



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

September 15, 2000

Ms. Michelle Rehmann, Environmental Manager
International Uranium (IUSA) Corporation
Independence Plaza, Suite 950
1050 Seventeenth Street
Denver, Colorado 80265

SUBJECT: AMENDMENT 16 TO MATERIALS LICENSE SUA-1358 -- APPROVAL OF
FREEBOARD CALCULATION METHOD FOR CELL 3 AT THE WHITE MESA
URANIUM MILL

Dear Ms. Rehmann:

In your letter dated October 13, 1999, International (IUSA) Uranium Corporation requested an amendment to its Source Material License SUA-1358 to revise the freeboard computation procedure for Cell 3 at the White Mesa Mill. Based on its review, the NRC staff has determined that the proposed revision to the procedure is adequate. Enclosed is Source Material License SUA-1358 and the Technical Evaluation Report. License Condition 10.3 previously read as indicated below:

10.3 Freeboard limits for Cells 1-I, 3, and 4A, and tonnage limits for Cell 3, shall be as stated in Section 3.0 to Appendix E of the approved license application.

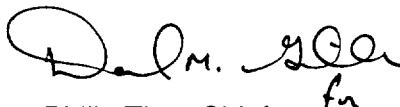
The amended license now reads as follows:

10.3 Freeboard limits for Cells 1-I, 3 and 4A, shall be set periodically in accordance with the procedures set out in Section 3.0 to Appendix E of the approved license application, including the October 13, 1999 revisions made to the January 10, 1990 Drainage Report. The freeboard limit for Cell 3 shall be recalculated annually in accordance with the procedures set in the October 13, 1999 revision to the Drainage Report.

September 15, 2000

If you have any questions regarding this letter or the enclosures, please contact William von Till, the NRC Project Manager for the White Mesa mill, at (301) 415-6251. He can be reached by e-mail at rwv@nrc.gov. In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

A handwritten signature in black ink, appearing to read "Philip Ting", with a stylized flourish at the end.

Philip Ting, Chief
Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-8681
SUA-1358, Amendment No. 16

Enclosure 1: Source Material License SUA-1358
Enclosure 2: Technical Evaluation Report

cc: W. Sinclair, UT
C.Crist, Ute Mountain Ute Tribe EPA
Terry Brown, US EPA Region VIII

September 15, 2000

If you have any questions regarding this letter or the enclosures, please contact William von Till, the NRC Project Manager for the White Mesa mill, at (301) 415-6251. He can be reached by e-mail at rwv@nrc.gov. In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

/s/

Philip Ting, Chief
Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-8681
SUA-1358, Amendment No. 16

Enclosure 1: Source Material License SUA-1358
Enclosure 2: Technical Evaluation Report

cc: W. Sinclair, UT
C.Crist, Ute Mountain Ute Tribe EPA
Terry Brown, US EPA Region VIII

DISTRIBUTION (w/ Encl.): File Center NMSS r/f FCLB r/f ~~WvonTill~~
JCaverly BSpitzberg, RIV PMackin, CNWRA ACNW ~~Adams~~

ADAMS ACCESSION NUMBER:
This closes out TAC#L51877

OFC	FCLB	FCLB	FCLB	OGC	FCLB
NAME	WvonTill <i>Wm</i>	ARamirez	DGillen	STreby	PTing <i>fu</i>
DATE	9/14/00	9/14/00	9/15/00	/ /00	9/15/00

OFFICIAL RECORD COPY

ACNW: YES ☒ NO ☐ Delete file after distribution: Yes ☐ No ☒

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		3. License Number	
1.	International Uranium (USA) Corporation [Applicable Amendments: 2]	SUA-1358, Amendment No. 16	
2.	6425 S. Highway 191 P.O. Box 809 Blanding, Utah 84511 [Applicable Amendments: 2]	4. Expiration Date	March 31, 2007
		5. Docket or Reference No.	40-8681
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

SECTION 9: Administrative Conditions

- 9.1 The authorized place of use shall be the licensee's White Mesa uranium milling facility, located in San Juan County, Utah.
- 9.2 All written notices and reports to the NRC required under this license, with the exception of incident and event notifications under 10 CFR 20.2202 and 10 CFR 40.60 requiring telephone notification, shall be addressed to the Chief, Uranium Recovery and Low-Level Waste Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards.
- Incident and event notifications that require telephone notification shall be made to the NRC Operations Center at (301) 816-5100.
- 9.3 The licensee shall conduct operations in accordance with statements, representations, and conditions contained in the license renewal application submitted by letter dated August 23, 1991, as revised by submittals dated January 13, and April 7, 1992, November 22, 1994, July 27, 1995, December 13, and December 31, 1996, and January 30, 1997, which are hereby incorporated by reference, and for the Standby Trust Agreement, dated April 29, 1997, except where superseded by license conditions below.
- Whenever the word "will" is used in the above referenced documents, it shall denote a requirement.
- [Applicable Amendment: 2]
- 9.4 A. The licensee may, without prior NRC approval, and subject to the conditions specified in Part B of this condition:

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- (1) Make changes in the facility or process, as presented in the application.
 - (2) Make changes in the procedures presented in the application.
 - (3) Conduct tests or experiments not presented in the application.
- B. The licensee shall file an application for an amendment to the license, unless the following conditions are satisfied.
- (1) The change, test, or experiment does not conflict with any requirement specifically stated in this license, or impair the licensee's ability to meet all applicable NRC regulations.
 - (2) There is no degradation in the essential safety or environmental commitments in the license application, or provided by the approved reclamation plan.
 - (3) The change, test, or experiment is consistent with the conclusions of actions analyzed and selected in the EA dated February 1997.
- C. The licensee's determinations concerning Part B of this condition, shall be made by a "Safety and Environmental Review Panel (SERP)." The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management and shall be responsible for managerial and financial approval changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and, one member shall be the corporate radiation safety officer (CRSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP as appropriate, to address technical aspects such as health physics, groundwater hydrology, surface-water hydrology, specific earth sciences, and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.
- D. The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations, made by the SERP, that provide the basis for determining changes are in compliance with the requirements referred to in Part B of this condition. The licensee shall furnish, in an annual report to NRC, a description of such changes, tests, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the NRC changed pages to the Operations Plan and Reclamation Plan of the approved license application to reflect changes made under this condition.

The licensee's SERP shall function in accordance with the standard operating procedures submitted by letter dated June 10, 1997.

[Applicable Amendments: 3]

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- 9.5 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 for 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 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 June 4 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 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. 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 estimates. Reclamation/decommissioning plans and annual updates should follow this outline.

The currently approved surety instrument, a Performance Bond issued by National Union Fire Insurance Company in favor of the NRC, and the associated Standby Trust Agreement, dated April 29, 1997, shall be continuously maintained in an amount not less than \$10,064,794 for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC.

[Applicable Amendments: 2, 3, 5, 13, 15]

Therefore, this office must receive an updated surety in this amount within 90 days of this letter.

- 9.6 Standard operating procedures shall be established and followed for all operational process activities involving radioactive materials that are handled, processed, or stored. SOPs for operational activities shall enumerate pertinent radiation safety practices to be followed. Additionally, written procedures shall be established for non-operational activities to include in-plant and environmental monitoring, bioassay analyses, and instrument calibrations. An up-to-date copy of each written procedure shall be kept in the mill area to which it applies.

All written procedures for both operational and non-operational activities 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 operating procedures at least annually.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- 9.7 Before engaging in any activity not previously assessed by the NRC, the licensee shall administer a cultural resource inventory. All disturbances associated with the proposed development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations (36 CFR 800), and the Archaeological Resources Protection Act (as amended) and its implementing regulations (43 CFR 7).
- In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with 36 CFR Part 800, and no disturbance shall occur until the licensee has received authorization from the NRC to proceed.
- The licensee shall avoid by project design, where feasible, the archeological sites designated "contributing" in the report submitted by letter dated July 28, 1988. When it is not feasible to avoid a site designated "contributing" in the report, the licensee shall institute a data recovery program for that site based on the research design submitted by letter from C. E. Baker of Energy Fuels Nuclear to Mr. Melvin T. Smith, Utah State Historic Preservation Officer (SHPO), dated April 13, 1981.
- The licensee shall recover through archeological excavation all "contributing" sites listed in the report which are located in or within 100 feet of borrow areas, stockpile areas, construction areas, or the perimeter of the reclaimed tailings impoundment. Data recovery fieldwork at each site meeting these criteria shall be completed prior to the start of any project related disturbance within 100 feet of the site, but analysis and report preparation need not be complete.
- Additionally, the licensee shall conduct such testing as is required to enable the Commission to determine if those sites designated as "Undetermined" in the report and located within 100 feet of present or known future construction areas are of such significance to warrant their redesignation as "contributing." In all cases, such testing shall be completed before any aspect of the undertaking affects a site.
- Archeological contractors shall be approved in writing by the Commission. The Commission will approve an archeological contractor who meets the minimum standards for a principal investigator set forth in 36 CFR Part 66, Appendix C, and whose qualifications are found acceptable by the SHPO.
- 9.8 The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings and other uranium byproduct waste generated by the licensee's milling operations authorized by this license. Mill tailings shall not be transferred from the site without specific prior approval of the NRC in the form of a license amendment. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.
- 9.9 The licensee is hereby exempted from the requirements of Section 20.1902 (e) of 10 CFR Part 20 for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with Section 20.1902 (e) and with the words, "Any area within this mill may contain radioactive material."

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- 9.10 Release of equipment or packages from the restricted area shall be in accordance with "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated May 1987, or suitable alternative procedures approved by the NRC prior to any such release.
- 9.11 The final reclamation shall be in accordance with the May 1999, Reclamation Plan Revision 2.0, Attachment A submitted on June 22, 1999, and Revision 3.0 submitted on July 7, 2000. Prior to the placement of alternate feed material, the licensee shall determine that adequate cell space is available for that additional material. This determination shall be made by a SERP approved procedure.

SECTION 10: Operational Controls, Limits, and Restrictions

- 10.1 The mill production rate shall not exceed 4380 tons of yellowcake per year.
- 10.2 All liquid effluents from mill process buildings, with the exception of sanitary wastes, shall be returned to the mill circuit or discharged to the tailings impoundment.
- 10.3 Freeboard limits for Cells 1-I, 3, and 4A, shall be set periodically in accordance with the procedures set out in Section 3.0 to Appendix E of the approved license application, including the October 13, 1999 revisions made to the January 10, 1990 Drainage Report. The freeboard limit for Cell 3 shall be recalculated annually in accordance with the procedures set in the October 13, 1999 revision to the Drainage Report.
- [Applicable Amendment: 16]
- 10.4 Disposal of material and equipment generated at the mill site shall be conducted as described in the licensee's submittals dated December 12, 1994 and May 23, 1995, with the following addition:
- A. The maximum lift thickness for materials placed over tailings shall be less than 4-feet thick. Subsequent lifts shall be less than 2-feet thick. Each lift shall be compacted by tracking of heavy equipment, such as a Cat D-6, at least 4 times prior to placement of subsequent lifts.
- 10.5 In accordance with the licensee's submittal dated May 20, 1993, the licensee is hereby authorized to dispose of byproduct material generated at licensed in situ leach facilities, subject to the following conditions:
- A. Disposal of waste is limited to 5000 cubic yards from a single source.
- B. All contaminated equipment shall be dismantled, crushed, or sectioned to minimize void spaces. Barrels containing waste other than soil or sludges shall be emptied into the disposal area and the barrels crushed. Barrels containing soil or sludges shall be verified to be full prior to disposal. Barrels not completely full shall be filled with tailings or soil.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- C. All waste shall be buried in Cell No. 3 unless prior written approval is obtained from the NRC for alternate burial locations.
- D. All disposal activities shall be documented. The documentation shall include descriptions of the waste and the disposal locations, as well as all actions required by this condition. An annual summary of the amounts of waste disposed of from off-site generators shall be sent to the NRC.

- 10.6 The licensee is authorized to receive and process source materials from the Allied Signal Corporation's Metropolis, Illinois, facility in accordance with the amendment request dated June 15, 1993.
- 10.7 The licensee is authorized to receive and process source material from Allied Signal, Inc. of Metropolis, Illinois, in accordance with the amendment request dated September 20, 1996, and amended by letters dated October 30, and November 11, 1996.
- 10.8 The licensee is authorized to receive and process source material, in accordance with the amendment request dated March 5, 1997.
- [Applicable Amendments: 1]
- 10.9 The licensee is authorized to receive and process source material from Cabot Performance Materials' facility near Boyertown, Pennsylvania, in accordance with the amendment request dated April 3, 1997, as amended by submittals dated May 19, and August 6, 1997.
- [Applicable Amendments: 4]
- 10.10 The licensee is authorized to receive and process source material from the Ashland 2 Formerly Utilized Sites Remedial Action Program (FUSRAP) site, located near Tonawanda, New York, in accordance with the amendment request dated May 8, 1998, as amended by the submittals dated May 27, June 3, and June 11, 1998.
- [Applicable Amendment: 6]
- 10.11 The licensee is authorized to receive and process source material from Cameco Corporation's Blind River and Port Hope facilities, located in Ontario, Canada, in accordance with the amendment request dated June 4, 1998, and by the submittals dated September 14, September 16, September 25, October 7, and October 8, 1998.
- However, the licensee is not authorized to receive or process from these facilities, the crushed carbon anodes identified in these submittals, either as a separate material or mixed in with material already approved for receipt or processing.
- 10.12 The licensee is authorized to receive and process source material from the Ashland 1 and Seaway Area D Formerly Utilized Sites Remedial Action Program (FUSRAP) site, located near Tonawanda, New York, in accordance with statements, representations, and commitments contained in the amendment request dated October 15, 1998, as amended by

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

letters dated November 23, 1998, November 24, 1998, December 23, 1998, January 11, 1999, January 27, 1999, and February 1, 1999.

[Applicable Amendment: 10]

- 10.13 The licensee is authorized to receive and process source material from the St. Louis Formerly Utilized Sites Remedial Action Program (FUSRAP) site, in accordance with statements, representations, and commitments contained in the amendment request dated March 2, 1999, and as amended and supplemented by submittals dated June 21, 1999; June 29, 1999 (2); and July 8, 1999. Prior to the licensee receiving materials from the St. Louis FUSRAP site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on a SERP approved internal procedure.

[Applicable Amendments: 13, 14]

- 10.14 The licensee is authorized to receive and process source material from the Linde Formerly Utilized Sites Remedial Action Program (FUSRAP) site, in accordance with statements, representations, and commitments contained in the amendment request dated March 16, 2000, and as amended and supplemented by submittals dated April 26, 2000, May 15, 2000, June 16, 2000, June 19, 2000, June 23, 2000.

Prior to the licensee receiving materials from the Linde FUSRAP site, the licensee must make a determination that adequate tailings space is available for the tailings produced from the processing of this material. This determination shall be made based on a SERP approved internal procedure. Design changes to the cells or the reclamation plan require the licensee to submit an amendment request for NRC review and approval.

Prior to the licensee receiving materials from the Linde FUSRAP site, the licensee must require that the generator of the material certify that the material does not contain listed hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) per a Radioactive Material Profile Record.

[Applicable Amendment: 14]

SECTION 11: Monitoring, Recording, and Bookkeeping Requirements

- 11.1 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 the NRC regulations all such documentation shall be maintained for a period of at least five (5) years.
- 11.2 The licensee shall implement the effluent and environmental monitoring program specified in Section 5.5 of the renewal application, as amended by the submittal dated June 8, 1995, and as revised with the following modifications or additions:
- A. Stack sampling shall include a determination of flow rate.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- B. Surface water samples shall also be analyzed semiannually for total and dissolved U-nat, Ra-226, and Th-230, with the exception of the Westwater Creek, which shall be sampled annually for water or sediments and analyzed as above. A sediment sample shall not be taken in place of a water sample unless a water sample was not available.
- C. Groundwater sampling shall be conducted in accordance with the requirements in License Condition 11.3.
- D. The licensee shall utilize lower limits of detection in accordance with Section 5 of Regulatory Guide 4.14 (Revision 1), for analysis of effluent and environmental samples.
- E. The inspections performed semiannually of the critical orifice assembly committed to in the submittal dated March 15, 1986, shall be documented. The critical orifice assembly shall be calibrated at least every 2 years against a positive displacement Roots meter to obtain the required calibration curve.

[Applicable Amendment: 5]

11.3 The licensee shall implement a groundwater detection monitoring program to ensure compliance to 10 CFR Part 40, Appendix A. The detection monitoring program shall be in accordance with the report entitled, "Points of Compliance, White Mesa Uranium Mill," submitted by letter dated October 5, 1994, and the following:

- A. The licensee shall sample monitoring wells WMMW-5, -11, -12, -14, -15, and -17, on a quarterly basis. Samples shall be analyzed for chloride, potassium, nickel, and uranium, and the results of such sampling shall be included with the environmental monitoring reports submitted in accordance with 10 CFR 40.65.

In addition, the licensee shall implement a monitoring program of the leak detection systems for the disposal cells as follows:

- B. The licensee shall measure and record the "depth to fluid" in each of the tailings disposal cell standpipes on a weekly basis. If sufficient fluid is present in the leak detection system (LDS) of any cell, the licensee shall pump fluid from the LDS, to the extent reasonably possible, and record the volume of fluid recovered. Any fluid pumped from an LDS shall be returned to a disposal cell.

If fluid is pumped from an LDS, the licensee shall calculate the flow rate by dividing the recorded volume of fluid recovered by the elapsed time since fluid was last pumped or increases in the LDS fluid levels were recorded, whichever is the more recent. The licensee shall document the results of this calculation.

- C. Upon the initial pumping of fluid from an LDS, the licensee shall collect a fluid sample and analyze the fluid for pH and the parameters listed in paragraph A of this license condition. The licensee shall determine whether the LDS fluid originated from the disposal cell by ascertaining if the collected fluid contains elevated levels of the constituents listed in paragraph A of this license condition or has a pH level less than 5.0. If either elevated

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

constituent levels or a pH less than 5.0 is observed, the licensee shall assume that the disposal cell is the origin of the fluid.

If the LDS fluid is determined not to have originated from the disposal cell, the licensee shall continue with weekly measurements of "depth to fluid" in the LDS standpipes. The licensee shall confirm, on an annual basis, that fluid from the disposal cell has not entered the LDS by collecting (to the extent possible) and analyzing an LDS fluid sample for the above stated parameters.

- D. Upon indication that the LDS fluids originated from the disposal cell, the licensee shall determine the flow rate through the liner by the calculation method in paragraph B of this license condition. If the flow rate is equal to or greater than one gallon per minute, the licensee shall:
1. Evaluate the cause of the liner distress and take appropriate and timely actions to mitigate the leak and any consequent potential impacts;
 2. Continue to measure and record LDS "depth to fluid" measurements weekly; and
 3. Notify NRC by telephone within 48 hours, in accordance with License Condition 9.2, and submit a written report within 30 days of notifying NRC by telephone, in accordance with License Condition 9.2. The written report shall include a description of the mitigative action(s) taken and a discussion of the mitigative action results.

If the calculated flow rate is less than one gallon per minute, the licensee shall continue with weekly measurements of "depth to fluid" in the LDS standpipes.

- E. All sampling, analysis, and evaluation of LDS fluids shall be documented and retained onsite until license termination for NRC inspection.

[Applicable Amendment: 8]

- 11.4 Annually, the licensee shall collect, during mill operations, a set of air samples covering eight hours of sampling, at a high collection flow rate (i.e., greater than or equal to 40 liters per minute), in routinely or frequently occupied areas of the mill. These samples shall be analyzed for gross alpha. In addition, with each change in mill feed material or at least annually, the licensee shall analyze the mill feed or production product for U-nat, Th-230, Ra-226, and Pb-210 and use the analysis results to assess the fundamental constituent composition of air sample particulates.

[Applicable Amendment: 7]

- 11.5 Calibration of in-plant air and radiation monitoring equipment shall be performed as specified in the license renewal application, under Section 3.0 of the "Radiation Protection Procedures Manual," with the exception that in-plant air sampling equipment shall be calibrated at least quarterly and air sampling equipment checks shall be documented.

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-1358, Amendment No. 16

Docket or Reference Number

40-8681

- 11.6 The licensee shall perform an annual ALARA audit of the radiation safety program in accordance with Regulatory Guide 8.31.

SECTION 12: Reporting Requirements

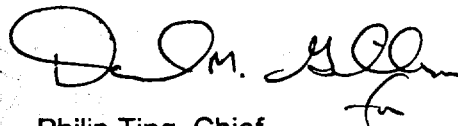
- 12.1 DELETED by Amendment 13.

[Applicable Amendment: 13]

- 12.2 The licensee shall submit a detailed decommissioning plan to the NRC at least twelve (12) months prior to planned final shutdown of mill operations that includes a detailed Quality Assurance Plan. The plan will be in accordance with Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs," and NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), or equivalent most current guidance.

[Applicable Amendment: 13]

FOR THE NUCLEAR REGULATORY COMMISSION



Philip Ting, Chief
Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Date 9/18/00

**TECHNICAL EVALUATION REPORT
AMENDMENT 16 TO SOURCE MATERIAL LICENSE SUA-1358
TO REVISE FREEBOARD CALCULATION PROCEDURE AT THE WHITE MESA MILL**

DATE: August 13, 2000

DOCKET NO.: 40-8681

SOURCE MATERIAL LICENSE NO.: SUA-1358

LICENSEE: International Uranium (IUSA) Corporation

PROJECT MANAGER: William von Till

TECHNICAL REVIEWER: Jill S. Caverly

SUMMARY AND CONCLUSIONS:

International Uranium (IUSA) Corporation, by letter dated October 13, 1999, requested an amendment to its Source Material License to revise the freeboard computation procedure for Cell 3 at the White Mesa Mill. Based on its review, the NRC staff has determined that the proposed revision to the procedure is adequate. The new procedure does not create additional risk to the public health and safety or to the environment. Therefore, the staff recommends Sources Material License SUA-1358 be amended to include the revised freeboard calculation.

DESCRIPTION OF LICENSEES REQUEST:

IUSA, by letter dated October 13, 1999, requested an amendment to its source material license to revise the freeboard limit calculation procedure and to adjust the freeboard amount at the White Mesa Uranium Mill located in Blanding, Utah. The request describes the current method of calculation and provides an explanation and example of the new procedure. The licensee states that the revision to the procedure includes the next 12 months of mill throughput, plus a factor of safety, in lieu of the existing assumption of maximum tonnage for the following 12 months. The licensee further describes the high degree of conservatism that is included in the revised procedure.

TECHNICAL EVALUATION:

The proposed method for determining the freeboard for Cell 3 uses several assumptions to determine a value of freeboard. A detailed discussion of the revised procedure and the assumptions upon which it is based, are presented below. The staff, based on its review of IUSA's request, concludes that the amendment request is sufficiently conservative. Accordingly, IUSA's amendment request is approved.

Enclosure

The original design of the tailings impoundment at the White Mesa Mill includes four cells working in conjunction to contain the water volume produced by the Probable Maximum Precipitation (PMP), as well as the tailings discharge from the mill. The dual function of the cells subsequently effects the available storage volume for the Probable Maximum Flood (PMF).

Presently, not all cells have extra capacity to accommodate the PMF. Cell 2 is essentially full and has no available storage, due to the placement of tailings. Cell 1-I is assumed to be operated at maximum capacity and has no available storage capacity for the PMF. Therefore, Cell 3 is required to store the entire volume of runoff resulting from the PMP. License Condition 10.3 requires that when the volume of tailings placed after October 23, 1989 reaches 600,000 tons, Cell 3 freeboard will be re-evaluated.

The procedure for evaluating the freeboard limits was presented in a January 1990 submittal and was approved by the NRC staff. This submittal presented the basis and calculation for the PMP storm event and the wind wave run-up factor used to calculate the freeboard limit. The proposed license change will modify the current procedure, except for the PMF volume and the wave run-up height, since the values were previously approved.

The previous procedure for determining the freeboard for Cell 3 is based on the assumption that the volume of additional tailings in the cell is directly proportional to the surface area reduction. The basis for this assumption was determined during a period of time in 1988 when a known quantity of dry tailings was added to the cell. The surface area reduction after the addition of the tailings was used to determine the tons of tailings required to reduce pool size by one acre, or 39,146 dry tons per acre. Using this relationship and the maximum amount of tailings that could be discharged in a one-year time period, with the mill running at 93% availability, is 678,900 dry tons. The maximum tonnage divided by the number of tons required to reduce pool size by one acre, yields the maximum expected pool area reduction, or 17.3 acres. In simple terms, if the mill is working to capacity, it can be anticipated that the surface area of the pool will be reduced by 17.3 acres per year.

Once determined, the expected pool surface area can then be divided by the required volume for PMF storage, or 123.4 acre-ft, yielding the minimum freeboard, or height, required for flood storage. In addition to the flood freeboard, the wave run-up is included for the final freeboard. The total freeboard requirement is the sum of the PMF freeboard requirement and the wave run-up value. The final available storage elevation will be the top of embankment elevation minus the total required freeboard.

This amendment request proposes that the initial calculation to determine the surface area reduction (i.e. 17.3 acres per year) due to the addition of the tailings be re-calculated so that the freeboard is dependent on a more realistic value of the volume reduction from the tailings for the upcoming year. In other words, the revised procedure presented in the amendment request, revises the estimate of the mill throughput using an estimate based on the current production of the mill and a factor of safety of 50 percent in lieu of the existing assumption of maximum tonnage for the upcoming year.

Due to the conservative nature of the revised procedure, the staff has no objections to the revision of freeboard based on a more realistic estimate of mill production. The amendment request states that the procedure will be used yearly to recalculate the Cell 3 freeboard unless

the actual mill production approaches 2/3 of the Maximum Annual Mill Production. After mill production reaches this value, the procedure for determining freeboard will be re-evaluated.

RECOMMENDED LICENSE CHANGE:

License Condition 10.3 previously read as follows:

- 10.3 Freeboard limits for Cells 1-I, 3, and 4A, and tonnage limits for Cell 3, shall be as stated in Section 3.0 to Appendix E of the approved license application.

With this approval, License Condition 10.3 now reads as follows:

- 10.3 Freeboard limits for Cells 1-I, 3 and 4A, shall be set periodically in accordance with the procedures set out in Section 3.0 to Appendix E of the approved license application, including the October 13, 1999 revisions made to the January 10, 1990 Drainage Report. The freeboard limit for Cell 3 shall be recalculated annually in accordance with the procedures set in the October 13, 1999 revision to the Drainage Report.

ENVIRONMENTAL IMPACT EVALUATION:

An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(3)(i), and an environmental report from the licensee is not required under 10 CFR 51.60(b)(2).

REFERENCES:

International (IUSA) Uranium Corporation, 1999: Letter from Michelle Rehmann (IUSA) to John Surmeier (NRC), dated October 13, 1999, Request for Amendment of SUA-1358; Revised Freeboard Limit Calculation Procedure and Adjustment of Freeboard Amount - White Mesa Uranium Mill.