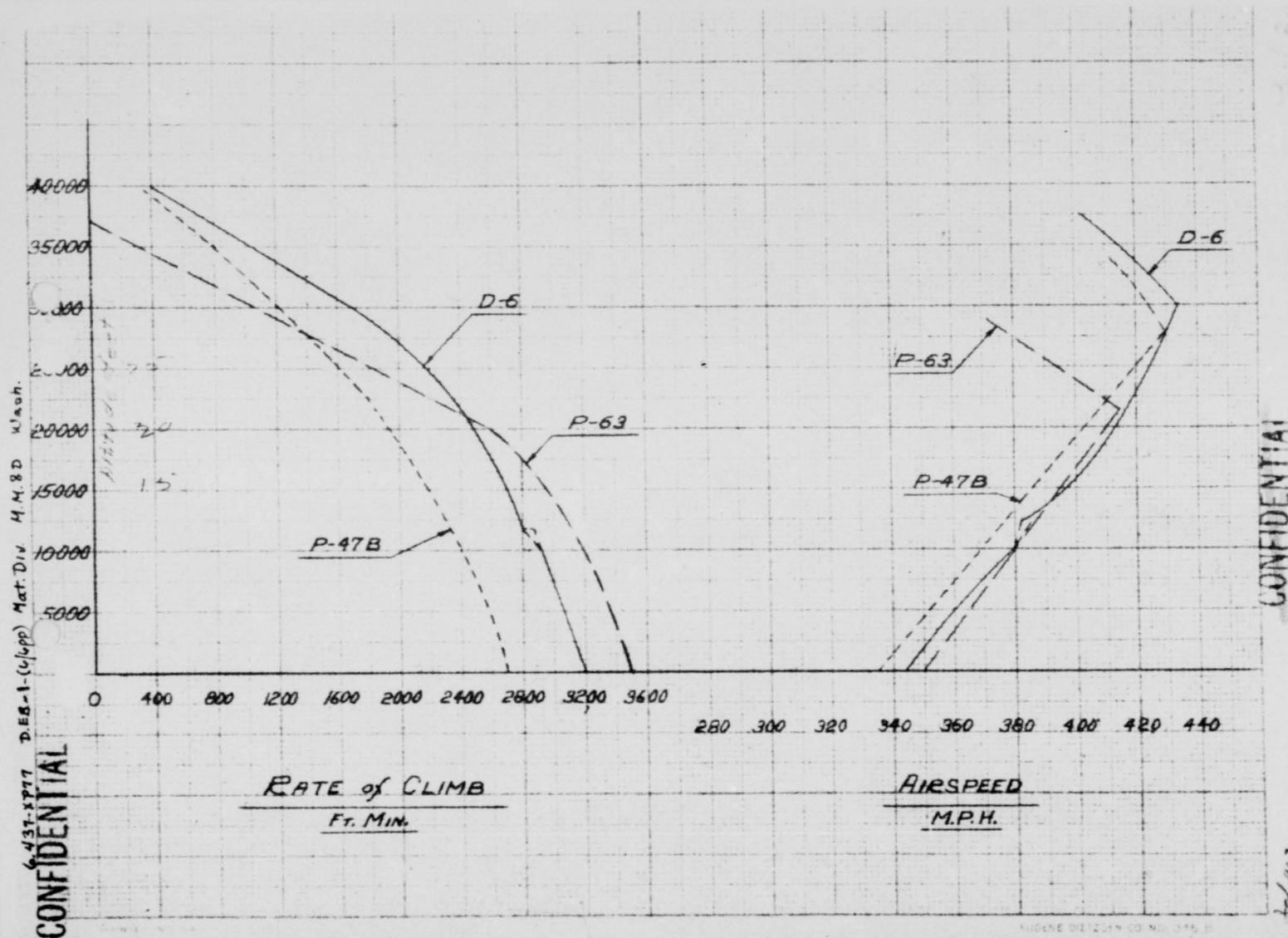
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1283

**BELL AIRCRAFT CORP.**  
2090 ELMWOOD AVENUE  
BUFFALO, N. Y.



July 2, 1942

**Subject:** Proposed Contract XE-77 Airplanes (Bell Model 32)  
Quotations on Models and Engineering Data.

**To:** Commanding General  
Army Air Forces  
Aeriel Center  
Wright Field  
Dayton, Ohio

**Attention:** Chief, Experimental Engineering Section

**Reference:** (a) Center letter OLS:eks dated June 16, 1942  
2-6 Airplanes.  
(b) Bell letter 877 dated May 20, 1942  
2-6 Airplanes.

**Through:** L. J. Resident representative  
Buffalo, New York

1. The contractor wishes to submit for Aerial Center's approval, the quotations requested by reference (a). These quotations are to be made part of the proposed contract for the XE-77 airplanes which heretofore have been known as 1-6 airplanes. The quotations and delivery dates on the six (6) flying articles in accordance with Specification 26-947-001 dated April 1, 1942 were submitted through reference (b).

2. (a) One skeleton airplane (static test article), for Wright Field  
 Total estimated cost . . . . . \$36,000.00  
 Plus 5% fixed fee . . . . . 1,848.00  
 Delivery date December, 1942

(b) One full scale model equipped with required wind tunnel fittings. The aerodynamic shape of this structure and movable control surfaces will be a replica of the proposed XE-77 airplane to make it suitable for obtaining data on aerodynamic characteristics. All air scoops and ducting will be installed in order to permit cooling and flow test investigation. An attempt will be made to internally stress this model to make it suitable for flight.  
 Total estimated cost . . . . . \$41,865.00  
 Plus 5% fixed fee . . . . . 2,093.25  
 Delivery date November, 1942.

*MX 176*

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BELL AIRCRAFT CORP.  
680 ELMWOOD AVENUE  
BUFFALO, N. Y.

Page -2-

July 2, 1942

Subject: Proposed Contract LP-77 Airplane (Bell Model 3E)  
Quotations on Models and Engineering Data.

(a) Free spinning model 1/16 scale in accordance with Specification A.P. 40261-8 dated August 15, 1940.

Total estimated cost . . . . .	\$3,836.80
Plus 5% fixed fee . . . . .	194.35

Delivery date August, 1942.

(b) Model for Wright Field, five-foot wind tunnel 1/8 scale in accordance with Specification A.P. 95-4-043-1 dated March 29, 1940 and Amendment No. 1 dated December 28, 1940.

Total estimated cost . . . . .	7,542.00
Plus 5% fixed fee . . . . .	377.10

Delivery date September, 1942.

(c) Engineering data as follows:

1. Complete set of shop and working drawings used for the construction of the airplane and suitable for maintenance and engineering reference purpose. Such drawings shall be furnished in blueprint form and in triplicate and shall include appropriate subject and numerical indexes.
2. Final report of actual weight and balance of LP-77 airplane to be built on Specification No. 16-947-001 dated April 1, 1941.
3. One copy of Model Specification covering the airplane called for having incorporated therein all changes and deviations authorized by the Government during the course of design and construction of the airplane called for and covering such airplanes as finally built and delivered to the Government. Such specification shall be furnished in Vandyke form.
4. Ten (10) blueprint copies of Handbook of Operating Instructions and ten (10) blueprint copies of Handbook of Maintenance Instructions. Such handbooks shall be furnished in accordance with Air Corps Specification No. 40102-D dated November 15, 1939 as amended by Amendment No. 1 thereto dated June 21, 1940 hereby made a part thereof

Estimated Cost . . . . .	\$ 900.00
Plus 5% fixed fee . . . . .	45.00

PROJECT # MX 176

This document contains information affecting the national defense within the meaning of the Espionage Act, Title 18, Section 793, and the Security Information Act, Title 50, Section 662, the transmission or revelation of its contents in any manner to an unauthorized person is prohibited by law.

~~CONFIDENTIAL~~

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BELL AIRCRAFT CORP.  
2050 ELMWOOD AVENUE  
BUFFALO, N. Y.

Page -5-

July 2, 1942

Subject: Proposed Contract IP-77 airplanes (Bell Model 52)  
Quotations on Models and Engineering Data.

3. The breakdown of items (a), (b), (c) and (d) is shown below:

	Item a	Item b	Item c	Item d
Direct Labor	\$15,350.00	\$17,700.00	\$1,375.00	\$2,750.00
Tool Labor	---	---	---	---
Overhead 110%	16,585.00	19,470.00	1,512.50	3,025.00
Engineering Labor	---	---	600.00	1,158.00
Eng. C. H. 40%	---	---	264.00	482.00
Direct Material	4,725.00	4,095.00	75.00	150.00
Tool Material	---	---	---	---
Direct Expense	---	---	---	---
<b>Total Estimated Cost</b>	<b>\$36,660.00</b>	<b>\$41,265.00</b>	<b>\$3,626.50</b>	<b>\$7,542.00</b>
Fixed Fee 5%	1,848.00	2,063.25	184.33	377.10
<b>Total Estimated Cost</b>				
Including 5% Fixed Fee	\$38,508.00	\$43,328.25	\$3,810.83	\$7,919.10

4. In addition to the items requested in Center letter reference (a), the contractor wishes to secure Material Center's approval and contractual authority for building two (2) additional airplane structures which are considered absolutely essential to the success of the D-8 design. These were discussed by Mr. Robert Woods with Material Center representative at Wright Field on June 25, 1942 and it is suggested they be made part of the proposed contract under models and engineering data as items (f) and (g).

(f) The components for one (1) complete skeleton D-8 airplane (Bell Static Test article): These components are to be constructed for the purpose of obtaining essential Engineering data on the preliminary plywood and plastic design for the final design of the IP-77 airplane. It is considered advisable by the contractor, this airplane or components thereof will be tested to destruction by the Bell Engineering Department.

Total estimated Cost . . . . . \$43,365.00  
Plus 5% fixed fee . . . . . 2,168.25  
Delivery - will remain at Bell Aircraft Corporation

(g) One mock up airplane: This airplane will be constructed structurally similar to the skeleton airplane (Static Test article), reference 1(a) and will serve a dual purpose:

- (a) It will be equipped with all the necessary fittings and attachment points to prove the fit, location, and accessibility of G.P.F. and C.P.F. installations and thus will be subjected to much cutting up and refitting, rendering it unsafe for flight.
- (b) Being structurally complete, it will also serve the purpose of proving through static, vibration, and other tests the information gained from the research work accomplished on the components, item 1.

Total estimated Cost . . . . . \$44,236.00  
Plus 5% fixed fee . . . . . 2,241.75  
Delivery - will remain at Bell Aircraft Corporation

**BELL AIRCRAFT CORP.**  
 2080 ELMWOOD AVENUE  
 BUFFALO, N. Y.

Date

3-17

**Subject:** Proposed contract B-77 airplanes (Bell model 32)  
 Quotations on drawings and engineering data.

5. The breakdown of items (f) and (g) is shown below:

	Item f <u>Roll Battle Test</u>	Item g <u>Backup</u>
Direct Labor	\$16,400.00	\$16,400.00
Tools	---	---
Overhead 110%	\$9,240.00	\$1,340.00
Engineering Labor	---	---
Exp. C. E. 40%	---	---
Direct Material	4,725.00	4,080.00
Tool Material	---	---
Direct Expense	---	---
<b>Total Estimated Cost</b>	<b>\$48,365.00</b>	<b>\$44,835.00</b>
Fixed Fee 5%	2,100.25	2,241.75
<b>Total Estimated Cost Including 5% Fixed Fee</b>	<b>\$46,543.75</b>	<b>\$47,076.75</b>

6. If these quotations meet with interest of customer's proposal, we would very much appreciate being advised that the items are being made part of the proposed contract for the B-77 airplanes.

Very truly yours,  
 \_\_\_\_\_  
 General Manager

Mittell/ce

*7/18/76*



STANDARD FORM NO. 107

~~CONFIDENTIAL~~

Authority for Purchase

No. 21700

CONTRACT No.

PURCHASE ORDER No.

DELIVERY VIA TERMS METHOD PROPOSAL  
THE ABOVE SPACE TO BE USED BY THE PURCHASE BRANCH ONLY '36

Item	Quantity	Unit	Estimated Unit Price	Description	Unit Price	Total Price
				Request that a contract be negotiated with the Hall Aircraft Corporation, Buffalo, N. Y. to cover procurement of six (6) X-77 airplanes, simulator airplanes, models, and spares parts and spare parts all as set forth in Exhibit "A" attached.		
				Estimated cost of the airplanes as set forth in Hall letter dated May 17, 1947 attached as Exhibit "B". (Continued on reverse side) (See notes on reverse side for priority rating)		
			494,700.00			

Total Estimated Cost: 494,700.00

MISCELLANEOUS CHARGE: Exped. Man. Sec. Dept. 30

MATERIAL TO BE USED FOR: Exhibit "A"

DELIVER TO: Procurement Data Number of S.M.

1. Recommended Sources of Supply
2. Hall Aircraft Corporation, Buffalo, New York
3. See Exhibit "A"
4. Serial Numbers should be assigned.
5. See Exhibit "A"
6. See Reverse Side

Proc. Auth. No. AC F A

Proc. Auth. No. AC P A

Proc. Auth. No. AC P A

Co-ordinated by: Chief, Contract Sec.

Approved: Accounting Br.

Approved: Budget Officer

Co-ordinated by: Production Engineering Sec.

Copy to: Statistics Office, Prod'n. Division  
Aircraft Projects-G. F. S. Unit

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Estimated cost of the skeleton airplanes, models, and data as set forth in Bell letter dated July 2, 1942 attached as Exhibit "C".

Cost of spares was authorized by Materiel Center telegram dated July 21, 1942, attached as Exhibit "D".

NOTE: It is requested that a priority rating of AA-1 be assigned to this procurement in accordance with teletype E-332, paragraph 2, dated August 10, 1942, from Chief of Staff, Materiel Command

7. A. The airplanes to be obtained by this procurement are light-weight, low-wing, single engine, single place, interceptor fighters incorporating a tricycle landing gear and resin bonded laminated wood construction. The Ranger 12-cylinder inverted V-type air-cooled engine will be used as a power plant. These airplanes are being obtained by the Materiel Center for experimental purposes.
- B. These airplanes are required in order that the construction, maintenance, and performance of a light-weight fighter airplane may be studied by the Materiel Center.
- C. This equipment is new.
- D. The expected advantage to be gained by this procurement is that a small fighter type airplane of low initial cost and incorporating principles of rapid construction will be obtained.

Authority for the initiation of this procurement is contained in C.T.I. No. 715 dated June 16, 1942.



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C O P Y

P R I O R I T Y

A.A.F. Materiel Center  
Wright Field, Dayton, Ohio

July 21, 1942  
CLH:mah:50  
3:00 P.M.

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

BELL AIRCRAFT CORPORATION,  
ATTENTION: A.A.F. RESIDENT REPRESENTATIVE,  
2050 ELLWOOD AVENUE,  
BUFFALO, NEW YORK

KAP-246.....ATTENTION MR. LITTELL.....RECONTRACTS 18373, 18966,  
30864 REGARDING CONFERENCE SPARE PARTS JULY 14, 1942. CONTRACTOR IS  
AUTHORIZED TO PROCEED WITH CONSTRUCTION AND PROCUREMENT OF SPARES AS  
FOLLOWS: 18373 \$25,000; 18966 \$50,000; 30864 \$32,103. FIRST PRIORITY  
SHOULD BE SPECIAL ITEMS PROCURED BY CONTRACTOR FROM VENDORS. LETTERS  
OF INTENT FOLLOW.

MATERIEL CENTER WRIGHT FIELD

Copies to:  
Cent. Dist. Supvr.  
A.A.F. Res. Repr.  
Prod. Engr. Section  
Contract Section  
Inspection Section

Contracts AC-18373  
AC-18966  
AC-30864

PREPAID GOVERNMENT DAY LETTER

C O P Y

Attached to A.F.P. 217680 dated 8-20-42 as Exhibit "D"

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C. P. F. F. Form No. 3  
Approved by The Assistant  
Secretary of War, Aug. 14, 1940  
(Revised)

Contract No. W 535 ac-37 64  
(8673)

ARB Preference: AA-1, A-1-A

Allocation Classification System Symbols: USA 1.0  
APP: 217680

Classification: Confidential

COST-PLUS-A-FIXED-FEE

STIPULATED CONTRACT  
W/ARMY/AF  
(ARMY AIR FORCE)

WAR INSTRUMENT

~~CONFIDENTIAL~~

Contractor: Bell Aircraft Corporation

Contract for: Six XP-77 Airplanes, Skeleton Airplane, Models, Engineering Data  
and Spare Parts

Estimated cost: \$ 665,427.50

Fixed-Fee: \$ 33,274.38

Payments to be made by Finance Officer at Wright Field, Dayton, Ohio.

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

AC 3010 P (11-09) A 0705-23

Class. CI-A

This Formal Contract supersedes Letter Contract Special Form dated August 10, 1940.

APPROVED: October 10, 1940  
Under the provisions of "First Air Powers Act - 1918"  
and Executive Order No. 3001, December 27, 1933.

(Signed) A. J. Vanecko  
A. J. Vanecko  
Brig. General, U.S.A.,  
Commanding General,  
Material Center.

~~CONFIDENTIAL~~

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COST-PLUS-A-FIXED-FEE  
SUPPLY CONTRACT

THIS CONTRACT, entered into this Twenty-ninth day of  
September, 1940, by THE UNITED STATES OF AMERICA, hereinafter  
called the Government, represented by the Contracting Officer executing  
this contract, and Bell Aircraft Corporation

\* a corporation organized and existing under the laws of the State of

\* NY

\* ~~XXXXXXXXXXXXXXXXXXXX~~

\*

\* ~~XXXXXXXXXXXXXXXXXXXX~~

of the City of Buffalo

in the State of New York

hereinafter called the Contractor, witnesseth that:

\*Delete all lines which do not apply.

452.1 A -- XP77  
CFARR(1/12pp)

(FI)

~~CONFIDENTIAL~~

WAR DEPARTMENT  
AIR CORPS, MATERIEL DIVISION

MEMORANDUM REPORT ON CLH:klr50

Date October 22, 1942

SUBJECT: Mock-up Inspection of  
Bell XP-77 Airplane

SECTION: Experimental Engineering

SERIAL No. EXP-M-50-768

Contract No. AC-30864  
Expenditure Order No. 430-112  
Purchase Order No.

15

A. Purpose

1. To report the results of the Mock-up Inspection of the Bell XP-77 airplane, six of which are being procured on Contract W-535 AC-30864.

B. Factual Data

1. The Mock-up Inspection was conducted at the Main Street Plant of the Bell Aircraft Corporation, Buffalo, New York, on September 21 and 22, 1942.

2. The personnel comprising the Mock-up Committee were as follows:

Directorate of Air Defense:

Lieut. Colonel H. A. Boushey

Material Center:

Colonel Marshall S. Roth

Colonel George F. Smith

Colonel Herbert H. Tellman

Tech. Staff, Exp. Engr. Sec.

Power Plant Lab., E.E.S.

Equipment Lab., E.E.S.

In addition to the above, the following personnel acted as advisory members:

Assistant Chief of Staff (E):

Colonel J. F. Phillips

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452.1A--XP71  
C.F. AAF-1 (4/12/42)

C O N F I D E N T I A L

Exper. Engineering Section,  
M.R. EXP-M-50-768  
dated October 22, 1942.

Directorate of Ground Air Support:

Lieut. Colonel H. T. Alness

Directorate of Technical Co-ordination:

Major F. Racen

Bureau of Aeronautics

Commander S. B. Spangler

British Air Commission:

Group Captain C. Crawford  
H. C. B. Thomas

Material Center:

Colonel Daniel C. Doubleday  
Colonel George E. Price  
Lieut. Colonel Carl F. Damberg  
2nd Lieut. Thomas J. May  
Clifford E. Johnson  
Guy T. Bixby  
Charles L. Hall

Aircraft Radio Lab., E.E.S.  
Production Engr. Section  
Aircraft Laboratory, E.E.S.  
Photographic Lab., E.E.S.  
Armament Laboratory, E.E.S.  
Armament Laboratory, E.E.S.  
Technical Staff, E.E.S.

3. The mock-up was fairly complete and, in general, very satisfactory for the purpose intended. The Chief Design Engineer, Project Engineer, and Group Engineers of the Bell Aircraft Corporation were available at all times and were most helpful through the period of inspection.

4. In most cases the many features of the airplanes were commented on favorably by the members of the Committee and the Technical Advisors. In general, this report will include only such items which should be changed in order to improve the utility of the airplane and to meet current requirements for the type. In addition, it will include recommendations for the installation of certain items and equipment which were not included in the mock-up.

5. These detail comments are included in Exhibit "A" attached hereto and made a part hereof.

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- 2 -

C O N F I D E N T I A L

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XP77

CF, AAF-1- (13/12 PP)

C O N F I D E N T I A L

Exper. Engineering Section,  
M.B. EXP-M-50-768  
dated October 22, 1942.

C. Conclusions

1. Certain design changes are necessary to improve the utility and serviceability of the IP-77 airplane.

D. Recommendations

1. It is recommended that the Contractor be furnished copies of this Memorandum Report.

2. Bell Model Specification No. 32-947-001 dated April 1, 1942 and revised July 10, 1942 shall be brought up-to-date in accordance with the requirements of this report set forth in Exhibit "A" by means of an Engineering Order. In case of conflict, the requirements of the Mock-up Committee Report shall govern.

3. A complete set of mock-up photographs showing the airplanes as mocked-up or as changed to comply with the requirements of this report shall be delivered to the Materiel Center at an early date.

4. In complying with the requirements of this report the Contractor shall not make any changes which will increase the guaranteed weight empty without obtaining specific approval in each case from the Materiel Center.

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C O N F I D E N T I A L

- 3 -

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YP 77

C.F. AAF-1-(4/12pp)

~~CONFIDENTIAL~~

Exper. Engineering Section,  
M.R. EXP-M-50-768  
dated October 22, 1942.

MEMBERS OF THE COMMITTEE:

M. S. ROTH, Colonel, A. C.  
Member

GEORGE F. SMITH, Colonel, A.C.  
Recorder

HERBERT H. TELLMAN, Col., A.C.  
Member

H. A. BUSHEY, Colonel, A.C.  
Member

H. E. BOBERT, Colonel, A.C.  
Chief, Technical Staff

F. O. CARROLL, Colonel, A.C.  
Chief, Exper. Engr. Section.

A. W. VANAMAN, Brig. General, USA  
Commanding General, AAF Mat. Center

- Distributions:
- Com. Gen., AAF Mat. Com. (8)
- Dir. of Military Requirements (2)
- Contract Files
- Contract Section
- Inspection Section
- Bell Aircraft Corp.
- Cent. Dist. Supr. (2)
- Aircraft Laboratory
- Aircraft Radio Laboratory
- Armament Laboratory
- Equipment Laboratory
- Power Plant Laboratory
- Photographic Laboratory
- Propeller Laboratory
- Aircraft Projects (Fighter)
- G.F.E. Unit A/P
- AAF Resident Representative  
Of Bell Aircraft Corporation
- Chief of Staff, Mat. Com.

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XP77  
C.F. A.A.F-115 (12pp)

C O N F I D E N T I A L

Exper. Engineering Section.  
M.R. EXP-M-50-768  
dated October 22, 1942.

EXHIBIT "A"

1. Aircraft

a. In order to improve forward visibility from the cockpit the channels supporting the bulletproof glass shall be bevelled so that the long dimensions lie parallel to sighting lines.

b. A combination map and Form #1 case shall be provided on the left side of the cockpit. This case shall be provided with a lid so designed that it will remain either in the open or closed position. A canvas data case suitable for holding airplane maintenance manual shall be installed aft of the cockpit readily accessible for quick removal. The canvas data case shall be carried as Alternate Load.

c. Mooring provisions shall be provided as shown on the Mock-up. A nose wheel towing fork and jacking provisions shall be installed in accordance with the Handbook.

d. The Contractor shall conduct flight tests and submit a report to the Materiel Center on the operation of the cockpit enclosure to determine satisfactory operation. These tests shall be conducted at any permissible flight attitude or speed, including limit diving speed. In the event these tests indicate the enclosure will not open rapidly the Contractor shall provide an auxiliary means of securing rapid enclosure operation.

e. The Mock-up did not have provisions for permitting the pilot to enter the airplane from the ground. Suitable flush or retractable steps on the left side of the fuselage shall be provided by the Contractor.

f. The flap control shall be provided with a double yoke handle to assist the pilot in the operation of the flaps. The flap control shall move rearward to lower the flaps and forward to retract the flaps.

g. An aileron trim tab is called for in Bell Model Specification No. 32-947-001 dated April 1, 1942 and revised July 10, 1942 but was not shown on the Mock-up. The Contractor shall install a screw-adjustable aileron trim tab on the left aileron.

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C O N F I D E N T I A L

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XP-77  
 C.F. AAF-1 (6/12pp)

C O N F I D E N T I A L

Exper. Engineering Section,  
 M.R. EXP-M-50-768  
 dated October 22, 1942

h. In order to improve maintenance accessibility the Contractor shall study the possibility of providing large hinged cowling on each side of the engine. Small access door shall be provided for starter crank. The flap for engine cooling air shall not be a part of this cowl.

i. The pilot's seat shall be tilted rearward and the rudder pedals raised in order to aid the pilot's acceleration resistance. The changes incorporated on the Mock-up were considered suitable. Toe-straps and heel-plates of suitable design shall also be installed.

j. The Contractor shall study the possibility of installing a suitable means of preventing dirt and water from entering the nose wheel compartment. Such means shall be as light as possible.

k. Inspection holes or servicing doors shall be installed where necessary to aid in the accomplishment of necessary maintenance of controls.

l. All controls shall be so located that they can be reached by the pilot without unlocking his shoulder harness. Specifically, the following changes shall be made:

- (1) Move landing gear crank one inch to rear.
- (2) Relocate gas fuel cock nearer pilot's seat.
- (3) Move elevator tab wheel forward.
- (4) Rotate throttle assembly counter-clockwise.

m. A suitable clear view panel shall be installed on the left side of the canopy. Detail drawings of this panel shall be submitted to the Material Center for comment.

n. As shown on the Mock-up the line of sight was only 2 degrees down when looking forward from the cockpit. In order to be acceptable from a tactical viewpoint at least 4 degrees downward vision over the nose shall be provided. The Contractor shall study the possibility of increasing the downward sight angle and submit drawings to the Material Center for comment as soon as possible.

## 2. Radio

a. As a result of further consideration by the Material Center sub-

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1977  
CF, AAF-1-(7/12pp)

C O N F I D E N T I A L

Exper. Engineering Section,  
M.R. EEP-M-50-768  
dated October 22, 1942.

sequent to the Mock-up Inspection, it is requested that action on the comments submitted by the Mock-up Committee be held in abeyance. Further comments on this subject will be submitted by the Material Center at an early date.

3. Armament

a. The A-3 caliber .50 front gun mounts as shown on the mock-up are considered satisfactory. However, since the A-3 type mount requires lock-wiring, it is no longer considered quick-acting. The Contractor shall give consideration to the use of a new type mount being developed by the Armament Laboratory on one (1) of the six (6) airplanes.

b. To provide for quick adjustment and detachment the rear caliber .50 gun mounts shall be in accordance with the requirements set forth in the design of the XP-39B airplane armament installation in which adjustment is possible without the use of wrenches and slide mounts. Drawings of this mount will be furnished to the Contractor by the Material Center.

c. The two hundred (200) rounds of caliber .50 ammunition for each gun shall be considered suitable for the first six (6) airplanes. The Contractor shall, however, conduct a study with the object of providing at least twenty (20) seconds of fire for each machine gun.

d. To obtain minimum arming time the Contractor shall make provisions for threading the caliber .50 ammunition through the box covers to the guns. The firing mock-up being constructed for tests at Wright Field shall be equipped with such provisions.

e. The structural former located at the aft section of the machine gun seriously interferes with the removal of the gun. This former was removed from the mock-up and should not be used on the airplanes.

f. To reduce the time of servicing the armament installation the machine gun blast tubes shall be attached by means of snap pin or hand wheel. Flash hiding in accordance with present A.A.F. requirements shall also be provided.

g. The installation of the trigger motors on the caliber .50 guns as shown on the mock-up is not considered suitable for quick servicing. As shown on the mock-up there existed serious interference between the

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C O N F I D E N T I A L

YPTT

CF, AAF-1-(2) (12/2)

C O N F I D E N T I A L

Exper. Engineering Section,  
M.H. EIP-M-50-768  
dated October 22, 1942.

gas tank, adjacent bulkhead, and trigger motor adjustment. The Contractor shall make such changes as are necessary to allow a reasonable swing for the adjusting wrenches and provide for quick removal of the trigger motor.

h. In accordance with existing military requirements the Contractor shall make space provisions for the installation of one (1) Incendiary Grenade, AN-M14.

i. The Contractor shall move the M-7 gun sight forward so that at least twenty (20) inches of clearance shall exist between the pilot's eye and the gun sight when the pilot is in normal position with shoulder harness on. Position on mock-up is dangerous to pilot's face while operating; controls located on or close to floor. The gun sight rheostat shall be so located that it is accessible to the throttle hand.

j. In the event that sufficient downward sighting vision over the engine cowl cannot be obtained the Contractor shall consider the use of a periscopic form of sighting so that the downward angle of sight can be increased.

k. As shown on the Mock-up the caliber .50 gun chargers seriously compromise the gas tank installation and trigger motor adjustment. In the event that this interference cannot be eliminated the Contractor shall submit a study showing a suitable installation employing approved type of ground charging devices.

l. In order to provide for the satisfactory operation of the gun camera the Contractor shall install a suitable glass filter flush with the cowl on the camera lens hole and blast cooling for protecting the camera from engine heat.

m. The Contractor shall submit to the Material Center a study showing the installation of a caliber .50 machine gun located so as to fire through the hollow propeller shaft. This study should be in a form suitable for submission to the Director of Military Requirements. As agreed to during the Mock-up Inspection, the Contractor shall incorporate means for installing this gun on the firing mock-up to be submitted to the Material Center for tests.

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C O N F I D E N T I A L

XP77

CF, AAF-1-(9/12pp)

C O N F I D E N T I A L

Exper. Engineering Section,  
M.R. EXP-M-50-768  
dated October 22, 1942.

n. The Contractor shall provide an armor plate installation as decided upon by the Committee and finally shown on the Mock-up. Drawings of this installation, together with a weight breakdown of each section of armor plate shall be submitted to the Materiel Center for comments.

o. During the Mock-up Inspection, the matter of providing a supplementary ring and bead sight was discussed by members of the Committee and representatives of the Contractor. At this time a representative of the Materiel Center stated that a supplementary ring and bead sight would not be necessary for use in conjunction with the M-7 sight. Upon further consideration, however, it is evident that a ring and bead sight should be provided for evening fighting since the pilot tends to become blinded by the reticle pattern formed in the M-7 sight. It is, therefore, requested that the Contractor consider the installation of a ring and bead sight and submit drawings to the Center for comment.

#### 4. Equipment

a. The Contractor shall comply with the following changes in location and installation of electrical switches:

- (1) Provide only one (1) safety switch for all guns. This switch shall be located on left side.
- (2) Provide single switch for guns on B-5 stick grip and wire this grip so that the caliber .50 guns fire when the forefinger trigger is pressed and the cannon fires when the thumb-switch is pressed.
- (3) Control battery with circuit breaker switch directly from cockpit and eliminate solenoid switch.

(4) Change switch locations as follows:

o	o	o	— o —	o	o
Landing Light	Pilot Heat	Cockpit Heat	Others	Generator	Battery

b. The Contractor shall be permitted to install the compass as shown on the Mock-up provided the requirements of the Handbook for deviation correction are complied with and until actual tests of the compass in the airplane can be accomplished.

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C O N F I D E N T I A L



XP 77

(F, AAF-1-(10/12PP)

C O N F I D E N T I A L

Exper. Engineering Section,  
M.R. XP-M-50-766  
dated October 22, 1942.

c. Although not shown on the Mock-up, provisions for the adequate cooling of the generator and regulator shall be made in accordance with the requirements of the Model Specification.

d. In order to reduce the guaranteed weight empty an approved type circuit breaker switch shall be installed in the landing light circuit in lieu of the B-2A relay.

e. Instead of installing two (2) type C-5 fluorescent cockpit lamps as required by the Model Specification the Contractor shall install one (1) C-5 lamp on the first airplane in order to determine minimum cockpit lighting requirements. The Contractor shall also provide a tubular type container for storage of a pentype flashlight in accordance with the requirements of paragraph D-1c(4) and Fig. 10 of U. S. Army Specification No. 32265-A dated February 24, 1942. A type C-4 lamp shall also be installed over the radio panel.

f. The Contractor shall make provisions for the elimination of glare in connection with the reflection of instrument dials on the windshield.

g. Approved type circuit protectors or switch type circuit breakers shall be used in lieu of the fuses required by the Model Specification. Suitable protection for the generator circuit shall also be provided. One (1) main switch and three (3) circuit protectors shall be provided for the gun installation.

h. The type A-9 wing tip position lamp assemblies shall be installed in the wing tips in such a manner as to be flush with the wing surface. Only one (1) assembly shall be installed in each tip. A suitable transparent material shall be provided for covering the assemblies.

i. In order to comply with the latest A.A.F. requirements the Contractor shall install a low pressure demand type oxygen system in accordance with A.A.F. Specification No. 40363-A.

j. Aft of Station 190 in the fuselage, the Contractor shall make space provisions for the installation of one (1) K-24 and one (1) K-25 Aircraft Camera.

k. A starter engaging unit shall be installed adjacent to the starter crank shaft and in the cockpit.

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C O N F I D E N T I A L

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XP77  
CF, AAF-1/11/12 pp.

C O N F I D E N T I A L

Exper. Engineering Section,  
M.R. EXP-M-50-766  
dated October 22, 1942.

1. The electrical switch panel and instrument board shall be lowered so that switch and instrument markings are readily visible to the pilot in a normal sitting position. Sufficient clearance shall be provided so that the pilot's knees will not touch the panel when a winter flying suit is worn.

2. The Contractor shall make provisions for the installation of a hand Signal Light in accordance with AN-3089. Such provisions shall consist of approved type receptacle, wiring the bracket.

3. Although no requirement exists for the installation of a free air thermometer in fighter type aircraft the Contractor shall be permitted to install one (1) thermometer in the first airplane for flight test purposes.

4. Although complete Winterisation of fighter type aircraft is now a military requirement, it is not considered essential to apply this requirement to the first six (6) XP-77 airplanes being equipped with the Ranger V-770-7 engine. However, for the first airplane equipped with the XV-770-9 engine, the Contractor shall provide complete winterisation.

#### 5. Power Plant

a. The starter handcrank shall be located on the inside of the starter cowl access door on the left side of the airplane and shall be accessible for immediate use.

b. To prevent the entrance of dust the Contractor shall provide wooden cover plates for all openings in the engine compartment. These cover plates shall be tied to one rope for quick removal.

c. In connection with complete Winterisation to be provided on the first airplane equipped with XV-770-9 engine, the Contractor shall make provisions for the installation of approved type immersion heaters in the oil tank.

d. In order to provide for satisfactory de-icing of the carburetor and Induction system the Contractor shall install a carburetor heat system of sufficient capacity to increase the temperature of the air entering the carburetor at least 90 degrees F. at sea level at 65 per cent of normal sea level power with plus 40 degrees F. outside air temperature.

ML-272

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C O N F I D E N T I A L

- 11 -

1303

AP77  
CF, AAF-1 (12/12 pp)

C O N F I D E N T I A L

Exper. Engineering Section,  
W.R. EXP-V-50-768  
dated October 22, 1942.

e. The first airplane equipped with the XV-770-9 engine shall be provided with a by-pass type carburetor air filter with necessary valves and controls in accordance with latest Army Air Forces requirements. This filter shall not be installed for performance tests.

f. In the design of the alternate flame damping exhaust system, described in paragraph E-4f(3)(b) of the Model Specification, the Contractor shall make every effort to incorporate this system as fixed equipment.

g. Full closing oil cooler and engine cooling air flaps shall be provided by the Contractor. Preliminary drawings showing the proposed installation of such flaps shall be submitted to the Materiel Center for comment.

h. The electrically driven fuel pump referred to in paragraph 9, page 92 of the Model Specification shall be of a type approved by the Materiel Center.

i. The Contractor shall provide a Tee connection near the skin at the starter crank access door for the purpose of priming the engine with volatile liquid or gas.

j. The Contractor shall submit a study as soon as conveniently possible to determine the practicability of installing two (2) external twenty-one (21) gallon droppable fuel tanks and an oil tank of 6.5 gallons capacity. Provisions shall also be incorporated for the installation of two (2) external thirty-seven (37) gallon droppable fuel tanks as now required by the Model Specification. The twenty-one gallon tanks will give the desired 75 per cent of main fuel capacity in the form of external droppable tanks and six and one-half gallons of oil will give the desired 18:1 fuel-oil ratio for this fuel condition. The provisions for the two thirty-seven gallon external fuel tanks will retain the long range feature of the design as it now exists.

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January 14, 1943

Subject: XP-77  
To: Commanding General  
Army Air Forces Materiel Center  
Wright Field, Dayton, Ohio  
Att: Brig. General Franklin Carroll  
Thru: AAF Resident Representative  
Niagara Falls, New York

1. Pursuant to a conference held in my office on January 11th, attended by Major Marcus Cooper and Mr. Charles Hall of Wright Field, and Messrs. Plourde, Littell, Wilkens and Elyadon of Bell Aircraft, regarding the delivery dates of the first XP-77 flight article and static test article, it was agreed by all concerned that the first static test, which is termed Bell static test, is to be completed on April 22nd. The first flight article is to be completed May 1st, for the purpose of establishing some flight test data pertaining to stability, power plant operations, cooling, etc. The second static test article is being built for the Army and will be delivered on or about May 15th. The rest of the flight articles are to follow at about three per month.

2. Please advise if this is not in accordance with our understanding.

BELL AIRCRAFT CORPORATION

O. L. Woodson  
Vice President and  
Asst General Manager

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See MC ltr 1-21-43

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Address reply to:  
Commanding General  
AAF Materiel Center  
Reference: OLSabd:70

Wright Field, Dayton, Ohio  
January 21, 1943

Contract AC-33864,  
1F-77 Airplanes  
Delivery of Airplanes and  
Static Test Articles

Bell Aircraft Corporation  
2050 Elmwood Avenue  
Buffalo, New York

Attention: Mr. O. L. Woodson

Reference: Bell letter dated Jan. 11, 1943 OLS f

1. The Contractor is advised that the Materiel Center concurs in the deliveries of the airplanes and static test articles stated in the reference letter.

2. In the interest of supplying information to higher authority it is requested that the Contractor furnish the Materiel Center suitable justification for these delays.

For the Commanding General, AAF Materiel Center:

A. H. JONES  
Brig. General, USAF  
Chief, Procurement Division

Copies to:  
Bell Aircraft - Dayton  
AAF Resident Representative  
Central District Supervisor  
Inspection Section  
Procurement Division

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clh/eks*

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January 30, 1943

~~CONFIDENTIAL~~

Subject: Contract AC 30864  
XP-77 Airplanes  
Delivery of Airplanes and Static Test Articles

To: Commanding General  
Army Air Forces Materiel Center  
Wright Field  
Dayton, Ohio

Reference: AAF letter CLH:abd:50 dated 1/21/43

Through: AAF Resident Representative  
Niagara Falls, New York

In regard to second paragraph of reference letter, the XP-77 airplane being a wood and plastic design incorporating considerable magnesium alloy, involves material, processes and procedures entirely foreign to our present experience.

In order to distribute the work more efficiently, we have engaged numerous subcontractors specializing in this new type of construction. We now find that the original schedule was inconsistent with the ability of present subcontractors to develop the work and the changed schedule recognizes this, now that the information is made available to us.

BELL AIRCRAFT CORPORATION

O. L. Woodson  
Vice President and  
Assistant General Manager

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*mfc*  
*skk*  
*clk*  
*orig to CF 2-6-43*

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Address Reply to  
Chief, Engineering Division  
AF Materiel Center  
Att: Technical Staff  
Reference: HJT:IS:50

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Wright Field, Dayton, Ohio  
March 11, 1943

Contract W-535 - AC-30864  
XP-77 Airplane  
Propeller Requirements

Bell Aircraft Corporation  
2050 Elmwood Avenue  
Buffalo, New York

Reference: Bell letter ENG:223:RJM, #194, dated February 23,  
1943.

1. The Materiel Center is now negotiating with the Aeroproducts Division, General Motors Corporation, for the procurement of two (2) propellers for use in test installations of subject airplanes, incorporating the V-770-6 engine. These propellers, in addition to having sufficient pitch change range, will have a blade area sufficient to absorb the increased rating of the aforementioned engine.

2. The Aeroproducts Division has informed the Materiel Center that this item will be available June 1, 1943, which date should allow your Company to test the first flight article with the Aeroproducts Division propeller installed without causing too much inconvenience to the flight testing of the XP-77 airplane.

For the Chief of Engineering Divisions

H. Z. BOGERT,  
Colonel, Air Corps,  
Chief, Technical Staff,  
Engineering Division.

Copies to:

AAF Res. Repr.  
AAF Cent. Dist. Supv.  
Procurement Div.  
Inspection Section  
Propeller Lab.  
Fighter Br., Airo. Proj. Sec. ✓

MX-272

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1308

AAFMC-265-A-WF-8-28-42-150M

INTER-OFFICE MEMORANDUM  
ARMY AIR FORCES  
MATERIEL CENTER  
Office of The Commanding General

MP Cr:mf:50  
Wright Field, Dayton, Ohio  
Date: March 25, 1943.

~~CONFIDENTIAL~~

TO: Chief, Power Plant Laboratory, Wright Field.  
Attn: Mr. W. B. Roy

SUBJECT: Contract AC-30864, Change of Gear Ratio of  
Ranger V-770-7 Engine on XP-77 Airplanes.

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1. As a result of a visit to the Materiel Center of Mr. R. J. Woods of Bell Aircraft Corporation and Mr. C. MacNeill of Aeroproducts Division on March 22 and 23, a discussion was reached in collaboration with the Propeller Laboratory to the effect that since the recent testing of the Ranger V-770-7 engine, whereby a war emergency rating of 670 horsepower was established, the Hamilton-Standard propeller being furnished the Bell Aircraft Corporation for the subject airplanes was inadequate for the increased rating.
2. Mr. Lester of Ranger and Mr. Woods of Bell discussed with Mr. Roy of the Power Plant Laboratory the possibility of making a change in the existing reduction gear on the V-770-7 engine in order that a more efficient Aeroproducts propeller, that will shortly be available, could be utilized on the subject airplanes.
3. It was found possible to change the present 3:2 ratio gears to gears having a ratio of 1.357:1 without having to modify the engine nose section other than the gears and the Ranger Corporation has agreed that they can make, install and test these gears prior to the time they will be needed for the first flying article of the subject airplanes.
4. All of the V-770-7 engines now at Bell will be modified by the addition of Al-fin barrels, improved dynamic balance mechanics and any other changes found necessary as a result of the war emergency test. This agreement is part of the contract authorizing the use of three engines by Ranger to establish the war emergency rating. At the time of conversion of these engines by Ranger, it would be extremely advantageous to have two (2) of the engines also modified to accommodate the Hamilton Standard type propeller. It is understood that this can be accomplished at a minor cost to the Government.
5. It is therefore requested that the Power Plant Laboratory initiate necessary action to have Ranger fabricate five (5) sets of

HA-272

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Signature

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Chief, Power Plant Laboratory  
Change of Gear Ratio of Ranger V-770-7 Engine  
March 25, 1943

1.857:1 reduction gears, two of which shall be installed in two V-770-7 engines, the other three sets of gears to be held as spares. Also necessary action should be initiated to have Ranger make the required conversion on two (2) of the six engines at the time of the addition of Al-fin barrels and balance mechanism to permit the use of a Hamilton Standard propeller.

H. Z. BOBERT,  
Colonel, Air Corps,  
Chief, Technical Staff,  
Engineering Division.

Copies to:  
Propeller Lab.-Mr. S. Grimes  
GPE-Engr. Division

MX-272

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BELL AIRCRAFT CORP.  
2050 ELMWOOD AVENUE  
BUFFALO, N. Y.

**CONFIDENTIAL**

Subject: Contract W 535 AC 30864 - XP-77 Airplanes  
Request for Additional Funds and Extension  
of Delivery Dates

April 29, 1943  
No. 250

To: Commanding General, AAF  
Materiel Center  
Wright Field, Dayton, Ohio

Attention: Contracting Officer

References: (a) Bell letter RPW:bu of May 29, 1942  
(b) Mat. Center letter CLH:eks:50 dated June 15, 1942  
(c) Bell letter HHL:fs of July 2, 1942  
(d) Conference Wright Field April 28, 1943 between Army  
personnel and Bell representatives

Through: Army Air Forces Resident Representative  
Buffalo, New York

1. Our quotation for the supplies under subject Contract as originally submitted orally, was admittedly too low a price for the amount of work to be done and was based on an airplane incorporating an all-metal fuselage and empennage with wood wings. When instructions were received changing the design to all wood construction, we agreed to no change in price although an increase was obviously in order. Lack of experience in this type of construction rendered us unable to estimate the costs with any degree of accuracy and we, therefore, decided to accept the same price on the basis of the anticipated protection in costs afforded by the Cost-Plus-Fixed-Fee type of contract.

2. We have encountered a number of factors which have greatly increased the cost and delayed production of these airplanes among which are:

- A. We found it necessary to sub-contract the major portion of the work in order to avoid delaying other experimental projects with higher priority. This involved fuselages, complete wings, empennages and many detail metal parts which we had originally planned to fabricate in our own shop. This action which took place at a time when your glider program was in full swing, resulted in our being forced to accept prices for such work which were vastly greater than our anticipated costs.
- B. We have also found it necessary to educate not only our own personnel but also the available sub-contractors in new fabrication methods necessary for the molded plywood construction of a small, light, plywood fighter airplane with high estimated performance stressed to Army Handbook requirements.

See form to Proc. Div. 5-4-43  
Page 1 of 3

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BELL AIRCRAFT CORP.  
2090 ELMWOOD AVENUE  
BUFFALO, N. Y.

CONFIDENTIAL

Subject: Contract W 335 AC 30864  
To: Commanding General, AAF, Dayton, Ohio

April 29, 1943  
No. 250

- C. Under our original plans to construct the major portion of these airplanes in our own shop, we contemplated a very limited amount of engineering, involving substantially only major assembly drawings from which our own Mold Loft could construct its templates. When it became necessary to sub-contract this work, we were forced to produce detailed drawings and to furnish to such sub-contractors, duplicate sets of mold loft templates.
- D. One of the largest unknowns at the inception of this project, was the matter of cooling the Ranger engine. Considerable wind tunnel research has forced us to do a large amount of re-designing of the cowling and cooling ducts. Other re-design resulted from this wind tunnel research, including re-design of the tail surfaces, etc.

3. Confirming our discussion of this entire matter with your personnel at Wright Field on April 20, 1943, we, therefore, find it necessary to ask you for a Change Order increasing the estimated cost of the Contract based upon our present cost experience plus a very careful estimate of the costs necessary to complete the entire contract. We are listing below breakdowns of:

	I	II	III
	The Original Quotation	Actual Costs As Of April 11, 1943	A Revised Estimate Of The Costs For The Entire Contract
Direct Labor	\$ 174,635.00	\$ 109,472.69	\$ 678,571.07
Overhead	211,318.50	103,688.15	818,217.59
Tools (including Labor, Material and Overhead)	20,350.00	137,278.58	73,125.00
Engineering Labor	130,215.00	207,085.08	211,079.11
Engineering Overhead	51,785.00	65,316.80	74,927.69
Direct Material	42,105.00	132,938.38	626,312.62
Direct Expense	3,000.00	85,909.29	
	<u>\$ 633,379.50</u>	<u>\$ 821,718.97</u>	<u>\$ 2,515,266.08</u>
Spares	32,108.00		
TOTAL	<u>\$ 665,487.50</u>	<u>\$ 821,718.97</u>	<u>\$ 2,515,266.08</u>
Fixed Fee 5%	<u>33,274.38</u>		<u>33,274.38</u>
GRAND TOTAL	<u>\$ 698,761.88</u>		<u>\$ 2,548,540.46</u>

4. From the foregoing tabulation it will be noted that the additional estimated cost to be covered by the aforementioned Change Order, is \$1,849,778.58 which is the difference between the revised estimated costs for the entire contract (Column III) and the estimated costs as set forth in the contract (Column I). No additional Fixed Fee has been added, the fee remaining at \$33,274.38 as now covered by the contract.

\* This sum includes Spares at \$32,108.00

\*\* This sum includes Quotation Tool Development

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FORM 44-11

BELL AIRCRAFT CORP.  
2050 ELMWOOD AVENUE  
BUFFALO, N. Y.

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Subject: Contract W 535 AC 30864  
To: Commanding General, AAF, Dayton, Ohio

April 29, 1943  
No. 250

5. We also request that the following revised delivery schedule be made a part of the Change Order covering the increase in estimated costs:

		<u>Delivery Date</u>
<u>Item 1</u>	First Flying Article	July 31, 1943
	Second Flying Article	Aug. 31, 1943
	Third Flying Article	Sept 15, 1943
	Fourth Flying Article	Sept 30, 1943
	Fifth Flying Article	Oct. 15, 1943
	Sixth Flying Article	Oct. 31, 1943
<u>Item 2</u>	Wright Field Skeleton Airplane	Aug. 15, 1943
<u>Item 7</u>	Bell Skeleton Airplane (Static Test)	July 15, 1943
<u>Item 9</u>	Spare Parts	Oct. 30, 1943

BELL AIRCRAFT CORPORATION

Ray P. Whitman  
First Vice President

RPF:JE

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FOR THE RECORD (If applicable)

FOR THE RECORD (If applicable)

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FOC:lmf:50

ROUTINE

May 4, 1943 11:50 a.m.

Engineering Division

F. C. CARROLL,  
Brig. General, U.S.A.

CHIEF, MATERIEL DIVISION  
AC/AS, M M AND D

ENG-908 RETELETYPE AFMA-1-14 DATED MAY 4, 1943 THIS OFFICE IS VERY MUCH CONCERNED NOT ONLY ON THE BELL XP-77, BUT ALSO ON THE XP-62, XP-60, XB-19A, XB-39 (XB-29) AND IA-26 AIRPLANES REGARDING THE MATTER OF OVERAGES RUNNING TO SUCH HIGH PERCENTAGES OF THE ORIGINAL CONTRACT PRICES. CONSIDERABLE DISCUSSION HAS BEEN HAD WITH GENERAL JONES OF THE PROCUREMENT DIVISION REGARDING METHODS WHEREBY CONTRACT COSTS OF EXPERIMENTAL DEVELOPMENTS CAN BE MORE PROPERLY CONTROLLED. UNDER THE PRESENT SYSTEM IT APPEARS THAT IT IS NOT DIFFICULT FOR THE CONTRACTOR TO NOT ONLY SPEND THE TOTAL FUNDS SET UP IN THE BASIC CONTRACT, BUT TO PROCEED BEYOND THAT POINT BEFORE IT COMES TO THE ATTENTION OF THE MATERIEL COMMAND. IT WOULD ALSO APPEAR THAT THERE IS NO HARD AND FAST CONTROL OF THE CONTRACTOR AS TO JUST WHAT HE CAN CHARGE TO THE CONTRACT IN THE WAY OF DEVELOPMENTS REQUIRED FOR THE COMPLETION OF THE BASIC CONTRACT.

WE ARE PROPOSING TO THE PROCUREMENT DIVISION THAT EACH OF THE CONTRACTORS WITH MAJOR EXPERIMENTAL PROJECTS SUBMIT MONTHLY THEIR COSTS AND BALANCES, AND TRY TO SET UP SOME SYSTEM WITH THE PROCUREMENT DIVISION WHEREBY ALLOWABLE CHARGES AGAINST THE BASIC CONTRACT CAN BE BETTER SCRUPINIZED. IT IS ESSENTIAL THAT THE CONTRACTOR BE PERMITTED TO CARRY OUT AN EXPERIMENTAL DEVELOPMENT WITHOUT BEING HANDICAPPED BY

*Handwritten notes:*  
 Int'l  
 H.B.  
 [Signature]  
 [Signature]  
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 [Signature]

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ENG-908 continued

May 4, 1943

~~CONFIDENTIAL~~

CHIEF, MATERIEL DIVISION  
AC/AS, M M AND D

TOO MUCH REGULATION IN ORDER THAT HE MAY BENEFIT BY ALL OF THE INGENUITY AT HIS  
COMMAND. SOME CONTRACTORS, NOTABLY NORTH AMERICAN, BELIEVE THAT THE FIXED PRICE  
CONTRACT IS MORE DESIRABLE THAN THE COST-PLUS-FIXED-FEE SINCE THEY ARE WORKING  
AGAINST TIME AND THERE IS LESS TENDENCY TO EXTEND A GIVEN PROJECT OVER A CONSIDERABLE  
PERIOD WHEREIN LARGE OVERHEAD CHARGES RAPIDLY CONSUME THE BASIC CONTRACT PRICE.

ACTION HAS ALREADY BEEN TAKEN TO SEND A PROJECT OFFICER AND A REPRESENTATIVE  
OF THE PROCUREMENT DIVISION TO THE BELL COMPANY TO THOROUGHLY INVESTIGATE THE  
SITUATION ON THE XP-77 WITH A VIEW TO DETERMINING WHY SUCH A TREMENDOUS OVERAGE HAS  
BEEN SUBMITTED AND WHETHER OR NOT THE AIR FORCES SHOULD CONTINUE WITH THIS CONTRACT.  
SIMILAR INVESTIGATION WILL BE CARRIED OUT ON THE OTHER AIRCRAFT MENTIONED ABOVE.

ENGINEERING DIVISION

Copy to Tech. Staff (Airc. Proj.)

- 2 -

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AFDMA-1-14

5-4-43

CHIEF ENGINEERING DIVISION, WRIGHT FIELD

PARTICULAR ATTENTION GENERAL CARROLL

~~CONFIDENTIAL~~

REFERENCE IS MADE TO THE BELL XP-77 MATTER WHICH WAS DISCUSSED BY GENERAL CHIDLAW VERY BRIEFLY WITH GEN. CARROLL AND COL. ROTH YESTERDAY. MR. BELL AND MR. RAY WHITMAN OF BELL AIRCRAFT VISITED THIS OFFICE THIS DATE AND ADVISED THAT ORIGINAL CONTRACT ON THE XP-77 WHICH STARTED OUT TO BE ABOUT ONE-HALF MILLION DOLLARS THEN GREW LATER TO \$698,000 INCLUDING THE FIXED FEE HAD NOW GROWN TO THE ASTOUNDING AMOUNT OF \$2,500,000. MESSRS. BELL AND WHITMAN HAD A LOT OF EXCUSES FOR THIS BUT NONE THAT WOULD SEEM TO JUSTIFY SUCH UNPRECEDENTED RISE OF THREE HUNDRED PER CENT (300 PERCENT) OVER THE ORIGINAL. IN VIEW OF THE CURRENT SITUATION, IT IS DESIRED THAT YOU TAKE IMMEDIATE ACTION TO INVESTIGATE THIS MATTER TO FIND OUT WHY AN AIRPLANE OF THIS SIZE AND TYPE SHOULD COST US TWO AND ONE-HALF MILLION DOLLARS TO BUILD. YOUR STUDY SHOULD INCLUDE THE POSSIBILITY OF CANCELLATION SINCE THE BASIC IDEA WAS MORE TO PROVE THE FEASIBILITY OF A SMALL AIRPLANE TYPE RATHER THAN EXPECTING TO GET THE ULTIMATE ANSWER IN THIS PARTICULAR PRODUCT. PENDING A COMPLETE INVESTIGATION, YOUR IMMEDIATE COMMENTS ON THIS SITUATION WOULD BE APPRECIATED.

CHIEF, MATERIEL DIVISION

AC/AS, M M AND D

LW

1458Z

*Eng-908  
5-4-43*

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~~CONFIDENTIAL~~

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AAFMC-261-A-WF-8-28-42-750M

INTER-OFFICE MEMORANDUM

ARMY AIR FORCES  
MATERIEL ~~ENGINEER~~ Command  
Office of The Commanding General

CLM:abd:50

Wright Field, Dayton, Ohio

Date May 4, 1943

**CONFIDENTIAL**

TO: Chief, Procurement Division  
Wright Field

SUBJECT: Contract AC-30864, XP-77 Airplanes  
Increase in Costs and Extension of Delivery Dates

1. Inclosed is Bell Aircraft Corporation letter #250 dated April 29, 1943 requesting additional funds and an extension of delivery dates in connection with the completion of the subject contract. Inasmuch as the Engineering Division desires to continue with this project, it is requested that your Division investigate the increase in cost and negotiate a Change Order if the increase in cost is considered reasonable.

2. In the event that your Division prepares an Authority for Purchase to cover this increase in cost and delivery extension, it is requested that the Engineering Division be furnished with at least two (2) copies.

F. O. CARROLL  
Brig. General, U.S.A.  
Chief, Engineering Division

Incl.  
Bell letter #250  
dated 4-29-43

Copies to:  
Administrative Staff -  
Mr. E. Johnson

*rps*  
*wgl/ekc*  
*ps*  
M-272

**CONFIDENTIAL**  
Signature



Orig. no. 6.437-1P77  
DEB-2  
Mat. Div.  
MMSD  
Wash

7.0 6037

INTER-DESK MEMORANDUM  
MATERIEL DIVISION

May 4, 1943

MEMORANDUM FOR GENERAL ECHOLS

SUBJECT: Cost of the Bell XF-77 Project

*BTC  
Keep me  
informed  
OK*

25

1. General Carroll advised me at Wright Field last Sunday that Bell had approached them on the XF-77 (little fighter) deal stating that their estimated development costs were far out of line and wanting a new deal declared on this matter. Messrs. Bell and Whitman were in to see me yesterday about this matter.

2. As you may remember, this started out as a project - principally to test out the small airplane theory - and was to cost about a half-million dollars. This grew to about \$700,000 when it reached the contract stage and now Bell declares that the overall cost will be TWO BILLION, FIVE HUNDRED THOUSAND (\$2,500,000) before it is through.

3. This is absurdly out of line for this whole thing, and it seems to me that both Bell and Dayton have been asleep to let this thing get so far out of line. I have directed an immediate investigation of the entire matter - with Dayton to submit interim recommendations pending the submission of the complete story.

*[Signature]*  
B. G. CHIDLE,  
Brigadier General, U. S. A.,  
Chief, Materiel Division.

*Int. C. [unclear] @ W.F. [unclear] [unclear] E. B. C. [unclear]  
5/29/43*

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*[Handwritten initials]*

*[Handwritten initials]*

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XXXXXX  
Command

RR:171450

Wright Field, Dayton, Ohio  
May 26, 1943.

~~CONFIDENTIAL~~

AP-77 project and other experimental  
projects at Bell Aircraft Corporation

Commanding General, Army Air Forces,  
Material Division, Office Dist. S/AS, W. H. H. P.,  
Washington, D. C.

1. For reasons covered at greater length in the inclosed Memorandum  
Report, WAC-50-875 dated May 14, 1943, it is recommended that Contract  
W-535-Ac-30064 for the AP-77 airplanes be terminated immediately.

2. The Bell Company has undertaken more experimental development  
than they can satisfactorily handle under present conditions. Unless  
this condition is alleviated all projects will suffer. It is believed  
that the P-40 and the P-59 are respectively in first and second priority.  
Such development work, executed with thoroughness and speed, is required  
to get the most out of these two developments. Termination of Contract  
AC-30064 and assignment of last priority to Contract W-535-Ac-30064 (AP-77  
airplanes) is necessary to permit proper handling of the two more important  
projects.

WAC-50-875

WAC-50-875

CONFIDENTIAL

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~~CONFIDENTIAL~~

Record of Long Distance Telephone Conversation between  
Brig. Generals F. O. Carroll and B. W. Chidlaw.

-lwf  
Wright Field, Dayton, Ohio  
June 15, 1943

Chidlaw: Bogart was telling me this morning that this Goshen plywood outfit seems to be out of line.

Carroll: They are cancelling out of that place. They have somebody else who agreed to build the stuff for what it was costing at Goshen which was a lot. We will save some by cutting out four airplanes - not a lot, but I think we ought to go ahead and try to finish one or two airplanes anyway just as a sample of what it costs to build a wooden airplane. I know every congressman or senator who has a patch of woods in his district thinks it ought to be made into airplanes. They are probably bothering everybody about that. Maybe we can get something out of this airplane if we can finish it. We are in so far now anyway and so many parts have been built that it seems to me it would look foolish if we stopped in the midstream. It will cost \$1,200,000 to stop and have nothing. It won't cost a lot more than that to finish and have a couple of airplanes anyway.

Chidlaw: Maybe it will be worth it. You might have that story ready for decision during our dry run Tuesday.

F. O. CARROLL,  
Brig. General, U.S.A.,  
Chief, Engineering Division.

CC: Tech. Staff  
Proc. Files

~~CONFIDENTIAL~~

EX-272

address reply UNCLASSIFIED

08:50

Commanding General  
AAF Materiel Command  
Procurement Division  
Wright Field, Dayton, Ohio

XXXXXX  
Command

Wright Field, Dayton, Ohio  
20 July 1943

A I R M A I L

Contract #559 43-30621, AP-77 Airplanes  
Request for quotation and delivery schedule

Bell Aircraft Corporation  
2050 Elmwood Avenue  
Buffalo, New York.

1. Since the conference of 14 and 15 June 1943 at Wright Field during which representatives of the contractor and the Materiel Command discussed the present experimental program now in effect at the contractor's plant, the Materiel Command has given careful consideration to the completion of the AP-77 project.

2. In order to assist this Command in making a proper decision with regard to this project, it is requested that a letter of quotation be prepared to cover the estimated cost of completing the work on the basis of two (2) flight articles in lieu of six (6) as now called for in the contract. The quoted deliveries of these two (2) flight articles should be based on initial flight dates and should be so stated in the quote letter. A revised delivery date for the Wright Field Skeleton Airplane should also be included.

3. The matter of reducing the quantity of spare parts to be procured on the basis of furnishing two (2) flight articles should also be included in the quote letter. The Materiel Command considers a reduction of a proximately one-third in the cost of spares to be suitable for two (2) flight articles.

4. It is requested that immediate consideration be given to the preparation of this quote letter in order that the Materiel Command may reach a final decision with respect to this project.

for the Commanding General:

*Handwritten:* 11 Aug 43

*Handwritten:* [Signature]

Copies to:  
AAF Res. Repr.  
East. Dist. Supr.  
Bell-Dayton  
Procurement Division - Airplane Proc. Br.-L.J. Scully  
Inspection Section  
G.R.E. Br.-Engr. Div.

MR-272

A. F. JONES,  
Brig. General, U.S.A.,  
Chief, Procurement Division.

**CONFIDENTIAL**

*Handwritten:* 28



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July 29, 1943

MEMORANDUM FOR Maj. General C.P.Echols

Bell, Buffalo, is working on a  
wood aeroplane with Ranger engine, numbered as  
XP77. Why not cancel it?

William S. Knudsen  
Lieutenant General, A.U.S.  
Director of Production

Carbon Copy  
6437-1277  
DES-4  
Mat. Div.,  
MMBD  
Wash.

6437

Written by Col. F. C. Wilson, ket  
AFAC-1 (Devel. Engr. Br. # 1.  
Div., AC/As. M.M.B.D., Room 53-370  
ext. 6716. (4-2-43)

MEMORANDUM FOR: Lieutenant General William H. Hensley,  
Office, Under Secretary of War,  
Room No. 31-606, Pentagon Building

SUBJECT: Bell X-77.

1. The X-77 airplane was laid down by directive of General Arnold at the time when plywood was a less critical material than aluminum alloy. It was hoped to develop, in addition, a small light fighter which would be relatively easy and inexpensive to produce.

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2. At the present time action has been initiated to terminate the project except for the completion of tests on the static test airplane, which has already been delivered and the completion of two flying articles. This latter action was considered advisable in order to obtain valuable flight data for this type of plywood aircraft.

O. F. ROSS,  
Major General, U.S.A.,  
Asst. Chief of Air Staff,  
Material, Maintenance & Distribution



RWC:ket  
AFDMA-2A

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MDAC-6-WF-3-5-42-600M

# TELETYPE MESSAGE

CLM:MM:50  
3:25 P.M.

MATERIEL COMMAND TELETYPE NETWORK

DATE: 3 August 1943

P R I O R I T Y

FROM Engineering Division

ATTENTION: BELL AIRCRAFT CORPORATION,  
2050 ELMWOOD AVENUE  
THRU: AAF RESIDENT REPRESENTATIVE  
BUFFALO, NEW YORK

A. E. JONES,  
Brig. General, U.S.A.

ENG-353 RECONTRACT AC-30864 REOULET 20 JULY. CONTRACTOR HEREBY INSTRUCTED TO  
PROCEED WITH CONSTRUCTION OF TWO XP-77 FLYING ARTICLES IN LIEU OF SIX AS NOW  
REQUIRED BY ITEM ONE OF CONTRACT. REQUEST CONTRACTOR EXPEDITE PREPARATION OF  
QUOTE LETTER END AFAMC

PROCUREMENT DIVISION, WRIGHT FIELD

Copies to:  
Proc. Div. - Mr. Sculley  
Bell - Dayton  
AAF Res. Repr.  
East. Dist. Supr.  
G.F.E. - Eng. Div.  
Inspection Div.

*See memo to Mr. Sculley  
Re: Bell AC-30864  
8/3/43*

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MSR:hmw:50

10 August 11:00 a.m.

Engineering Division

DEV. ENG. BR., MATERIEL DIVISION  
ATTN: BRIG. GENERAL. B. W. CHIDLAW

H.Z. BOGERT  
Colonel, Air Corps

BELL ESTIMATED, AS OF APR. 29, 1943, THAT IT WOULD COST \$2,548,540.46 TO COMPLETE THE SIX AIRPLANES ON CONTRACT, AND THAT, ACCORDING TO AN ARMY AUDIT, CANCELLATION WOULD COST THE GOVERNMENT \$1,482,786.50. THE AMOUNT SAVED BY CANCELLATION WOULD BE \$1,065,753.96 (\$1,065,753.96). AS OF AUG. 9, 1943, BELL ESTIMATED THAT IT WOULD COST \$1,853,540.46 TO COMPLETE TWO AIRPLANES--A SAVING, CONSIDERING THE FIRST ESTIMATE, OF \$695,000. IT WOULD BE TO THE BENEFIT OF THE GOVERNMENT, TO THE AMOUNT OF \$370,753.96, TO CANCEL THE PROJECT. HOWEVER, SINCE COSTS COULD NOT BE ASSUMED TO BE CORRECT, MD RECOMMENDED THAT TWO AIRPLANES BE COMPLETED SO THAT THERE WOULD BE SOME RETURN FOR THE LARGE AMOUNT OF MONEY ALREADY EXPENDED.

ENGINEERING DIVISION

cc: Fighter Br., Aircraft Proj. Sec.

Cy. #1

Fighter Branch

Cy. #2

Colonel Bogert

Cy. #3

General Carroll

~~CONFIDENTIAL~~

C O P Y

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Address reply & ENVELOPE to:

Commanding General  
AF Materiel Command  
Engineering Division  
Technical Staff

~~Command~~

Wright Field, Dayton, Ohio  
11 August 1943

Reference: LH:fkf:50

Wright Field, Dayton, Ohio

Contract W545-AC-30061, XP-77 Airplanes  
Revision of Model Specification

~~CONFIDENTIAL~~

Bell Aircraft Corporation  
2000 Elmwood Avenue  
Buffalo, New York

Reference: (a) HQ letter of 23 July 1943, SLS:af:50  
(b) HQ teletype WMO-353 dated 1 August 1943

1. In view of the recent decision to proceed with this project on the basis of two (2) flight articles, as discussed in reference (a) and authorized in reference (b), it is considered necessary that Model Specification No. 32-347-001 dated 1 April 1942 and revised 13 July 1942 be further revised to describe the airplane as it will be finally delivered to the Army Air Forces.

2. In an effort to reduce additional costs and engineering work, it is considered advisable to proceed with the actual construction of two (2) airplanes incorporating the larger V-77-7 engine and the Hamilton-Standard nine foot diameter propeller. No further consideration will be given at this time to the use of the V-77-9 engine or the conversion of the V-77-7 engine for use at War Emergency Power, in these airplanes.

3. It is requested that a revised model specification be submitted to the Materiel Command for comment as soon as possible.

For the Chief of Engineering Division:

R. W. Boyert  
Colonel, Air Corps  
Chief, Technical Staff  
Engineering Division

Copies to:  
Bel.-Dayton  
AAF Res. Repr.  
Eastern Dist. Supr.  
Armament Lab.  
Aircraft Lab.  
Power Plant Lab.  
Propeller Lab.  
G.F.R. Branch  
Inspection Div.  
Procurement Div.

REL-272

~~CONFIDENTIAL~~

*pls  
relh  
mfe/perm*

*See Bell ltr #331 8-25-43*

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AAF M-122-A-WF-5-12-42-26M

~~SECRET~~

ARMY AIR FORCES  
HEADQUARTERS OF THE MATERIEL COMMAND

Washington, D. C.  
Wright Field, Dayton, Ohio  
20 August 1943

TECHNICAL INSTRUCTIONS

Serial No.: 31-100  
Subject: Experimental Fighter Program.  
To: Engineering Division

8-21-43  
B.W.C.

1. Problem Presented:

a. To accomplish certain changes in the experimental fighter program.

2. Factual Data:

a. During the past several weeks, personnel from the Office of the Assistant Chief of Air Staff, Materiel, Maintenance and Distribution and the Engineering Division, Materiel Command, have cooperated in a review of experimental fighter projects.

3. Authority:

a. Commanding General, Army Air Forces. By letter dated 18 August 1943, subject: "Experimental Fighter Program", from the Assistant Chief of Air Staff, Materiel, Maintenance and Distribution.

4. Action Desired:

a. That action be initiated immediately to accomplish the changes in experimental fighter program indicated in the following table:

01

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AAFMG 10-10-43-25M

ARMY AIR FORCES  
HEADQUARTERS OF THE MATERIEL COMMAND

WASHINGTON, D. C. JFC:JJB:RHF  
Page two  
Wright Field, Dayton, Ohio.  
25 August 1943

TECHNICAL INSTRUCTIONS

Serial No.: AT-1429 (Cont'd)

Subject: <sup>15130</sup> Experimental Fighter Program.

P-51-43  
G. W. C.

To: Engineering Division

Project Closed No Further Action Required	Closed Out Report Pre- pared	Drop or Cancel Contract, Pre- pare Report	Accept Delivery Close Contract Prepare Report	Continue Pre- sent Program
XP-47 XP-47H XP-51	XP-39E	XP-47F XP-47E XP-51 XP-52 (40) XP-71 XP-77 (4)	XA-26A XP-47G XP-47J XP-49 XP-51F XP-54 XP-60C XP-60E XP-60E XP-60E XP-62 (4) XP-77 (4)	XP-51F XP-51G XP-55 XP-56 XP-58 XP-59A XP-57 XP-57 XP-72 XP-75 XP-75A XP-75B XP-80
3	1	4	11	17

b. It is directed that a similar review of other types of experimental aircraft that the Engineering Division is preparing be expedited and a preliminary report forwarded as soon as practicable to the Assistant Chief of Air Staff, Materiel, Maintenance & Distribution.

By Command of Major General BRANSHAW:

*E. A. Sims*  
E. A. SIMS,  
Colonel, Air Corps,  
Deputy Chief of Staff.

ADDRESS REPLY TO  
HEADQUARTERS OF THE ARMY AIR FORCES  
WAR DEPARTMENT  
WASHINGTON, D. C.

**SECRET**

**WAR DEPARTMENT  
HEADQUARTERS OF THE ARMY AIR FORCES  
WASHINGTON**

18 August 1943

SUBJECT: Experimental Fighter Program.

*CTI-1429*

TO: Commanding General,  
Materiel Command,  
Wright Field,  
Dayton, Ohio.

Attention: Technical Executive.

1. During the past several weeks, personnel of this office and the Engineering Division have cooperated in the review of experimental fighter projects.

2. The result of this effort is summarized in the following table:

<u>Project Closed No Further Action Required</u>	<u>Closed Out Report Pre- pared</u>	<u>Drop or Cancel Contract, Pre- pare Report</u>	<u>Accept Delivery Close Contract Prepare Report</u>	<u>Continue Pre- sent Program</u>
XP-47	XP-39E	XP-47F	XA-26A	XP-51E
XP-47H		XP-59B	XP-47E	XP-51G
XP-51		XP-61	XP-47J	XP-56
		XP-62 (#2)	XP-49	XP-56A
		XP-71	XP-51B	XP-58
		XP-77 (4)	XP-54	XP-59A
			XP-60C	XP-63
			XP-60E	XP-67
			XP-60E	XP-72
			XP-62 (#1)	XP-75
			XP-77 (2/6)	XP-79A
				XP-79B
				XP-80
9	1	6	11	13



REC'D WAR DEPT. 31-08

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*P-2899*



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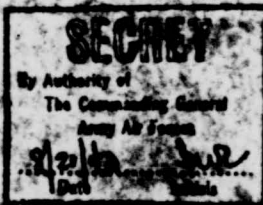
To: C.G., Materiel Command  
Attn: Technical Executive  
Subj: Experimental Fighter Program  
Date: 18 August 1943

3. It is requested that you initiate action immediately to accomplish the changes in the Experimental Fighter Program as indicated in paragraph 2 above.

4. This office is advised that the Engineering Division is preparing a similar review of other types of Experimental aircraft. It is requested that the project be expedited and the preliminary report forwarded as soon as practicable.

By command of General ARNOLD:

*O. P. Echols*  
O. P. ECHOLS,  
Major General, U. S. A.,  
Asst. Chief of Air Staff,  
Materiel, Maintenance & Distribution.



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**SECRET**

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AFM 7-2001

Colonel Ralph E. Swafford, Jr.,  
Engineering Division, Army Air Forces  
Building Administration  
Right Field, Dayton, Ohio

Bell Aircraft Corporation  
Goshen Veneer Company

Dear Colonel Swafford:

Reference is made to our discussions of last week concerning the above situation. As neither Goshen Veneer Company, its lawyers or I had received any word from Bell Aircraft or from the A.A.F., I today called Mr. Woods to find out what progress was being made in furtherance of the program which was outlined at our meeting last week. Our understanding was that the matter would be discussed with the A.A.F. contracting officer on the Bell prime contract and that there would be instituted proceedings which would ultimately result in a conference of Bell, Goshen and A.A.F. auditors to be held at Goshen with the objective of resolving the disputed items.

With respect to this point, Mr. Woods was uninformed but is going to investigate and advise me.

Mr. Woods stated that Bell was planning to enter into a contract with Vidal for the remaining three wings and was going to present the change of subcontractor to you or your office for approval on Wednesday.

It was the consensus of opinion of all of the Army representatives at Dayton I believe that the question of the subcontractor for the completion of the three remaining wings is Bell's responsibility and in any event this question should be determined on the basis of procurement without regard to Goshen's financial position and the War Department's interest therein. It is my personal opinion furthermore, with which the Goshen management disagrees, that Goshen is probably better off to be relieved of the responsibility for the completion of these three wings at a fixed price as it might very well result in more headaches and more losses.

However, I do want to point out that the cancellation by Bell (with respect to 3 out of 7 remaining wings) apparently is claimed by Bell

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SPRGE 7-5003  
Colonel Ralph P. Swofford, Jr.  
Wright Field, Dayton, Ohio

to be for fault of Goshen and not for convenience of the Government. This is a matter of dispute and it may result in a substantial claim by Goshen against Bell over and above the amounts claimed for the work already performed.

In the event that the approval of this charge of source would make the Air Force liable for any such claim, I wanted to be sure that you were aware of it with the suggestion that possibly if the change were to be approved it could be approved subject to Bell remaining liable therefor.

Very truly yours,

Grant Keehn  
Lt. Colonel, F.D.  
Liaison Officer

cc: Capt. Geo. H. Folsom  
Midcentral Procurement District  
A.A.F. Chicago

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AAF MATERIEL COMMAND  
WRIGHT FIELD, DAYTON, OHIO

86:JWS:ia  
12 October 1943

A.E. JONES, Brig. General, U.S.A.  
Chief, Procurement Division

GOSHEN VENEER COMPANY  
GOSHEN  
INDIANA

PD-33488 .... REURTEL OCTOBER ELEVENTH MATERIEL COMMAND HAS BEEN INFORMED THAT CONTRACT WITH VIDAL RESEARCH CORP. HAS BEEN APPROVED BY THE CONTRACTING OFFICER AT BELL AIRCRAFT CORPORATION. IT IS, THEREFORE, REQUESTED THAT YOU PERMIT BELL AND VIDAL REPRESENTATIVES TO ENTER YOUR PLANT, IF YOU HAVE NOT ALREADY DONE SO.

PROCUREMENT DIVISION, WRIGHT FIELD

File: Bell contract ac-30864

cc: Midcent. Dist. Supvr.  
AAFRR-Bell



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13 OCT 1946

WASHINGTON, D.C. 20540

DIRECTOR SERVICE  
MILITARY AIRCRAFT DIVISION  
AAAF WASH DC 20330  
111 WING COMPANY  
CHICAGO, ILLINOIS

NO-3351B ... GOSSEN VEHICLE COMPANY OF GOSSEN, IN IOWA AND SUBCONTRACTORS, FOR THE  
AIRPLANE WING PANELS, TO BUILD AIRCRAFT COMPONENTS IN CONTRACT AC-30864. DUE TO  
UNSATISFACTORY PERFORMANCE UNDER SUBCONTRACT BILL HAS TERMINATED CONTRACT WITH  
GOSSEN VEHICLE AND PLACED CONTRACT WITH VIDAL RESEARCH CORPORATION FOR COMPLETION  
OF SUCH WING PANELS AS ARE REQUIRED UNDER THE REMAINDER CONTRACT WITH BILL. GOSSEN  
VEHICLE HAS THIS FAR AGREED TO PERMIT BILL AND VIDAL REPRESENTATIVES TO ENTER  
THEIR PLANT FOR THE PURPOSE OF SELECTING PARTS, WHICH THE GOVERNMENT WANTS,  
FOR SHIPMENT TO VIDAL FOR COMPLETION. CONTRACTING OFFICER AT BILL HAS APPROVED  
SUBCONTRACT WITH VIDAL AND THEIR REPRESENTATIVES ON BILL REPRESENTATIVE'S  
IN GOSSEN AWAITING CONSENT TO ENTER GOSSEN VEHICLE PLANT TO SUPERVISE PACKING AND  
SHIPPING OF PARTS. THIS COMMENT HAS REQUESTED GOSSEN VEHICLE COMPANY'S COOPERATION

Page One

CONTINUED

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7-33-11  
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TO NO. 11. ...  
IN ...

...

cc:  
AFRC-Hall  
Engr. div. (Mr. Hall)

END

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*2*  
BELL AIRCRAFT CORP.  
DAYTON DIVISION  
HOTEL BILTMORE  
MAIN AND FIRST STS  
DAYTON OHIO

~~CONFIDENTIAL~~

November 5, 1943

Subject: XP-77 Delivery Schedule  
Contract Wb35-ag-30864

To: Commanding General  
Materiel Command  
Wright Field  
Dayton, Ohio

Attention: Fighter Branch  
Engineering Division  
Department #50

1. This office has been advised that the delivery schedule on subject contract may be quoted as follows:

First flight article.....January 31, 1944  
Army static test article.....February 15, 1944  
Second flight article.....March 1, 1944

BELL AIRCRAFT CORPORATION

D. D. Brubaker  
Manager, Dayton Office

**RESTRICTED**

DB:p  
CC: Central File

*up 329637*

*38*

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0416/NAH  
AP-77-Cont 20264  
AADM: [unclear]  
Proc. 87-2(1/4P)  
MMD

P-1

~~CONFIDENTIAL~~  
ARMY AIR FORCES  
MATERIAL ~~ENGINEERING~~  
ENGINEERING DIVISION

MEMORANDUM REPORT ON  
AP-77 AIRPLANE

MPC:hw:50

Date 11 November 1943

SUBJECT: Interim Report on Status of Project  
at time of Partial Cancellation.

~~SECRET~~ TECHNICAL STAFF

Contract No. W-535-AC-30864  
Exp. Order No. 430-112  
Purchase Order No.

SERIAL NO. WO-50-949

A. Purpose.

1. To present a brief report on the AP-77 airplane project setting forth the reasons for the cancellation of (4) of the (6) airplanes originally constructed for and the status of the project at the time of the cancellation as well as to record references to pertinent correspondence relating to and leading up to the cancellation.

B. Background.

1. Reasons for partial cancellation are as follows:

a. Extremely long delay in completion of project due primarily to failure of subcontractors to meet delivery dates and inability of Bell Aircraft Corporation to devote sufficient personnel to project because of interference of projects of higher priority. Original delivery date December 1942, probable date now estimated first quarter of 1944.

b. Delay in delivery of engine V-770-5 high altitude engine as called for in Bell Aircraft Corporation original specifications required for Bell aircraft airplane with high altitude engine V-770-7 engine. The performance of this airplane with the combination very definitely less than that of the airplane with the engine V-770-5 airplane as called for in the original specifications. The above considerations alone, if not the delay in delivery of engine, would complete the project. The delay in delivery of engine V-770-5 is the result of Bell Aircraft Corporation's failure to meet delivery dates.

2. This report is intended to be used in connection with the project and is not to be distributed outside the project. It is to be used as a guide in the cancellation of the project and is not to be used as a basis for the project.



12-77  
Spec BR-CMA 30144  
(2/4P)

Bellevue, Wash. Report  
November 1943.

d. It is estimated that the cost of the cancelled contract, including the cost of the design, will be approximately \$1,000,000.

e. It is further estimated that the cost of the project as originally planned would have been approximately \$1,000,000. From this it is apparent that not only is the cost of delivery of two (2) instead of six (6) aircraft.

f. The above estimates refer only to the cost of contract A-55-40-3004 and do not include the cost of government-furnished equipment.

3. The following extracts are taken from reports relative to the increase in cost and the action taken to correct the situation:

a. Bell letter #P-1 dated April 1943 gave the following quotation:

Original quote	\$1,000,000.00
Actual cost as of 11 April 1943	\$1,000,000.00
Revised estimate to complete entire contract.	\$1,000,000.00

b. Teletype WPM-1-14 dated 1 May 1943 from Chief, Material Division, AC/AS, WPAAS, to General Merrill direct to General Merrill to investigate immediately the tremendous increase in cost.

c. Teletype WAG-01 dated 1 May 1943 from General Merrill to Chief, Material Division, AC/AS, WPAAS, directing that the investigation thoroughly the tremendous increase in cost of the project and a report be submitted to Bell Aircraft Corporation.

d. Letter #P-1, signed by General Merrill, dated 1 May 1943, to commanding General, Bell Aircraft Corporation, stating that it is recommended that the contract be terminated and that the development of the Bell Aircraft Corporation as a result of the development that they can satisfy all the requirements.

Proc BR--2(44P)-1P-77

1. The following information was obtained from the report of completion, the final report, and other documents available at the time of the final report, dated August 1943.

2. The following information was obtained from the report of completion, the final report, and other documents available at the time of the final report, dated August 1943.

a. Status of work.

- 1) Engineering. Practically complete.
- 2) Construction. Six fuselages for flight airplanes and two static test fuselages were completed by the contractor, the Vidal Research Corporation. One static test wing was completed by sub-contractor, Taylor Aircraft Company. This left six (6) flight and one additional static test wings to be constructed. Arrangements were made with the Bell Aircraft Corporation whereby three (3) sets of wing panels will be constructed by the Vidal Research Corporation. Three sets of landing gear struts and eight sets of tail surfaces were delivered. All Government-furnished equipment with the exception of the larger V-770-7 engines was on hand.
- 3) Delivery. In view of the delay involved in the switching of sub-contractors for the construction of wings it was estimated in September 1943 that the three wings could be completed in 70, 60, and 120 days for the two (2) flight airplanes and the static test article. On this basis it was estimated that the first airplane would be completed and ready for flight in January 1944, followed by completion of the static test article in February 1944 and the second airplane in March 1944.

b. The initial estimated cost of this project involving six (6) airplanes, two (2) static test articles, spare parts, models and engineering data was \$58,487.50 which, plus a 5% fixed fee of \$29,274.38 made a total of \$87,761.88 and was the amount included in Contract W-535-AC-3074.

c. The amount of money actually expended by the Contractor up to the time of partial cancellation on 3 August 1943 is estimated at \$1,526,464.28. This is based on information supplied by the AAF Resident Auditor on 17 June 1943 to the effect that \$1,478,404.36 had been expended up to 31 May 1943. During June and July 1943 it is estimated that approximately \$48,060.00 was expended resulting in the above estimate of total expenditures.

13-272



AAFHC-205-WF-1-12-42-300M

Cont. given 200 703

24

INTER-OFFICE MEMORANDUM  
ARMY AIR FORCES  
MATERIEL CENTER Command  
Office of The Commanding General

WRR:mfm:50

Wright Field, Dayton, Ohio

Date 29 November 1943

~~CONFIDENTIAL~~

TO: Chief, Procurement Division  
Attention: Aircraft Procurement Branch

SUBJECT: Contract W535 AO-30864, XP-77 Airplane

1. Inclosed is a letter from the Bell Aircraft Corporation dated 5 August 1943 setting forth the revised estimated cost to complete the subject contract. It will be noted that the third column under paragraph 2 is entitled, "Estimated cost for Revised Contract". This revision is based on the contemplated partial cancellation of Article 1, Item 1 of the contract involving the reduction in the number of airplanes to be completed. A copy of the I.O.M. to the Termination Unit requesting cancellation of four (4) of the six (6) airplanes now called for under Item 1 is inclosed for your information.

2. It is desired to point out that the Engineering Division is desirous of continuing this project on the basis of a reduction in the number of airplanes and it is therefore requested that your office undertake the necessary negotiations to cover an increase in the estimated cost of \$1,154,778.58.

3. It is further requested that a copy of the A.F.P. covering the above overrun in the estimated cost be prepared and supplied to the Administrative Staff of the Engineering Division.

A. L. BURGENT,  
Colonel, Air Corps  
Chief, Technical Staff

*F. O. CARROLL*  
F. O. CARROLL,  
Brig. General, U.S.A.,  
Chief, Engineering Division.

- 2 Incl. -
- Incl. 1 - Bell ltr. No. 323 dated 5 August 1943.
- Incl. 2 - Cy. of IOM to Termination Unit, Proc. Div. dated 29 Nov. 1943.

MI-272

*CAB*

~~CONFIDENTIAL~~

Signature .....

526A

40



25

XXXXX Command

NRB:afn:50

~~CONFIDENTIAL~~

29 November 1943

Chief, Procurement Division  
Attention: Termination Unit

Contract #535 AC-30364, XP-77 Airplanes

COM. GEN.
TECH. EXC.
ADM. EXC.
C. O.
BUD. OFF.
EXP. ENG.
CONTRACT
INSP.
PROD. DIV.
PROD. ENG.
PROD. CONT.
I. P. S.
A. S. C.
TECH. DATA
CIV. PERS.
OTHERS

1. In accordance with F.O. Memorandum No. 131 dated 1 September 1943, it is requested that your office undertake the necessary negotiations to partially terminate Article 1, Item 1 of the subject contract. This partial cancellation involves the reduction of the number of airplanes being procured under Article 1, Item 1 of the subject contract from six (6) airplanes to two (2) airplanes. It is requested that the Bell Aircraft Corporation be notified of this decision immediately so that all further work in connection with the four (4) airplanes to be cancelled will cease.

2. The estimated reduction in the total cost of the contract brought about by the cancellation of the four (4) airplanes is \$695,000.00.

3. Action taken by your office should be coordinated with the Aircraft Procurement Branch in view of the fact that an I.O.M. has been written requesting that they undertake the necessary negotiations to cover an overrun on the estimated cost. A copy of the I.O.M. to the Aircraft Procurement Branch is inclosed for your information.

*mæ*  
F. C. CARROLL,  
Brig. General, U.S.A.,  
Chief, Engineering Division

1 Incl. -  
Cy. of IOM to Aircraft Procurement Br.,  
Procurement Div., dated 29 Nov. 1943.

MX-272

~~CONFIDENTIAL~~

CENTRAL FILES

**BELL AIRCRAFT CORPORATION**  
NIAGARA PROJECT DIVISION  
2080 ELMWOOD AVENUE  
BUFFALO, N.Y.

ADMINISTRATIVE OFFICES  
NIAGARA FALLS PLANT  
NIAGARA FALLS, N. Y.

August 5, 1945

ADDRESS ALL MAIL  
TO BUFFALO OFFICE

**Subject:** Contract W336 6-30864  
XP-77 Airplanes

**To:** Commanding General  
Army Air Force, Materiel Command  
Wright Field, Dayton, Ohio

**Attention:** Contracting Officer

**Reference:** (a) Materiel Command telegram HHC-T-855 dated August 3, 1945  
(b) Materiel Command letter CLM:mfm:80 dated July 20, 1945  
(c) Bell letter No. 250 RFW:js dated April 29, 1945

**Through:** AAF Resident Representative  
Buffalo, New York

AIRCRAFT PROCUREMENT  
No. PRICE ANALYSIS BRANCH  
Prices Approved 12-4 1945

By \_\_\_\_\_  
Analyst  
By RWB  
Analyst

1. We understand from your telegram, reference (a), and Materiel Command letter, reference (b), that we are to complete only two (2) of the flight articles on the subject contract instead of the six (6) which were originally specified in Item (1). The balance of the items are to be completed as specified in the contract.

2. In answer to the request in reference (b) we have prepared a revised estimate based on our costs to date, plus an estimate of costs to complete the contract in accordance with the above understanding. A comparison of this revised cost breakdown based on partial cancellation, and the final cost estimate as submitted with our letter No. 250, reference (c), is as follows:

	Total Estimated Cost as quoted 4-29-45 Bell letter No. 250	Reduction Thru Cancellation	Estimated Cost for Revised Contract
Direct Labor	\$ 678,574.07	\$ 306,889.89	\$ 369,684.18
Overhead	848,217.59	586,111.11	462,106.48
Tools	78,125.00	---	78,125.00
Engineering Labor	214,079.11	---	214,079.11
Engineering Overhead	74,927.59	---	74,927.59
Direct Material	626,542.62	---	626,542.62
<b>Total</b>	<b>\$2,515,266.06</b>	<b>\$ 696,000.00</b>	<b>\$1,820,266.06</b>
Fixed Fee 5%	85,274.58	---	85,274.58
<b>Grand Total</b>	<b>\$2,600,540.64</b>	<b>\$ 696,000.00</b>	<b>\$1,904,540.64</b>

**CONFIDENTIAL**

PROJECT MX-672

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U.S.C. 50.31 and 52. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

4074  
Bell - June - Dec 1943

27  
BELL AIRCRAFT CORP.  
2000 ELMWOOD AVENUE  
BUFFALO, N. Y.

Subject: Contract W535 ac-30864  
XP-77 Airplanes

August 5th, 1943  
Letter No. 325

3. It will be noted that the \$695,000.00 reduction in costs obtained by this partial cancellation occurs only in the direct labor item and the corresponding overhead. This condition arises from the fact that in most cases our subcontractors have fabricated the majority of the parts ordered from them. In the case of the subcontracts not yet finished, the savings obtained by the immediate cancellation of work not yet completed will probably be more than offset by the cancellation charges incurred by such action.

4. With respect to the proposed reduction of the quantity of spare parts called for on the present Exhibit "A", a similar situation exists inasmuch as expenses have already been incurred to the extent of approximately 90% of the dollar value specified in the present Exhibit "A". The only items of major cost which have not yet been placed in work by the supplier are the Nose Wheel and Main Wheel Struts, and experience indicates that these items are highly desirable to have on hand during the flight testing period of experimental airplanes in order to preclude unnecessary delay in obtaining replacement struts.

5. Regarding the revised delivery dates for the two (2) flight articles and the Wright Field Skeleton airplanes, a definite date upon which the completed articles can be delivered depends upon negotiations now underway for the procurement of completed wings. We are endeavoring to recover from the original supplier not only the fixtures and tools used in the manufacture of the first wing, but also any additional detail parts and subassemblies which might be acceptable for incorporation in the replacement wings. We also intend to secure a new subcontractor for the manufacture of the wings. Although the time of receipt of the new wings is not available as yet we estimate that it will require about eight (8) weeks to complete the first flying article to the point at which the wings may be installed. If the new wings are available to us at that time delivery of the first flying article can be made two (2) weeks from that date. Similarly delivery of the second flying article can be made three (3) weeks after delivery of the first flight article provided the second set of wings is received by us not later than three (3) weeks after delivery of the first set of wings. The delivery of the skeleton airplanes can be made, on the same basis, not later than three (3) weeks after the delivery of the second flight article. Due to the advance stage of completion of the spare parts called for on the original Exhibit "A" these spare parts can be delivered concurrently with the airplanes. As soon as definite information is received from the wing subcontractor we will be glad to submit firm delivery promises based upon these figures.

CONCURRED IN     APPROVED     NOTED

For AAF Resident Representatives:

*Harvey E. Steinberg*

JTB:ma

BELL AIRCRAFT CORPORATION

*Ray P. Whitman*  
Ray P. Whitman  
First Vice President and  
Manager Niagara Frontier Division

**CONFIDENTIAL**

PROJECT No. ~~W-372~~

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U.S.C. 50:31 and 32. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.



AAFMCG-414 WF-6-26-42-100M

*Cont. 700*

*288720*

**CONFIDENTIAL**  
**CHANGE ORDER**

Substituting	Date 12-6-43
Change No. 4	to
Contract No. W 535 ac-30864	
Dated 29 September 1942	

Prepare in Septuplicate  
 Detach no copy.  
 Execute in triplicate  
 C-16895

WAR DEPARTMENT  
 ARMY AIR FORCES  
 MATERIEL CENTER COMMAND  
 WRIGHT FIELD DAYTON, OHIO

TO: Bell Aircraft Corporation, 2050 Elmwood Avenue, Buffalo, New York  
 SUBJECT: Additional Funds  
 AFFECTING: Contract W 535 ac-30864, as amended  
 ORDER:

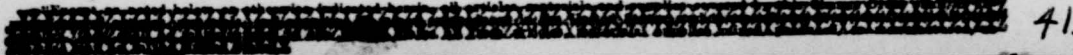
1. Under authority contained in the First War Powers Act, dated December 18, 1941 (Public No. 354 - 77th Congress) and Executive Order No. 9001, dated December 27, 1941, permitting the amending or modification of contracts to carry out the purposes specified in said Act and Executive Order, Contract W 535 ac-30864, as amended, is hereby further amended as follows:

- (a) Article 2 of the subject contract, as amended, is hereby further amended by increasing the total estimated cost in the sum of ----- \$1,154,778.56
- (b) The increase in total estimated cost shall result in no increase in the fixed fee to be paid under this contract.

REASON: The Contractor's original estimates were too low and additional money is urgently needed to complete this contract.

**CONTRACT FILES**

Project No. **W 535 ac-30864**  
 NOTICE: This document contains classified information the disclosure of which to unauthorized persons would be injurious to the national defense. It is to be controlled and distributed in accordance with the provisions of the Espionage Laws of the United States.





Sheet 2.

~~Change No. 4~~ Change No. 4 ✓ Contract W 535 ac-30864. 29

Except as hereby amended, all the terms and conditions of the Contract affected shall remain unmodified and in full force and effect and shall also apply in carrying out the provisions of this Change Order.

Ordered by:  
*Benjamin O. Kessel*  
BENJAMIN O. KESSEL,  
CAPTAIN, AIR CORPS  
Contracting Officer.

1st INDORSEMENT

Buffalo, New York December 17, 1943  
(Place) (Date)

TO: CONTRACTING OFFICER:

1. Contractor or Vendor hereby acknowledges above Change Order ~~in addition to~~  
~~the following items:~~  
~~(a) [REDACTED]~~  
~~(b) [REDACTED]~~  
~~(c) [REDACTED]~~  
~~(d) [REDACTED]~~  
~~(e) [REDACTED]~~  
~~(f) [REDACTED]~~  
~~(g) [REDACTED]~~  
~~(h) [REDACTED]~~  
~~(i) [REDACTED]~~  
~~(j) [REDACTED]~~  
~~(k) [REDACTED]~~  
~~(l) [REDACTED]~~  
~~(m) [REDACTED]~~  
~~(n) [REDACTED]~~  
~~(o) [REDACTED]~~  
~~(p) [REDACTED]~~  
~~(q) [REDACTED]~~  
~~(r) [REDACTED]~~  
~~(s) [REDACTED]~~  
~~(t) [REDACTED]~~  
~~(u) [REDACTED]~~  
~~(v) [REDACTED]~~  
~~(w) [REDACTED]~~  
~~(x) [REDACTED]~~  
~~(y) [REDACTED]~~  
~~(z) [REDACTED]~~

NOTE: Delete words not applicable. In Sections (c), (d) and (f) the word "estimated" must be deleted when a weight and performance has been guaranteed in the original contract.

BELL AIRCRAFT CORPORATION (SEAL)  
(Contractor or Vendor)

APP: 361256

By *Ray P. Whitman*  
Signature of Official with Office held:  
Ray P. Whitman, First Vice President  
2nd INDORSEMENT DEC 22 1943  
(Place) (Date)

TO: CONTRACTOR or VENDOR:

- 1. The terms proposed by you in the first indorsement are (a) accepted by the Government.
- 2. The supplies and services to be obtained by this instrument are authorized by, are for the purpose set forth in, and are chargeable to Procurement Authority. the available balance of which is sufficient to cover cost of same. ACA 1942-14, 2-3010, 611-09 A 212/40705

Approved: *Benjamin O. Kessel*  
Contracting Officer.

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4/D  
XP-77--Cont. 30864  
Proc. 38-1  
MM&D  
CONFIDENTIAL

WD ESSENTIAL AIR MAIL

*file*

In reply please refer  
to: 87 14:SLG:sh  
Docket No. 2589

20 December 1943

Contract No. W 535 ac-30864

Bell Aircraft Corporation  
Buffalo, New York

1. Effective immediately the Government hereby partially terminates contract no. W 535 ac 30864 by reducing the number of airplanes being produced under Article One, Item One, from six (6) airplanes to two (2) airplanes.

2. You are directed to discontinue accordingly all work and the placing of all orders for material, facilities and supplies and cancel all subcontracts in respect to said partial termination, as above indicated. A letter of more detailed instructions will follow.

3. It is requested that you contact District Supervisor, Eastern Procurement District, AAP Materiel Command, 67 Broad St., New York, New York, Attention, District Termination Officer for any information in connection herewith.

JOHN A. CARR  
Captain, Air Corps  
Contracting Officer

Copies to:  
Eastern District Supervisor  
Eastern District Termination Officer  
AAP Area Representative, Buffalo, N.Y.  
Materiel, Maintenance & Distribution  
Finance Officer, Buffalo  
Follow Up, Procurement Division  
Follow Up, Production Control  
Office of Traffic & Transportation, Control Br.  
Inspection Section  
Price Adjustment Office  
Insurance Office, Procurement Div.  
Budget & Fiscal Officer, W. F.  
Fiscal Branch  
Industrial Service Br., R.C.S.  
Redistribution & Salvage Unit  
Statistical Control, Attn.: Lt., Fletcher  
Chief, Engineering Division, Attn: WFR:mfm:50  
Aircraft Procurement, Class 21-A

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HB:hg

4 February 1944

2-944

Bell Aircraft Corporation, Niagara Frontier Division

SUBJECT: Monthly Progress Report  
Contract AC #30864  
Model XP-77 Airplanes  
Bell Aircraft Corporation

TO: Commanding General  
AFM Materiel Command  
Wright Field, Dayton, Ohio  
  
Attention: Chief Eng. Div.

1. Progress on subject contract has fallen behind schedule considerably during the past month. Actual percentages of completion are not available at present but will be submitted by means of Exhibit "C" within the next few days.

2. A large contributing factor to this recent delay in progress is the fact that the first wing panel was not received by the prime contractor until 3 February 1944.

3. Your office has been advised by contractor's letter, JTB:DM, dated 19 January 1944 of the delay in obtaining wings from the Vidal Research Corp., Camden, N. J. and revised delivery dates were set forth therein.

4. Based upon information obtained from the Project Engineer, the contractor expects to have the first Flight Article ready for flight within the next twenty (20) days. However, it is the opinion of this officer that the first Flight Article will not be completed before 1 March 1944.

5. Work on the second Flight Article is progressing normally. The contractor estimates that the second wing will be on hand on or about 1 March 1944. However, considering the delays encountered in obtaining the first wing, it is improbable that the second wing will be completed before 15 March 1944.

6. No accurate estimate of the delivery date of the third wing can be made at the present time. However, upon the receipt of this wing, the contractor should be able to complete the Army Static airplane within two (2) weeks.

7. After a visual inspection of the wing panel now on hand, the Chief Army Inspector on the project reports the quality and workmanship to be greatly improved over former wings obtained from another subcontractor.

*File  
into  
file*

*Orig. then sent to  
Staff to R. 2-8-44*

43

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Progress Report

-2-

3 February 1944

8. Should the First Flight Article be completed before the end of the month, your office will be notified immediately. In the meantime, if additional information is desired every effort will be made to furnish it upon request.

For the AAF Resident Representative:

PAUL H. WOODRUM  
2nd. Lt., Air Corps  
Asst. Exp. Eng. Officer

cc: WPE

**RESTRICTED**

~~CONFIDENTIAL~~

1349



MATERIAL, COVERED TELETYPE SERVICE

CLASSIFIED

THE AIRMAIL CORPORATION  
2050 BROADWAY AVENUE  
NEW YORK

BY CONTRACT AC-30664. CONTRACTOR IS AUTHORIZED TO USE THE PATENT AND  
RIGHTS INVENTED BY THE VITAL RESEARCH CORPORATION FOR THE STIMULANT  
ARTICLE. IT IS REQUESTED THE CONTRACTOR NOTIFY VITAL RESEARCH CORPORATION  
THIS INSTANT AND THAT THE BEST TWO SETS OF THIS PATENT BE ASSIGNED TO  
BY THE ASSIGNED TIME IS REQUESTED TO NOT MORE THAN 25 MINUTES. THE  
ENGINEERING DIVISION, BUREAU OF AERONAUTICS

Copies to:  
Bell- Dayton  
AFM Sec. Mggr.  
Mast. Dist. Supr.  
Mgt. Dist. Eng. Div. Officer  
Col. Both  
Col. Bogert

NY 2256  
01003 R

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1918  
JK

# Bell Aircraft Corporation

NIAGARA FRONTIER DIVISION

3050 ELMWOOD AVENUE • BUFFALO 7, NEW YORK

February 19, 1944

REPRODUCTION OF THIS DOCUMENT WITHOUT THE WRITTEN PERMISSION OF THE BELL AIRCRAFT CORPORATION IS PROHIBITED BY LAW.

ADDRESS ALL MAIL TO COMPANY.  
IN REPLY REFER TO:

**Subject:** Contract W535.40-30864 #392

**To:** Commanding General  
Army Air Forces, Materiel Command  
Engineering Division, Technical Staff  
Wright Field, Dayton, Ohio

**Reference:** (a) Materiel Command letter 7-14:SIG:ah Docket 2389 dated December 20, 1943  
(b) Bell letter No. 383 dated January 19, 1944

**Through:** AAF Resident Representative  
Buffalo, New York

1. We advise in our letter, reference (b), that the delivery dates on subject experimental airplanes will be approximately February 15 on the first flight article, March 28 on the second flight article and April 21 on the third airplane (static test model). Correspondence has been received from the Vidal Research Corporation, manufacturers of the wings for subject airplane, indicating that there will be a farther delay in delivery to us. It is therefore necessary for us to revise our quotation on delivery dates to you to a new schedule as follows:

First Airplane	March 5, 1944
Second Airplane	April 6, 1944
Third Airplane (static test model)	April 30, 1944

2. We ask that you incorporate the above quoted delivery dates in the Change Order to be issued covering the reduction in quantity of airplanes from six (6) to two (2) in accordance with your letter reference (a).

BELL AIRCRAFT CORPORATION

CORRECTED IN  
 APPROVED  
 NOTED  
For AAF Resident Representative

Honey E. Stenberg

T.G. Haantel  
Contract Department

**CONTRACT FILES**  
gdc/perm  
cc-30864 4-18-44

**CONFIDENTIAL**

GWT:ml

~~CONFIDENTIAL~~

**WAR DEPARTMENT  
ARMY AIR FORCES  
MATERIEL COMMAND**

PHB:lh

OFFICE OF THE ARMY AIR FORCES REPRESENTATIVE  
Bell Aircraft Corporation, Niagara Falls, N. Y. 6 March 1944

W769

Subject: Monthly Progress Report, Contract A.O. 30864,  
Model XP-77 Airplanes, Bell Aircraft Corporation.

To: Commanding General  
AAF Materiel Command  
Wright Field  
Dayton, Ohio

Attn: Chief, Engineering Division

1. The first flight article is nearly completed and is due to arrive at the Niagara Falls Airport either today or tomorrow which will be within one or two days of the new scheduled date set forth in Bell letter No. 392 dated 19 February 1944.
2. After the first wing panel arrived from the Vidal Research Corporation, it was found to be  $\frac{1}{4}$ " too thick at the front spar. This necessitated cutting the fuselage and moving the attaching fittings up  $\frac{1}{4}$ ". Because of this the wing panel on this model will not be interchangeable with those on subsequent models.
3. Your office was informed by TWI NYAR 8-2723 dated 3 February 1944 that the time required for gluing the first wing was 40 minutes instead of 15 to 20 minutes as specified and it was suggested that this wing be used for the static test article. On 11 February 1944 authorization was obtained from Wright Field to use the first set of wing panels for flight. However, this officer recommends that the first flight article be restricted from such strenuous maneuvers as dive and spin tests. In fabrication of the second wing panel, the Vidal Research Corporation is taking necessary steps to correct this condition as well as the error in dimension stated in paragraph two.
4. Although authorization for the use of the first wing panel for flight was not obtained for a week, work on the first flight article was not delayed for over  $3\frac{1}{2}$  days as some installations such as landing gear could be made regardless whether the wing was to be used for flight or for the static test article.

Copy to file - Eng. Div. 3-1-44  
**CONTRACT FILES**  
 photo  
 [Handwritten initials and date 3/5/44]

MX-272

~~CONFIDENTIAL~~

47.



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~~CONFIDENTIAL~~

Monthly Progress Report, Contract A.C. 30864  
Model XP-77 Airplanes, Bell Aircraft Corporation

6 March 1944, Cont'd

5. A supplementary report on the first flight article will be submitted as soon as flight is accomplished and from time to time additional reports will be forwarded with details on subsequent flights.

6. Exhibit "C" on subject contract has not as yet been submitted by the contractor but will be forwarded as soon as possible. However, the approximate percentages of completion as of 29 February 1944 on the remaining parts of this contract as obtained by verbal statement from Army Inspection are: Second flight article - 75%; Army static - 79% complete. Exhibit "A" on total subject contract will be forwarded as usual, on or about the 15th of this month.

For the AAF Resident Representative:

*Paul H. Bronnenkant*

PAUL H. BRONNENKANT  
2nd Lt., Air Corps  
Asst. Experimental  
Engineering Officer

RECEIVED  
STATE DEPARTMENT  
cc-EPD  
10  
1444 APR 1

15:53

*29 Mar 44*

RECEIVED  
STATE DEPARTMENT  
10  
1444 APR 1

13:04

~~CONFIDENTIAL~~



VERSION 2800

BELL-CRAFT

5

## BELL AIRCRAFT CORPORATION

NIAGARA FRONTIER DIVISION  
2050 ELMWOOD AVENUE

BUFFALO, N. Y.

March 7 1944

IN REPLY REFER TO

**Subject:** Electrical Retraction for Landing Gear for  
XP-77 Airplanes - Contract W538 ac 30864 No. 394  
ENG:0307:WAP

**To:** Commanding General,  
Army Air Forces Materiel Command,  
Wright Field, Dayton, Ohio.

**Attention:** Lt. Col. M. Cooper

**Through:** Army Air Forces Resident Representative,  
Niagara Falls, N. Y.

1. After the final installation of the manual Landing Gear Actuating System on the XP-77 airplane, and, its subsequent operation and inspection by pilots Stanley and Woolams, it was determined that the hazard to both airplane and pilot was sufficient to necessitate the installation of an electrical retraction system for the operation of this gear.

2. The principal reasons, set forth by our Flight Research staff and further concurred in by Management, were the fact that either on take-off or a forced landing, beyond the bounds of our airport, it would not be possible for the pilot to retract the gear in time to make a belly landing. The lack of ability to make such a belly landing would result in the application of a substantially higher hazard to both the pilot and airplane.

3. Therefore, we are requesting the approval of the Materiel Command to allow the immediate application of an Electrical Retracting System to the Subject airplane prior to the initial flight demonstrations. Our Estimating Department has recently concluded that approximately \$4716.88 will be expended against the Contract in consummating this necessary change.

*ans 3-20-44*

CONCLUDED BY     APPROVED     NOTED

For AAF Resident Representative:

*Harvey E. Steinberg*

BELL AIRCRAFT CORPORATION

*Wm. A. Flourde*Wm. A. Flourde  
Executive Chief Engineer

WAP-c

**CONFIDENTIAL**

Address reply & ENVELOPE to:

Commanding General  
AAF Materiel Command  
Engineering Division  
Technical Staff  
Reference: PBS:MIN:50  
Wright Field, Dayton, Ohio

~~CONFIDENTIAL~~

20 March 1944

Contract W-532-40-30434 - C-47 Airplane  
Electrical Retraction System

Mr. Wm. A. Bourde,  
Bell Aircraft Corporation,  
2050 Elmwood Avenue,  
Buffalo, New York.

ET9162

Reference: Bell ltr. 7 March 1944, ENG:0307:WAP

1. The reference letter made no mention of the conference attended by the Bell & AAF representatives on the subject of landing gear retraction which occurred on 13 October 43 in Mr. R. Whitman's office, Bell Aircraft Corporation, and in which it was decided to retain the manually operated gear until such time as the requirement for a power operated gear became evident. The reference letter gives the impression that pilots have only recently examined the gear and its operation, which is the basis for considering the change to a power operated gear at this time. The Materiel Command, however, is of the same opinion as previously expressed and that is that the airplane should be initially flown with manual retraction for the landing gear. This appears as the most logical way to ascertain whether or not a power operated gear is required.

For the Commanding General:

*Marcus J. Cooper*  
M. S. BETH,  
Colonel, Air Corps,  
Acting Chief, Technical Staff,  
Engineering Division

Copies to:  
AAF Reg. Rep.  
East. Dist. Subr.  
Att: Dist. Eng. Div. Officer  
Bel - Dayton  
Aircraft Laboratory

~~CONFIDENTIAL~~

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P. 975

CABLE ADDRESS  
"BELL-CRAFT"

# Bell Aircraft Corporation

NIAGARA FRONTIER DIVISION

2050 ELMWOOD AVENUE • BUFFALO 7, NEW YORK

March 29 1944

50

**Subject:** Electrical Retraction for Landing Gear for XP-77 Airplane- Contract W535 ac 30864

**To:** Commanding General,  
Army Air Forces Materiel Command,  
Wright Field, Dayton, Ohio.

**Attention:** Engineering Division-Technical Staff

**Reference:** a - Materiel Command letter PBS:MIN:50 dated March 20 1944  
b - Bell letter March 7th 1944 ENG:0307:WAP

**Through:** Army Air Forces Resident Representative,  
Niagara Falls, N. Y.

ADDRESS ALL MAIL TO COMPANY.  
IN REPLY REFER TO:  
No. 404  
ENG:0330:WAP

1. With respect to Reference "b" and in conformance with a telephone conversation between Colonel M. F. Cooper and the writer, on this date, it was decided that it would be satisfactory to flight test the XP-77 airplane with the electrical retraction system which was installed for both pilot and airplane safety for the initial flight tests.

2. Following these initial flight tests, the manual system shall be checked out and evaluated by both Company and Army pilots in order to ascertain whether or not a power operated gear is required.

3. It is regretted that your office was not completely informed of the decisions involving both pilot and airplane safety, at an earlier date, and, action will be taken to prevent a repetition of this condition.

ans. 4/7/44

CONCURRED IN  
 APPROVED  
 NOTED

For AAF Resident Representative:

*Harvey E. Steinsberg*  
HARVEY E. STEINBERG  
1ST LT. AIR CORPS

BELL AIRCRAFT CORPORATION

*A. Flourde*  
A. Flourde  
Executive Chief Engineer

WAP-s

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AAFC-507 W.F. 1-25-42-500M

P. 383

**C O N F I D E N T I A L**

FHB:hg

*[Handwritten signature]*

3 April 1944

*PK*

WAR DEPARTMENT  
ARMY AIR FORCES  
MATERIEL CENTER  
EASTERN PROCUREMENT DISTRICT  
OFFICE OF THE ARMY AIR FORCES REPRESENTATIVE  
Bell Aircraft Corporation, Niagara Frontier Division

SUBJECT: Monthly Progress Report  
Contract W535 AC-30864  
Model XP-77 Airplanes  
Bell Aircraft Corporation

TO: Commanding General  
AAF Materiel Command  
Wright Field, Dayton, Ohio

ATTENTION: Chief, Engineering Division

AC-30864  
**CONTRACT FILES**  
*stale*  
*W.C.*  
*11/18/44-8-44*

*Cy to Eng Div 4-8-44*

1. The First Flight Article of subject contract was delivered to the Niagara Falls Plant of the Bell Aircraft Corporation on 11 March 1944. The airplane arrived complete except for electrical landing gear installation, which was installed at the Bell Experimental Hangar.
2. The remainder of the month was spent in instrumentation and preparation for ground tests and the actual performance of these tests such as flow and pressure, temperature and propeller vibration, etc. The results of all these tests were very satisfactory.
3. On 1 April 1944, the initial flight was made by Mr. J. Woolams, Sr. Experimental Test Pilot. The flight lasted for only twenty-five (25) minutes, due to the weather conditions, wherein the ceiling dropped from 2500 ft. to 1200 ft. accompanied by snow. This flight was purely a shake-down flight with no attempt being made to obtain exact performance data.
4. The pilot reported that the ship handled very satisfactorily with a light control touch and no apparent vices. Engine operation was normal and the cooling system very effective. The pilot further stated that very little effect upon longitudinal stability was caused by the operation of landing gear or flaps during flight. Although no calibrated air speeds were recorded, from ground observation the cruising speed was apparently comparable to that of the P-63 type airplane.
5. The Second Flight Article is far behind schedule, its present status being approximately 78% complete to date. The wing panel for this airplane has not yet been delivered to the prime contractor. However, based on the latest information received from the Vidal Research Corp., Camden, New Jersey, this wing will be ready for shipment from that facility 6 April 1944. The Project Engineer states that the Second Flight Article will be completed three weeks after the receipt of the wing panel, provided that difficulty in fitting the wing to the fuselage is not encountered, as was the case with the First Flight Article. In order to avoid such a condition

*51*



9

Monthly Progress Report

Page 2

3 April 1944

additional precautions are being taken by the sub-contractor and work on this second wing is being closely supervised by Eastern Procurement District personnel. Therefore, no difficulty is expected.

6. Progress on the Static Article of subject contract is also very slow. The airplane, at present, is about 79% complete.

7. Performance reports on subject contract, requested in Wright Field letter WRR:hw:50, dated 27 January 1944, have been accomplished and are inclosed herewith. In the future, reports of this nature will be sent directly to Wright Field by the contractor, unless otherwise directed by your office.

8. Performance data obtained from subsequent flight tests of subject contract airplanes will be forwarded to your office.

For the A.A.F. Resident Representative:

*Paul H. Bronnenkant*

PAUL H. BRONNENKANT  
2nd. Lt., Air Corps  
Asst. Exp. Eng. Officer

RECEIVED  
APR 10 10:40 AM

*Incls. Retained in Fighter Br*

cc: EPD, Dist. Eng. Div.  
Liaison Officer

APR 10 09:11

RECEIVED  
DISTRICT ENGINEER

LEPHONE  
RECORD 1600

CABLE ADDRESS  
"BELL-CRAFT"

# Bell Aircraft Corporation

NIAGARA FRONTIER DIVISION

2050 ELMWOOD AVENUE • BUFFALO 7, NEW YORK

*Contract file*

July 14, 1944

**CONFIDENTIAL**

ADDRESS ALL MAIL TO COMPANY.  
IN REPLY REFER TO:

Subject: Contract W535 ac-30864 No. 435  
Request for Additional Funds

To: Commanding General  
Army Air Forces, Materiel Command  
Wright Field  
Dayton, Ohio

Attention: Contracting Officer

Through: Army Air Forces Resident Representative  
Bell Aircraft Corporation  
Niagara Falls, New York

PROJECT NO. MX-272

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, U. S. C. 50:31 and 52. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

1. An analysis of the delivery status of the subject contract reveals that all contractual items will have been delivered by approximately August 1, 1944. The present delivery status is as follows: Item 1, six (6) XP-77 airplanes; two (2) of these airplanes have been delivered and the remaining four (4) were terminated by Termination Docket No. 2389 dated December 20, 1943. Item 2, one skeleton airplane, will be ready for delivery approximately July 20, 1944. Item 3, full scale wind tunnel model, was delivered on December 7, 1942. Item 4, free spinning model, was delivered on August 15, 1942. Item 5, Wright Field wind tunnel model, was delivered on September 15, 1942. Item 6, engineering data, has all been shipped with the exception of five (5) items which will be delivered on or before July 31, 1944. Item 7, static test article, was delivered during August, 1943. Item 8, mock-up article, was delivered on September 21, 1942. It is anticipated that the balance of the spare parts under Item 9 will be delivered by August 1, 1944.
2. In view of the prospective conclusion of this contract, we have viewed our cost records, and these indicate that we have incurred costs or have outstanding commitments under subject contract totaling \$2,753,224.07. Our present contractual coverage is \$1,819,865.13, not including fee. The estimate attached indicates that we shall over-run our costs under this contract by \$933,358.94. The breakdown of this indicated over-run is attached as Page "A". In Column I is shown the actual estimated cost as at present incorporated in this contract and its modifying change orders. Adding Columns II, III and IV gives the total estimated cost of the completed contract as shown in Column V. The additional amount needed to complete the contract is obtained by subtracting Column I from Column V, or \$1,819,865.13 from \$2,753,224.07, leaving \$933,358.94 over-run as listed in Column VI.

*Y-70252*  
*52*

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11  
**LA. AIRCRAFT CORP.**  
 2000 SLAGBEE AVENUE  
 BUFFALO, N. Y.

**CONFIDENTIAL**

**Subject:** Contract W535 ac-30864  
 Request for Additional Funds

July 14, 1944  
 No. 436

3. As you will note from the attached breakdown, the principal items upon which our costs over-ran the original estimate are (a) overhead, (b) tools, and (c) direct material.

(a) Our revised estimate of August 15, 1943, provided for direct labor overhead at 125%. Our actual overhead rate for the year 1943 was 153%. The overhead costs have constantly changed during the life of this contract. Indications are that we have underestimated our actual costs by approximately \$182,000.00 in overhead alone.

(b) and (c) Tools and direct material. The over-run of our estimate in both our tooling and direct material costs was, to a great extent, due to the many unknowns connected with producing the first successfully constructed molded plywood fighter airplane which we expect will meet the now established design requirements of the Army for molded plywood aircraft.

4. One of the numerous problems requiring solution was a satisfactory method of bonding metal to wood. Research on this particular matter was first attempted at considerable expense by our subcontractors familiar with this type of work, but due to their lack of success, we were forced to take over this development. Numerous test of "cycle-weld" specimens were made by us, and the results have proven this to be the only practical method of bonding wood and metal. Materiel Command personnel have followed these experiments over a period of time, and we understand the answers we obtained have been used on other projects.

5. In common with the industry, we had the problem of using magnesium in aircraft construction. The critical status of aluminum at the time this project was started made this a "must" on our program. Considerable time and expense was devoted to this experimental material, and we developed a method of deep forming magnesium sheet which was the most successful of any known to the industry up to that time. In this experimental work, it was necessary for us to fabricate expensive tooling consisting of Kirksite forming dies in order to form properly the magnesium sheet sections.

6. A very large factor in our over-run of costs on direct material was the very unsatisfactory experience that we had with one of our subcontractors covering construction of the wings. The results obtained were negligible, and the development and production costs were excessive. For a time between June, 1943 and November, 1943, the entire project was held more or less in status quo, pending investigation of this subcontractor by the Army and ourselves. It was then decided during December, 1943 to place this wing manufacturing work with another subcontractor who has since performed satisfactorily.

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- 2 -

Y-70232  
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12

BELL AIRCRAFT CORP.  
2050 ELMWOOD AVENUE  
BUFFALO, N. Y.

~~CONFIDENTIAL~~

Subject:

Contract W535 ac-30864  
Request for Additional Funds

July 14, 1944  
No. 435

7. In view of the foregoing information, we respectfully request that a change order be issued in the amount of \$933,358.94 to cover the over-run of costs on this experimental contract. This additional sum is requested without any additional fixed fee, although additional work beyond that originally contemplated in our first bid estimate has undoubtedly been performed. We ask that this change order be issued at your earliest convenience.

BELL AIRCRAFT CORPORATION

*Ray Whitman*  
Ray B. Whitman  
First Vice President and  
Mgr. Niagara Frontier Div.

GFH:js  
Attachment: Page "A"

~~CONFIDENTIAL~~

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**CONFIDENTIAL**

Attachment Page "A"

CONTRACT W535 ac-30864

11 Aircraft Corporation  
 Niagara Frontier Division  
 60 Elmwood Avenue  
 Buffalo 7, New York

	I	II	III	IV	V	VI
	Present Contract Value Including C.O. Nos. 2 & 4	Actual Cost Report of 6/4/44	Estimate to Complete Contract	Unpaid Purchase Order Commitments	Estimated Total Cost of Completed Contract	Estimated Over-run
Direct Labor	\$ 369,685.18	\$ 351,485.83	\$ 26,655.00		\$ 378,140.83	\$ 8,455.
Overhead	462,106.48	603,590.11	40,782.15		644,372.26	182,265.78
Tools (Including Labor) Material and Overhead	73,125.00	283,033.77	720.00		283,753.77	210,628.77
Engineering Labor	214,079.11	284,800.78	4,842.50		289,643.28	75,564.17
Engineering Overhead	74,927.69	138,732.46	3,292.90		142,025.36	67,097.67
Direct Material	625,941.67	706,191.20	825.00	\$168,000.00 \$112,000.00	987,016.20	361,074.53
Direct Expense		28,272.37			28,272.37	28,272.37
<b>Total</b>	<b>\$1,819,865.13</b>	<b>\$2,396,106.52</b>	<b>\$77,117.55</b>	<b>\$280,000.00</b>	<b>\$2,753,224.07</b>	<b>\$933,358.27</b>

**RESTRICTED**

This represents the full amount of a claim presented to us by the Goshen Veneer Company covering additional charges under our purchase orders with them for the construction of the plywood wing. We feel that these charges are not fair and reasonable, and at the present time have not paid them. Until this claim is finally negotiated, we do have an exposure.

Open and unpaid in our Accounts Payable Department.

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AA Form 107-2-22-42-2000  
AAF Contract Representative  
Bell Aircraft Corporation  
2050 Elmwood Avenue  
Buffale 7, New York

14  
~~CONFIDENTIAL~~

WAR DEPARTMENT  
ARMY AIR FORCES  
MATERIEL COMMAND

HRD:bmd

Attention: Contracting Officer  
OFFICE OF THE ARMY AIR FORCES REPRESENTATIVE 15 July 1944  
Bell Aircraft Corporation, Niagara Frontier Division

CP Subject: Contract W535 AG 30864  
Request for Additional Funds

To: Commanding General  
AAF Materiel Command  
Wright Field  
Dayton, Ohio  
Attention: Contracting Officer

This office recommends the issuance of a change order as requested in Bell Aircraft Corporation letter No. 435 dated 14 July 1944, and has determined that the increase in estimated cost is fair and reasonable.

*H B Davies*

H. B. DAVIES  
Captain, Air Corps  
Contracting Officer

*cont. files*

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used in P-77  
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HEADQUARTERS ARMY AIR FORCES  
ROUTING AND RECORD SHEET

~~CONFIDENTIAL~~

TALLY NO.	3
FILE NO.	

SUBJECT: P-77

TO: Asst C/AS, Materiel, Maintenance and Distribution  
FROM: Asst C/AS, Operations, Commitments and Requirements

DATE 15 JUL 1944

COMMENT NO. 1  
Col Holloway:ajp 72429

1. By directive from Commanding General, Army Air Forces, P-77 aircraft will be tested for fuel consumption and operational suitability at the Army Air Forces Proving Ground Command, Eglin Field, Florida, as soon as possible.
2. It is desired that the three P-77 aircraft which have been built to date be made operational and delivered to Eglin Field for these tests. Tests will be made in an impartial manner at Eglin to show fuel consumption for simulated tactical operations, and actual operational adaptability without prejudice to the acknowledged superiority of this aircraft in most respects to the standard current fighters.
3. It is requested that this office be notified as soon as these aircraft are ready for delivery to Eglin Field.

Fighter & Air Defense Branch W.M. Lane  
Fighter Section W.M. Lane  
Requirements Division B. F. Jate

*Kenneth P. Bergquist*

Kenneth P. Bergquist  
Colonel, Air Corps  
Executive Asst Chief of Air Staff  
Operations, Commitments & Requirements

17893

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54

**CONFIDENTIAL**

HEADQUARTERS ARMY AIR FORCES

**ROUTING AND RECORD SHEET**

TALLY NO.	<i>RAH</i>
FILE NO.	<i>(6)</i>

*orig. 277  
CD. add.  
5-41-44*

SUBJECT: *P-77*

TO: ACAS/OCR/Requirements Division

DATE: *July 1944*

FROM: ACAS/M&S/Materiel Division

COMMENT NO. *2*  
*B* Capt. Bussey/afn/6330

*55*

1. The XP-77 experimental contract calls for two flight articles plus the static test article. To date, only the two flight articles have been completed.
2. Materiel Command was directed 18 July 1944 to make the two experimental articles available to Eglin Field at the earliest possible date. The 1st XP-77 has been delivered to the Materiel Command and functional tests are currently being conducted. This airplane should depart for Eglin Field the last of this week. The 2nd XP-77 is still at the Bell Factory and will be flown to Eglin Field the last of this week or early next week.
3. The 3rd XP-77 is a static test article and will not be available for flight

*R-13057*

*Bus*

*R. C. Wilson, Col. C.*  
R. C. WILSON  
Colonel, Air Corps  
Chief, Devel. Engr. Branch

*452.1 Requirements*

**RESTRICTED**

**FILE**

*Handwritten notes and signatures*

**CONFIDENTIAL**

*55*



AAFMC-241-WF-2-24-11-1432

21  
INTER-OFFICE MEMORANDUM  
ARMY AIR FORCES

Major R. E. Hunt  
Jep:66:stale 2

**CONFIDENTIAL**

Wright Field, Dayton, Ohio  
Date 22 July 1944

555

TO: Chief, Engineering Division  
Attn: Fighter Branch

SUBJECT: Overrun on Contract W535 as-30864

1. Forwarded herewith is copy of Contractor's letter dated 14 July 1944 requesting an overrun on subject Contract in the amount of \$933,358.94. It is requested that the Procurement Division be advised by indorsement hereto as to whether, in the light of the increased cost, the Engineering Division wishes to continue with this contract and have the additional funds made available.

For the Commanding General:

*[Signature]*  
D. C. SWATLAND  
Colonel, Air Corps  
Chief, Procurement Division

56

W/Incl:  
Bell letro. No. 435 d. 7-14-44

1st Ind. Colonel M. S. Both:  
aj:50 - Ext. 2-3217

Engineering Division, Wright Field, Dayton, Ohio - 3 August 1944

To: Chief, Procurement Division, Wright Field.

1. The Engineering Division desires to wind up Contract as-30864 as soon as acceptance flights have been completed. At the present time No. 2 airplane is at Eglin Field undergoing proof testing and No. 1 airplane is at Wright Field undergoing repairs as a result of landing gear failure. These airplanes will be accepted shortly.

2. On 29 May 1943, the cost of these aircraft was \$1,761.88. Delivery was scheduled for 15 June 1943. On 15 June 1943 Bell quoted a cost of \$2,548,540.46 to complete 2 airplanes. On 5 August 1943 quoted a cost of \$1,855,540.46 to complete 2 airplanes. Later correspondence indicated

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Subject: Overrun on Contract W335 ac-30864

1st Indorsement  
Chief, Procurement Division  
3 August 1944

**CONFIDENTIAL**

that it would be just as cheap to complete the two airplanes as it would be to cancel the project inasmuch as Bell had obligated considerable funds to sub-contractors. It appears now that almost an additional million dollars is needed to pay the cost of completing the airplanes which should have been delivered 18 months ago. It is suggested that the Procurement Division investigate this huge expenditure of funds with a view toward closing out the contract as soon as the present two airplanes are accepted.

*M.S. Roth*  
F. O. CARROLL,  
Brig. General, U.S.A.,  
Chief, Engineering Division.

Copy to:  
Fighter Br., Aircraft Proj. Sec.

W. S.  
Chief, Aircraft Project Section

1 Incl.  
n/o

2nd Ind.

Major R. E. Hunt  
vmo:86 Tel. 2-5243

Chief, Procurement Division, Materiel Command, Wright Field, Ohio. 9-5-44

TO: Chief, Engineering Division - Attention: Colonel M.S. Roth

1. In accordance with request contained in 1st Indorsement above, Procurement Division requested the local Contracting Officer at Bell Aircraft Corporation to make a thorough investigation of the overrun request contained in contractor's letter No. 435 dated 14 July 1944. The reply of the local Contracting Officer as set forth in his 1st Indorsement dated 2 September 1944 is attached hereto.

2. It will be noted that he recommends an increase in the funds allotted to this contract in the amount of \$833,335.23; this is a reduction of approximately \$100,000 from the contractor's request of \$933,358.94. The reduction was made in the unpaid commitments since it was believed by the Contracting Officer that less additional funds would be required to

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<sup>191</sup>  
**CONFIDENTIAL**

Subject: Overrun on Contract W535 ac-30864

2nd Indorsement  
Chief, Engineering Division  
5 September 1944

complete the Project. The contractor advises that he is willing to accept the increase in this lesser amount provided that the Air Technical Service Command realizes that this represents a very close estimate and that if any costs are greater than anticipated that another overrun request will be necessary to complete this Project.

3. It will be noted that there is included in this overrun request a sum of \$168,000 covering a claim of the Goshen Veneer Company. The exact amount in which this claim will be allowed cannot be ascertained at this moment; this claim is receiving the attention of the Assistant, Chief of Air Staff, M&S, and the amount will be definitely resolved in the near future.

4. Advice is requested as to whether the Engineering Division wishes the Procurement Division to make additional funds available as recommended by the local Contracting Officer.

For the Director:

*Orval R. Cook*

ORVAL R. COOK  
Brig. General, U.S.A.,  
Chief, Procurement Division.

Encl: Add:  
1st Inds. dtd 8-23 & 9-2-44  
fr Capt. H.B. Davies, Cont. Officer

Capt. G. D. Colchago *Handwritten*  
MTC:50  
Ext. 2-5236

3rd Ind.

Engineering Division, Wright Field, Dayton, Ohio - 23 September 1944

To: Chief, Procurement Division, Wright Field

1. It is desired to complete this project and, therefore, it is requested that your division prepare the necessary Authority for Purchase in the amount of \$833,335.23 to cover the estimated overrun.

*F. O. Carroll*  
F. O. CARROLL,  
Brig. General, U.S.A.,  
Chief, Engineering Division.

3 Incls:  
n/c

**RESTRICTED  
CONFIDENTIAL**





AAFDG-6WP-5-21-44-100X

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~~CONFIDENTIAL~~

W-446

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WAR DEPARTMENT  
ARMY AIR FORCES  
MATERIEL COMMAND

PRB:lh

OFFICE OF THE ARMY AIR FORCES REPRESENTATIVE

Bell Aircraft Corporation, Niagara Falls, N. Y. 4 August 1944

Subject: Monthly Progress Report - ~~Contract AC 30864~~  
Model XP-77 Airplanes, Bell Aircraft Corporation

To: Commanding General  
AAF Materiel Command  
Wright Field  
Dayton, O.

Attn: Chief, Engineering Division



AC-30864  
CONTRACT FILES  
8-8-44

Cy to [unclear] - Long Dew

1. Subject contract is now completed. The second flight article was delivered to Wright Field 21 July 1944 and the Army static article was sent to Wright Field 20 July 1944.

2. During the past month several flights were made in the second flight article at the Niagara Falls Airport by Bell Aircraft experimental test pilots. Spin tests were witnessed by this officer wherein spins were done to the right and to the left working up to three turns in each direction. All spins were violently oscillatory but from observation and the pilot's report, recovery was rapid and positive.

3. With the exception of a few familiarisation and check flights the rest of the flights were for the purpose of obtaining performance data. All data from these tests were recorded and figures are to be furnished to Wright Field by the contractor.

4. The final expenditure report (Exhibit "A") for subject contract will be forwarded as soon as it can be obtained from the contractor's Statistics and Reports Group.

For the AAF Resident Representative:

*BR*

*Paul H. Bronnenkant*

PAUL H. BRONNENKANT  
2nd Lt., Air Corps  
Experimental Engineering Officer



cc-EPD, Attn: District Engineering  
Div. Liaison Officer

~~CONFIDENTIAL~~

58



~~CONFIDENTIAL~~

HEADQUARTERS OF THE MATERIEL COMMAND VMO:86 / 25243



WRIGHT FIELD, DAYTON, OHIO  
9 August 1944

Subject: Overrun on Contract W535 ac-30864

To: Army Air Forces Resident Representative  
Bell Aircraft Corporation  
2050 Elmwood Avenue  
Buffalo, New York

Attention: H. B. DAVIES  
Captain, Air Corps  
Contracting Officer

1. Under date of 14 July 1944, contractor's letter No. 435 requested an overrun in the amount of \$933,358.94. In view of the fact that a year ago contractor estimated a total cost on this project of \$1,853,540.16 at a time when the project was fairly well advanced, it is requested that a careful study be made of the contractor's current request to determine the propriety of granting this overrun.

2. It is requested that this matter be expedited insofar as possible.

By Command of Brigadier General WOLFE:

*[Signature]*  
D. C. SWATLAND  
Colonel, Air Corps  
Chief, Procurement Division.

cc:  
E.D. Superv.



~~CONFIDENTIAL~~

1-70231  
1-1443  
59.

1 - (1/270) ADDRESS REPLY TO  
 COMMANDING GENERAL, ARMY AIR FORCES  
 WASHINGTON 25, D. C.

~~SECRET~~

ATTENTION:

HEADQUARTERS, ARMY AIR FORCES  
 WASHINGTON

18 AUG 1944

MEMORANDUM FOR THE CHIEF OF AIR STAFF:

Subject: P-77/ Test at Eglin Field.

x452.04 x686

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I. Discussion.

1. The P-77 is a Bell Single Engine aircraft, powered by Ranger V-770-17. Its fuel capacity is 53 gallons internal, and 38 gallons in one external drop tank. Armament consists of two .50 caliber guns. Maximum bomb load is 325 pounds. Gross weight is 3,857 pounds. Aircraft construction is wood fabrication.

2. Test just completed at Eglin Field has furnished the following performance data:

a. <u>HIGH SPEED:</u>	Sea Level	-	304 mph
	5,000 ft	-	316 mph
	20,000 ft	-	295 mph
	30,000 ft	-	258 mph
b. <u>RATE OF CLIMB:</u>	Sea Level	-	2,900 ft per min
	10,000 ft	-	2,100 ft " "
	26,000 ft	-	500 ft " "
c. <u>TIME TO CLIMB:</u>	10,000 ft	-	in 4 minutes
	20,000 ft	-	in 11 "
	30,000 ft	-	in 32 "

3. Above performance is with maximum power. War Emergency Power (3,300 RPM and 57") is available up to 2,000 feet, above which the manifold pressure drops off rapidly. Maximum manifold pressure available at 25,000 feet is 23".

a. <u>COMBAT RADIUS</u>	10,000 ft (best alt)	-280 miles
<u>OF ACTION:</u>	25,000 ft	-173 "

II. Conclusion.

While the fuel consumption of the P-77 is very low, its performance and armament are so inferior to our own and enemy fighters, that its use in combat should not be contemplated.

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III. Action recommended.

That no further consideration be given to the production of this airplane.

*Kenneth P. Bergquist*

Kenneth P. Bergquist  
Colonel, Air Corps  
Executive, Ass't Chief of Air Staff  
Operations, Commitments & Requirements  
Acting Chief, OC&R.

~~SECRET~~

SAS 400.112 (13)

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**SECRET**

original  
452.1 E P-77  
C.A. 222  
ADDRESS REPLY TO  
COMMANDING GENERAL, ARMY AIR FORCES  
WASHINGTON 25, D. C.



HEADQUARTERS, ARMY AIR FORCES  
WASHINGTON

23 AUG 1944

ATTENTION:

X 300.6

MEMORANDUM FOR THE CHIEF OF AIR STAFF

SUBJECT: P-77 Performance Data With V-770-9 Engine.

X 452.13

1. The following data are contained in the Model Specification for this airplane with the XV-770-9 engine installed as estimated by the manufacturer and supplement the information submitted by memorandum to you, subject: "P-77 Test at Eglin Field" dated 18 August 1944 from Assistant Chief of Air Staff, OC&R:

- A. High Speed:
  - Sea Level - 329 mph
  - 5,000 ft. - 346 mph
  - 20,000 ft. - 397 mph
  - 30,000 ft. - 418 mph
- B. Rate of Climb:
  - Sea Level - 3,050 ft. per min.
  - 10,000 ft. - 2,840 ft. per min.
  - 20,000 ft. - 2,010 ft. per min.

2. The above data are based on the V-770-9 single stage, two speed engine at Military Power and are considered very optimistic. No other data exist because plans were cancelled for the installation of the XV-770-9 planial supercharged engine which is still in the experimental stage of development. Also, no War Emergency Rating has been established for this engine.

3. This office concurs with the conclusion and action recommended in the referenced memorandum from Assistant Chief of Air Staff, OC&R.

*E. M. Powers*

E. M. POWERS  
Brigadier General, U. S. A.  
Deputy Asst. Chief of Air Staff,  
Material and Services

452.1 Pursuit

19 Inform those at requirements meeting of the above decision  
MMP

Aug 22/44

**SECRET**



*1108/10/44*

*R*

~~CONFIDENTIAL~~

Overrun on Contract  
W535 AC 30864

1st Ind.

Capt. H. B. DAVIES  
bmd; Contracting Officer

Contracting Officer, Bell Aircraft Corporation, 2050 Elmwood Avenue,  
Buffalo 7, N. Y. 2 September 1944

TO: Commanding General, AAF Materiel Command, Wright Field, Dayton,  
Ohio. Attention: Chief, Procurement Division

*30864 contract*

1. The contractor exceeded the estimated costs on the subject contract mainly due to their experience in constructing a plywood airplane and their very poor experience with their principal vendor, namely the Goshen Veneer Company, who were never able to deliver satisfactory material. This vendor was on a Time and Material basis, because, at the time the order was placed, the vendor did not have sufficient experience to construct plywood wings and empennage. Considerable difficulty was experienced by the prime contractor in the construction of the fuselage and other plywood parts of the airplane.

2. The contractor has expended in excess of the original estimated cost, as of 6 August 1944, \$641,856.29 of costs that have been determined to be reimbursable if the estimated cost is increased. In addition to this amount the contractor has requested the additional amount of \$168,000 to cover a claim of the Goshen Veneer Company. The Contracting Officer does not believe Bell Aircraft Corporation is obligated to pay any of this amount after inspecting the claim of the Goshen Veneer Company. The open purchase commitments on this contract as of 1 August 1944 were \$25,478.94. These items in total should represent the additional amount asked by the contractor to complete the contract.

3. The contractor has or will have exceeded the estimated cost of this contract in the amount of \$833,335.23 when all costs have been accumulated.

*H B Davies*  
H. B. DAVIES  
Captain, Air Corps  
Contracting Officer

cc: EPD Superv.

Incl. (1)  
copy of 1st Ind. dated 8.23.44

*4873*

*V-70233*  
~~*V-70233*~~  
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SEE 2nd INDORSEMENT TO DOCUMENT NO. 56

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SEE 3rd INDORSEMENT TO DOCUMENT NO. 56

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WDAC-1-WF-1-1-2-200M

# TELETYPE MESSAGE

**PRIORITY**

DATE: 2 October 1944

FROM: Engineering Division

ATTENTION: ACAS/PAS  
Development Engineering Branch

F. O. CARROLL  
Brig. General, U.S.A.

TSMAP-549... MILLY FIELD REPORT STATES NO. 2 AIRCRAFT, PROPERT XL-278, STATIONED  
THERE FOR EVALUATION IN TESTING SPUN IN AND CRASHED. PILOT BAILED OUT AND IS  
UNIDENTIFIED. MORE DETAILED INFORMATION WILL FOLLOW. END. AAKCC

WOLFE - MEMPHIS, AIR TECHNICAL SERVICE COMMAND

Copies to:  
Col. Roth  
Gen. Carroll

*pls  
info for  
gen*

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Address reply & ENVELOPE to: *109 27*

Director  
Air Technical Service Command  
Reference: TSUNG (TSEAP-3)  
Wright Field  
Dayton, Ohio

Supt. G. D. Cole  
FKK: Ext. 2-5236

HEADQUARTERS, AIR TECHNICAL SERVICE COMMAND

11 October 1950

*ms* Contract W535-AC-30864 / XP-77 Airplane  
Disposition of T6018

Commanding General  
Army Air Forces  
Washington 25, D. C.

Attention: AC/AS, M. & S.,  
Development Engineering Branch

- 1. Recently all activity concerning the subject contract has been directed with a view to an early termination.
- 2. The Air Technical Service Command has now been requested to make recommendation for disposition of special tools, templates, jigs, fixtures and kirksite dies used in production of the subject airplanes.
- 3. Therefore, to facilitate disposition, information is requested relative to the effect the evaluation testing of the subject airplane which recently took place at Eglin Field will have on the contemplated action as stated in Paragraph 2.

For the Director:

*283*  
F. D. CARROLL  
Brigadier General, U. S. A.  
Chief, Engineering Division

OCT 11 1950

10.28.

NY-272

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CH. STAFF
DEP. CH. STAFF
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ADJ. GEN.
EXEC. PROC.
AIR. INSP.
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COMPTROLLER
C. O.
SUD. OFF.
PERS. SEC.
ENG. DIV.
PROD. DIV.
INSP. DIV.
PROC. DIV.
OTHERS

*Handwritten signatures and initials in the routing column*

*Handwritten number 66*

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AAFORM-4144

437A

cb

Executed in triplicate	
C	234.00
Class	01-A

**CHANGE ORDER**  
**ARMY AIR FORCES**  
 Air Technical Service Command  
 Wright Field, Dayton, Ohio

Date	14 October 1944
Change Order No.	10
Contract No.	W 535 ac-30864
as amended	

To: Bell Aircraft Corporation, 2050 Elmwood Avenue, Buffalo 7, New York

SUBJECT: Increase of Allotment

1. Contract W 535 ac-30864, as amended, is hereby further amended as set forth hereinbelow:
    - a. The total amount allotted to this Contract is hereby increased in the sum of ----- \$833,335.23
    - b. The fixed fee specified in Article 3 shall not be increased by reason of this Change Order.
- REASON: The Contractor's original estimates were too low and additional funds are required to pay the amounts due the Contractor under this Contract.

AAFMG-414B

32

		increase		\$ _____
Total	in	estimated cost		\$ <u>Nothing</u>
	decrease	fixed fee		\$ <u>Nothing</u>

This Change Order was negotiated under authority contained in the First War Powers Act, 1941, and Executive Order No. 9001, 27 December, 1941.

Except as hereby amended, all terms and conditions of the Contract affected, as heretofore amended or modified, shall remain unmodified and in full force and effect and shall also apply in carrying out the provisions of this Change Order.

UNITED STATES OF AMERICA

OCT 18 1944  
(Date)

BY: /s/ Alton S. Wolfert  
Contracting Officer.  
ALTON S. WOLFERT, 2nd LT., AIR CORPS

1st INDORSEMENT

Buffale, New York      October 16, 1944  
(Place)                                  (Date)

TO: CONTRACTING OFFICER:  
acknowledges

1. Contractor hereby accepts the above Change Order.

Bell Aircraft Corporation      (SEAL)  
(Contractor)

BY: /s/ Charles L. Beard  
(Signature of Official with Office Seal)  
Charles L. Beard  
Vice-President

AFP No: 373023

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 allotments, the available balances of which are sufficient to cover cost of same:

212/50705, 502-5150 P 611-09 S 33-038



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2  
Subject: Surplus special tools for XP-77 Airplane

1st Ind.

*G.D.C.*  
Capt. G. D. Colohagoff  
FKK: TSEAP-3 Ext. 2-5236

TSENG 16 October 1944

To: TSEPD Attention TSEPD3

1. This Division is inclined to concur in the disposition of tools, dies and fixtures pertaining to the XP-77 Airplane; however, before making a definite recommendation, the plans of the AC/AS, M&S regarding this airplane have been requested in as much as the development of this type airplane was directed by that office and lately there has been an indication of a revived interest in the airplane on the part of the Training Command.

2. It is therefore suggested that action on disposition of tools, etc. be held in abeyance until this Division obtains an expression from Higher Authority.

M. S. ROTH  
Colonel, Air Corps  
Chief, Aircraft Projects Section  
Engineering Division

*Basic Communication 10-9-44*

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<sup>6</sup>  
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HEADQUARTERS  
ARMY AIR FORCES PROVING GROUND COMMAND (34)PG:bmh  
EGLIN FIELD, FLORIDA

17 October 1944.

SUBJECT: Capabilities of the XP-77 as a Training Airplane.

TO: Commanding General,  
AAF Technical Service Command,  
Wright Field, Dayton, Ohio,  
Attn: Engineering Division, Aircraft Projects  
Section, Fighter Branch.

1. In accordance with verbal request from Liaison Officer, Air Technical Service Command, the following comments are made regarding the capabilities of the P-77 airplane as an advanced trainer:

a. Poor Take-off and Landing Characteristics.--Due to the mushy feel at low speeds, it is necessary to land the airplane at speeds about 20 mph higher than current fighter types. There is not sufficient elevator control to hold the nose wheel off the ground, and the nose falls through as soon as the main wheels touch. With all three wheels on the runway, the drag of the airplane is low, and an excessively long distance is required to bring the airplane to a stop. The take-off run is excessively long, as the airplane does not become airborne until about 130 mph is attained.

b. Unsuitable Handling Characteristics.--Although the airplane is statically stable about all axes, it combines very light stick forces with extremely rapid response. The effectiveness of the controls is so great as to give the impression of instability. These characteristics are not dangerous to an experienced fighter pilot, but the extreme sensitivity of the airplane would provide many opportunities for an inexperienced pilot to get in trouble. The elevator trim tab is not sufficient to trim the airplane for high speeds. No aileron or rudder trim are provided. Lateral and directional trim are unnecessary in this airplane, because of the very light aileron and rudder forces, but this detracts from the value of the airplane as a trainer.

c. Unsuitability for Gunnery.--The airplane is entirely unsuited for gunnery work, having very little visibility over the nose (about two degrees). The airplane's extreme sensitivity makes it a poor gunnery platform; the very light rudder forces result in a tendency to yaw the airplane inadvertently.

*Orig to PG 11-8-44  
del base-2 ltr (mrs) 11-4-44*

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Ltr fr Col C B Overacker to CG AAPTSC Wr Fld Dayton Ohio Attn  
Eng Div A/C Proj Sect Fighter Branch dtd 17 October 1944 Subj  
Capabilities of the XP-77 as a Training Airplane (Cont'd)

d. Low Ceiling.--The airplane is equipped with a sea level engine, which gives good performance up to about fifteen thousand feet. A fighter trainer of this type should provide good altitude performance so that it can be used for oxygen indoctrination.

e. Insufficient Ruggedness and Durability.--During the tests conducted at this station, the airplane was continually out of commission for repairs to minor items such as cowling formers, oil cooler mountings, exhaust stacks and shrouds, and landing gear door fittings. Many of these failures appeared to be the result of vibration. Although no failures of landing gear structural members were encountered, it is doubtful if the airplane would stand up under continuous rough landings. Wooden construction is considered unsuitable for a trainer; repairs are difficult, and it is doubtful if the airplane could withstand a belly landing. The whole airplane is too delicate to stand the rough handling that a training airplane is required to withstand.

For the Commanding General:

9525  
C. B. OVERACKER,  
Colonel, Air Corps,  
Director, Proof Division.

cc: Captain W. A. Pomeroy,  
Liaison Office,  
Wright Field, Ohio.

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~~CONFIDENTIAL~~  
1st Ind. AFDMA-AF

Headquarters, Army Air Forces, Washington, D. C., 26 October 1944

TO: Director, AAF - Air Technical Service Command, Wright Field  
Dayton, Ohio.  
Attn: Engineering Division (TSENG)

Evaluation report for subject airplane indicates this airplane  
does not meet military requirements. There will be no additional  
procurement of the P-77 type airplane.

By command of General ARNOLD:

R. C. WILSON  
Colonel, AC  
Chief, Aircraft Projects Br.  
Materiel Division  
AC/AS, Materiel & Services

*See Tseeng-AC ltr (ydc) 10-11-44*

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AAFMC-268-A-W-P-B-28-42-750M

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INTER-OFFICE MEMORANDUM  
ARMY AIR FORCES  
HEADQUARTERS CENTER ATSC  
Office of The Commanding General

Capt. G. D. Colchagoff  
KK: Ext. 2-5236

Wright Field, Dayton, Ohio

Date 26 October 1944

TO: TSBUY

SUBJECT: IP-77 Airplane  
AAF Serial No. 43-34916

1. The subject airplane was completely destroyed in a crash at Eglin Field, Florida while being flown by an approved Army Air Forces pilot.

2. Inasmuch as the Government does not desire to have this airplane repaired or replaced under the terms of the subject contract, it is requested that action be taken to accept the subject airplane as of 12 July 1944, the date this airplane departed from the contractor's plant for Eglin Field, Florida.

M. S. ROTH  
Colonel, Air Corps  
Chief, Aircraft Projects Section  
Engineering Division

Copy to:  
TSCU-98 T6C5U-5C  
Att: Mr. Shuler

*gdy/abbl*

*See Comment #1 for Prod Sect. 11-2-44*

*See Comment #2 (ffa) 11-6-44*

EX-272

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Signature .....

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BELL AIRCRAFT CORPORATION

NIAGARA FRONTIER DIVISION

2050 Elmwood Avenue Buffalo, New York

October 28, 1944

Subject: Contract W535 ac-30864 Termination

To: Director  
AAF, Air Technical Service Command  
Procurement Division  
Wright Field, Dayton, Ohio

Attention: Major R.E. Hunt  
Contracting Officer

Reference: (a) Materiel Command letter 37-14:LG:ah  
dated December 20, 1943  
(b) Materiel Command letter, 88-24:mCF:gg  
dated March 28, 1944

Through: Army Air Forces Resident Representative  
Buffalo, New York

Your letters, referenced (a) and (b), reduced the quantity of flying articles from six to two, under Article 5, "Changes", and assigned Termination Docket No. 2389 to this reduction.

The first flying article was delivered and accepted by the Government. The second flying article was delivered and before final acceptance by the Government at Wright Field, crashed during Government tests at Eglin Field.

Our records indicate that all spare parts and technical data called for under this contract have been delivered.

In view of the conditions brought about by the crash of the second flying article and in order that we may negotiate a final settlement of this contract, we would appreciate receiving a complete termination under Article 8.

BELL AIRCRAFT CORPORATION

T.G. Haertel, Manager  
Contract Department

GFH:kh

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W535 AC 30864

1st Ind.

Capt. H.B. DAVIES  
bmd; Contracting Officer

Contracting Officer, Bell Aircraft Corporation, 2050 Elmwood Avenue,  
Buffalo 7, N.Y. 30 October 1944.

TO: Director, Air Technical Service Command, Wright Field, Dayton,  
Ohio. Attention: Procurement Division.

The contractor's request for a complete termination of subject  
contract is forwarded herewith under the belief that the Government  
would be better protected and the termination could be better nego-  
tiated under a complete termination than under the termination as  
it now exists.

H.B. DAVIES  
Captain, Air Corps  
Contracting Officer

cc: EPD

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**CONFIDENTIAL**

Termination of  
Contract W535 ac-30864

TSENG  
Attn: Maj. J.F. Aldridge

TSPR3F2  
Maj. R.E. Hunt

2 November 1944  
Maj. Hunt/vac  
2-5243

1. Subject contract has been terminated and the number of airplanes to be produced thereunder reduced from 6 to 2. Of these 2 airplanes, one has been delivered and accepted and the second airplane crashed. Under date of 26 October 1944, the Chief, Aircraft Project Section, Engineering Division requested that this crashed airplane be accepted also.
2. Forwarded herewith is contractor's letter dated 28 October 1944 requesting that instead of accepting this crashed airplane, the contract be totally terminated. This will allow the contractor to enter into an overall settlement agreement so that a cleanup on this contract can be effected.
3. It is believed that the total termination will greatly simplify administrative problems of handling the remainder of the contract. If this procedure meets with the approval of the Engineering Division, an IOM setting forth the request should be addressed to Chief, Procurement Division, attention TSPR3F2.

GEORGE E. PRICE  
Colonel, Air Corps  
Chief, Production Section  
Procurement Division

Attaches:

- Bell Ltr dtd 10-28-44
- w/let Ind. dtd 10-30-44
- IOM fr TSENG dtd 10-26-44

*See Attn R's R sheet Comment #2 11-6-44*

**CONFIDENTIAL**

Y. 18527  
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Termination file

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MAJOR GLENN V. WALLS  
Eastern Branch - Tel Ext 32316  
Rocket No. 2389

//////  
Air Technical Service Command

2 November 1944

Captain Charles V. Boons  
Technical Executive  
Termination Section

Contract No. 535 ac-30854  
Bell Aircraft Corporation

1. Last week, Major Hatfield requested Major Walls to ascertain if a notice of total terminations would be issued in this case. This was pursuant to telephonic request of Major Laughlin, Eastern Procurement District.
2. This was a GTF experimental contract for 6 P77 airplanes, spare parts and technical data. Rocket 2389 is a partial termination covering 4 planes.
3. Discussion was had with Major Hunt, who suggested information be sought from Mr. Paul Smith, Fighter Branch, Ext.-23230. Mr. Smith advised that as to the 2 remaining planes, one has crashed and the other was in a hangar at Wright Field. He further advised that procedure has been instituted to accept the crashed plane; that the other plane also would be accepted in the near future; that the technical data was desired, and that nothing could be terminated.
4. On 31 October 1944, this information was given to Major Laughlin. He advised that Washington was interested in winding up this contract and he urged that Procurement be requested to refrain from accepting the remaining planes.
5. Paul Smith was again contacted on 2 November, and again he advised that the 2 planes and data would be accepted.
6. In view of the above facts, there appears to be no basis for securing a total termination of this contract.

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**RESTRICTED**  
GLENN V. WALLS  
Major, Air Corps  
Eastern Branch  
Field Service Unit

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8  
MATERIAL COMMAND ROUTING AND RECORD SHEET

- INSTRUCTIONS:
1. Use full addresses for sender and addressee to facilitate mailing.
  2. Draw line across page after each comment.
  3. Use whole sheet, both sides.
  4. If addressed to two or more offices, first office receiving will readdress to next office on list.
  5. See Office Memorandum 10-1 for full instructions.

Subject:

Comment Number	To:	From:	Date Dict. By Phone No.
-------------------	-----	-------	-------------------------------

*See Comment #1 per Pool Div 11-2-46*

---

2	TSBPR372 Att: Maj. R. E. Hunt	TSSES-20	6 Nov. 1946 Maj. J.F. Aldridge 2-5236
---	----------------------------------	----------	---

1. The Engineering Division concurs in the procedure recommended above for total termination of Contract W535-AC-30864.

F. O. CARROLL  
Brig. General, U.S.A.  
Chief, Engineering Division

Incls:  
No Change.

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(Start comments on other side at this end)

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AAFMC-288-A-WF-8-25-42-750M

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INTER-OFFICE MEMORANDUM  
ARMY AIR FORCES  
~~Hq. Army Air Forces ATSC~~  
Office of The Commanding General

Major J. P. Aldridge  
FKK: Ext. 2-5236

Wright Field, Dayton, Ohio

Date 6 November 1944

~~CONFIDENTIAL~~

TO: TSRPD, Property Disposal Section  
Attention: TSRPD-3

SUBJECT: Special tools, dies, jigs and fixtures  
for IP-77 Airplane, Contract #535-AC-30864.

1. Confirming telephone conversation between members of  
TSRPD-3 and TS&SE-2C on 28 October 1944, with reference to your  
I.O.M. dated 3 October 1944, authorization has been received from  
AC/AS, W&S to completely dispose of the subject special tools, dies,  
jigs and fixtures as at the present time all activity concerning  
the subject contract has been directed with a view to an early term-  
ination.

2. Accordingly, the above information should enable your office  
to make the proper classification of this special tooling etc.

H. Z. BOGERT  
Colonel, Air Corps  
Chief, Service Engineering Section  
Engineering Division

MK-272

*Ho Kern*

Y-77943

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Signature .....

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202.1-11 ✓  
Dec 1944

RETURN TO  
Historical Research Division  
3825/HOA  
Maxwell AFB, AL 36112

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APPROVED BY AUTHORITY

Mr. C. G. Miller

18 27 1950

Date

Mr. C. G. Miller