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33-15-01
30,000 lbs

DDESB-KT (31 Jan 80) 1st Ind
SUBJECT: ALCM Support Facilities, Munitions Storage Facilities Design
Analysis and Plans

Department of Defense Explosives Safety Board, 2461 Eisenhower Avenue,
Alexandria, VA 22331

26 FEB 1980

TO: HQ USAF/LEEVX, Washington, DC 20330

1. Reference SEV letter to DDESB dated 31 Jan 80, subject as above.
2. Drawings and design calculations forwarded with referenced letter have been reviewed. The earth-covered magazine depicted on U.S. Army Engineer District Omaha Drawing AW 33-15-01 is approved as a typical layout for ALCM storage. This approval is subject to satisfactory adaptation to the specific sites where such igloos will be proposed for construction.
3. The ALCM igloo is considered equal to U.S. designed reinforced concrete arch-type magazines designated as standard for application of intermagazine separation distances in DoD 5154.4S, Ammunition and Explosives Safety Standards. The net side-to-side separation of 40 feet between adjacent arches shown on drawing AW 33-15-01 limits the maximum net explosive content to 30,000 pounds per magazine. Exposures of the portal walls of such magazines to each other, at locations within the 120-degree sector centered on the longitudinal axis with the apex at the wall, require separations of $6W^{1/3}$ or $11W^{1/3}$ feet from W pounds of explosive, depending on whether or not an effective earth barricade is interposed.

/s/ W. G. Queen

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ALTON W. POWELL
Colonel, USAF
Chairman

CF:
AFISC/SEV

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MFR:

High-quality design work by Omaha District iaw TM5-1300. Portal wall design pressure and impulse were 100 psi (7 bars) and 1100 psi-ms (76 bar-ms), as recommended by this office. Arch design pressure was 40 psi, a little less than the 3-bar figure recommended, but the same impulse, ^{as in the headwalls} apparently for lack of a specific recommended figure. Arch response model includes mass of earth cover moving with the arch, and passive soil pressure developed at sidewalls.

T.A. Zaker