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AUG 12 1981

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Docket No. 40-8745

MEMORANDUM FOR: Ross A. Scarano, Chief
Uranium Recovery Licensing Branch

THRU: John J. Linehan, Section Leader
Operating Facilities Section I
Uranium Recovery Licensing Branch

FROM: T. L. Johnson, Project Manager
Operating Facilities Section I
Uranium Recovery Licensing Branch

SUBJECT: OGLE PETROLEUM, INC. ESTABLISHMENT OF RESTORATION CRITERIA AND UPPER CONTROL LIMITS - AMENDMENT NO. 8

On May 12, 1981, Ogle Petroleum, Inc. (OPI) submitted baseline water quality data for Mine Unit 1 of their commercial in-situ solution mining project. This data was submitted in accordance with License Condition Nos. 41, 42, 43, and 74(A), which require that this data be used to establish upper control limits (UCL's) and restoration criteria for the project.

Along with J. Pohle and F. Ross, I have reviewed the baseline data. Based on this review, we conclude that with the exception of uranium UCL's levels, the applicant's proposed values are acceptable.

Upper Control Limits

The applicant proposed to compute UCL's, with the exception of UCL's for uranium, as baseline plus 20 percent. Baseline was defined as the maximum of four readings in each individual monitor well. UCL's were established for specific conductance, sodium, sulfate, chloride, carbonate plus bicarbonate, and uranium. Uranium UCL's were proposed to be baseline plus 1 mg/l. These methods were approved by Wyoming DEQ.

We find the method for establishing the UCL for uranium to be unacceptable. NRC licensing practice is to establish uranium UCL's in generally the same manner as the other parameters. The NRC staff initially felt that the UCL for uranium should also be set at 20% above baseline, if uranium is to be used as a valid early indicator of lixiviant excursion. Setting the UCL's at baseline plus an arbitrary value of 1 mg/l would allow uranium values to increase by more than an order of magnitude before the UCL was reached.

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When OPI met with the NRC staff on August 10, 1981, G. Catchpole presented several arguments and additional information regarding the setting of UCL's for uranium:

(1) He indicated that he thought that using the maximum of four sample values for each well would result in UCL's that were much too low. This would result in UCL's for some wells that would be less than the naturally occurring baseline values in other wells. During operation when the uranium became mobilized, it would be extremely likely that mixing of water over a large area would occur, raising the background levels in some wells above the UCL's.

(2) He presented data showing that if the 20% over baseline for each well method were used to set UCL's for OPI's R&D project, many false excursions would have occurred.

(3) He argued that analytical error could lead to false excursions with UCL's as low as about .015 mg/l.

The method finally used by the NRC staff to set UCL's for uranium for this project differs somewhat from the method used for the other parameters. Based on the wide variability of baseline uranium concentrations as compared to the variability in concentrations seen for other parameters measured at the Ogle site and on the arguments and information stated above, we determined that one UCL should be set for each zone and that this UCL should be set at the maximum value for all samples taken in each zone, plus 20%. In the ore zone, the highest sample values in nine wells ranged from .008 to .015 mg/l. The UCL for the ore zone was therefore set at .015 plus 20%, or .018 mg/l. In the upper zone the highest value in eight wells was .022 mg/l; the UCL was set at .027 mg/l. In the lower zone, the highest value in one well was .01 mg/l; the UCL was set at .012 mg/l.

We also concluded that use of these UCL's, low in OPI's opinion were appropriate for the following reasons:

(1) Under the license, an excursion is not deemed to exist unless one parameter exceeds its UCL by 20% or two parameters exceed their UCL's. Therefore, before an excursion could be declared based on uranium levels alone, uranium concentrations would have to be 40% higher than the maximum baseline values.

(2) Analysis for uranium can accurately be performed by flourometric methods down to less than 0.002 mg/l. The high baseline value for uranium for each zone at Ogle, on which UCL's will be based, is 0.015 mg/l for the ore zone and 0.022 mg/l and .01 mg/l for the upper and lower monitoring zones, respectively.

(3) The method used by the NRC staff to set UCL's for this project throws out outliers and is based on the maximum of all readings taken in each monitoring zone.

Restoration Values

We agree with the proposed restoration valves. These values are the same as those presented in the FES and approved by Wyoming DEQ. However, a review of restoration data from Ogle's R&D operation showed that values less than those proposed were achievable for some parameters. Therefore, the licensee should be urged to achieve values that are as low as reasonably achievable, taking into account costs and depletion of resources.

Based on our review, we recommend that License Condition 42 be modified as follows:

42. For Mine Unit 1, with the exception of uranium, upper control limits for each excursion monitor well shall be those proposed in the licensee's May 12, 1981 submittal regarding baseline water quality. For uranium, upper control limits shall be .018 mg/l for all ore zone monitor wells, 0.027 mg/l for all upper zone monitor wells, and .012 mg/l for the lower zone monitor well.

    Mining shall not be conducted in any subsequent mine unit before UCLs for all excursion monitor wells associated with such mine unit are approved by license amendment. Upper control limits (UCLs) for future mine units shall be established for each excursion monitor well for total bicarbonate plus carbonate, sodium, sulfate, specific conductivity, chloride, and uranium. UCLs shall be established on the basis of the beseline water quality data required pursuant to Condition No. 41 of this license.

We recommend that License Condition 43 be modified as follows:

43. Restoration criteria shall be established separately for each mine unit, for each parameter in the Long List of FES Table 4.1, on the basis of the baseline water quality data for restoration sampling wells required pursuant to Condition No. 41 of this license. Restoration criteria shall be approved by license amendment for each mine unit prior to conducting mining operations in such mine unit. Restoration values for Mine Unit 1 shall be those described in the licensee's May 12, 1981 submittal regarding baseline water quality.

Based on the submittal of the required information, License Condition 74(A) should be deleted. The conditions detailed above were discussed between Mr. Glenn Catchpole and Mr. Ted Johnson on several occasions. Other than the UCL's for uranium, as discussed above, Mr. Catchpole had no objections to the license modifications.

Original Signed By:

T. L. Johnson, Project Manager
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

Original Signed by:
J. J. Linehan

Approved by: _____
J. J. Linehan, Section Leader
Uranium Recovery Licensing Branch

Case Closed: 04008745A04E

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