

DISTRIBUTION

40-8084/NMS/85/10/15/0

- 1 -
OCT 18 1985

Docket File 8084

PDR/DCS

DBangart, RIV

NMShopenn

URFO r/f

LAnderson, RCPD, U

URFO:NMS
Docket No. 40-8084
040080846305

MEMORANDUM FOR: Docket File No. 40-8084

FROM: Noah M. Shopenn, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, RIV

SUBJECT: REVIEW OF SEMI-ANNUAL ALARA AUDIT PERFORMED FOR THE
RIO ALGOM MINING CORP. LISBON MILL

By letter dated September 25, 1985, Rio Algom Corp. submitted the semiannual ALARA committee audit at the Lisbon Uranium Mill near La Sal, Utah. The audit included information generated from December 12, 1984 through June 27, 1985. The information was provided in compliance with License Condition No. 40 of Source Material License SUA-1119. The ALARA audit evaluated the radiation safety program at the Lisbon Uranium Mill and followed the format presented in Section 2.2.3 of Regulatory Guide 8.31. Each area is reviewed below.

MILL RADIATION PROTECTION AND MONITORING

1. Employee Exposure to U-nat

Records of exposure were maintained for all personnel exposed to U-nat. The reviewer noted that the licensee separated exposures to ore dust and yellowcake with ore dust reported as a percentage of the monthly maximum permissible exposure. In addition, the licensee in January 1985, had computerized and maintained the personnel exposure records.

There were two overexposures reported to the NRC by the licensee in this reporting period. The licensee determined that actual overexposures had not occurred. This was due to the fact that respiratory protection was used, but no credit for the protection factors was taken in exposure

OFC :	:	:	:	:	:	:	:
NAME :	:	:	:	:	:	:	:
DATE :85/10/18	:	:	:	:	:	:	:

8511070576 851018
PDR ADOCK 04008084
C PDR

determination. Moreover, the bioassay showed that an uptake had not occurred. The highest exposures that occurred were to the maintenance personnel. The licensee had not mentioned any increased training or monitoring of maintenance personnel due to the exposure levels they encounter in their work. The ALARA committee commented that the air sampling results lead to higher exposure determinations than bioassay results indicate. Although the licensee questions the validity of air sampling on this point, the reviewer is convinced that this discrepancy is due to their not using the protection factors of the respiratory protective equipment in their calculations for exposure. The reviewer has concluded that, except for the licensee not taking the respiratory protection factors into the exposure calculations, the program is being conducted within the guidance given in Regulatory Guide 8.30.

2. Employee Exposure to Radon Daughters

Records of exposure to radon daughters were maintained for all personnel. Exposure conditions were the same as described in the previous paragraph. The highest value was .014 WL or 4% of the permissible WL. This exposure was for ore dust on the bottom floor of the fine ore bin and at west sump. The average, within all areas of the mill, was .0052 WL or 1.6% of the permissible WL. The overall average for 1984 was 5.1 percent of the working level. It appears that there has been a downward trend in the radon daughter levels for 1985. This will be followed in future reports.

3. Bioassays and In Vivo Counting

Records of bioassay were maintained by the licensee for all personnel subject to exposure. The licensee reported that 5 out of 398 urinalyses were above 15 ug/l of uranium in urine with the highest at 44.5 ug/l. This dropped back to normal background on the following urinalysis. The licensee was observed to have followed the requirements of License Condition No. 42 of the license and Section 5.5.4 of the mill license application.

In vivo measurements had not been performed during the first half of 1985; however, they are scheduled for August 1985.

OFC :	:	:	:	:	:	:
NAME :	:	:	:	:	:	:
DATE :85/10/18	:	:	:	:	:	:

4. External Gamma Exposure

Monthly personnel gamma exposures ranged from 40 mrem/qtr to a high of 350 mrem/qtr. The reviewer observed an upward trend in exposure to the mill mechanics in the six months ending June 30, 1985 from 130 to 160 mrem/qtr with a decrease in exposures to the yellowcake dryer, ball mill and crusher operators and no significant change in exposure to the precipitator operator. These trends will be followed in future reports.

5. Surface Contamination

Weekly surface contamination surveys were performed throughout the mill in the eating and smoking areas and change rooms. The highest level of removable alpha contamination (264 dpm/100 cm²) was in the change room. Repeat surveys of areas which exceeded 200 dpm/100 cm² on initial survey indicated adequate decontamination had been performed. The report did not have a record or graph of these survey results.

The licensee stated that there were 27 surveys of material that was released from the mill site. In addition to this, sole use shipments of 1518 contaminated barrels had been made to an authorized licensee.

Alpha surveys of employees leaving the restricted area were self administered with quarterly spot checks performed by the radiation safety staff. The reviewer noted the absence of data on the results of these surveys in the report and contacted the RSO. He stated that the spot check surveys did not show anyone over the limits for alpha contamination.

6. Air Sampling

The licensee submitted monthly area airborne concentrations of ore dust and U-nat for 10 general areas. All areas at one time or another during the reporting period had a spike in the activity; however, no trend was evidenced in the overall results. The highest concentrations were recorded inside the packaging room with a range of 31 to 60 percent of MPC. The precipitation area also ran above 25 percent of MPC for the same period, with a range of 31 to 40 percent. The mill service area after January 1985 dropped to 17 percent or less of the limits. The reviewer also noted that for March through May 1985, the ore dust concentrations in the filtration area were above 25 percent of MPC.

OFC :	:	:	:	:	:	:
NAME :	:	:	:	:	:	:
DATE :85/10/18	:	:	:	:	:	:

However, the June results of this area showed a significant drop from May.

The licensee also noted that average concentrations of airborne uranium in the precipitation section of the mill showed a 30% increase over the same period in 1984. This increase is attributed to maintenance improvements in the mill's sheet metal work which resulted in diminished air flow into the mill. Conversely, average concentrations of airborne uranium in the dryer-packaging section showed a 10% decrease over the same period in 1984. The change is also attributed to maintenance improvements in the dryer, primarily rehangng and resealing the hearth doors of the dryer.

7. Radiation Work Permits

A total of fourteen work permits were issued during the first half of 1985. This was in excess of a 400 percent increase in the use of work permits over the previous six months. The highest levels of exposure to personnel were during the radiation work permits issued for work in the yellowcake dryer and packaging. It was also the time when the two suspected overexposures occurred. The reviewer noted that during the RWPs additional bioassays are taken before and after the work, and a series of bioassays are taken after the job is complete when exposures have been calculated to be high. The worker is also pulled out of his routine work until his actual exposure is determined.

8. Training Activities

It is the standard practice to have radiation training and radiation safety meetings concurrently with bi-weekly industrial safety meetings. During this reporting period the use, regulations, guidelines and procedures for respirators were taught. Personnel exposure requirements, ALARA concepts and radiation hazards were also taught. Specialized training was given to two new hires, four female employees and four contractor personnel.

OFC :	:	:	:	:	:	:
NAME :	:	:	:	:	:	:
DATE :85/10/18	:	:	:	:	:	:

9. Conclusions

The ALARA report submitted covered the areas required by Regulatory Guide 8.31 and as required by License Condition No. 40 of Source Material License SUA-1119.

The ALARA report is the second one submitted by the licensee. There has been an improvement in reporting of inspections, exposures and trends in the reports. It has been reported that the RSO is leaving the company by the end of October 1985. The reviewer expects a period of adjustment for the new RSO to fit into the position.

15
Noah M. Shopenn, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, RIV

Approved by: 15

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

Case Closed: 04008084630S

OFC	: URFO	: GP	: URFO	: HP	:	:	:	:
NAME	: NMShopenn	: GPangburn	: HPettengill	:	:	:	:	:
DATE	: 85/10/18	: 8/10/8	: 10/18	:	:	:	:	: