40-8681

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

August 28, 1998

Mr. Earl E. Hoellen, President
International Uranium (USA) Corporation
Independence Plaza, Suite 950
1050 Seventeenth Street
Denver, Colorado 80265

SUBJECT: AMENDMENT 7 TO SOURCE MATERIAL LICENSE SUA-1358, WHITE MESA URANIUM MILL - MODIFICATIONS TO IN-PLANT MONITORING PROGRAM

Dear Mr. Hoellen:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of an amendment request submitted by International Uranium (USA) Corporation (IUC) for the White Mesa uranium mill. By letter dated December 3, 1997, and subsequently revised by letter dated March 23, 1998, IUC requested approval for a change in the in-plant radiological monitoring program at the mill. Based on its review, the NRC staff finds this request acceptable with slight modifications. These modifications were agreed to by IUC by telephone on July 20, 1998.

The details of IUC's amendment request are discussed in the staff's Technical Evaluation Report (TER). The TER documents the basis for the staff's approval of this request and is provided as Enclosure 1.

Therefore, pursuant to Titie 10 of the Code of Federal Regulations, Part 40, NRC Source Material License SUA-1358 is hereby amended by revising License Condition No. 11.4. All other conditions of this license shall remain the same. The license is being reissued to incorporate the above modification (Enclosure 2). An environmental review was not performed since this action is categorically excluded under 10 CFR 51.22(c)(11).

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If you have any questions regarding this letter or the enclosures, please contact Mr. James Park, the NRC Project Manager for the White Mesa site, at (301) 415-6699.

Sincerely,

Joseph J. Holonich, Chief
Uranium Recovery Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-8681
SUA-1358, Amendment No. 7

Enclosures: As stated (2)

cc: W.Sinclair, UT
M.Rehmann, IUC

If you have any questions regarding this letter or the enclosures, please contact Mr. James Park, the NRC Project Manager for the White Mesa site, at (301) 415-6699.

Sincerely,

[Signed by]

Joseph J. Holonich, Chief
Uranium Recovery Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 40-8681
SUA-1358, Amendment No. 7
Case Closed: L51598

Enclosures: As stated (2)

cc: W.Sinclair, UT
M.Rehmann, IUC

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TECHNICAL EVALUATION REPORT

DOCKET NO. 40-8681 LICENSE NO. SUA-1358

DATE: August 21, 1998

LICENSEE: International Uranium (USA) Corporation

FACILITY: White Mesa Uranium Mill

PROJECT MANAGER: James Park

TECHNICAL REVIEWER: Duane Schmidt

SUMMARY AND CONCLUSIONS:

As part of its corrective actions taken in response to a Notice of Violation (NOV) issued by NRC on August 12, 1997, International Uranium (USA) Corporation (IUC) requested an amendment to Source Material License No. SUA-1358 for the White Mesa uranium mill. By letter dated December 3, 1997, IUC requested approval of a proposed modification to the in-plant air monitoring program committed to in its approved license application. IUC provided additional information by letter dated March 23, 1998, in response to comments received from the NRC staff.

The staff has reviewed IUC's proposal and found it acceptable with slight modifications. These modifications were discussed with IUC and agreed to in a telephone call on July 20, 1998.

DESCRIPTION OF LICENSEE'S AMENDMENT REQUEST:

By letter dated December 3, 1997, IUC requested an amendment to SUA-1358 to modify in-plant air monitoring commitments made in its approved license application. IUC's request was part of its corrective actions taken in response to an NOV issued by the NRC on August 12, 1997, as a result of the staff's routine inspection of the White Mesa mill on July 15-17, 1997. By letter dated March 23, 1998, IUC provided additional information in response to a February 13, 1998, written request from the NRC staff.

By its submittals, IUC proposed that License Condition 11.4 of SUA-1358 be revised, in part, to require that (1) annual air samples be taken, during operational periods, in routinely or frequently occupied areas and analyzed for gross alpha radioactivity, and (2) isotopic analyses of operational mill feed or production product be performed for natural uranium, thorium-230, radium-226, and lead-210 to assess the composition of air particulates.

Depending on the results of the isotopic analyses, derived air concentration (DAC) values would be determined for different mixtures of radionuclides, with the result that various areas in the mill would have a DAC value applied that is most appropriate for the radionuclide mixture likely to be present in air samples in that area. IUC considers that the mill site can be separated into

four areas for this purpose: (1) the ore handling and storage area, where uranium and its progeny is expected to be in equilibrium; (2) the uranium precipitation circuit, where only soluble uranium is expected to be present; (3) the uranium drying, packaging, and calciner area, where only uranium in a moderately insoluble form would be present; and (4) the tailings area, where uranium and its progeny would be present in disequilibrium, as separation has been attained.

IUC stated that approval of its proposed modifications will result in the collection of more meaningful isotopic data than that currently collected, and at a reduced expense to the company.

TECHNICAL EVALUATION:

Currently, in its approved license application, IUC has committed to taking an annual eight-hour, in-plant airborne radioactivity sample and analyzing the sample for natural uranium, thorium-230, radium-226, lead-210, and polonium-210. In accordance with License Condition No. 11.4, IUC is authorized to eliminate this annual sample, during extended periods of mill standby, if routine airborne sampling show levels below ten percent of the appropriate 10 CFR Part 20 limits.

At issue in the licensee's proposal is an appropriate method for performing measurements to determine the isotopic composition of the airborne radioactive particulates in plant areas to which workers are, or may be, exposed. As a result of the uranium extraction process in the mill, the concentrations of the airborne radioactive particulates are expected to vary around the mill. Appropriate area-specific DACs (based on the mixture of radionuclides present) can be used (1) to determine whether measured air particulate concentrations (often gross alpha measurements) are acceptable, and (2) in the determination of worker radiation exposures. These determinations are necessary primarily for the licensee to ensure compliance with the worker dose limits of 10 CFR Part 20, Subpart C.

IUC believes that the ability to sample much larger quantities of the mill feed or product materials would provide at least as accurate information regarding the radionuclide composition of potential airborne contaminants as does the current air sampling method. The NRC staff agrees that the larger sample sizes possible with the proposed method should improve the validity of the results on radionuclide composition.

The staff also considers that the sampling of the mill feed materials should allow for the early identification of materials that are significantly different, in terms of radionuclide composition, from natural ores processed at the mill, an issue of some importance considering the processing of alternate feedstock materials. As a result, IUC would be able to evaluate the need for changes to DAC values for various areas of the plant commensurate with the material being processed. Thus, the NRC staff concludes that the proposed approach should be valid for the purpose of determining DAC values for the different areas of the mill. The staff cautions that the use of this approach depends on accurate determinations, in advance, of how the isotopic composition of the mill feed and product may impact the isotopic composition of air particulates in the different mill areas.

A second issue with the proposed license amendment is the appropriateness of the proposed approach for extended periods of mill standby. IUC did not specifically address this issue in its submittals. However, during mill standby, there would be no mill feed or product to sample. Thus, it appears to the NRC staff that, if isotopic results are needed for DAC or dose calculations during periods of standby, the licensee can make use of previously determined values, or base calculations on other knowledge of the likely airborne contaminants during standby conditions. Such an approach would generally be acceptable.

Finally, approval of this request will not impact the regular weekly and monthly in-plant radiation monitoring conducted by IUC.

Therefore, the staff finds IUC's proposed approach to be acceptable. However, the staff considers that an annual analysis of mill feed or product materials may not be frequent enough, in light of IUC's past and anticipated future processing of various alternate feed materials in addition to natural uranium ore. Therefore, the staff will require that IUC perform an isotopic analysis of mill feed or product materials any time a new feed material is introduced into the mill process. IUC agreed to this modification by telephone on July 20, 1998.

RECOMMENDED LICENSE CHANGE:

License Condition 11.4 of SUA-1358 will be modified, in part, as follows:

> 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 either 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]

ENVIRONMENTAL IMPACT EVALUATION:

Because this change in IUC's in-plant radiation monitoring program will not result in (1) a significant change or increase in the types or amounts of effluents that may be released offsite; (2) a significant increase in individual or cumulative occupational radiation exposure; (3) a significant construction impact; or (4) a significant increase in the potential for or consequences from radiological accidents, an environmental review was not performed since actions meeting these criteria are categorically excluded under 10 CFR 51.22(c)(11).