



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 29, 1999

Mr. Lawrence J. Corte, Manager
Western Nuclear, Inc.
Union Plaza Suite 300
200 Union Boulevard
Lakewood, CO 80228

SUBJECT: REVIEW OF RADON FLUX SAMPLING DATA - AMENDMENT 91

Dear Mr. Corte:

This letter is in response to your submittals dated November 13, 1998, and January 18, 1999, concerning the U.S. Nuclear Regulatory Commission (NRC) review of Western Nuclear, Inc.'s (WNI's) radon flux sampling data at its Split Rock, Wyoming, site.

Based on its review of these submittals, the NRC staff concurs with the analysis and results of WNI's radon flux sampling reports and concludes that WNI has demonstrated compliance with 10 CFR Part 40, Appendix A, Criterion 6(2) requirements. The NRC staff review is documented in the enclosed Technical Evaluation Report. Also enclosed is the amended source materials license SUA-56, reflecting the revision of license condition 75A(3) to show WNI's compliance with applicable radon emissions limits.

An environmental review of this action was not performed since it is categorically excluded under 10 CFR 51.22(c)(11). Also, an environmental report was not required by the license pursuant to 10 CFR 51.60(b)(2).

If you have any questions concerning this subject, please contact Mr. Robert Carlson of my staff at (301) 415-8165.

Sincerely,

A handwritten signature in cursive script that reads "John J. Surmeier".

John J. Surmeier, Chief
Uranium Recovery and
Low-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-1162
License No. SUA-56

Enclosures: As stated

cc: R. Chancellor, WDEQ

Mr. Lawrence J. Corte, Manager
 Western Nuclear, Inc.
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 200 Union Boulevard
 Lakewood, CO 80228

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Sincerely,
 [Signed by]
 John J. Surmeier, Chief
 Uranium Recovery and
 Low-Level Waste Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Docket No. 40-1162
 License No. SUA-56
 Enclosures: As stated
 cc: R. Chancellor, WDEQ

CASE CLOSED: L51764

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RDC

9/27/99

(Initials)

(Date)

Mr. Lawrence J. Corte, Manager
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 Union Plaza Suite 300
 200 Union Boulevard
 Lakewood, CO 80228

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DATE	9/27/1999		1/1999		1/1999			

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JJC 9/27/1999
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TECHNICAL EVALUATION REPORT

DATE: September 27, 1999

DOCKET NO.: 40-1162

LICENSE NO.: SUA- 56

LICENSEE: Western Nuclear, Inc.

FACILITY: Split Rock, WY

PROJECT MANAGER: Robert Carlson

TECHNICAL REVIEWER: John H. Lusher

SUMMARY AND CONCLUSIONS:

By letter dated November 13, 1998, Western Nuclear, Inc. (WNI) transmitted to the U.S. Nuclear Regulatory Commission (NRC) its radon emanation testing reports on the radon barriers of its Split Rock, WY, site tailings piles to demonstrate compliance with 10 CFR Part 40, Appendix A, Criterion 6(2). After performing an initial review of the licensee's submittal, the NRC staff verbally requested additional information in December 1998 concerning quality assurance data from the testing laboratory. WNI provided the additionally requested data to NRC on January 18, 1999. Based on its review of the aforementioned licensee submittals, the NRC staff concludes that WNI has demonstrated compliance with applicable 10 CFR Part 40 requirements.

BACKGROUND:

In 1997 WNI completed placement of the radon barrier for its Split Rock site and submitted the results of this reclamation action in its Radiological Verification Completion Report, dated December 19, 1997. Beginning in 1995, WNI conducted radon flux performance sampling at the tailings piles within each of the areas for which radon barrier had been placed during the preceding calendar year. Final report data for testing conducted during 1998 were received by WNI on October 3, 1998. The radon flux performance sampling data and results were sent to the NRC via WNI's November 13 submittal. The NRC staff conducted an initial review of WNI's reports in December 1998 and requested the quality assurance data for radon flux sampling from the testing laboratory. WNI provided this additional information in its January 18 submittal.

TECHNICAL EVALUATION:

The NRC staff reviewed WNI's submittal material for its radon barrier analysis and the laboratory quality assurance data. Based on this review, the NRC staff concluded the quality assurance data was within acceptable limits and that the appropriate procedures were used. The average measured radon flux (from 320 locations) was 0.88 pCi/m²s, compared to the regulatory limit of 20 pCi/m²s.

Enclosure

Therefore, the data demonstrated that WNI met the requirements of 10 CFR Part 40, Appendix A, Criterion 6(2) for the total tailings areas reclaimed and tested at the Split Rock site.

PROPOSED LICENSE CHANGE:

License condition 75A(3) should be revised to read as follows:

Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m²s above background as described in WNI's submittal of June 14, 1994, and subsequently verified in submittals dated November 13, 1998, and January 18, 1999 - complete.

[Applicable Amendments: 73, 77, 86, and 91]

ENVIRONMENTAL IMPACT EVALUATION:

An environmental assessment (EA) is not required for this licensing action in accordance with the categorical exclusion contained in 10 CFR § 51.22 (c)(11). This paragraph states the categorical exclusion applies to issuing license amendments for uranium mill operators licensed under 10 CFR § 40 provided that: (1) there is no significant change in the types or significant increase in the amounts of any effluent that may be released off site; (2) there is no significant increase in individual or cumulative occupational radiation exposure; (3) there is no significant construction impact; and (4) there is no significant increase in the potential for, or consequences from, radiological accidents. The licensing action discussed herein meets all of the above listed criteria for an EA categorical exclusion.

Additionally, this license amendment application does not meet any of the subsequently listed criteria of 10 CFR 51.60(b)(2), regarding the requirement for licensee's to submit environmental reports with amendment requests. This paragraph states an environmental report shall be prepared by uranium mill operators licensed under 10 CFR Part 40 if one of the following criteria applies: (1) a significant expansion of the site; (2) a significant change in the types of effluents; (3) a significant increase in the amounts of effluents; (4) a significant increase in individual or cumulative occupational radiation exposures; (5) a significant increase in the potential for or consequences from radiological accidents; or (6) a significant increase in spent fuel storage capacity, in a license or other form of permission to conduct an activity listed in paragraph (b)(1) of this section. The licensing action discussed herein does not meet any of the aforementioned criteria. Consequently, an environmental report is not required from the licensee for this action.

REFERENCES:

WNI letter to NRC submitting radon flux sampling data, dated November 13, 1998.

WNI letter to NRC submitting additional information regarding radon flux testing, dated January 18, 1999.

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

<p>Licensee</p> <p>1. Western Nuclear, Inc.</p> <p>2. 200 Union Boulevard, Suite 300 Lakewood, Colorado 80228 [Applicable Amendments: 34, 52]</p>	<p>3. License Number SUA-56, Amendment No. 91</p> <hr/> <p>4. Expiration Date Until Terminated (Applicable Amendments: 31, 32, 38, 41)</p> <hr/> <p>5. Docket or Reference No. 40-1162</p>
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6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License
Natural Uranium	Any	Unlimited

9. The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings generated by the licensee's past milling operations authorized under SUA-56. [Applicable Amendments: 32, 46, 58]
10. Authorized Places of Use: The licensee's uranium milling facilities located approximately two miles north of Jeffrey City, Wyoming.

[Applicable Amendments 46, 50, 60, 82]
11. DELETED by Amendment No. 49.
12. DELETED by Amendment No. 49.
13. DELETED by Amendment No. 49.
14. DELETED by Amendment No. 49.
15. DELETED by Amendment No. 49.
16. DELETED by Amendment No. 54.
17. DELETED by Amendment No. 33.
18. DELETED by Amendment No. 49.
19. DELETED by Amendment No. 56.
20. DELETED by Amendment No. 49.

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- 21. DELETED by Amendment No. 56.
- 22. DELETED by Amendment No. 54.
- 23. DELETED by Amendment No. 33.
- 24. The licensee shall implement the environmental monitoring program outlined in Table 2 of its guidance titled "Current Environmental Monitoring Program," dated November 14, 1988. The licensee shall sample three surface water locations, S-5 [Sweetwater Below Mill], S-6 [Sweetwater Across from Mill], and S-7 [Sweetwater Above Mill], at the same sampling frequency and for the same constituents [excluding static water level] as required under LC No. No. 74A. The data obtained from this monitoring program shall be reported semiannually to the NRC in accordance with requirements of 10 CFR 40.65.

[Applicable Amendments: 26, 28, 30, 44, 49, 56A, 84, 89]

- 25. The licensee shall conduct a quality assurance program as contained in their submittal dated March 25, 1981. In addition, the licensee shall be required to document the results and recommendations of each annual audit of the environmental monitoring program. Any requested changes to the "Environmental Monitoring Manual" submitted on March 23, 1981, as revised by letters dated March 27, 1991, January 28 and March 11, 1992, shall be in the form of a license amendment.

[Applicable Amendments: 49, 63]

- 26. DELETED by Amendment No. 49.
- 27. The licensee shall reclaim the tailings disposal areas in accordance with the Tables and Figures, and Sections 1 through 5 and Section 7 of their 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," with the following exceptions:
 - A. If a rock source other than the on-site source is used, durability testing must be performed and the results submitted to the NRC for review and approval prior to placement of materials from the alternate source.
 - B. The preliminary radon attenuation barrier design for the Winter Storage Ponds (Area 2C, Figure 4, Drawing No. 91-225-E53 (Addendum A to Revision 5) consists of 6 inches of Cody Shale and 12 inches of Soil Borrow. This design is considered acceptable for estimating the surety amount. However, once the storage ponds are dismantled, the Licensee shall confirm the design and obtain NRC approval prior to placing the radon cover on the ponds.
 - C. A completion report including as-built drawings, verifying that reclamation of the site has been performed according to the approved reclamation plan shall be provided within 6 months after completion of construction. The report shall also include summaries of results of the quality assurance and control testing to demonstrate that approved specifications were met.
 - D. One-point Proctor tests shall not be required during placement of the Cody shale.

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- E. The soil component of the erosion protection layer, consisting of soil/rock matrix, is deleted. This erosion protection layer, to be placed over the final surface reclamation soil cover, will consist of a minimum 4-inch thickness of rock with a minimum D_{50} of 2-inches.
- F. For rock durability tests, the frequency, specified in Table 5, shall be one test series prior to placement and one test series for every 20,000 cubic yards of material from the rock source.
- G. For rock gradation tests, the frequency, specified in Table 5, shall be one test prior to placement and one test for every 10,000 cubic yards of each size of material produced, with a minimum of 3 tests for each material size. These gradation tests shall be performed as the material is being produced and prior to placement of material.
- H. The radon barrier for the northern portions of Area 1A and Area 1B shall be constructed in accordance with material types, thicknesses, and placement criteria described in the license amendment request, License Condition #27: Revisions to Surface Reclamation Design - License Condition #33: Addendum to Radiological Verification Program, dated March 31, 1997; and the supplemental information, dated May 12, 1997, and May 30, 1997.
- I. The thickness of the radon barrier in the 0.8 acre Area 2A shall be in accordance with the Western Nuclear, Inc. Western Nuclear Split Rock Site Redesign of Final Cover Thickness 0.8 Acre Area in Area 2A, transmitted to the NRC on July 25, 1997.
- J. Contaminated soil samples shall be disposed of in accordance with Western Nuclear, Inc.'s "Disposal Plan for Left-Over Samples Collected During Radiological Clean-Up Program at Split Rock Mill Site," dated July 26, 1999.

[Applicable Amendments: 22, 56, 68, 71, 74, 75, 80, 81, and 90]

- 28. DELETED by Amendment No. 87.
- 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 3 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 3 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 3 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 1 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

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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, issued by American Home Assurance Company on October 26, 1998, in favor of the U. S. Nuclear Regulatory Commission, shall be continuously maintained in an amount no less than \$11,439,100 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]

30. DELETED by Amendment No. 69.

31. DELETED by Amendment No. 46.

32. A. DELETED by Amendment No. 56.

B. DELETED by Amendment No. 50.

33. DELETED By Amendment No. 88

34. In order to ensure that no disturbance of cultural resources occurs in the future, the licensee shall have an archeological and historical artifact survey of areas of its property, not previously surveyed, performed prior to their disturbance, including borrow areas to be used for reclamation cover. These surveys must be submitted to the NRC and no such disturbance shall occur until the licensee has received authorization from the NRC to proceed.

The licensee is authorized to excavate material from the proposed reclamation borrow areas as designated in the licensee's approved reclamation plan, provided that protection of the cultural resources is managed in accordance with statements and representation contained in the licensee's letter dated March 30, 1992.

[Applicable Amendment: 71]

35. Before engaging in any project-related activity not evaluated by the NRC, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates such activity may result in a significant adverse environmental impact that was not evaluated, or an impact greater than that evaluated in the environmental statement, the licensee shall provide a written evaluation of such activity and obtain prior approval of the NRC for the activity.

36. DELETED by Amendment No. 49.

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37. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR Part 20, provided that all entrances to the restricted area are conspicuously posted in accordance with Section 20.203(e)(2) and with words, "Any area within this facility may contain radioactive material."

[Applicable Amendment: 49]

38. Mill tailings other than samples for research shall not be transferred from the site without specific prior approval of the NRC obtained through application for amendment of this license. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.

39. DELETED by Amendment No. 50.

40. DELETED by Amendment No. 49.

41. Release of equipment or packages from the restricted area shall be in accordance with the previously provided guidance entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September, 1984.

42. The Radiation Safety Officer (RSO) shall perform an annual review of the radiation protection program for content and implementation. A copy of the annual review report shall be retained at the site and shall be available for NRC review.

[Applicable Amendments: 49, 87]

43. The results of sampling, analysis surveys and monitoring, the calibration of equipment, reports on inspections, and the additional conditions to this license, as well as any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in NRC regulations, all such documentation shall be maintained for a period of at least 5 years.

[Applicable Amendment: 49, 87]

44. Written procedures shall be established for site reclamation and monitoring activities to include personnel and environmental monitoring, and survey instrument calibrations. These procedures shall be reviewed and approved in writing by the Radiation Safety Officer (RSO) before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing site procedures at least annually. An up-to-date copy of each written procedure shall be kept at the site facility.

[Applicable Amendments: 49, 56, 87]

45. DELETED by Amendment No. 49.

46. DELETED by Amendment No. 87.

47. DELETED by Amendment No. 49.

48. The Radiation Safety Office (RSO), who is responsible for the radiation safety aspects of the decommissioning, shall possess the minimum qualifications as specified in Section 2.4.1 of Regulatory Guide 8.31, "Information Relevant to Ensuring That Occupational Radiation Exposure at Uranium Mills Will Be As Low As Reasonably Achievable," until license termination.

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[Applicable Amendments: 49, 50, 56, 87]

- 49. DELETED by Amendment No. 49.
- 50. DELETED by Amendment No. 49.
- 51. DELETED by Amendment No. 49.
- 52. DELETED by Amendment No. 49.
- 53. Radiation detection instruments shall be calibrated after repair and as recommended by the manufacturer or at intervals not to exceed six months, whichever is sooner.
- 54. DELETED by Amendment No. 49.
- 55. DELETED by Amendment No. 49.
- 56. DELETED by Amendment No. 49.
- 57. DELETED by Amendment No. 33.
- 58. DELETED by Amendment No. 37.
- 59. DELETED by Amendment No. 49.
- 60. DELETED by Amendment No. 49.
- 61. DELETED by Amendment No. 49.
- 62. DELETED by Amendment No. 49.
- 63. DELETED by Amendment No. 56.
- 64. The licensee shall control grazing to the N and NNE of the tailings impoundment by maintaining cattle guards at each end of the rock outcrops along the north side of the restricted area fence, as indicated on map A, submitted by letter dated August 18, 1978 from G. Fletcher to J. Linehan.
- 65. DELETED by Amendment No. 49.
- 66. DELETED by Amendment No. 33.
- 67. DELETED by Amendment No. 33.
- 68. DELETED by Amendment No. 46.
- 69. DELETED by Amendment No. 46.
- 70. DELETED by Amendment No. 49.
- 71. DELETED by Amendment No. 49.
- 72. DELETED by Amendment No. 49.

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73. DELETED by Amendment No. 54.

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

A. Sample Southwest Valley Wells 1, B, 21, 24, 25, 16, 15, and Northwest Valley Wells 4, 5, 17, 19, 23, and 27, on a semiannual frequency for chloride, nitrate, sulfate, pH, TDS, water level, beryllium, cadmium, chromium, lead, nickel, radium-226 and 228, selenium, thorium-230, and uranium.

B. Comply with the following ground-water protection standards at point of compliance Well No. 4 and 21, with background being recognized in Well No. 15:

beryllium = 0.05 mg/l, cadmium = 0.01 mg/l, chromium = 0.05 mg/l, lead = 0.05 mg/l, nickel = 0.05 mg/l, radium-226 and 228 = 5 pCi/l, selenium = 0.013 mg/l, thorium-230 = 0.95 pCi/l, and uranium = 0.16 mg/l.

C. Implement a corrective action plan program that shall recover and evaporate between 6 and 15 million gallons of contaminated water based upon minimizing recharge to the tailings. This program shall be constructed as described in the August 31, and September 28, 1989, submittals as modified by the licensee's April 3, 1990, January 13, 1992, September 23, 1993, April 18, 1997, May 20, 1998, and July 2, 1999, submittals. The objective of the program shall be to return the concentrations of beryllium, cadmium, nickel, radium-226 and 228, selenium, thorium-230, and uranium to the concentration limits specified in Subsection 74B above. A final Corrective Action Program Plan, which includes a complete site characterization, must be received by NRC by October 31, 1999.

[Applicable Amendments: 25, 27, 36, 39, 40, 44, 48, 51, 56, 58, 61, 62, 67, 69A, 79, 89]

D. The licensee shall submit by December 15 of each year, a review of the corrective action program and its effect on the aquifer.

[Applicable Amendments: 25, 27, 36, 39, 40, 44, 48, 51, 56, 58, 61, 62, 67, 69A, 79]

75. The licensee shall complete site reclamation in accordance with the approved reclamation plan and groundwater corrective action plan, as authorized by License Condition Nos. 27 and 74, respectively, in accordance with the following schedules.

A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:

- (1) Windblown tailings retrieval and placement on the pile - complete.
- (2) Placement of the interim cover to decrease the potential for tailings dispersal and erosion - complete.
- (3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m²/s above background as described in WNI's submittal of June 14, 1994, and subsequently verified

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in submittals dated November 13, 1998, and January 18, 1999 - complete.

- B. Reclamation, to ensure required longevity of the covered tailings and groundwater protection, shall be completed as expeditiously as is reasonably achievable, in accordance with the following target dates for completion and as described in WNI's submittal of June 14, 1994:
- (1) Placement of erosion protection as part of reclamation to comply with Criterion 6 of Appendix A of 10 CFR Part 40.
 - (a) For areas 3A and 3B - June 30, 1995 (complete).
 - (b) For area 2B - June 30, 1996.
 - (c) For area 1C - June 30, 1997.
 - (d) For areas 1A, 1B, 2A, and 2C - June 30, 1999.
 - (2) Projected submittal of revised groundwater corrective action plan - October 31, 1999.
- C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).
- D. Any license amendment request to change the target dates in Section B above, must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factors beyond the control of the licensee.

[Applicable Amendments: 73, 77, 86, 91]

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: Chief, Uranium Recovery and Low-Level Waste Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

[Applicable Amendment: 73]

Date 9/28/99

FOR THE NUCLEAR REGULATORY COMMISSION


John Surmeier, Chief
Uranium Recovery and Low-Level
Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards