

UNITED STATES GOVERNMENT

Memorandum

TO : Joseph Delaney, Chief
Nuclear Materials Branch

DATE: FEB 1 1961

FROM : Charles D. Luke, Chief
Criticality Evaluation Branch

CDL

SUBJECT: THE MARTIN COMPANY - December 1, 1960

Please refer to my memorandum of January 12, 1961, on the above subject. Subsequent to that date, Mr. W. W. Wachtl, Chairman of the Martin Company's Nuclear Materials Control Committee, visited us to further discuss their application. To confirm the position we took at that meeting, we suggest that the following be included in your reply to the Martin application:

"In order to continue the review of your application, the following information is required concerning your proposal to convert an ammunition bunker to a nuclear materials and finished product storage area:

"(1) A description of special nuclear materials to be stored in the bunker, with as much detail as possible. This description should include the chemical and physical state of the materials (eg., UO_2 powder, apparent density 3.2 grams/cm³); their isotopic content (eg., 93% U-235); moderator content or ratio (eg., 0.1% H₂O, or H/U-235 < 2); data pertaining to other materials which may be present or intermingled (eg., aluminum alloyed with uranium to the extent of 20% U-80% Al by weight); and geometry of individual pieces (eg., $\frac{1}{2}$ " pellets, 3" x 24" x 0.020" plates, etc.).

"(2) A description of the individual storage units of special nuclear material, their containers, and birdcages. This should include, for each type of unit, mass and other pertinent data for special nuclear material, [and] container and birdcage dimensions and structural details.

"(3) The number of individual storage units described in (2) above that comprise an array, and their spacing or arrangement within the array. Further, the number and arrangement of such arrays within the bunker.

"(4) Justification, from the viewpoint of critical safety, of both the individual storage units described in (2) and the arrays described in (3), while taking into account whether or not accidental moderation by flooding is credible.

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This justification should cite applicable criteria for critical safety (such as mass or volume control) and an evaluation of how the proposed storage procedures will satisfy such criteria.

"(5) Despite the fact that the bunkers are well shielded by earth and concrete, and will be under the close surveillance of your Accountability Representative, we feel that a radiation monitor alarm system should be provided, for the safety of personnel who may be in the area. Further, since the bunkers are vented and located on a waterway, the public safety is also involved.

"With regard to the nuclear waste storage area proposed in your application, the same type of information described in items (1) through (4) above is required. In addition, justification of nuclear safety should take into account the consequences of an inadvertent criticality at your selected site, which is in proximity to a public thoroughfare.

"We recognize that it is often difficult to provide descriptions, such as those we have outlined in items (1) through (4), when the nature of materials to be stored will be largely determined by activities now unforeseen. However, if the safety criteria were clearly delineated over a reasonable range, it is quite possible that a variety of materials or arrangements could be justified."