

October 26, 2006

Mr. Lawrence J. Corte, President
Western Nuclear, Inc.
2801 Youngfield, Suite 340
Golden, CO 80401

SUBJECT: LICENSE AMENDMENT 100, APPROVING THE GROUND WATER
CORRECTIVE ACTION PONDS RECLAMATION PLAN AND UPDATED
SURETY, WESTERN NUCLEAR, INC., JEFFREY CITY, WYOMING, SUA-56
(TAC LU0139)

Dear Mr Corte:

By letter dated July 25, 2006, Western Nuclear, Inc. (WNI) submitted a reclamation plan for the ground water Corrective Action Program ponds (CAP ponds) to the U.S. Nuclear Regulatory Commission (NRC) staff, as required by License Condition (LC) 74.G of Source Materials License SUA-56. LC 74.G currently states that WNI must confirm that the CAP ponds cover design approved on March 25, 1994, (Amendment 71, LC 27.B) is still acceptable and must obtain NRC approval prior to placing the cover. NRC staff has reviewed the cover design and radon calculations provided by WNI in its 2006 CAP ponds reclamation plan and approves the design, as submitted. NRC staff's technical review is documented in the enclosed Technical Evaluation Report (TER). License Amendment No. 100, enclosed herein, has been revised to reflect the July 26, 2006, submittal, as the approved CAP ponds design. This licensing action does not require any environmental review under 10 CFR Part 51 because NRC staff previously reviewed the technical and environmental aspects of this design and approved it on March 25, 1994.

By letter dated March 28, 2006, WNI submitted an updated corporate guarantee for its surety instrument to NRC staff. NRC staff has reviewed and approves this corporate guarantee. Therefore, NRC staff is amending LC 29, as part of License Amendment No. 100, to include a reference to this latest surety document. This licensing action is categorically excluded under 10 CFR 51.22(c)(11), which precludes the need for further environmental review of license amendments that are organizational or procedural in nature, provided that there is no significant increase in amounts or types of effluents or occupational radiation exposure, no significant construction impact, and no significant increase in radiological accident potential.

In addition to the surety and CAP ponds amendments, Source Materials License SUA-56 is being amended to reflect organizational changes that became effective on October 1, 2006. LC 76 has been amended to state that all correspondence shall be sent to the Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate, Division of Waste Management and Environmental Protection, Office of Federal and State Materials and Environmental Management Programs, Mail Stop T-7E18, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

L. Corte

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If you have any questions regarding this licensing action, please contact Stephen J. Cohen, Project Manager, at 301-415-7182, or via e-mail, to: sjc7@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at: <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA/

Keith I. McConnell, Deputy Director
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No.: 040-01162

License No.: SUA-56

Enclosures:

1. Technical Evaluation Report
2. License Amendment No.100

cc: M. Thiesse, Wyoming DEQ
J. Wagner, Wyoming DEQ

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(CLOSES TAC LU0139)

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TECHNICAL EVALUATION REPORT
GROUND WATER EVAPORATION PONDS RADON BARRIER
WESTERN NUCLEAR, INC., SPLIT ROCK SITE
JEFFREY CITY, FREMONT COUNTY, WYOMING

DOCKET NO.: 40-1162
LICENSE NO.: SUA-56
DATE: October 3, 2006
FACILITY: Split Rock Site, Jeffrey City, Wyoming
TECHNICAL REVIEWERS: Stephen J. Cohen, Robert G. Lukes
PROJECT MANAGER: Stephen J. Cohen

1.0 SUMMARY AND CONCLUSIONS

By letter dated July 25, 2006, Western Nuclear, Inc. (WNI) submitted to the U.S. Nuclear Regulatory Commission (NRC) staff confirmation that the radon barrier for the ground water Corrective Action Program evaporation ponds (CAP ponds) cited in the License Condition 74.G is sufficient to reduce radon emissions to below 20 pCi/m²/sec, as required by 10 CFR 40, Appendix A, (WNI, 2006). NRC staff reviewed WNI's submittal, including barrier design and radon emission calculations, and determined that the radon barrier, as proposed, is sufficient to meet the radon emissions standards. Therefore, NRC staff approves the radon barrier for the CAP ponds.

2.0 BACKGROUND

In a memorandum to Docket File No. 40-1162 dated March 25, 1994, NRC staff approved a license amendment for the Reclamation and Closure Plan for the Split Rock uranium mill tailings site, Jeffrey City, Wyoming (NRC, 1994). Included in this memorandum were assessments of the cover design, resistance to erosion, structural integrity, liquefaction, settlement, hydrologic assessments, filter design, rock durability and gradation, radon attenuation, construction specifications, and quality control. In this memorandum, NRC staff specifically stated that the CAP ponds radon barrier design cannot be finalized until the ponds are dismantled and the source term is verified. This verification is required to determine the appropriate radon barrier thickness.

By letter dated July 25, 2006, WNI submitted a request for CAP ponds cover approval that included a verification of the source term. This submittal included sample analytical data, radon emissions computations, and a cover design drawing. This document formed the basis for NRC staff's review.

3.0 TECHNICAL EVALUATION

WNI provided information regarding the radium-226 and thorium-230 concentrations in the sludge remaining in the CAP ponds (WNI, 2006). These samples were collected at various times between 1999 and 2005. A review of the data indicates that radium-226 concentrations range from <0.1 to 3.0 pCi/g, and thorium concentrations ranged from <0.1 to 0.47 pCi/g.

The calculated average radon emission from the sludge alone is 2.37 picocuries per meter per second (pCi/m/s). This emission rate is considerably below the 20 pCi/m/s limit specified in 10 CFR 40, Appendix A, Criterion 6. Although radon emission standards are met without a cover, a minimal cover is still required to isolate the waste from the environment, as required in 10 CFR 40, Appendix A, Criterion. Therefore, WNI is proposing a clay cover with erosion protection that consists of the following layers:

To address these issues, WNI provided a design that includes the following layers, from top to bottom:

- soil/rock mulch - 15 centimeters (cm) or 6 inches (in)
- borrow soil (sand) - 30 cm (12 in)
- compacted clay - 15 cm (6 in)
- borrow soil - thickness varies

According to the computations provided by WNI, radon emissions from the sludge, clay, and soil are 1.7 pCi/m/s. NRC staff independently estimated radon emissions using the RADON code, the results of which were similar to WNI's (see Attachment A). Therefore, NRC staff finds that the CAP ponds cover, as designed, meets the standards in 10 CFR 40, Appendix A, Criteria 1 and 6.

4.0 PROPOSED LICENSE AMENDMENTS

29. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, for reclamation of any tailings or waste disposal areas, ground-water restoration, as warranted, and the long-term surveillance fee. Within three months of NRC approval of a revised reclamation/decommissioning plan, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within three months of written NRC approval.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC at least three months prior to the anniversary date which is designated as December 30 of each year. If the NRC has not approved a proposed revision to the surety coverage 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing surety arrangement for one year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes

in engineering plans, activities performed and any other conditions affecting estimated costs for site closure. The licensee shall also provide the NRC with all surety related correspondence submitted to the State, a copy of the State's surety review, and the final approved surety arrangement. The licensee shall also ensure that the surety, where authorized to be held by the State, expressly identifies the NRC portion of the surety. The basis for the cost estimate is the NRC approved reclamation/decommissioning plan or NRC approved revisions to the plan. The previously provided guidance entitled "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates" outlines the minimum considerations used by the NRC in the review of site closure cost estimates. Reclamation/decommissioning plans and annual updates should follow this outline.

Western Nuclear's currently approved surety, a Parent Company Guarantee, issued by Phelps Dodge Corporation on **March 28, 2006**, committing Phelps Dodge Corporation, among other things, to take certain actions in the event the licensee fails to fulfill its decommissioning or financial assurance obligations, shall be continuously maintained in accordance with the recitals of the Parent Company Guarantee in an amount no less than \$12,279,018 for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9 and 10, until a replacement is authorized by the NRC.

[Applicable Amendments: 24, 45, 53, 64, 66, 70, 72, 76, 85P, 93, 94, 95, 97, **100**]

74. The licensee shall implement a compliance monitoring program containing the following:

- G.** The licensee shall reclaim the groundwater corrective action evaporation ponds in accordance with its February 7, 1994, report titled, "Western Nuclear, Inc. Split Rock Mill, Addendum A (February 7, 1994) to Revision 5 to the June 30, 1987, Uranium Tailings Reclamation Plan." **The Winter Storage Ponds radon attenuation barrier shall be constructed according to the design in the confirmed reclamation plan dated July 25, 2006.**

[Applicable Amendment: 92, 99, **100**]

76. Notification to NRC under 10 CFR 20.2202, 10 CFR 40.60, and specific license conditions should be made as follows:

Required written notice to NRC under this license should be given to: **Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate, Division of Waste Management and Environmental Protection, Office of Federal and State Materials and Environmental Management Programs, Mail Stop T-7E18, U.S. Nuclear Regulatory Commission, Washington, DC, 20555.**

[Applicable Amendment: 73, 95, **100**]

5.0 REFERENCES

U.S. Nuclear Regulatory Commission. 1994. Memorandum for Docket No. 40-1162, Proposed Amendment to Source Materials License SUA-56 to Revise the Approved Disposal Area Reclamation and Closure Plan for Western Nuclear, Inc.'s Split Rock Mill near Jeffrey City, Wyoming. March 25, 1994 [Accession No. 9404280059]

Western Nuclear, Inc. 2006. Reclamation of Ground Water Corrective Action Ponds - License Condition 74E, License SUA-56. July 25, 2006 [ADAMS Accession No. ML062080442].

ATTACHMENT A
NRC STAFF RADON CALCULATIONS

Reference

RG-3.64

Radon cover calucation

----- Input Parameters -----

Number of Layers: 3

Radon Flux into Layer 1: 0 pCi/m²s

Surface Radon Concentration: 0 pCi/L

Bare Source Flux (Jo) from Layer 1: 2.958 pCi/m²s

Specific Bare Source Flux from Layer 1: 0.986 pCi/m²s per pCi_Ra-226/g

Layer No.	Thickness [m]	Ra-226 [pCi/g]	Emanat Fract	Porosity	Moisture [dry wt_%]	Diff Coeff [m ² /s]
1	0.91	3	.35	0.4	1.5	5.750E-6
2	0.15	0	.35	0.44	16.9	744.0E-9
3	0.3	1.1	.35	0.4	2	5.395E-6

----- Results of Radon Diffusion Calculation -----

Layer No.	Thickness [m]	Exit Flux [pCi/m ² s]	Exit Conc [pCi/L]
1	0.91	1.823	1.632E3
2	0.15	1.744	161.7E0
3	0.3	2.103	0E0

Total cover radon retention: 28.92%

Regulatory analysis

2.103 pCi/m²-s is much less then the regulatory limit of 20 pCi/m²-s.