

~~TOP SECRET~~ Panel - Early Warning - Muse

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October 10, 1958

MEMORANDUM TO DR. KILLIAN

FROM: W. E. Bradley

SUBJECT: Present Problems Relating to Radar Early Warning of Manned Bomber Attack



1. The status of the continental defense program is described in Annex "A" of the DOD report to the NSC on status of U.S. military programs as of June 30, 1958 (attached). Page A3 of this annex gives the overall radar coverage of North America in being and as augmented according to present plans. The information presented on page A3 is believed to be a correct statement of the situation; the following comments apply:

2. The seaward extensions of the DEW line do not provide continuous coverage, due to the small number of AEW patrol aircraft, and at present do not extend far enough to prevent an "end run" by long-range bombers.

a. The lack of continuous coverage can to some extent be compensated by random course reversals by patrolling AEW aircraft, so that gaps in coverage are rendered unpredictable.

b. End runs can only be prevented by further extension of the AEW coverage, perhaps to Johnston Island and Palmyra.

The seaward extensions of the DEW line rely upon H.F. communications to transmit their warning information. Such warning might be suppressed by a high altitude nuclear explosion in the vicinity.

a. Line of sight communication to the picket ships, together with simplified telegraphic cable communication to the mainland might provide a practical solution.

b. Immediate investigation of communication vulnerability to nuclear explosion blackout is urgently needed.

4. The land based portion of the DEW line relies upon H.F. and scatter communication systems to transmit warning. These communication systems are urgently in need of review in the light of present knowledge of the effect of high altitude fission weapons.

REVIEWED BY *Chang* DATE *OCT 8 1975*
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5. The Canada-to-Scotland DEW line extension will not be operational until some time in 1961. The present time schedule is limited by the radar installation across Greenland from Davis Strait to Denmark Strait. The AEW airplanes which provide the rest of the line will not operate according to present plans until the Greenland installation is completed.
 - a. It might be appropriate to employ AEW on an interim basis all the way from Cape Dyer to Scotland, beginning as soon as possible, until the Greenland installation is completed.
6. The planned Canada-to-Scotland DEW line extension will have two 200 mile gaps, on either side of Greenland, extending from sea level up to about 5000 feet. Only operational inconvenience deters the enemy from the use of these gaps.
 - a. Occasional AEW aircraft, at random times, patrolling these gaps would make dependence upon them unreliable.
7. Around the seacoast of the U.S. and across the Mexican border, low altitude approach to within 100 miles is possible before detection. No easy solution to this problem presents itself at present, although additional AEW coverage might be one solution.
8. Concluding Remarks:
 - a. Although the present early warning net seems to give a reasonable probability of warning against a mass bomber attack (except in the event of a communications blackout), it is relatively ineffectual in the case of a surprise, low-level attack by a small number of bombers.
 - b. The urgency and importance of completing the aircraft early warning net should be reaffirmed and should take priority over active defenses whose effectiveness depends upon early warning and whose cost v/s effectiveness ratio for additional investment is higher than that for needed improvements in the early warning net.
 - c. Since early warning is completely dependent on communication from the detection stations, consideration should be given to short-term "fixes" needed to provide at least limited communications in the event of artificial blackout.

