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27 Mar 1959

MEMORANDUM FOR THE CHIEF OF NAVAL OPERATIONS

Via: Vice Chief of Naval Operations

Subj: MINUTEMAN information obtained from Rand Corporation and BMD, USAF

Encl: (1) Highlights of Navy Team Visit to Rand Corporation and BMD, USAF to Obtain Information on MINUTEMAN, 17-18 March 1959

1. On 17 and 18 March 1959 a Navy team led by RADM K. S. MASTERSON, USN visited the Rand Corporation, Santa Monica, and the Ballistic Missile Division, USAF, Inglewood, respectively to obtain detailed information on the MINUTEMAN missile program. Broadly speaking, the effort was not successful in the sense that both agencies insisted that either they were not familiar with the details of the program (Rand) or it was too early in the program to provide definitive answers to many of the Navy questions (BMD). This was particularly true in the area of costs.

2. Both the Rand Corporation and BMD personnel were pleasant despite an obvious atmosphere of tension. No acrimonious exchanges took place. Both groups were informed that the reason for the visit was to obtain factual, detailed information on the MINUTEMAN program in order to provide the Chief of Naval Operations with the data he required to assist in making informed decisions as a member of the JCS. It was further stated that the MINUTEMAN information currently available to the Navy was conflicting and not in sufficient detail to sort out the conflicts. Also, that on the completion of the visit, questions would be submitted by the Navy to the Air Staff on any MINUTEMAN item about which uncertainty remained (there will be a fair number of these).

3. Highlights of the information obtained at Rand and BMD are forwarded as enclosure (1) (a more detailed report is under preparation).

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K. S. MASTERSON
By direction of Deputy
Chief of Naval Operations (Air)

AUTHENTICATED:

P. H. Backus

P. H. BACKUS
COMMANDER, USN

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Highlights of Navy Team Visit to Rand Corporation and BMD, USAF to Obtain Information on MINUTEMAN, 17-18 March 1959

1. Rand Corporation - 17 March 1959.

a. Manning levels - Air Force goal of seven men per emplaced missile will probably be degraded greatly.

b. MINUTEMAN Target System - Indefinite; either soft area targets (cities) or hard fixed point targets.

c. Accuracy. Air Force statement that a ½ NM CEP is achievable by 1965 is nonsense. Achievement of 1 NM CEP by 1963 is doubtful.

d. Development time scale vs missile characteristics - A MINUTEMAN missile with a gross take-off weight of 85,000-90,000 pounds by 1963 (IOC) is about right. (Air Force claiming they can attain a 65,300 pound missile with a range of 5500 NM by 1963.)

e. Silo Launching - Neither silo nor silo hatch is designed. Length of time hatch will be open unknown. Shock mounting of missile in silo a big problem and may turn out to be Achilles heel of hardening.

f. Missile (electronics) vulnerability to a nuclear fall-out field - Unknown. Shielding against nuclear fall-out radiations will not be incorporated in initial operational missiles.

g. Missile vulnerability during initial portions of trajectory to nearby enemy nuclear detonations - Unknown. Probably bursts within three to four miles would be lethal.

h. System reliability - once in hole and checkout lights all show green, what percentage would fly hot, straight and normal if button were pushed? - About 2/3.

i. System reliability - what are the trade-offs between downtime for maintenance, logistic back-up factors including manpower, system specifications, etc? - Rand would not answer questions on this because they are in the process of studying the trade-offs and their evaluation had not been completed.

j. Effects of system reliability on force levels - Would not commit themselves on this subject.

k. Re-entry Body - Little possibility of [illegible] 1963 (IOC) design goal of a 790# re-entry body containing a 600# warhead.

l. Warhead - Under no circumstances should the United States rely on an untested warhead (new warhead proposed for MINUTEMAN)!

m. MINUTEMAN Missile Costs - It is fair to state that MINUTEMAN missile costs can be estimated by a direct extrapolation of POLARIS costs on a per pound of propellant basis.

n. IRBM version of MINUTEMAN - To obtain such a missile, an almost wholly new development would have to be undertaken.

o. Controlled Retaliation - Rand believes in it.

p. Automatic Retaliation based on Pre-ordained Doctrine or Early Warning. Rand is against it.

q. Vulnerability of fixed, hardened, dispersed ICBM sites. Navy and Rand thinking agree on the vulnerability of these sites but there is considerable disagreement between Rand and the Navy as to the time when this will occur.

2. Ballistic Missile Division, USAF - 18 March 1959.

a. Siting of MINUTEMAN missile groups and control centers - Four major egg-shaped areas in the United States are presently being surveyed. If the public and Congress agree, these four large areas will contain major groupings of MINUTEMAN missiles. The four areas are centered respectively around:

Omaha
Rapid City
The Panhandle (Texas and Oklahoma)
Smoky Hill Area of North Carolina and West Virginia

Each of these areas will be self sufficient in that they will be supported by a repair and assembly facility, have multiplex communication circuits, at least 100 silo launchers and one control center for each 10 missiles. Each control center will be capable of firing all of the missiles in the entire area. Direct command communication cross-ties between the four large egg-shaped areas may be installed but, if so, SAC not DOD will put them in. In any case, centralized control over all four areas will be exercised by SAC probably from Omaha and all communication links exterior to each of the four areas are the responsibility of SAC.

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b. Mobile MINUTEMAN system. According to BMD, Air Force has decided to make a portion of the total MINUTEMAN forces mobile. Barges, trucks and railroads have been considered and the railroads selected; the others rejected.

Of the several possible methods of operating a railroad system, the Air Force has chosen one which will require the use of presurveyed RR sidings at which the MINUTEMAN train will be parked and from which launches will be made on order. Launching will be from a flatcar and not from prebored silos spotted along the right of way.

A MINUTEMAN train will consist of 13 cars among which will be three 70' long missile firing cars. Although the train crew must be civilian because of the provisions of the Railway Labor Act, the missile system on board will be manned by airmen.

Allegedly, the sidings can be built at a cost of $10.00 per ft. According to BMD, the railroad companies are willing to build complete MINUTEMAN sidings for $7,000.00 each.

From a survey of available track in the U. S., BMD reports there are some 90,000 miles of what they call free and invulnerable track. They admit that much of this is single track but in each such case ample sidings are alleged to be available.

Each MINUTEMAN train will be assigned to a 900 mile section of track. Each train will be parked 80% of the time. A Monte Carlo system will be used for selecting parking sites during any given period of time.

Although four hours are required for complete settling of the guidance gyro after a train ride, MINUTEMAN missiles can be fired, albeit with degraded accuracy, 15 to 20 minutes after parking at a presurveyed siding.

c. Shelf life. MINUTEMAN's replacement cycle is based on a three-year shelf life.

d. Reliability. Specifications require a missile reliability of .905 but missiles with a reliability as low as .59 will be accepted.

e. Impact on U. S. or Canada of either burned out first stage or errant complete missiles. BMD considers either of these possibilities as but minor irritants inasmuch as they

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will occur only in the event of general war wherein nuclear detonations over the U. S. and Canada would be doing far more damage.

f. Reassignment of targets and command coordination after impact of Soviet blunting attack on MINUTEMAN sites. There would be no reassignment of targets between surviving MINUTEMAN missiles and/or between MINUTEMAN and other deterrent systems. Target coverage would be insured in advance by a deliberate redundancy in the assignment of targets to individual MINUTEMAN missiles.

Command coordination is a function of SAC and BMD would not comment.

g. Costs. BMD was deliberately vague. Although some cost figures were provided, one got the impression they either did not really know the answers or were giving out the absolute minimum of information.

h. Cost effectiveness. The results of an "early" cost effectiveness study were presented. Essentially, WSEG 30 was used and the conclusions based thereon (WSEG 30 data was preliminary and misleading).

i. IRBM version of MINUTEMAN. According to BMD, an IRBM version of MINUTEMAN could be developed and produced prior to an ICBM version. BMD admitted much redesign would be involved and there would be some interference with the ICBM schedule.

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