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 Docket No. 40-8745  
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UNITED STATES  
 NUCLEAR REGULATORY COMMISSION

REGION IV  
 URANIUM RECOVERY FIELD OFFICE  
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FEB 15 1983

Return to URFO 467-SS  
 Docket 40-8745  
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MEMORANDUM FOR: Docket File No. 40-8745

FROM: Yvonne A. Young, Project Manager  
 Licensing Branch I  
 Uranium Recovery Field Office, RIV

SUBJECT: REVIEW OF OGLE PETROLEUM, INC.'S SEMI-ANNUAL ALARA REPORT  
 RESPECTIVE TO LICENSE CONDITION NO. 17 FOR THE PERIOD OF  
 JANUARY 1, 1982 THROUGH JUNE 30, 1982

By letter dated August 12, 1982, Ogle Petroleum, Inc. submitted to NRC their semi-annual ALARA audit report for the period of January 1, 1982 through June 30, 1982. Additionally, OPI submitted external exposure and other in-plant radiation data dated May 13, and September 10, 1982. Via telecon, I verified that OPI had provided the written audit ALARA report to the manager of mining for review to implement necessary corrective or mitigating actions as required by License Condition No. 17.

I have reviewed the OPI ALARA, in-plant radiation data, and external radiation data reports and have discussed the audit via several telephone conversations with OPI's staff. My review of the information provided by OPI is discussed below:

I Exposure Records (External)

Respective to License Condition No. 21, OPI submitted a statistical report of the first twelve months of employee external radiation exposure data by work classifications, including monthly exposure data, for the period August 1, 1981 through July 31, 1982. Results showed the total dose equivalent (mrem) to the skin and penetrating radiation to the whole body. This data was reviewed by the URFO staff (as required by License Condition No. 21) to determine whether a continuing personnel dosimetry program for external radiation should be required for future operations.

Whole body annual external radiation exposures listed in the statistical report varied from 0.010 rem to 0.099 rem. Additionally, the statistical breakdown by work classifications showed that the only workers with annual

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FEB 15 1983

exposure doses greater than 0.010 rem (10 mrem) were the operators, one wellfield maintenance worker, and one temporary worker.

Monthly whole body exposures varied from 0 to 61 mrem (the data showed one monthly exposure of 108 mrem which was determined by NRC and OPI to be erroneous) during the reporting period mentioned above. For the lead operator, who had the highest reported skin doses, it was noted that skin doses were as high as 392 mrem per quarter.

By 10 CFR 20.202, each licensee shall supply appropriate personnel monitoring equipment and shall require the use of such equipment by each individual who enters a restricted area under such circumstances that he is likely to receive a dose in any calendar quarter in excess of 25 percent (312 mrem) of 1.25 rems for the whole body. The applicable value in rems per calendar quarter for the skin of the whole body is 7.5 rems.

The whole body exposures and the skin exposures during the first twelve months of operations for all work classifications were well below 25 percent of the applicable dose values specified in 10 CFR 20.101 (a).

The URFO staff has determined that the licensee can discontinue routine monthly personnel monitoring. However, if the licensee chooses to drop routine personnel monitoring, as operations continue at the Bison Basin Project Site, the licensee must conduct a periodic monitoring program to verify that personnel still are not likely to receive exposures in excess of 25 percent of the limits specified in 10 CFR 20.101(a). License Condition No. 21 will therefore be deleted.

## II Bioassay Results

OPI reported only those incidents where urinalysis showed  $\geq 5$   $\mu\text{g}/\text{l}$  of uranium. The staff was informed via telecon with Mr. Glenn Catchpole (OPI) that from 23 to 24 persons submit urine samples on a monthly basis which are analyzed by Technology Laboratories, Inc. (TLI) Casper, Wyoming.

OPI stated that on February 11, 1982 TLI reported that three of their employees' urinalyses had exceeded 15  $\mu\text{g}/\text{l}$  of uranium-natural. OPI further stated that on February 12, 1982 resampling was initiated to confirm the analyses for two employees, and on February 13, 1982 another confirmation resampling was initiated for the other employee. Respectively, the confirmation sample results showed 9  $\mu\text{g}/\text{l}$  each for the employees with 54  $\mu\text{g}/\text{l}$  and 16  $\mu\text{g}/\text{l}$  samples, and less than 5  $\mu\text{g}/\text{l}$  for the employee with the 160  $\mu\text{g}/\text{l}$  sample (an additional sample for albuminuria proved negative when tested by the Lander Medical Clinic). All of these resamples were less than the action level of 15  $\mu\text{g}/\text{l}$  as specified in Regulatory Guide 8.22, therefore, no further action is required.

FEB 15 1983

It was noted that OPI's Safety and Radiation Protection Engineer collected the initial samples during working hours instead of prior to commencing shift operations. Consequently, OPI concluded that this sampling period probably resulted in the contamination of the sample cups for urinalysis. However, all subsequent samples have been collected prior to commencing shift operations. OPI stated that they will proceed to collect samples prior to shift operations to prevent reoccurrence. Therefore, the URFO staff has concluded that OPI's corrective actions to prevent contamination appear adequate.

By License Condition No. 27(3) anytime an action level of 15  $\mu\text{g}$  U/l of urine is reached or exceeded for any worker, the licensee shall provide documentation to the NRC as part of the ALARA audit report required by License Condition No. 17 indicating what corrective actions have been performed to satisfy the requirements of Regulatory Guide 8.22. This information was submitted as required and is adequate.

### III In-Plant Data

OPI did not submit its internal exposure data in the ALARA report. However, OPI did submit inplant survey data on May 13, 1982 as required by License Condition No. 19:

19. The licensee shall submit to the U.S. Nuclear Regulatory Commission, Uranium Recovery Licensing Branch, Washington, D.C. 20555, for review all in-plant external gamma, radon, and airborne particulate survey data for the first six months of operation of the facility. The data shall be submitted within nine months of commencing mining operations.

External gamma radiation was measured with acceptable instrumentation at nine locations within the processing facility. Readings ranged from .01 to 2.4 mr/hr with first quarter levels averaging 0.69 mr/hr while the second quarter readings averaged only .12 mr/hr. These average levels were less than 312 mrem per quarter as discussed previously.

It was both noted by (and discussed between) Mr. D. B. Spitzberg, Region IV inspector, and URFO staff that the inplant survey fell short of NRC's licensing requirements for the following reasons:

1. Tables for radon gas and airborne particulates were submitted with units of  $\mu\text{g}/\text{ml}$ . It was not clear whether airborne particulates results were for uranium-natural or gross alpha. OPI has since indicated that the values should have been  $\mu\text{Ci}/\text{ml}$  instead of  $\mu\text{g}/\text{ml}$ .
2. Contrary to License Condition No. 26, OPI's reported radon monitoring frequency had exceeded one month on at least five occasions and by as much as 3.2 months. This matter was also discussed with OPI's staff.

FEB 15 1983

License Condition No. 26 requires monthly surveys for radon in all enclosed process buildings. At Ogle's Bison Basin Project Site, radon gas surveys were conducted at the locations required by the license, but at irregular intervals. On numerous occasions, measurements were not made within the required monthly interval. License Condition No. 26 also specifies that whenever radon concentrations exceed 8 pCi/l, surveys should be conducted weekly until concentrations fall below 8 pCi/l for four consecutive weeks. On the three occasions when data show concentrations in excess of this limit, weekly followups were not performed. Overall, the radon measurements which were taken averaged 2 pCi/l which is less than not only the maximum permissible concentrations for restricted areas but also for unrestricted areas.

Airborne particulate concentrations of uranium, were measured using acceptable instrumentation for three locations within the processing plant. No measurements were submitted for September and October as a result of calibration problems. Conversations with OPI's staff indicated that they have been resolved. Concentrations ranged from  $9.4 \times 10^{-15}$  to  $1.32 \times 10^{-12}$   $\mu\text{Ci/ml}$  in comparison to the 10 CFR 20 limit of  $1 \times 10^{-10}$   $\mu\text{Ci/ml}$ . These values verified the statement in the ALARA report that values were <10% MPC.

In view of the problems associated with the radon concentration surveys, the staff informed Ogle of the deficiencies in their radon program and requested Ogle to submit survey data for an additional six-month period. The remainder of the in-plant survey report was complete and acceptable.

By letter dated September 10, 1982, OPI submitted in-plant radon concentrations for the first six months of 1982. The monthly data ranged from a low of 0.059 pCi/l to a high of 7.04 pCi/l. Overall, these radon measurements averaged 1.86 pCi/l which is below the maximum permissible concentration for restricted areas (<10%).

#### IV Environmental Radiological Effluent and Monitoring Data

OPI did not include their environmental radiological effluent and monitoring data in their ALARA report (January 1982 through June 1982). However, the data (January 1982 through June 1982) was included in their second semi-annual report and was below 25% of MPC. The environmental data from OPI's second semi-annual report (February 22, through August 24, 1982) is discussed in detail in a separate memorandum to the docket file.

#### V Training Program

It was noted that the training program required by License Condition No. 18 had been implemented. Monthly safety meetings were conducted two to three days per month.

FEB 15 1983

VI Log Entries and Summary Reports of All Inspections by the Radiation Safety Staff

OPI stated that daily walk-through inspections respective to License Condition No. 16 are being conducted, and that previous discrepancies noted have been corrected. Additionally, (as required by License Condition No. 16) weekly and monthly inspections of all work and storage areas are being conducted.

VII Reports on Overexposure Submitted to NRC, MSHA or the State

OPI stated that no overexposure had occurred at the Bison Basin Mine Site.

VIII Reviews of Operating and Monitoring Procedures Completed During the Period

Via telephone, OPI staff stated that no reviews of operating and monitoring procedures have been completed during this period.

IX Special Work Permits (SWPs) Which Require That Additional Radiological Monitoring and Sampling be Performed

OPI stated that three SWP's were issued during January 1, 1982 through June 30, 1982. Additionally, all sampling indicated that no concentrations exceeded normal work conditions.

X Conclusions

Mr. R. Woolsey's review of OPI's first semi-annual ALARA report, and my review of OPI's second semi-annual ALARA report show that OPI, in violation of License Condition No. 17, failed to specifically discuss the following in their semi-annual ALARA audits.

1. The performance of exposure and effluent control equipment; whether it is being properly used, maintained, and inspected; and
2. Recommendations on ways to further reduce personnel exposure (only missing from 2nd ALARA report) and effluent releases of uranium and its daughters.

In addition, if OPI's upper management, the Manager of Mining, is to understand the significance of the radiological data and determine if conditions are indeed ALARA and whether the data indicates trends, data ranges or high and average values for all areas of the radiation safety program discussed, as well as applicable regulatory limits or action levels, should be included in the audit report. While statements in these ALARA reports may be the end result of careful and thorough audits and evaluations by the RSO, the purpose of the reports is to provide sufficient data and documentation of the

FEB 15 1983

evaluation to allow OPI's upper management and the NRC to make an independent determination of whether the radiation safety program is meeting the ALARA objective.

Two other points that need to be brought to OPI's attention are: 1) that rather than report data values as zero, the lower limit of detection should be presented; and 2) ALARA reviews of in-plant survey data should include contamination survey data.

*Yvonne Young*

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Approved By:

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