APPENDIX 3

2007 ALARA Audit

Annual ALARA Audit
of the
2007 Radiation Protection Program
COGEMA Mining, Inc.
Irigaray and Christensen Operations

An audit of the COGEMA Mining, Inc. Irigaray and Christensen Operations radiation protection program to determine compliance with ALARA principles was conducted on January 25, 2008. The audit was completed in fulfillment of the requirements of Section 5.3 of the approved license application and Standard Operating Procedure No. HP-12. The audit was conducted by T. Hardgrove, Manager, Environmental & Regulatory Affairs for COGEMA Mining, Inc., with assistance from the Irigaray/Christensen Radiation Safety Officer. The areas audited and the overall results are summarized below.

1.0 Employee exposure records

Employee exposure records were reviewed. Of the total 14 employees evaluated, only four employees were assigned any exposure (TEDE). All doses were minor, the largest TEDE being 0.02 rem or 0.4% of the 5 rems annual limit. That individual received 14.6 mrem CEDE and 5 mrem DDE. The 14.6 mrem TEDE was the highest internal dose for 2007; the highest DDE was 13 mrem, assigned to another individual. Assigned doses from airborne uranium or radon daughters were minor due to very low measured concentrations during 2007.

Overall doses continue to be very low, reflective of the non-operational status of the site, and the controls on exposure accomplished with Radiation Work Permits (RWP) during decommissioning/maintenance activities at Irigaray and the Christensen Ranch satellite plant. Attachment 1 provides a summary of the 2007 doses and a comparison of the monitored personnel's doses with the previous three years.

The yellowcake dryer was not operated during 2007 at the Irigaray site. Aquifer restoration activities were completed in 2005, resulting in no further incidental production of concentrate from restoration.

2.0 Bioassay results

Bioassays (urine samples) are analyzed on a monthly basis for plant personnel. The results for the 2007-year showed no employees exceeding the 15 ug/l action level. In fact, all samples during 2007 were below the analytical laboratory detection level (<5 ug/l) for U. Blind control spiked samples were routinely submitted with other samples to the analytical lab. The laboratory results for the blind control spikes were well within the acceptable range for accuracy with one exception. Both 5/03/07 control samples were widely missed by the laboratory (theoretical 20 ug/l vs. lab 75 ug/l, and theoretical 50 ug/l vs. lab 0 ug/l). The results suggest that the control samples may have been mislabeled at some point. That still does not account entirely for the error. Assuming there was a sample mix up, the error still is not consistent from one sample to the next. It is suggested that in the future under similar circumstances, a re-analysis of the controls be ordered. It may even make sense to submit follow up controls to quickly validate the laboratory's accuracy. Overall, the bioassay program required pursuant to NRC License Condition No. 10.12 was being followed.

3.0 Inspections

Documented walk through inspections were made of both plant areas on a weekly basis (NRC License Condition 11.5). The inspection logs were reviewed and found to be in order. Interestingly, no problems were identified throughout the year, nor were any recommendations made. While such lack of problems may in deed have been the norm, it is suggested that, in consideration of an eventual re-start of operations, the importance of the plant walk through inspection in terms of critical examination be re-emphasized.

Weekly pond inspections were also conducted and documented. No problems were noted. With no operations occurring pond levels continued to decline due to evaporation. Water levels in all ponds were well below maximum permissible levels. No leaks were detected.

4.0 Training

The present RSO has been with the company for about thirty years, serving for 2.5 years as a radiation safety technician and over five years as an environmental technician. He has been in his present position as RSO for 2.5 years. The RSO is current with his refresher training in radiation safety, having attended a one week radiation safety refresher course during 2007. A radiation/environmental technician hired during 2007 was scheduled during early 2008 to attend a one week radiation safety training course.

Training was also provided to employees and contractors pursuant to the company's Radiation Safety Training Plan. Task training was typically conducted by supervisors. All training was documented and filed in each employee's personnel file.

The required refresher radiation safety and general industrial safety training was provided to employees during quarterly safety meetings, discussed below. Workers also attended offsite a full day fall protection class. During 2007 four new employees received the required radiation and industrial safety training as described in the Radiation Safety Training Plan. The one new female employee was advised of the potential radiation risk to an unborn fetus, and the advisory was documented.

5.0 Safety Meetings

Safety meetings are routinely held on a quarterly basis. A review of the documentation for each meeting showed that a range of safety related topics was discussed. Topics covered included exposure trends, respirator fit testing, sand filter work and safety aspects of the project (including use of RWPs), exit monitoring, monitoring of tools/equipment, and a review of the NRC inspection results.

6.0 Radiological Surveys and Data

A review was made of the various radiological surveys required by NRC License Conditions 10.10, 10.11, and 11.3. A summary of the survey statistics for the year is provided in Attachment 2 to this report. A review of Attachment 2 and the radiation safety files generated the following comments:

Alpha Contamination Swipes - Contamination swipe results at Christensen were very low for the entire year. The highest reading recorded was 22 dpm/100 cm2 in the plant upstairs

office. No trends were noted. Contamination swipes at Irigaray were somewhat higher than at Christensen, but still well below the action level. The highest reading for the year at Irigaray was 51 dpm/100cm^2 in the dry pack change room. No trends were evident.

Respirator Maintenance and Surveys of Respirators for Alpha Contamination – Documentation of respirator maintenance and surveys to check for alpha contamination on respirators were examined and found to be in order.

Airborne Uranium Surveys – Monthly airborne uranium levels at both Irigaray and Christensen remained low for the entire year. The maximum value recorded at Christensen was 1.6 E-11 µCi/ml (13% of the action level) during May. No trends were noted. The highest airborne uranium concentration recorded at Irigaray was 10.2E-12 µCi/ml during August, equivalent to 8.6% of the action level. Airborne uranium from RWP work was included in the calculation of the individual TEDEs assigned to a few employees for 2007. Such individuals participated in the bulk of the RWPs.

Radon Daughter Surveys – Monthly radon daughter levels at both Irigaray and Christensen remained below action levels for the entire year. Overall, radon progeny contributed 0% to the TEDEs assigned to employees for 2007. The highest measured radon daughter level at both Irigaray and Christensen Ranch was 0.03 WL, 9% of the DAC. No trends in area radon daughter concentration were noted.

External Gamma Surveys – Gamma surveys are conducted on a quarterly basis. Should any area exceed the action level of 2 mR/hr, the area is posted as a "restricted area", and surveys are conducted monthly. No readings at either site exceeded the action level in 2007. The highest external gamma rate at Irigaray was 1.8 mR/hour which occurred in September and November. At Christensen Ranch the highest gamma rate was 1.7 mR/hour in June.

Radiation Work Permits (RWPs)

A total of 63 RWPs were issued during 2007. Fifteen of the RWPs were issued in conjunction with maintenance work in the yellowcake drum or storage rooms at Irigaray; Thirty-eight RWPs were issued at Christensen Ranch during the project to refurbish the sand filter tanks. The balance of the RWPs (10) were issued at Irigaray as part of the decommissioning effort in areas of the plant that will no longer be used. The highest airborne uranium exposure recorded for any of the RWPs was 0.5 DAC-hrs during work in the dry pack area. The average DAC-hours per RWP in 2007 was 0.033, and the maximally exposed individual from RWPs received a collective internal dose of 5.8 DAC-hours U. Three other individuals also were assigned internal dose from RWPs in calculating their overall exposure for 2007, the highest being 2.0 DAC-hours.

Personnel Alpha Contamination Surveys

Personnel alpha contamination survey records indicated that personnel are routinely conducting self-monitoring prior to leaving the restricted areas at Irigaray and Christensen. Additionally, at least 25% of the total employees were spot-checked for alpha contamination by the RSO or RST on a quarterly basis. No problems were noted. The highest noted contamination levels during spot checks were all 250 dpm/100 cm2 on some workers' boots. Onsite vehicles were also spot checked on a quarterly basis to identify and remove any

excessive alpha contamination. No vehicles exceeded the limit – the highest direct reading was 333 dpm/100 cm^2 on the bed of the I.T. truck.

Equipment Release Surveys

Surveys of equipment prior to release from the restricted areas are well documented, and no problems were apparent. There were limited releases of such equipment in 2007, reflecting a shift to decommissioning activity to preparation for an eventual startup of operations.

There were 17 shipments of byproduct material sent to Shirley Basin; most of it was generated by decommissioning activities at Irigaray. Detailed shipment release information was reviewed and all records appeared to be complete. There was one shipment that was delayed 13 days between its departure from CR/IR and its arrival at Shirley Basin. The truck developed mechanical problems and was parked inside a secure (tall fence) yard at the trucking company while repairs were completed. While the situation was not desirable, the load was secure with no access. If a similar situation occurs in the future, it is recommended that an alternate truck be enlisted to complete the shipment in a timely manner.

During the NRC inspection conducted on June 26-28, 2007, a violation was identified relating to a failure to renew the waste disposal agreement with Pathfinder Mines in a timely manner. The agreement had lapsed at the end of 2006. The oversight was quickly corrected by issuing a renewed agreement dated July 20, 2007, a copy of which was forwarded to the NRC. The SOP concerning waste shipment was modified to incorporate reference to the contract expiration date to assure that the annual SOP review provides a reminder as the time for renewal approaches.

7.0 Reports of Overexposures

There were no employee overexposures during the year.

8.0 Review of Standard Operating Procedures

The last annual review of SOPs was conducted by the RSO in March, 2007. No significant changes were made to the SOPs during that review. The SOPs are comprehensive.

9.0 Instrumentation

Calibration and/or repair records for instrumentation used for radiation surveys were reviewed. The calibration records were found to be in good order, pursuant to License Condition No. 10.13. All radiation detection instrumentation currently is calibrated by an outside vendor, Energy Laboratories, Inc. Air samplers are calibrated in-house. Out-of-calibration instruments are isolated to avoid inadvertent use until they are calibrated.

10.0 Recommendations for Ways to Further Reduce Personnel Exposures

The following recommendations are made to further reduce personnel exposures:

- Continue to emphasize good housekeeping practices as a means to avoid surface contamination problems.

- Continue to monitor and evaluate any maintenance activities to assure that doses are maintained ALARA. If in doubt the issuance of an RWP for an activity is the conservative approach.
- Place continuing emphasis on the critical examination of facilities while conducting walk through and other inspections.
- Evaluate QA/QC aspects of laboratory bioassay reports, requesting re-checks when significant aberrations occur.
- Review of the entire radiation safety program to assure that the program is prepared for the increased monitoring work load that will occur with an operational startup. It will be important to make sure the radiation safety resources are sufficient for the scope and pace of activity in an operational environment.

11.0 Conclusions

The radiation safety program at the Irigaray and Christensen sites is well managed and it is apparent that employee exposures are being maintained ALARA. Ample use of the RWP mechanism to control exposures during decommissioning activities is good. The diligence of the radiation safety staff, site management and the site employees to maintain an ALARA environment continues to be notable. Continued adherence to the ALARA principle will assure the maintenance of already low exposures. ALARA will be particularly important if an operational startup occurs in 2008.

T. Hardgrove

2007 ANNUAL OCCUPATIONAL RADIATION DOSE SUMMARY

Total internal and external dose (TEDE) **NRC limit = 5,000 mrem**

	2007	2006	2005	2004
Employees with no assigned dose	10	10	13	17
Employees with 0.01 to .9 % of limit	4	2	2	7
Employees with 1 to1.9 % of limit	0	0	0	0
Employees with 2 to 2.9 % of limit	0	0	0	0
Employees with 3 to 3.9 % of limit	0	0	0	0
Maximum assigned dose:	19.6mrem	15.6mrem	22.0mrem	21.6mrem
% of annual limit:	.4%	.3%	.4%	.4%

Maintenance Worker's Dose Summary

There were no plant or wellfield operators during 2007 – only maintenance workers.

	2007	2006	2005	2004
Dose range (mrem)	.007-19.6	1.0 -15.6	1.3 - 22.2	2-21.6
Average dose (mrem)	8.3	8.3	12.6	7.3
% of annual limit	0.2%	0.2%	0.3%	0.1%

WYOMING OPERATIONS

EXPOSURE AND MONITORING DATA 2007

	Action Levels	JANUARY Maximum Values	FEBRUARY Maximum Values	MARCH Maximum Values	APRIL Maximum Values	MAY Maximum Values	JUNE Maximum Values
Employee Urine	15 ug/l	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l
Alpha Contamination Survey							
Irigaray Site	100 dpm/100cm2	24. dpm/100cm2	17. dpm/100cm2	25. dpm/100cm2	13. dpm/100cm2	13.6 dpm/100cm2	16.0 dpm/100cm2
Christensen Ranch		4. dpm/100cm2	5. dpm/100cm2	22. dpm/100cm2	9. dpm/100cm2	18.0 dpm/100cm2	19.0 dpm/100cm2
Airborne Uranium							
Irigaray Site	1.18 E-10 uCi/ml	7.6 E-12 uCi/ml	4.2 E-12 uCi/ml	4.5 E-12 uCi/ml	1.4 E-12 uCi/ml	1.3 E-12 uCi/ml	1.5 E-12 uCi/ml
Christensen Ranch	1.25 E-10 uCi/ml	2.8 E-12 uCi/ml	3.5 E-12 uCi/ml	6.7 E-13 uCi/ml	2.3 E-12 uCi/ml	1.6 E-11 uCi/ml	1.2 E-11 uCi/ml
Radon Daughters							
Irigaray Site	0.08 Working Level	0.007 Working Level	0.01 Working Level	0.01 Working Level	0.002 Working Level	0.03 Working Level	0.009 Working Level
Christensen Ranch		0.01 Working Level	0.02 Working Level	0.02 Working Level	0.03 Working Level	0.03 Working Level	0.02 Working Level
External Gamma N/D= No Data							
Irigaray Site	> 2.0 mR/hour	N/D	N/D	0.8	N/D	N/D	1.2
Christensen Ranch		N/D	N/D	0.8	N/D	N/D	1.7

	Action Levels	JULY Maximum Values	AUGUST Maximum Values	SEPTEMBER Maximum Values	OCTOBER Maximum Values	NOVEMBER Maximum Values	DECEMBER Maximum Values
Employee Urine	15 ug/l	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l	<5 ug/l
Alpha Contamination Survey							
Irigaray Site	100 dpm/100cm2	17. dpm/100cm2	24. dpm/100cm2	30.0 dpm/100cm2	13.4 dpm/100cm2	51. dpm/100cm2	20.3. dpm/100cm2
Christensen Ranch		12. dpm/100cm2	15. dpm/100cm2	16.3 dpm/100cm2	16.3 dpm/100cm2	14. dpm/100cm2	7.4 dpm/100cm2
Airborne Uranium							
Irigaray Site	1.18 E-10 uCi/ml	5.5 E-12 uCi/ml	10.2 E-12 uCi/ml	1.3 E-12 uCi/ml	3.6 E-13 uCi/ml	3.2 E-12 uCi/ml	2.5 E-12 uCi/ml
Christensen Ranch	1.25 E-10 uCi/ml	1.2 E-12 uCi/ml	1.8 E-12 uCi/ml	1.9 E-12 uCi/ml	5.0 E-12 uCi/ml	2.5 E-12 uCi/ml	1.5 E-12 uCi/ml
Radon Daughters							
Irigaray Site	0.08 Working Level	0.02 Working Level	0.03 Working Level	0.009 Working Level	0.007 Working Level	0.01 Working Level	0.02 Working Level
Christensen Ranch		0.01 Working Level	0.02 Working Level	0.01 Working Level	0.01 Working Level	0.008 Working Level	0.01 Working Level
External Gamma (quarterly) N/D =No Data							
Irigaray Site	>2.0 mrem/hour	N/D	N/D	1.8	N/D	1.8	N/D
Christensen Ranch		N/D	N/D	0.6	N/D	1.2	N/D