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WEAPONS ENGINEERING DIVISION

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Redacted
VERSION

W48 PIT STORAGE (U)

In light of the recent W48 pit cracking incident the question has been asked - What, if any, actions should be taken with respect to the W48 pits in interim storage?

Recommended actions include:

- 1) A verification that W48 disassembly and pit packaging records do not contain anomalies involving radioactive contamination external to the pit.
- 2) Investigate, in an expeditious manner the reasons for the W48 pit crack occurrence.

While the W48 pit is unique in many ways, its use of [redacted] shells is common to a large portion of US produced nuclear weapons. In general the most severe environment experienced by these pits is the braze/weld operation during their production. In the case of the W48 the second most stressing event is the thermal shock disassembly process used for removing high explosive that is adhesively bonded to the pit. I am not aware of any catastrophic structural failure of [redacted] in braze/welded pits during the relatively benign environments associated with storage. Failures [redacted] occurred during production and now, one failure has occurred on weapon disassembly, during a stressing environment. The implication for the W48 pits in storage is that, if they survived the weapon disassembly environments they are not likely to fail in storage environments. This assumes these storage environments are similar to stockpile storage conditions, which they are reported to be. [redacted] failure similar to that experienced in the recent pit cracking incident results in loss of radioactive material containment. Therefore, if it can be determined that the W48 [redacted]

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surface was not radioactively contaminated prior to being placed in its interim storage container, pit integrity is reasonably well assured. Any further examination of the W48 pits in storage would involve opening storage containers as no external contamination or unusual temperature signature would be expected from the container.

If an examination of packing records or the results of an investigation into the causes of the recent pit cracking incident identify individual units or groups of pits that would be suspect for a particular reason then those units could be examined. Until those reasons and units have been identified a more general survey in their storage location does not appear warranted. The units are safe in their storage containers with or without cracks, definitive diagnostics would require retrieval of the container from its storage location, significant worker exposure to radiation environments are involved as well as time and cost expenditures that are not yet justified.

A vigorous and timely investigation into the causes of the W48 pit cracking is needed. This incident was totally unexpected. This pit was subjected to stressing environments but not severe conditions according to calculations. The calculations predicted large safety margins. A significant number of pits, more than one hundred, have been through this disassembly process with no known problems. This investigation could produce information of significance to the W48 pits in interim storage, the methods and procedures for disassembly of remaining W48 nuclear systems, and potentially for all pits.

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