

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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| In the Matter of |) | |
| |) | Docket No. 40-8681 |
| UMETCO MINERALS CORPORATION |) | Source Material License |
| |) | No. SUA - 1358 |
| White Mesa Mill |) | |
| P.O. Box 787 |) | Amendment No. 29 |
| Blanding, Utah 84511 |) | |

ORDER TO MODIFY LICENSE

I

Umetco Minerals Corporation (Licensee) is the holder of Source Material License No. SUA-1358 issued by the Nuclear Regulatory Commission (Commission). The license authorizes the possession of natural uranium and byproduct material. The current license was issued August 7, 1979, and is currently under timely renewal in accordance with 10 CFR 40.43(b).

II

On September 30, 1983, the Administrator of the Environmental Protection Agency (EPA) promulgated, pursuant to Section 275b of the Atomic Energy Act of 1954 (Act), the final health and environmental standards to govern stabilization and control of byproduct materials at licensed commercial uranium and thorium processing sites (40 CFR 192). Under the terms of Section 275d of the Act, the Commission is responsible for the implementation and enforcement of the standards promulgated by EPA.

Section 192.32(a)(2)(iii) of EPA's 40 CFR 192 requires that detection monitoring programs for ground water (required by 40 CFR 264.98) to establish ground water protection standards for hazardous constituents for each

regulated unit (40 CFR 264.92) be in place and operational within one year of the date of promulgation. All NRC licensees subject to the rule, therefore, were required to have an acceptable detection monitoring program in operation no later than September 30, 1984.

By letter dated July 10, 1984, the Commission notified the licensee of the acceptance criteria it would use in evaluating whether the licensee's ground water monitoring program was acceptable to meet these requirements. The Commission also pointed out those specific areas of the licensee's current program which it believed did not meet the acceptance criteria. The licensee was directed to submit its proposed program sufficiently in advance of the September 30, 1984 deadline to permit NRC review and implementation of the program.

The licensee responded to the July 10, 1984 letter on September 26, 1984. The Staff's analysis of the licensee's response and evaluation of its program for conformance to the acceptance criteria is set forth in the attachment to this Order.

The detection monitoring program has been required in order to establish ground water standards for each regulated entity to assure that hazardous constituents entering the ground water from that entity do not exceed established concentration limits in the uppermost aquifer passing under the tailings impoundment. As described above, detection monitoring programs have been required to be in place since September 30, 1984. If contamination exceeds standards pursuant to 40 CFR 192.33, a corrective action program as specified in 40 CFR 264.100 may be required to be in operation no later than 18 months after a finding of exceedance is made. If undetected contamination of ground water occurs, it may degrade the ground water to the extent that

available corrective actions will be ineffective and the contamination will irretrievably pose a substantial present or potential hazard to human health or the environment. Therefore, I have determined pursuant to 10 CFR 2.204 that the public health, safety, and interest requires that the monitoring program to gather the information to establish the appropriate ground water standards for this licensee and to detect their exceedance should be implemented as soon as possible and that the license modification set forth below should be effective immediately.

III

Accordingly, pursuant to sections 61, 81, 84, 161(b & o) and 275 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR 2.204 and Part 40, IT IS HEREBY ORDERED EFFECTIVE IMMEDIATELY THAT: License No. SUA-1358 is amended by adding the following License Condition No. 33 to read as follows:

33. The licensee shall implement a ground water detection monitoring program to ensure compliance to 40 CFR 192.32(a)(2) which includes the following elements:

A. The licensee shall monitor at the point of compliance and background wells for the following indicator parameters: Arsenic, Selenium and pH. The licensee shall utilize analytical techniques capable of providing lower limits of detection of 0.005 mg/l and 0.001 mg/l for arsenic and

selenium, respectively. Measurements of pH shall be reported to the nearest 1/10 standard unit.

- B. The determination of compliance shall be based on sampling Well Nos. 2 and 3.
- C. The determination of background levels for the parameters specified in subsection (A) shall be defined by sampling Well No. 1.
- D. The licensee shall sample for those parameters specified in subsection (A) above at those wells designated in subsections (B) and (C) on a monthly basis for a period of one (1) year and at least twice annually thereafter. The first monthly sample shall be taken within 30 days of the date of this Order. All semiannual samples shall be taken at least four months apart.
- E. The licensee shall, within 60 days of collection of the last of the twelve monthly samples, propose for USNRC review and approval in the form of a license amendment background levels for indicator parameters and a statistical procedure for identifying significant changes (95% confidence level) between data from the wells specified in subsections (B) and (C).

- F. The licensee shall report the data required by subsection (D) semiannually along with those data required by License Condition No. 28 in accordance to the reporting format, Attachment No. 3 to SUA-1358, "Sample Format for Reporting Detection Monitoring Data." These monitoring requirements are in addition to the requirements specified in License Condition No. 27.
- G. The licensee shall report at least annually in accordance to reporting requirements specified in subsection (F) the rate and direction of ground water flow under the tailings impoundment.

IV

The licensee or any other person adversely affected by this Order may request a hearing within 25 days after issuance of this Order. Any answer to this Order or any request for hearing shall be submitted to the Director, Uranium Recovery Field Office, U.S. Nuclear Regulatory Commission, P.O. Box 25325, Denver, Colorado, 80225. Copies shall also be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555 and to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, Parkway Central Plaza Building, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas, 76011. ANY REQUEST FOR A HEARING SHALL NOT STAY THE IMMEDIATE EFFECTIVENESS OF THIS ORDER.

If a hearing is requested by the licensee, the Commission will issue an order designating the time and place of any hearing. If a hearing is held, the issue to be considered at such hearing shall be:

Whether, on the basis of the matters set forth in this Order, this Order should be sustained.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

Dated at Denver, Colorado
this 19th day of July 1985

DISTRIBUTION

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Docket File 8681
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Docket No. 40-8681

SUA-1358, Amendment No. 28

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MEMORANDUM FOR:Docket File No. 40-8681

FROM: Gary R. Konwinski, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, RIV

SUBJECT: AMENDMENT NO. 28 TO SOURCE MATERIAL
LICENSE SUA-1358 FOR UMETCO MINERALS
CORPORATION, WHITE MESA MILL

By letter dated September 26, 1984, Umetco Minerals Corporation, White Mesa Mill (Umetco) submitted the details of their proposed detection monitoring program in response to URFO's July 10, 1984 letter outlining the staff's criteria for an acceptable detection monitoring program as detailed in 40 CFR 192. The July 10 letter informed Umetco that their existing groundwater monitoring program at that time did not appear to meet Criteria 6 and 7. The purpose of this memorandum is to review Umetco's proposed detection monitoring program against the staff-developed acceptance criteria and make recommendations for licensing action to implement this program.

The Umetco submittal discussed the Exception provision of the above-cited regulations. This provision allows synthetically lined ponds with leak detection systems to use the leak detection system in lieu of a detection monitoring system. However, this exemption was specifically designed to eliminate the need for a detection monitoring system at solar evaporation ponds constructed at insitu uranium recovery operations. Such evaporation ponds are generally utilized for only a short period of time and then removed in their entirety. Due to this, the staff does not recognize the exception provision at uranium recovery facilities which have tailings impoundments.

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Criterion 1

The program must be reliable in indicating the presence of hazardous constituents in the uppermost aquifer under the impoundment. Reliable indication shall be based on the analyses of ground water samples for specified chemical-physical parameters, waste constituents, or reaction products that are reliable indicators of the leakage of hazardous constituents disposed in the impoundment.

Umetco currently monitors 10 ground water parameters. These parameters include highly mobile ions which are used in the mill circuit for the extraction of uranium, are very concentrated in the tailings pond liquor compared to background values and are therefore reliable indicators of the presence of seepage. A review of this water quality data indicates that the downgradient wells (Wells 2, 3, 4, 5, 11, 12 and 13) show a higher concentration of dissolved constituents than does the background well (Well 1). Because this has occurred from preoperational monitoring until the present, it probably represents normal variance in the ground water. Umetco did not propose to monitor for any indicator species due to their exemption as discussed above. The staff, as discussed in its previous generic review, recommends that they monitor for species which indicate the potential presence of hazardous constituents: arsenic, selenium and pH. There exists data on these parameters for the years 1980 and 1981 (Table 1). Resumption of monitoring for these parameters will develop a sufficient data base to assess changes in ground water quality. A statistically significant change in any or all of these parameters will indicate the presence of tailings impoundment seepage.

Criterion 2

The program must provide samples representative of the ground water passing under the impoundment at the point of compliance. Representative samples shall be determined by the sufficiency in number of sampling wells and the adequacy of their locations, including depths, with respect to the uppermost aquifer and its direction(s) of flow. Point of compliance is specified to provide prompt indication of leakage from the impoundment should it occur.

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TABLE 1, UMETCO MINERALS CORPORATION WHITE MESA MILL WATER QUALITY DATA

| Well No. 1 - Background | | | | Well No. 2 - Point of Compliance | | | | Well No. 3 - Point of Compliance | | | |
|-------------------------|-------------------|----------|-----------|----------------------------------|-------------------|----------|-----------|----------------------------------|-------------------|----------|-----------|
| Date | Indicator Species | | | Date | Indicator Species | | | Date | Indicator Species | | |
| | As(mg/l) | Se(mg/l) | pH(units) | | As(mg/l) | Se(mg/l) | pH(units) | | As(mg/l) | Se(mg/l) | pH(units) |
| 1083 | * | * | 7.2 | 1083 | * | * | * | 1083 | * | * | 7.0 |
| 0983 | * | * | 7.2 | 0983 | * | * | * | 0983 | * | * | 6.8 |
| 0483 | -.01 | -.01 | 7.6 | 0483 | * | * | * | 0483 | -.01 | -.01 | 7.2 |
| 0183 | * | * | 7.2 | 0183 | * | * | * | 0183 | * | * | 6.9 |
| 1282 | * | * | 8.0 | 1282 | * | * | * | 1282 | * | * | 7.0 |
| 0782 | * | * | 7.8 | 0782 | * | * | * | 0782 | * | * | 7.5 |
| 0881 | -.001 | -.001 | 7.0 | 0881 | -.001 | .010 | 7.2 | 0881 | -.001 | -.001 | 6.5 |
| 0881 | -.001 | -.001 | 7.3 | 0881 | -.001 | .002 | 6.9 | 0881 | -.001 | -.001 | 6.8 |
| 0681 | -.005 | -.005 | 7.5 | 0681 | -.005 | -.005 | 7.2 | 0681 | -.005 | -.005 | 6.9 |
| 0681 | -.005 | -.005 | 7.5 | 0681 | Sampled destroyed | | | 0681 | -.005 | -.005 | 7.1 |
| 0481 | -.005 | -.005 | 7.2 | 0481 | -.001 | -.001 | 7.1 | 0481 | -.005 | -.005 | 6.9 |
| 0481 | -.001 | -.001 | 7.2 | 0481 | -.005 | -.016 | 7.2 | 0481 | -.001 | -.001 | 6.8 |
| 0181 | -.001 | -.005 | 7.4 | 0181 | * | * | * | 0181 | -.001 | -.005 | 7.1 |
| 0181 | .002 | .001 | 7.5 | 0181 | -.001 | -.005 | 7.4 | 0181 | .004 | .003 | 7.1 |
| 1280 | -.005 | -.005 | 7.4 | 1280 | -.005 | .017 | 7.3 | 1280 | -.005 | -.002 | 7.2 |
| 1080 | .002 | -.005 | 7.6 | 1080 | .002 | .012 | 7.6 | 1080 | .002 | -.005 | 7.6 |
| 1080 | .004 | .002 | 7.2 | 1080 | .004 | .026 | 7.2 | 1080 | -.005 | .005 | 6.9 |
| 0980 | -.005 | -.005 | 7.4 | 0980 | .016 | .025 | 7.5 | 0980 | .012 | -.005 | 7.2 |

* Indicates that no sample was taken for this indicator species on the date specified.

- When a concentration is preceded by a -, this indicates that the indicator species was undetectable at this lower limit of detection.

In their submittal, Umetco did not propose a point of compliance well, due to their exemption argument. However, they do have several wells installed each of which satisfy the point of compliance requirement. Because Umetco has 3 tailings cells completed and two more planned, two point of compliance wells were chosen. Well No. 2 is immediately downgradient from the existing cells and Well No. 3 is downgradient from the complete tailings management system. These wells sample the aquifer underlying the tailings impoundments and have a rather good data base for the staff recommended indicator species. The staff therefore recommends that Wells No. 2 and No. 3 be used as a point of compliance wells.

Criterion 3

The program must include sampling locations suitable to determine background levels of monitored parameters and constituents and to detect leakage of hazardous constituents from the impoundment should it occur. Suitability of sampling locations shall be determined by the placement of sampling wells upgradient (background) and downgradient (leakage) of the surface impoundment.

Umetco did not propose a background well; however, an adequate well does exist. Well No. 1 is upgradient from the total tailings management system and is representative of background water quality. It is also completed in and samples the aquifer in contact with the tailings impoundments. Therefore, it is representative of the water passing under the tailings impoundments. The staff therefore recommends that Well No. 1 be designated as the background well.

Criterion 4

The program, to be fully operational, must have available reliable data on background levels of monitored parameters and constituents, or a procedure implemented for determining background levels of monitored parameters and constituents.

As previously discussed, Umetco has developed a data base for the background and point of compliance wells. However, sampling for arsenic and selenium was discontinued in 1981. The staff therefore recommends that sampling for arsenic and selenium be resumed at Well Nos. 1, 2 and 3. Although Umetco currently monitors on a quarterly

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frequency, the staff recommends that sampling for arsenic, selenium as well as pH be done a monthly frequency for the initial year of sampling in order to establish baseline levels of indicators in a reasonably short time.

The staff further concludes that monitoring include sampling and analysis for arsenic, selenium and pH on the above frequency with a lower limit of detection for arsenic of 0.005 mg/l and 0.001 mg/l for selenium. Measurements of pH shall be to the nearest 1/10 standard unit.

Criterion 5

The program must provide for analyses of ground water samples from all monitoring wells at a frequency of at least twice each twelve month period, where the first and last samples at any wells are spaced at least four months apart in that twelve month period. All monitoring wells means all background (upgradient) and all leakage detection (downgradient) sampling wells.

Umetco currently monitors their wells on a quarterly frequency. The staff recommends that this frequency be upgraded to monthly for the initial year of sampling of the indicators (as discussed in Criterion 4) and twice annually thereafter.

Criterion 6

The program must include determination of the rate and direction of ground water flow in the uppermost aquifer under the impoundment at a frequency of a least once each twelve month period.

In the original review of Umetco's detection monitoring program, Criterion 6 was not adequately addressed. The staff therefore finds that Umetco should comply with Criterion 6 by determining rate and direction of ground water flow at least annually.

Criterion 7

The program must provide for the identification and reporting of statistically significant increases above background levels of monitored parameters and constituents in ground water samples. Statistically

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significant increases shall be based on factors such as: variability and values of background levels of monitored constituents and parameters, accuracy of analytical methods, limits of detection of analytical methods, and the number of samples.

In the original review of Umetco's ground water monitoring program, Criterion 7 was not adequately addressed. In their September 26, 1984 submittal, Umetco did not propose a statistical procedure. The staff therefore finds that Umetco should collect data as outlined in Criterion 4. Upon review of this data, the staff finds that Umetco should propose background concentrations for indicator parameters and a statistical procedure for identifying significant changes between data from the background well and data from the point of compliance wells at the 95% confidence level.

Based upon the above discussion, the staff recommends that SUA-1358 be amended by adding a new License Condition No. 33 to read as follows:

33. The licensee shall implement a ground water detection monitoring program to ensure compliance to 40 CFR 192.32(a)(2) which includes the following elements:

- a. The licensee shall monitor at the point of compliance and background wells for the following indicator parameters: Arsenic, Selenium and pH. The licensee shall utilize analytical techniques capable of providing lower limits of detection of 0.005 mg/l and 0.001 mg/l for arsenic and selenium, respectively. Measurements of pH shall be reported to the nearest 1/10 standard unit.
- b. The determination of compliance shall be based on sampling Well Nos. 2 and 3.
- c. The determination of background levels for the parameters specified in subsection (a) shall be defined by sampling Well No. 1.
- d. The licensee shall sample for those parameters specified in subsection (a) above at those wells designated in subsections (b) and (c) on a monthly basis for a period of one (1) year and at least twice annually thereafter. All semiannual samples shall be taken at least four months apart.

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- e. The licensee shall, within 60 days of collection of the last of the twelve monthly samples, propose for USNRC review and approval in the form of a license amendment background levels for indicator parameters and a statistical procedure for identifying significant changes (95% confidence level) between data from the wells specified in subsections (b) and (c).
- f. The licensee shall report the data required by subsection (d) semiannually along with those data required by License Condition No. 28 in accordance to the reporting format, Attachment No. 3 to SUA-1358, "Sample Format for Reporting Detection Monitoring Data." These monitoring requirements are in addition to the requirements specified in License Condition No. 27.
- g. The licensee shall report at least annually in accordance to reporting requirements specified in subsection (f) the rate and direction of ground water flow under the tailings impoundment.

/s/

Gary R. Konwinski, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, RIV

/s/

Approved by: _____

Harry J. Pettengill, Chief
Licensing Branch 2
Uranium Recovery Field Office, RIV

Case Closed: 04008681611E

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