DNFSB/MISC-020

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 23, 1993

MEMORANDUM FOR: G. W. Cunningham, Technical Director

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Public Reading Room
U. S. Department of Energy
Idaho Operations Office

FROM: Dermot Winters

SUBJECT: Idaho National Engineering Laboratory - Radioactive Waste Management Complex, Facility Overview and Conduct of Operations Review, October 18-20, 1993

1. **Purpose:** This memorandum provides DNFSB Staff comment on the status of Conduct of Operations and other programs at the Radioactive Waste Management Complex at the Idaho National Engineering Laboratory. The DNFSB review team consisted of staff members Ralph Arcaro, Dermot Winters and Larry Zull. The purpose of the visit was orientation and familiarization and to perform a Conduct of Operations review. Several issues were identified during the review. The issues raised in this report are preliminary in nature and may provide the basis for further reviews.

2. **Summary:** Based on observations during a tour of the RWMC facility, observations of facility operations and a maintenance evolution, discussions with EG&G supervisory and management personnel, and interviews with six facility personnel, potential health and safety issues were identified in the areas of fire protection, radiation protection, storage of waste drums, safety analyses, and conduct of operations.

3. **Discussion:**

a. Fire Protection: The Certified and Segregated (C&S) Building, an unheated air-support structure, which houses approximately seventeen thousand drums and boxes containing combustible transuranic (TRU) waste in a high density storage configuration, does not meet current fire protection requirements, including those of the DOE Order 5480.7A, *Fire Protection*. It does not have an automatic fire protection system, and because fire detectors did not operate properly during cold weather they were disabled.

Under these conditions, and although an hourly fire watch has been instituted as a compensatory measure, there appears to be a possibility for a fire to start undetected and spread to engulf the total building inventory. This potential for a fire in the C&S Building seems not to have been evaluated adequately. An adequate evaluation of measures to prevent or mitigate a fire in the C&S Building also appears to be lacking.

b. Radiation Protection: Tours, observations, and interviews revealed the following deficiencies in radiation protection:

1. Essentially the entire RWMC is designated a Radiological Controlled Area (RCA). Within the overall boundary of this large RCA there are located toilet facilities and lunchrooms/conference areas. Toilet facilities are within the RCA itself, while the lunchrooms are within properly access controlled non-RCA "islands." The presence of toilet facilities within the RCA is not good radiological control practice.

   Since other likely uncontaminated areas, such as office and equipment areas, are contained within the large RCA, it would be desirable for the large RCA to be compressed into several smaller RCAs so that only those areas which truly have a significant potential to be contaminated would remain within an RCA. An additional benefit accruing from such action would be elimination of the need for lunchrooms to exist as non-RCA "islands" within the large RCA.

2. Waste containers with fissile materials are stored in the C&S Building truck bay without Continuous Air Monitors (CAMs) being located in that bay area.

3. Three of the six facility personnel interviewed by the DNFSB review team exhibited a general weakness in their knowledge of radiation protection fundamentals.

c. Storage of Waste Drums: Staff walkdowns of storage areas and review of documentation revealed the following apparent deficiencies in the storage of waste drums:

1. Although approximately 45 55-gallon drums containing transuranic (TRU) waste have been found by neutron assay to exceed the fissile material limits in the Operational Safety Requirements (OSRs), Occurrence Reports have not been issued for the drums as required by the OSRs and the reporting requirements of DOE Order 5000.3B, *Occurrence Reporting and Processing of Information*.

2. A number of the drums discovered to violate the OSR limits are currently stored outdoors on a concrete pad adjacent to a roadway, separated only by a rope from the occasional passage of motor vehicles.

3. In addition to the potential hazard posed by the proximity to vehicular traffic, Resource Conservation and Recovery Act (RCRA) guidelines require these drums to be stored in a facility sheltered from weather.

4. The OSRs require that a reevaluation of the fissile material content in the drums be performed by EG&G Physics personnel and the Criticality Review Committee. Although the OSRs do not provide a time limit for the reevaluations, the reevaluations appear to have not been performed in a timely manner.

5. The RWMC currently does not contain an approved Fissile Material Control Area (FMCA). Although an FMCA is expected to be established within the next six months, the fire safety issues described above have not been considered in the current plan for locating the FMCAs within the C&S Building. Establishing the FMCAs within one of the first metal Waste Storage Buildings to be constructed at the RWMC appears not to have been considered.

d. Safety Analyses: A general weakness in the area of safety documentation was suggested by interviews of facility personnel. None of the operators interviewed understood what the OSRs were, their purpose, or where they could be found. Other workers interviewed did not recognize OSR or Safety Analysis requirements contained and clearly identified in a sample operating procedure. Observed knowledge levels appear to reflect the management recognized lack of facility-specific safety analysis training for RWMC workers.

e. Conduct of Operations: Although specific deficiencies were noted in Lockout/Tagout performance and in execution of low level waste box placement in the disposal trench, observations of drum handling operations, low level waste box emplacement, routine log-taking, and a maintenance evolution suggested that Conduct of Operations is generally good at the RWMC. Some specific observations follow:

1. EG&G's RWMC management is committed to having the RWMC in full compliance with DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, by December 1994. At the time of this DNFSB staff visit the RWMC was in transition to the use of a Corporate-level Conduct of Operations Manual supplemented by facility-level procedures. Once complete the RWMC would be in full compliance with Order 5480.19. At the time of this visit compliance was complete except for the Order chapters entitled, "Operations Aspects of Facility Chemistry and Unique Processes" and "Required Reading." Pending completion of the transition, these chapters were being implemented through department-level procedures.

2. The facility's Lockout/Tagout performance is not fully in accordance with DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, in that controlled systems drawings or prints are not consistently used in preparation of a tagout and the facility Lockout/Tagout procedure is ambiguous in describing actions for temporary removal of tags. Deficiencies noted in tagouts during the review, including an unsigned hanging tag and inconsistent understanding of the

tagout procedure as demonstrated in interviews, are likely a direct result of ambiguities in the procedure.

3. Workers placing/stacking low level waste boxes in the disposal pit exhibited confusion, possibly the result in part of poor job planing, as to where specifically to place certain boxes in the stacking arrangement in the disposal pit. The resultant delay caused longer than necessary stay time in proximity to the radiation field in the disposal pit.

4. **Plans for Future Reviews:** The RWMC is performing TRU waste retrieval, characterization, and storage activities. The facility is also burying low level waste (LLW). These activities are expected to continue for at least the next decade. The construction of major new waste storage buildings is also beginning at the facility. Since WIPP is not expected to accept any TRU waste until approximately 1998, or later, the interim TRU waste storage planned at the RWMC will become longer term waste storage than originally planned.

The DNFSB Staff plans further reviews of various issues noted above during the coming year. A radiation protection and fire protection review at RWMC is currently scheduled for February 1994. Additional INEL site-wide reviews, which will encompass RWMC activities, will be scheduled as required to cover additional issues, such as training and qualifications, quality assurance, and safety analyses.