



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION IV
URANIUM RECOVERY FIELD OFFICE
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DENVER, COLORADO 80225

JUL 26 1990

URFO:DCW
Docket No. 40-1162
04001162580R

MEMORANDUM FOR: Docket File No. 40-1162
FROM: Dana C. Ward, Project Manager
SUBJECT: REVIEW OF DECOMMISSIONING AND INTERIM SOIL COVER REPORT
FOR THE SPLIT ROCK MILL

Introduction

By letter dated October 31, 1989, Wester Nuclear, Incorporated (WNI) submitted a four volume report documenting decommissioning and interim soil cover activities for the Split Rock Mill, Jeffrey City, Wyoming. The decommissioning plan is specified in License Condition No. 28 of Source Material License SUA-56. The staff review of the decommissioning and interim soil cover report is discussed below.

Decommissioning Activities

Decommissioning activities for the Split Rock Mill involved demolition and disposal or the removal and salvage of all structures and equipment located within the restricted area. Decommissioning activities began on June 13, 1989, and were completed on September 14, 1989.

The unsalvageable material was buried in 10 separate burial sites located within the approved burial area. These sites are located on Drawing No. 3 (DR-3) of the October 31, 1989, submittal. An extensive inventory was maintained on each disposal site.

Dismantling of the buildings progressed in an orderly sequence, starting first with the stripping of the wood and metal shell, removal of the internal processing equipment, and finally, the cutting and downing of the structural steel. All of the structural material and most of the slightly contaminated processing equipment was sized or crushed to reduce void spaces and disposed

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within the burial area. The more contaminated items, such as items from the processing circuit, were disposed in an existing concrete-lined vault within the former mill. Although most tanks and vats with void spaces were disassembled prior to burial, two roasters were placed in the vault whole with openings welded shut with steel plates. Also placed in the vault was an old AEC probe calibration source that measured 500 μ R/hr on contact.

Additional information was requested from WNI on the two roasters detailing the differential settlement potential at the vault disposal site by letter dated June 4, 1990. A comprehensive report was presented by WNI in their response of July 5, 1990. The report concluded that the two roasters were constructed of materials in a manner capable of maintaining integrity over the 1000 year design life of the project. Further, WNI concluded that the maximum possible settlement would be an approximate 27 inches due to void spaces if a dryer should have a total massive rupture. The staff concludes from the information provided by WNI that the likelihood of differential settlement by rupture of the two roasters is unlikely.

During conversations held on May 16 and 17, 1990 with Ms. Stephanie Baker, additional information was requested from WNI on the AEC probe calibration source that was buried. A report was submitted to this office on May 17, 1990, detailing what radiation levels were present on the source and how it was buried. The unit was constructed of two pipes, an inner 3 inch diameter pipe and exterior 6 inch diameter pipe. Both pipes were 31 feet long. The area of the source was approximately 5 feet long on the inner pipe and measured 500 micro R/hr on contact. The remainder of the pipe measured less than 20 micro R/hr. The source area plus 18 inches of pipe on either end was cut from the pipe and buried vertically in the southwest corner of the vault. The remaining sections of pipe which exhibited near background levels of radiation were buried in Burial Site 7.

A minimum of 1 foot of interim soil was placed over the mill area with the average being 5 feet. Interim stabilization of the millsite cover, windblown tailings, and portions of the borrow area was accomplished by the use of 15,000 linear feet of wind fencing. Gamma surveys conducted over the cover material yielded readings under 35 μ R/hr.

Salvageable equipment was surveyed prior to release from the restricted area between February 6, 1986, and June 11, 1988. All items removed were released in accordance with Attachment No. 1 to Source Material License SUA-56 entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use." The survey records for all equipment and material released from the site are provided in Appendix S of the WNI submittal.

Radiation Safety

All workers involved in decommissioning activities were provided radiation safety training prior to work. The material covered during training, results of tests as well as forms signed by all employees to verify receipt of training, is provided in Appendix R of the submittal.

All jobs with a potential for significant exposure were conducted under Radiation Work Permits (RWP) issued by the Radiation Safety Officer (RSO) or his designate. The RWPs specified the radiation surveys necessary during the performance of the work, precautions to be taken to minimize exposures, and bioassay testing required following the work. Copies of the RWPs are provided in Appendix D.

Air sampling was performed in the vicinity of decommissioning activities using both personal lapel air samplers and area air samplers. The results of the sampling are provided in Appendix E. A review of the findings indicates that all results were less than the maximum permissible concentration (MPC) specified in Appendix B to 10 CFR 20. The highest result obtained was a 9.89 MPC hours which is 25 percent of the weekly MPC hours allowed.

Urinalysis testing was performed for all workers involved in decommissioning activities. The results of the testing are provided in Appendix H. A review of the results indicates that all values were less than the initial action level of 15 $\mu\text{g/l}$ uranium as specified in Regulatory Guide 8.30. One split sample recorded a value of 75 $\mu\text{g/l}$. Follow-up samples from the employee were analyzed, and the results were all under 15 $\mu\text{g/l}$. Investigations indicated that extraneous non-uranium contamination gave the false result. The staff concurs with WNI's conclusion.

Radon surveys were conducted prior to dismantling. Results indicated six areas in excess of 0.04 working levels (WLs). Two of these areas were not resampled, the value which was used for disposal and classifier No. 4 which was dismantled with a trackhoe. The remaining four areas were tested during decommissioning, with results at or below 0.02 WL.

Exposure of employees to gamma radiation was monitored by the use of thermoluminescent dosimeters (TLDs) which were exchanged quarterly or at the end of work. The TLD results along with gamma exposure correlations, are presented in Appendix G. A review of the data indicates that all results were low and well below regulatory limits.

Exposure of employees to beta radiation was calculated for individuals working in areas identified in pre-surveys as being above 2.00 mRem/hr. The results are presented in Appendix F. The highest accumulative exposure to the hands was 50.59 mRem or less than 1 percent of the quarterly maximum permissible exposure of 18.75 rem.

Alpha contamination control procedures were instituted during decommissioning operations for personnel, offices, and wash areas. Survey results are contained in Appendix L and Appendix N of the submittal. No personnel exceeded the 100 dpm/100 cm^2 action level nor was any surface contaminated above 100 dpm.

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During mill decommissioning, it appears that proper fire protection was maintained at all times; protective clothing and respirators were utilized in a proper manner consistent with regulatory guides, and areas of operation were wetted during decommissioning to lessen dusting. The overall safety seemed to be adequate for the operations.

Conclusion

The staff review of WNI's decommissioning report submitted by letter dated October 31, 1989, and additional information submitted May 17, and July 5, 1990, indicates that the licensee has performed and documented decommissioning activities in accordance with requirements of License Condition No. 28 of Source Material License SUA-56. Therefore, License Condition No. 28 should be deleted at the next opportunity.

Dana C. Ward

Dana C. Ward
Project Manager

Approved by:

Ramon E. Hall

Ramon E. Hall
Director

Case Closed: 04001162580R

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