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LAURITSEN COMMITTEE REPORT

31 May 1960

1. On 3 April 1960, a group headed by Dr. Charles C. Lauritsen was established to undertake an independent appraisal of the technical and operational aspects of the ICBM program. Other members of the Lauritsen Committee (all members of the 1953-1954 Von Neumann Committee that recommended establishment of the ICBM program) were: Dr. Lawrence A. Hyland, Mr. Trevor Gardner, Dr. Hendrick W. Bode and Dr. Jerome B. Wiesner.

2. The Committee's report consists of a letter, dated 31 May 1960, subject: "Ad Hoc Evaluation ICBM Program", addressed to General Schriever and a set of the committee's working papers. Each of these documents is briefed below.

3. The 31 May 1960 letter to General Schriever stated that the 1960 problem of providing a missile deterrent on schedule is greater than was the job undertaken by AFBMD (WDD) in 1954. The RAND/RCA/Industry achievement of technical objectives exceeded the expectation of the Von Neumann Committee. New and greater problems must be faced now. The Committee concludes:

a. The Minuteman program acceleration and the inclusion in the program of the mobility concept must proceed. Slippage of 6 to 12 months in this program should be expected. The Air Force should protect the ballistic missile deterrent capability by taking long lead time actions toward installing additional Atlas E and/or Titan I squadrons at a maximum rate until the validity of the Minuteman schedule is assured.

b. Technical backup in Minuteman guidance and propulsion components is needed.

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c. AFBMD should undertake a high priority study to determine the extent of a reduced range and/or accuracy in early Minuteman Squadrons.

d. AFBMD should expand the Atlas and Titan reliability program to cover the lives of these systems.

e. A program should be established to insure that fielded systems are manned with long tenure, technically competent personnel. Contractor maintenance and support should be used in critical skill areas.

f. The heavy workload (missiles and space systems) assigned to AFBMD/STL dilutes the attention that top management can give to the particular programs. This problem is compounded by the fact that several intermediate bodies are now interjected in the ballistic missile review and approval channel.

4. The Lauritsen Committee working papers enlarge upon the recommendations made in the 31 May 1960 letter. A brief of the working papers follows:

a. Atlas and Titan Programs

(1) Early models tended to be more costly and more complex than Minuteman will be, because we lacked prior experience when we entered this program.

(2) A current reliability program, augmented by a modification center concept, extended through the lives of these systems, is recommended.

(3) Strong contractor support in maintenance and general support is highly desirable.

b. Minuteman

(1) Nature of the problem

(a) The major problem areas have been identified

(b) Just because the Minuteman system is intended to be simple and highly reliable does not mean that development and production of

Minuteman is correspondingly simple. The contrary is the case. Development and production will be of a demanding and extraordinary character.

(c) Guidance and propulsion subsystems need state-of-the-art improvements to satisfy stated Minuteman performance requirements.

1 Permanent magnets used in Autonetics' guidance system must be improved.

2 Quantity production of Autonetics' air bearing gyro on present Minuteman schedules will be a difficult job. The planned change to beryllium rotors may cause problems because of our lack of experience in using the material. Gyro problems are probably the most limiting of the technical uncertainties associated with Minuteman.

3 Problems may be encountered when the airborne guidance system computer is mass produced to meet present schedules.

4 Problems can be expected when Autonetics' expands its technical and production staffs and associated facilities to meet production schedules now established.

5 Development of the first stage engine by Thiokol presents a potentially serious schedule difficulty. Insufficient knowledge exists in the solid propellant industry. We do not know enough about the effects of high gas temperatures and higher aluminum content in propellant grain and the erosion problems these create. These problems must be solved by August or September if we are to meet the December 1960 first-flight date.

(d) Rapid force buildup will cause other peculiar problems in the I&C area. The large construction problem associated with bringing into being (at a peak rate of 60 per month) hardened and dispersed Minuteman silos will require careful planning and programming.

(e) Minuteman program acceleration and the addition of the mobility concept has increased program risk in terms of finding solutions to technical/operational/management problems.

(2) The Committee concludes that substantial slippage of Minuteman schedules may be impending due to technical problems. Present, unresolved management problems can add to these delays.

c. Recommendations for Interim Measures to Offset Minuteman Problems

(1) Combat effectiveness of Atlas and Titan I squadrons will, initially, be quite low. The programs are moving so rapidly that adequate operational training cannot take place. The CTL rate should be increased. The reliability improvement program should be extended throughout the life of these missiles.

(2) A time gap exists between Atlas E/Titan I and Titan II/Minuteman. The gap can widen if Minuteman slips. Long lead time actions should be taken to install additional Atlas E/and/or Titan I squadrons at a maximum rate until Minuteman schedules are assured.

(3) AFBMD should initiate a study to determine what reduced/operational performance can be expected from early Minuteman squadrons. The Committee does not recommend changing present operational schedules unless failure to solve the gyro problem makes it mandatory.

(4) Back-up programs should be initiated in areas of velocity meters, gyro platform, producibility-reliability of computers, [illegible] communications, insulation, gas dynamics, nozzles, propellant physics and maintenance engineering.

d. Management Problem

(1) Von Neumann Committee, in 1954, said that special management of the ballistic missile program was required.

(2) The management problem facing AFBMD/STL today is infinitely greater than it was when the only program was Atlas.

(3) The introduction of several intermediate echelons into the review and approval channel complicates the management problem.

e. Manning problem

(1) Current AF resources are not adequate to solve the manpower problem. A bold program must be undertaken by the Air Force to:

(a) Improve the AF technical skill position vis-a-vis industry.

(b) Use contractor maintenance and general support in critical skill areas.

f. New Development Efforts

(1) A program for follow-on to Minuteman must be started at once. This program must emphasize low cost, high reliability and invulnerability.