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February 2, 1959

MEMORANDUM: West Coast Visit of President's Science Advisory Committee, January 19-23, 1959 -- Items for possible follow-up action

Los Alamos Scientific Laboratory



- (1) Improvement of Laboratory morale and leadership.
- (2) Appraisal of difference of view between Los Alamos and Livermore on the feasibility of underground testing. (LASL claims it is difficult to determine yield underground; Livermore personnel state there is no difficulty).
- (3) Appraisal of difference in view between Los Alamos and Livermore on improvements that can be expected in yield to weight ratios of nuclear weapons with continued development and testing. (LASL is more conservative in its estimates).
- (4) Appraisal of seriousness of genetic damage from Carbon 14 due to continued nuclear testing. This issue was raised by Dr. Carson Mark of Los Alamos who believes there may be a serious genetic danger. Livermore, on the other hand, has previously indicated that this is a minor problem.
- (5) Project ROVER: Is the current emphasis on ROVER justified in view of marginal capability for the foreseeable future as compared with promise of chemical engines to achieve necessary thrust.
 - (a) Problem of the need to conduct remote full-scale tests.
 - (b) Question of proper approach to materials problem. Is there too much emphasis on engineering as opposed to basic fundamental understanding?

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 NSC - 9/5/76
 NAVY - 3/15/75
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 E.O. 12812 - with exceptions 4/4/75

Pacific Missile Range and Vandenberg Air Force Base

- (1) Appraisal of projected instrumentation and master plan calling for \$4 billion of cumulative funding.

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SECRET

-2-

- (2) Tie-in and coordination of Pacific Missile Range activities with those of the Atlantic Missile Range; (especially for planning and programming space exploration launchings and for tracking).
- (3) Members of the Committee expressed concern after visiting Vandenberg over complexity of Atlas system including associated questions of reliability, highly sophisticated crew training that appeared necessary, and cost. (Later, BMD/STL personnel claimed that these were R & D systems at Vandenberg and that actual operational squadrons would be less complex).
- (4) Need to disperse Atlas missiles to 1 per site instead of in "threes" as now planned.

Lockheed Missile Systems Division



- (1) Need for better management of the Polaris and 117 L programs.
- (2) Adequacy of research base for the 117 L program.
- (3) Need for more technically qualified personnel in higher management positions.

Livermore Laboratory

- (1) Reappraisal of the affect of a nuclear test moratorium on the relative nuclear weapons positions of the U.S. and the U.S.S.R. in the light of potential weapons developments as outlined by Livermore personnel.
- (2) Reappraisal of the possibilities of concealment of underground and high altitude nuclear tests in the light of ideas advanced by Livermore personnel.
- (3) Reappraisal of possible U.S. nuclear development under a test cessation agreement.

SECRET

- (a) Potential for developing very small weapons and weapons techniques [

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Portions deleted, per ERDA letter of 4/4/75

- (b) Ability of weapons laboratory to maintain staff morale and continue work under test moratorium in view of Dr. Teller's comments.
- (4) Livermore personnel expressed concern over possible reluctance of the military to accept new and advanced weapons designs without tests except for small extrapolations.
- (5) Evaluation of potential developments in tactical weapons as outlined by Livermore personnel.
- (6) An understanding is needed of differences between the Livermore and Los Alamos operations.
- (7) In the development of future advanced weapons systems -- looking beyond the aircraft and missile systems we can foresee at the present time -- consideration should be given to the central research laboratory approach.
- (8) Project PLUTO
- (a) Military worth of high speed (MACH-3,) very low level, high pay-load, unmanned nuclear ram-jet weapons system.
- (b) Technical feasibility -- including time scale and cost -- of Project PLUTO developing into such a weapons system.
- (c) Possibility of reorienting the ANP program toward this objective.

Ballistic Missile Division -- Space Technology Laboratories

- (1) Acceleration of the Atlas program.

SECRET

SECRET

-4-

- (a) Desirability of expanding the operational Atlas force.
 - (b) Is it possible to accelerate base acquisition, personnel training, GSE procurement, and funding cycle to warrant an increased rate of missile production?
 - (c) Desirability of installing Atlas squadrons 1 through 4 in hardened sites (100 psi) and the desirability of hardening Atlas squadrons 5 through 9 to 100 psi rather than to 25 psi as now planned.
 - (d) Is it possible to have a higher missile per launcher ratio -- particularly during the early period when the U.S. is base-limited and the enemy's accuracy is poorest?
- (2) Are the estimated accuracies for second generation missiles (i. e., CEP of 1/2 mile at 5500 n.m.) justified on the basis of reliability and other factors? And, if not, is this likely to lead to erroneous conclusions concerning our strategic military requirements in the 1965 - 1970 time period?
- (3) Solid propellants: There is a requirement for priority among programs requiring solid propellants since there appears to be a saturation of industries participating in the solid propellant development program.
- (4) Hawaii Tracking Station.
- (a) Problems created for the Air Force and NASA programs by the transfer of the Hawaiian tracking station to the Navy as part of the Pacific Missile Test Range.
 - (b) Immediate importance of assuring adequate instrumentation for JUNO firing in April since this critical station is to be transferred March 1, and thereafter modified by the Navy. (This question had not been discussed with Dr. Glennan when he visited STL).



SECRET

SECRET

-5-



- (5) Responsibility for the 117 L system. There is not a clear-cut responsibility for the systems management of the 117 L program. STL questions the capability of ARPA to exercise this function. Currently, BMD/STL have some responsibility for the overall vehicle, but NASA has the second stage engine. In addition, ARPA has the responsibility for developing the pay-load, as well as some overall responsibility, and has contracted to the Army Signal Corps for some of the pay-load instrumentation. Lockheed, furthermore, has production responsibility. No one appears to know who has overall responsibility.
- (6) Should the reorientation of the 117 L system include a firm commitment to incorporate the MIDAS program?
- (7) The need for longer-range planning for space programs. Next year's experiments should be planned now.
- (8) What is the most effective management arrangement for STL in the future?
 - (a) Problem of relationship to Ramo-Wooldridge/Thompson Products.
 - (b) The problem of tighter subordination to BMD.

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