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

May 28, 1999

Ms. Linda Z. Krupnik, Manager
Safety, Health and Environment
Exxon Coal and Minerals Company
P.O. Box 1314
Houston, Texas 77251-1314

SUBJECT: CONCURRENCE ON ALTERNATE CONCENTRATION LIMITS
SOURCE MATERIAL LICENSE SUA-1139, AMENDMENT NO. 49

Dear Ms. Krupnik:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of Exxon Corporation's (Exxon's) request for amendment of Source Material License SUA-1139, to incorporate proposed alternate concentration limits (ACLs) for ground-water constituents at the Highland uranium mill site in Converse County, Wyoming. Based on its review, the NRC staff concludes that the ACLs proposed by Exxon will not pose a substantial present or potential future hazard to human health and the environment and are as low as is reasonably achievable. Therefore, pursuant to Title 10 of the Code of Federal Regulations (CFR) Part 40, the staff has amended Condition 33 of Source Material License SUA-1139, incorporating the proposed ACLs. In addition, the staff has taken this opportunity to make an administrative change to License Conditions 22, 24, and 25 to reflect the new Branch name of "Uranium Recovery and Low-Level Waste Branch." All other Conditions of the license shall remain the same. The reissued license SUA-1139 is enclosed (Enclosure 1).

Since the ground water standards (the ACLs for uranium, radium 226+228, and nickel; and the groundwater protection limits for cadmium, chromium, lead, thorium-230, and selenium) in Condition 33 have been met, no further corrective action is required at this time. However, Exxon should be aware that the State of Wyoming may implement its ground water standards for non-radiological parameters as a result of the concurrent jurisdiction. The NRC staff's review is documented in the enclosed Technical Evaluation Report (Enclosure 2).

Furthermore, the NRC staff determined that this action would result in no significant environmental impacts, and documented this finding in the enclosed (Enclosure 3) Environmental Assessment (EA). The NRC issued a Finding of No Significant Impact in accordance with 10 CFR 51.32, and on May 21, 1999, published in the Federal Register (Volume 64, Number 98), providing notice of: 1) the NRC's proposal to issue an amendment of NRC Source Material License SUA-1139, concerning approval of Exxon's proposed ACLs; and 2) the availability of the EA.

If you have any questions concerning this letter or its enclosures, please contact the NRC Project Manager, Mohammad Haque, at (301) 415-6640.

Sincerely,

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

Docket No. 40-8102

Enclosures: As stated (3)

cc: G. Beach, DEQ, WY
R. Chancellor, DEQ, WY
M. Moxley, DEQ, WY

If you have any questions concerning this letter or its enclosures, please contact the NRC Project Manager, Mohammad Haque, at (301) 415-6640.

Sincerely,

[Original 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. 40-8102

TAC No. L51770 (closed)
L51734 (also)
Enclosures: As stated (3)

cc: G. Beach, DEQ, WY
R. Chancellor, DEQ, WY
M. Moxley, DEQ, WY

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ENCLOSURE 1

TECHNICAL EVALUATION OF
ALTERNATE CONCENTRATION LIMITS FOR GROUND WATER AT
EXXON HIGHLAND, WYOMING, URANIUM MILL SITE

DATE: April 20, 1999

DOCKET NO: 40-8102

LICENSE NO: SUA-1139

LICENSEE: Exxon Corporation

FACILITY: Exxon Highland

PROJECT MANAGER: Mohammad Haque

TECHNICAL REVIEWER: Jane Gunn

SUMMARY

By letter dated December 18, 1998, Exxon Corporation (Exxon) requested that Source Material License SUA-1139 be amended to allow Alternate Concentration Limits (ACLs) for groundwater at the Highland uranium tailings basin in Converse County, Wyoming. Based on its review of the information provided by the licensee, the U.S. Nuclear Regulatory Commission (NRC) staff concludes that the ACLs proposed by Exxon are acceptable.

The staff considers the proposed ACL values for the Exxon Highland site to be protective of human health and the environment. As required by 10 CFR Part 40, Appendix A, Criterion 5B(6), the licensee has demonstrated that the proposed limits are As Low As Reasonably Achievable (ALARA), considering practicable corrective actions. Since the groundwater standards in Condition 33 of the license (the ACLs for uranium, radium 226+228, and nickel; and the groundwater protection limits for cadmium, chromium, lead, thorium-230, and selenium) have been met, no further corrective action is required at this time.

Therefore, the licensee's request for ACLs has resulted in an amendment to Condition 33 of the license. The revised Condition includes the ACL values for nickel, radium 226+228, and uranium, as proposed, and a provision to require additional action in the event of confirmation of any ACL exceedence prior to license termination.

DESCRIPTION OF THE LICENSEE'S AMENDMENT REQUEST

The Exxon license amendment application proposes that ACLs be granted for three of the point of compliance (POC) wells, on a well by well, constituent by constituent basis. The licensee must terminate the site corrective action program (CAP) prior to completing placement of the final radon barrier. In order to terminate the CAP, the licensee must meet 10 CFR Part 40, Appendix A, Criterion 5B(5), which requires that the concentration limits for individual constituents measured at the POC not exceed: 1) the NRC-approved background constituent

ENCLOSURE

concentration in the ground water; 2) the maximum concentration limit (MCL) value given in Table 5C of Appendix A; or 3) an ACL established by the NRC. Therefore, Exxon requested that its license be amended to incorporate the following ACLs:

Well 125: 59 pCi/l UNAT
Well 175: 1.8 mg/l Ni and 25 pCi/l Ra 226&228
Well 177: 71 pCi/l UNAT

Currently, all concentrations of potentially hazardous constituents (PHCs), with the exceptions noted above, meet the established groundwater background values for the site as measured in the POC wells.

TECHNICAL EVALUATION

Background

Exxon, then known as Standard Oil Company of New Jersey and operating as Humble Oil and Refining Company, began conventional milling at the Highland site in October of 1972 under Atomic Energy Commission (AEC) license No. SUA-1139. Exxon owned and operated the uranium mines at Highland that provided ore to the mill, supplemented by a small volume of toll milled ore from two other companies. Milling operations ended in 1984. Reclamation commenced, and by 1989 the tailings had been reclaimed except for 20 acres containing the evaporation ponds for the groundwater corrective action program and an area of wick drains where consolidation of the tailings is not complete.

In 1988, Exxon reported completion of a formal leak detection program that confirmed the basin seeped liquid into the uppermost aquifer and completed a PHC detection monitoring program that measured PHCs at new and existing wells. This program involved monitoring at the background wells and other monitoring wells in the upper most aquifer or in mine backfill areas near the tailings basin. The concentrations of inorganic elements and radionuclides found in 1986 and other contaminants commonly associated with uranium tailings piles were measured. Data gathered were used to tailor the corrective action and monitoring programs to the constituents at the Highland site.

Overall, corrective action has been successful in reducing PHCs to background levels at the Highland site. Three constituents, uranium (UNAT), radium 226+228, and nickel have not reached license limits and are not declining with continued corrective action. Natural processes will attenuate the remaining contaminants during long-term custody of the site.

Technical Assessment

The staff evaluated the licensee's ACL application in accordance with the NRC "Staff Technical Position, Alternate concentration Limits for Title II Uranium Mills" dated January 1996. The staff's review was based on the licensee's submittal of December 1998. Based on its review, the staff finds the ACL application submitted by Exxon to acceptably demonstrate that hazardous constituent concentrations at the Points Of Exposure (POEs) for the site will not pose substantial present or potential hazards to human health or the environment, and that the ACLs are ALARA considering practicable corrective actions.

The Tailings Dam Sandstone (TDSS) is the formation impacted by seepage of tailings fluid from the pile. The TDSS is underlain by the Tailings Dam Shale (TDSH), which forms a barrier to plume movement into lower formations through both physical and geochemical mechanisms. Therefore, the tailings have not impacted lower aquifers.

The tailings impoundment was constructed by placing a dam in a natural valley across an unnamed tributary of the North Fork of Box Creek. The base of the tailings dam was keyed into the TDSH for stability reasons. This arrangement prevented seepage from moving underneath the dam; however the wings of the dam were not keyed into the shale, leaving a potential flowpath for seepage. Tailings fluid seepage moved down into the TDSS, at the base of the tailings impoundment, creating a mound of seepage water underneath the tailing impoundment. As the mound grew, the saturated area reached the wings of the dam, and seepage showed up in the fingers area shortly afterward. In 1975, a sump system was constructed to capture this seepage and return it to the tailings basin. No action was required or taken to address the seepage mound directly underneath the tailings impoundment in the TDSS at that time. The groundwater mound beneath the tailings impoundment began to move toward the open pit to the east of the impoundment; groundwater withdrawals to facilitate mining created a groundwater gradient toward the pit. As the reclamation is completed and groundwater levels reach equilibrium with the nearby Highland Reservoir, the remaining seepage beneath the tailings will become stagnant and return to reduced conditions.

The TDSH has a high cation exchange capacity and a low permeability, which will slow and attenuate any PHCs that contact the formation. Groundwater flow under the tailings basin currently is west, toward the Highland Reservoir. The tailings fluid that moves west toward the reservoir moves through an area of mine backfill, which is characterized by high porosity, high cation exchange capacity, and low permeability. Low permeability in the mine backfill gives greater contact time between any potential contaminant and the attenuating material, which enhances natural attenuation. Once the water level in the reservoir and the water table in the surrounding formations reach equilibrium, the historic gradient to the east should become dominant and groundwater movement from beneath the tailings pile into the mine backfill area will cease. However, the lack of recharge to the TDSS underneath the tailings pile will inhibit groundwater movement in either direction. Stagnant conditions in the groundwater beneath the tailings pile will lead to reducing conditions. Reducing conditions will immobilize the PHCs, ensuring no health or environmental concerns from the PHCs at the Exxon Highland Site.

Exxon explored the cost/benefit ratio of several additional corrective actions. The options evaluated were: (1) continuance of the current corrective action; (2) groundwater sweep with reinjection of treated water; (3) groundwater sweep with fresh water injection, and (4) installation of reactive barriers. Costs of all options considerably exceeded the value of the limited groundwater resource at the site. The NRC staff has reviewed the licensee's submittal and concurs with the finding in this area. Therefore, an ACL for the Exxon Highland site is ALARA.

RECOMMENDED LICENSE CHANGE

Based on the NRC staff review of the information provided in the ACL application, and pursuant to 10 CFR Part 40, the staff recommends that the Source Material License SUA-1139 be amended by revising Condition 33 as follows:

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

A. Sample wells 015, 112, 114, 116, 117, 120, 125, 127, 128, 129, 134, 148, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, and 183 on a quarterly frequency for chloride, nitrate, sodium, sulfate, pH, TDS and water level, and on a semiannual frequency for arsenic, cadmium, chromium, gross alpha, 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 Nos. 125, 175, 176 and 177, with background being recognized in well No. 182: arsenic = 0.05 mg/l, cadmium = 0.01 mg/l, chromium = 0.05 mg/l, gross alpha = 15.0 pCi/l, lead = 0.05 mg/l, nickel = 0.02 mg/l, radium-226 and 228 = 5.0 pCi/l, selenium = 0.01 mg/l, thorium-230 = 0.55 pCi/l, and uranium = 0.43 pCi/l, with the exceptions of: well 125 uranium = 59 pCi/l; well 175 nickel = 1.8 mg/l and radium 226 and 228 = 25 pCi/l; and well 177 uranium = 71 pCi/l.

C. DELETED by Amendment No. 49.

D. In the event the constituent limits in subsection B are exceeded, the licensee shall propose a new corrective action program with the objective of returning concentrations of those constituents to the concentration limits specified in subsection B.

[Applicable Amendments: 12, 13, 14, 22, 23, 26, 27, 32, 43, 44, 45, 49]

ENVIRONMENTAL IMPACT EVALUATION

The staff's review was documented in an Environmental Assessment (EA) in accordance with the requirements of 10 CFR Part 51. The conclusion of the EA is a Finding of No Significant Impact (FONSI) for the proposed licensing action. The staff issued the FONSI in accordance with 10 CFR 51.32, and on May 21, 1999, published that finding in the Federal Register (Volume 64, Number 98).

REFERENCES

Exxon Corporation (Exxon), 1998. Letter dated December 18, 1998, from Linda Z. Krupnik, to J. Holonich, NRC, transmitting the Alternate Concentration Limits Application.

Exxon, 1999. Letter dated January 21, 1999, from Linda Z. Krupnik, to J. Holonich, NRC, transmitting the 1999 Exxon Coal and Minerals Company Annual Report of Seepage Mitigation.

U.S. Nuclear Regulatory Commission, 1996. Staff Technical Position Alternate Concentration Limits for Title II Uranium Mills - Standard Format and Content Guide and Standard Review Plan for Alternate Concentration Limit Applications.

U.S. Atomic Energy Commission, Directorate of Licensing; March 1973; Final Environmental Statement.

ENCLOSURE 3

ENVIRONMENTAL ASSESSMENT
FOR
EXXON CORPORATION'S HIGHLAND URANIUM MILL SITE
CONVERSE COUNTY, WYOMING

IN CONSIDERATION OF AN AMENDMENT TO
SOURCE MATERIAL LICENSE SUA-1139 FOR
ALTERNATE CONCENTRATION LIMITS FOR GROUNDWATER

PREPARED BY

THE U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF WASTE MANAGEMENT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

ENVIRONMENTAL ASSESSMENT
IN CONSIDERATION OF ALTERNATE CONCENTRATION LIMITS FOR GROUNDWATER
FOR EXXON CORPORATION'S HIGHLAND, WYOMING, URANIUM MILL SITE

1.0 INTRODUCTION

1.1 Background

The Exxon Corporation's (Exxon's) Highland uranium mill site is located in Converse County, Wyoming. License SUA - 1139 was originally issued by the Atomic Energy Commission (AEC), and is currently issued by U.S. Nuclear Regulatory Commission (NRC). Exxon, then Standard Oil Company of New Jersey, and operating as Humble Oil and Refining Company, began conventional uranium milling at the Highland site in October 1972. Exxon owned and operated the uranium mines that provided the ore for the mill. A limited amount of toll milling also took place at the Highland facility. Milling operations ended in 1984, and site reclamation began. Most of the surface reclamation was completed in 1989, with the exception of 20 acres of the tailings basin which required additional action to ensure at least 90 percent consolidation of the tailings prior to final reclamation. A portion of the remaining 20 acres is also used for the evaporation ponds in the groundwater corrective action program.

The Highland mill used a conventional acid leach-solvent extraction process to extract uranium from the ore. The mill tailings were deposited in an above grade impoundment formed by damming an unnamed ephemeral tributary to the North Fork of Box Creek. Tailings deposition took place from the mill startup in October 1972, until June of 1984. Reclamation work and groundwater corrective action have taken place since 1984.

1.2 Proposed Action

By letter dated December 18, 1998, Exxon requested that Source Material License SUA-1139 be amended to allow alternate concentration limits (ACLs) for groundwater at the Highland uranium tailings basin in Converse County, Wyoming. The Exxon license amendment application proposes that ACLs be granted for three of the Point of Compliance (POC) wells, on a well-by-well, constituent-by-constituent basis. The licensee must terminate the site corrective action program (CAP) prior to completing placement of the final radon barrier. In order to terminate the CAP, the licensee must meet 10 CFR Part 40, Appendix A, Criterion 5B(5), which requires that the concentration of a hazardous constituent must not exceed: (i) the NRC-approved background constituent concentration in the ground water; (ii) the maximum concentration limit (MCL) value for groundwater protection given in Table 5C of Appendix A; or (iii) an ACL established by the NRC at the POC. Therefore, Exxon requested its license be amended to incorporate the following ACLs:

Well 125: 59 pCi/l UNAT
Well 175: 1.8 mg/l Ni and 25 pCi/l Ra 226&228
Well 177: 71 pCi/l UNAT

Currently, all concentrations of potentially hazardous constituents (PHCs), with the exceptions noted above, meet the established background constituent concentration in the groundwater.

1.3 Review Scope

In accordance with Title 10, Code of Federal Regulations, Part 51, this Environmental Assessment (EA) serves to :

(i) *Present information and analyses for determining whether to issue a Finding Of No* Significant Impact (FONSI), or to prepare an Environmental Impact Statement (EIS);

(ii) Fulfill the NRC's compliance with the National Environmental Policy Act when no EIS is necessary; and

(iii) Facilitate preparation of an EIS when one is necessary. Should the NRC issue a FONSI, no EIS would be prepared and the commercial source material license, or amendment thereof, would be granted, subject to operating conditions contained in the existing source and byproduct material license.

1.4 Federal/State Jurisdiction

As a result of the concurrent jurisdiction allowed under the Uranium Mill Tailings Radiation Control Act of 1978, Exxon's Highland site is also regulated by the Wyoming Department of Environmental Quality (WDEQ). There are certain parameters for which the WDEQ is preempted from jurisdiction; some parameters are under joint NRC and WDEQ jurisdiction; and some parameters are solely under the jurisdiction of the WDEQ. Furthermore, unlike NRC, the present WDEQ groundwater standards have no risk-based provision such as ACLs. This EA only covers impacts for parameters regulated by the NRC and does not assess impacts for parameters regulated solely by the WDEQ.

2.0 SITE CHARACTERISTICS

Exxon's Highland uranium mill facility and associated tailings are located in the Powder River Basin, 35 miles north of Douglas, Wyoming. Uranium was removed from the Highland deposit through surface, underground, and in-situ leach (ISL) mining. Overburden removal for surface mining began in September of 1970, and underground mining began in 1973, with the sinking of the Buffalo Shaft. ISL mining occurred in a pilot mine that was initiated in 1972, and terminated in 1981.

During operation, seepage from the tailings basin resulted in the development of a groundwater mound under and around the tailings basin. As the mound grew, it eventually reached an elevation that caused tailings fluid seepage to enter the alluvial deposits on the downstream of the dam. The center of the dam was keyed into the underlyingTailings Dam Shale (TDSH), which prevented any seepage moving under the dam. However, the wings of the dam were not keyed into the TDSH, and allowed seepage to move through the wings and outside of the tailings impoundment. In 1975, a sump system was constructed to capture this seepage and pump it back to the tailings basin. All aspects of mining and milling ceased in 1984, when reclamation activities began.

The underground and open pit mining that took place at the Highland site necessitated lowering the local water table below the working level in the mines. The overburden from new mining operations was placed in old mined out pits. The final two pits were not filled, and are now the Highland Reservoir.

Groundwater beneath the tailings impoundment will be cut off from recharge by the final cover over the tailings pile and the location of the pile itself. This lack of recharge will enable the groundwater beneath the pile to remain stagnant, which, in turn, will induce reducing conditions similar to the groundwater conditions prior to mining in this area. The reducing environment will encourage the PHCs remaining to move out of solution and precipitate onto sand grains in the Tailings Dam Sandstone (TDSS) formation. Once that has taken place, the groundwater will have been returned to background conditions. Additionally, some cation exchange will aid in attenuating the remaining levels of PHCs above background.

3.0 OPERATIONS

Exxon's Highland mill operated from 1972, until shutdown in 1984. The mill processed about 10.5 million tons of uranium ore, which did not have significant concentration of vanadium or molybdenum typical of some uranium ores. The mill contained a conventional dry crusher and wet rod mill to separate the individual grains in the ore. The resulting slurry was leached with sulfuric acid and sodium chlorate at a pH of between 1 and 1.5. The uranium was separated from the tailings through countercurrent decantation using a series of thickeners. Barren tailings were pumped into the basin at about 35 percent solids by weight. The uranium liquor was processed by solvent extraction to yield a rich eluate for uranium precipitation and drying.

4.0 ENVIRONMENTAL EFFECTS

The Exxon Highland site is licensed by the NRC under Source Material License SUA-1139 to possess byproduct material in the form of uranium waste tailings, as well as other radioactive wastes generated by past milling operations. The Exxon milling process was an acid leach process, which resulted in an acidic leachate from the tailings and a low pH groundwater plume immediately under the tailings pile. Modeling data provided by the licensee indicate that the resultant low pH plume will be naturally attenuated before reaching any potential points of exposure. Currently, all concentrations of groundwater hazardous constituents of concern to NRC, with the exception of uranium, radium, and nickel, meet the established groundwater background values for the site as measured at the site POC wells. The uranium, radium, and nickel concentrations meet the proposed groundwater ACLs for the site at the POC wells.

5.0 ALTERNATIVES

The action that NRC is considering is approval of the licensee's request to amend the source material license issued pursuant to 10 CFR Part 40. The alternatives available to the NRC are:

(i) approve the license amendment request;

(ii) establish other standards than those proposed; or

(iii) deny the request

Based on its review of the request, the NRC staff has concluded that there are no significant environmental impacts associated with the proposed action. Therefore, alternatives with equal or greater impacts need not be evaluated.

The licensee provided an evaluation that considers other practicable corrective actions, as required for ACL proposals by Criterion 5B(6) of 10 CFR Part 40, Appendix A. The licensee's evaluation of various options, including continuation of the CAP, treated water reinjection, fresh water injection, and installation of reactive barriers, resulted in a conclusion that the net reduction of constituent concentration would not be significant. The NRC staff review verified the licensee's findings of no significant improvement possible with increased corrective actions.

Since the licensee has demonstrated that the proposed ACL values will not pose substantial present or potential hazards to human health and the environment, and that the proposed ACLs are as low as is reasonably achievable (ALARA), considering practicable corrective actions, establishing other standards more stringent than the proposed ACLs was not evaluated.

The alternative to the proposed action would be to deny the requested action and require the licensee to continue operation of the existing CAP or implement some alternative corrective action. Based on its review, the NRC staff has determined that the environmental impacts of the proposed action and the alternatives considered by the licensee will be similar in outcome, because the alternatives will result in little or no net reduction of constituent concentration.

6.0 SUMMARY AND CONCLUSIONS

Based on an evaluation of the radiological impacts of the Exxon amendment request, the NRC staff has determined that the proper action is to issue a FONSI in the Federal Register. The following statements support the FONSI and summarize the NRC staff's conclusions resulting from its EA.

(i) Currently, the concentrations of uranium, radium, and nickel meet the proposed groundwater ACLs for the site at the POC. Due to the attenuation capability of the formations through which the groundwater plume will move, and the lack of movement for most of the plume in the TDSS, the residual amounts of PHCs will be reduced to background levels that will not pose any greater health risk than that assigned to the maximum concentration limits for groundwater protection. The concentrations of the remaining constituents of concern to NRC meet the established groundwater background values for the site for which no ACLs have been proposed.

(ii) Present and potential health risks were assessed for various exposure scenarios, using conservative approaches. The result of these assessments indicates that present and potential future hazardous constituent concentrations at the specified POEs will not pose significant risks to human health and the environment. The POEs are located along the site boundary of the restricted area that will be maintained for long-term care by the long-term care custodian, the U.S. Department of Energy, following termination of the Exxon license.

(iii) Climatological extremes and sparse vegetation indicate that future use of groundwater is likely to be limited to seasonal livestock (e.g., cattle) and wildlife (e.g., pronghorn antelope) watering. Domestic use of groundwater from the Tailings Dam Sandstone is unlikely because of the low volume of water available in the unit, and the remote location of the site.

(iv) Additional corrective action will have little effect on the net reduction of constituent concentrations of concern to the NRC and, therefore, will have little impact on groundwater quality.

7.0 CONSULTATION AND SOURCE INFORMATION

In completing this action, the NRC staff held telephone discussions with representatives of the WDEQ.

For public participation opportunities, the NRC announced the receipt of the Exxon ACL application in a Federal Register Notice dated January 13, 1999.

References:

1. Exxon Corporation, 1998, Letter dated December 18, 1998, from Linda Z. Krupnik, to J. Holonich, NRC, transmitting the Alternate Concentration Limits (ACL) Application.

2. U.S. Atomic Energy Commission, Directorate of Licensing; March 1973; Final Environmental Statement.

3. U.S. Nuclear Regulatory Commission, 1996, "Staff Technical Position: Alternate Concentration Limits for Title II Uranium Mills - Standard Format and Content Guide and Standard Review Plan for Alternate Concentration Limit Applications."

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.

Licensee	
1. Exxon Corporation [Applicable Amendment: 16]	3. License Number SUA-1139, Amendment No. 49
2. P.O. Box 1314 Houston, Texas 77251-1314 [Applicable Amendment: 16]	4. Expiration Date Until NRC determines site reclamation is adequate.
	5. Docket or Reference No. 40-8102

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
Uranium Byproducts	Any	Unlimited

9. The licensee is hereby authorized to possess byproduct materials as defined in this condition without regard to form or quantity resulting from past operations of its Highland facility. Byproduct materials are defined as tailings or other waste produced during the extraction or concentration of uranium.

   [Applicable Amendments: 14]

10. The authorized places of use are the licensee's uranium mill tailings facilities located approximately 25 miles north of Douglas, Wyoming.

    [Applicable Amendments: 14, 28]

11. For use in accordance with statements, representations, and conditions contained in the license amendment applications submitted by cover letters dated November 10, 1989, and October 8, 1991, except where revised by letters dated August 30, 1993, and October 2, 1997, and where superseded by license conditions below.

    [Applicable Amendments: 10, 11, 14, 15, 16, 19, 20, 22, 28, 33, 36, 37, 40, 42, 46]

12. DELETED by Amendment No. 14.

13. DELETED by Amendment No. 14.

14. DELETED by Amendment No. 19.

15. DELETED by Amendment No. 14.

16. DELETED by Amendment No. 19.

License Number
SUA-1139, Amendment No 49
Docket or Reference Number
40-8102

MATERIALS LICENSE
SUPPLEMENTARY SHEET

17. DELETED by Amendment No. 28.

18. DELETED by Amendment No. 20.

19. DELETED by Amendment No. 14

20. DELETED by Amendment No. 14.

21. DELETED by Amendment No. 14.

22. Environmental and effluent monitoring required by this license shall be conducted in accordance with the quality assurance program specified in Exxon's letter of May 28, 1998. Notwithstanding the representations in the licensee's quality assurance program, calibrations of instruments used in radiological monitoring shall be performed on a semiannual basis or in accordance with the manufacturer's recommendations, whichever is more frequent. The monitoring results shall be reported semiannually to the Director, Division of Nuclear Material Safety, Region IV, Nuclear Regulatory Commission, 611 Ryan Drive, Suite 400, Arlington, Texas, 76011, with copies to the 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, in accordance with the requirements of 10 CFR 40.65. Monitoring data shall be reported in the format shown in "Sample Format for Reporting Monitoring Data."

[Applicable Amendments: 14, 20, 46, 48, 49]

23. 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 decontamination of the mill site, reclamation of any tailings or waste disposal areas, groundwater restoration of any tailings or waste disposal areas, ground water restoration as warranted, reclamation of the tailings basin access trail, and the long-term surveillance fee.

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 1 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 basis for the cost estimate is the NRC approved reclamation/decommissioning plan or NRC approved revisions to the plan.

Exxon's currently approved surety instrument, a Irrevocable Letter of Credit issued by the Royal Bank of Canada-Portland, Oregon, in favor of the NRC, shall be continuously maintained in an amount no less than $2,200,000 for the purposes of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC.

[Applicable Amendments: 14, 21, 24, 34, 35, 39, 41, 45, 46, 47]

24. The licensee shall notify the Office of the Wyoming State Historic Preservation Officer, the

Wyoming State Archeologist, and the 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, if any buried cultural deposits are unearthed during the disturbance of land. All work in the immediate vicinity of the deposit shall cease until approval has been granted by the appropriate State officer and the NRC.

[Applicable Amendments: 14, 20, 43, 45, 49]

25. 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 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, and no such disturbance shall occur until the licensee has received authorization from the NRC to proceed.

[Applicable Amendments: 14, 20, 43, 45, 49]

26. Before engaging in any project-related activity not previously 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 by NRC in the environmental statement, the licensee shall provide a written evaluation of such activity and obtain prior approval of the NRC for the activity in the form of a license amendment.

[Applicable Amendment: 14]

27. DELETED by Amendment No. 14.

28. DELETED by Amendment No. 14.

29. DELETED by Amendment No. 18.

30. DELETED by Amendment No. 20.

31. DELETED by Amendment No. 19.

32. DELETED by Amendment No. 14.

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

    A. Sample wells 015, 112, 114, 116, 117, 120, 125, 127, 128, 129, 134, 148, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182 and 183 on a quarterly frequency for chloride, nitrate, sodium, sulfate, pH, TDS and water level, and on a semiannual frequency for arsenic, cadmium, chromium, gross alpha, 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 Nos. 125, 175, 176 and 177, with background being recognized in well No. 182: arsenic = 0.05 mg/l, cadmium = 0.01 mg/l, chromium = 0.05 mg/l, gross alpha = 15.0 pCi/l, lead = 0.05 mg/l, nickel = 0.02 mg/l, radium-226 and 228 = 5.0 pCi/l, selenium = 0.01 mg/l, thorium-230 = 0.55 pCi/l, and uranium = 0.43 pCi/l, with the exceptions of: well 125 uranium = 59 pCi/l; well 175 nickel = 1.8 mg/l and radium 226 and 228 = 25 pCi/l; and well 177 uranium = 71 pCi/l.

C. DELETED by Amendment No. 49.

D. In the event the constituent limits in subsection B are exceeded, the licensee shall propose a new corrective action program with the objective of returning concentrations of those constituents to the concentration limits specified in subsection B.

[Applicable Amendments: 12, 13, 14, 22, 23, 26, 27, 32, 43, 44, 45, 49]

34. The results of sampling, analyses, surveys and monitoring; the results of calibration of equipment; reports on audits and inspections; all meetings and training courses required by this license; and 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 five (5) years.

[Applicable Amendment: 14]

35. DELETED by Amendment No. 28.

36. DELETED by Amendment No. 20.

37. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of Wyoming), which is used for the disposal of such byproduct material or is essential to ensure the long term stability of such disposal site to the United States or the State of Wyoming, at the State's option.

[Applicable Amendment: 14]

38. Standard written operating procedures (SOP's) shall be established for environmental monitoring and instrument calibrations. An up-to-date copy of each written procedure shall be maintained on file by the SRE/RSO.

All procedures shall be reviewed and approved in writing by the SRE/RSO before implementation and whenever a change in procedure is proposed. In addition, the SRE/RSO shall perform a documented review of all existing operating procedures at least annually.

[Applicable Amendment: 14]

39. DELETED by Amendment No. 20.

40. The licensee is hereby authorized to reclaim the disposal area in accordance with their March 2 and 15, and July 6, 1989 submittals.

License Number
SUA-1139, Amendment No 49

Docket or Reference Number
40-8102

MATERIALS LICENSE
SUPPLEMENTARY SHEET

A. DELETED by Amendment No. 29.

B. DELETED by Amendment No. 26.

C. DELETED by Amendment No. 29.

D. DELETED by Amendment No. 26.

E. DELETED by Amendment No. 29.

F. The radon barrier may be placed over the wick area in accordance with the licensee's July 27, 1989 submittal.

[Applicable Amendment: 25, 26, 29, 30, 31]

FOR THE NUCLEAR REGULATORY COMMISSION

Dated: 5-28-99

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

ENCLOSURE 2