

1. Climax Uranium Company
Unit of American Metal Climax, Inc.
P. O. Box 989
Grand Junction, Colorado

Draft - Form AEC-591

2. November 19, 1964

3. Follow-up of 592

4. 10 CFR 20. 40

5. License No. SUA-10, Amendment No. 3, issued September 14, 1964
(Region IV has not received a copy of this amendment as of 11/23/64)

6. This inspection was conducted as a follow-up inspection to the last previous inspection conducted on August 4 and 5, 1964. As a result of the inspection of August 4 and 5, AEC Form 592 was issued to the licensee for failure to conduct adequate surveys to determine to compliance with 10 CFR 20.103(a), "Exposure of individuals/ concentrations of radioactive material in restricted areas". This citation was made as a result of high ~~radioactive~~ breathing zone air samples, taken in the crusher plant area without adequate follow-up to determine the concentrations to which individuals were exposed.

<u>P.S.</u> Initials	P. S. Sandel Inspector	<u>11/25/64</u> Date
<u>PL</u> Initials	_____ Reviewer	<u>11/25/64</u> Date

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Current Inspection

9. An unannounced follow-up inspection of the subject licensee's facilities was conducted on November 19, 1964. The inspector was accompanied by Mr. J. R. Roeder, Division of Compliance, HQ. The following employees of the Climax Uranium Company were contacted during the course of the inspection: Mr. Paul Wire, Plant Manager; Mr. E. E. Maurer, Senior Metallurgist and Radiological Safety Officer; and, Mr. Larry Hoggatt, Safety Engineer. There have been no changes in the licensee's management since the date of the last inspection.

Restricted Area Air Sampling - General

10. Since the date of the last inspection, the licensee has been issued Amendment No. 3 to License No. SUA-10. This amendment was issued on September 14, 1964, and incorporates the licensee's procedures submitted April 15, 1964, to the AEC. In addition, License Condition No. 13 of Amendment No. 3 requires that monthly breathing zone sampling be conducted in areas where the general air survey indicates levels above MPC.

General Air Samples

11. General air samples were collected from 87 locations throughout the mill process building during the month of September 1964. A review of the results of the general air samples taken during September indicates three areas in which general air samples approached or exceeded MPC. These three areas are listed below:

<u>Location No.</u>	<u>Location</u>	<u>Results uc/cc</u>
B-10	U3O8 Packaging area	5.24×10^{-11}
B-11	Area U3O8 scales	6.44×10^{-11}
B-2	South rolls room (Cumber Area)	4.59×10^{-10}

The licensee is allowed to average exposures over a 28-day period based on an average of 160 hours work per 28-day period. Maurer stated that the work schedule is the same as previously recorded and that employees work 168 hours in 28 days and, thus, the MPC's are reduced to the following: yellow cake - 5.7×10^{-11} uc/cc and ore - 2.4×10^{-11} uc/cc. The three areas shown above as approaching or above MPC on the general air samples of September were resampled in early October with the following results:

<u>Location No.</u>	<u>Location</u>	<u>Results uc/cc</u>
B-10	U3O8 packaging area	5.91×10^{-11}
B-11	U3O8 scales	6.47×10^{-11}
E-2	South rolls room (after repair to ventilation)	4.8×10^{-11}

As required by Condition No. 13 of the new license the licensee has obtained breathing zone samples on three operators who frequent the three locations shown to be above MPC on a general air sample.

Breathing Zone Samples

12. Since the date of the last inspection (August 4 and 5) the licensee has conducted breathing zone sampling on roaster operator, crusher operator, vanadium precipitate operator, uranium product operator, uranium product helper, and the disc filter operator at monthly intervals. Maurer stated that the personnel who frequent the three areas shown to be above MPC on general air samples are the uranium product operator, uranium product helper, and the disc filter operator. Results of breathing zone samples showed that all three of these operator's breathing zone samples were below the applicable MPC. (The maximum was 7.46×10^{-12} uc/cc for the crusher operator.) It was observed that breathing zone samples for the operators had been taken in October and were in the process of being taken during the month of November. Maurer stated that, as required by Condition No. 13, monthly breathing zone samples would be taken on the three operators as long as the general air sample survey showed these areas to be above MPC. Breathing zone samples are taken over an eight hour shift for each operator thus averaging his exposure for all of the working areas and eliminating the need for performing time weighted exposure calculations.

Unrestricted Area Air Sampling

13. The licensee continues to utilize the unrestricted area air sampler which was previously described and reported in the inspection of August 21-23, 1963, including photograph. Unrestricted area air samples had been taken during the month of July 1964, but the results were not available for review during the course of inspection August 4 and 5, 1964. These results were reviewed during the current inspection. The results indicated that 5 samples had been taken during the month of July at a distance of 700 feet from the stack in the wind flow. Results reviewed indicated a maximum of 2.32×10^{-14} uc/ml natural uranium - daughters present. (AEC standard for average annual release is 8×10^{-13} uc/ml natural uranium - daughters present.)

Liquid Effluents - General

14. There has not been a direct release of liquid tailings to the unrestricted area. The licensee continues to collect continuous samples five months of the year from the location where seepage from the holding ponds would probably enter the unrestricted area; and grab samples are taken from the Colorado River during the month of January, April, June, July and October.

As indicated by memo from D. I. Walker to L. Dubinski dated October 28, 1964, samples taken by the AEC inspector during the inspection conducted on August 4 and 5, indicated concentrations above MPC for radium-226, lead-210 and polonium-210. During the course of this follow-up inspection, water samples were taken by the licensee and the AEC inspector at the Climax Uranium Company sample station No. 7 as well as samples of the Colorado River at both the Clifton Bridge and the Grand Avenue Bridge which are located above and below the mill site, respectively. Results of these samples will be transmitted by a separate memo when analytical results are available.

Facilities and Process Changes

15. Maurer stated that mill process has remained essentially the same. No major facilities changes have been made; however, the ventilation system in the south rolls room of the main building No. 2 has been revamped since the date of the inspection of August 4 and 5, 1964, as a result of the high air samples obtained on the general air sample survey. Air samples taken since revamping of the ventilation system has shown a decrease in concentrations by a factor of approximately 10 as shown by results listed in paragraph 11.

Personnel Monitoring

16. The film badge program of the licensee is established so that one-fourth of all people working in the mill are film badged at any one time as reported in the inspection of August 4 and 5, 1964. The second quarter 1964 film badge results had just been received by the licensee from the film badge supplier and showed possibilities of damage. Film badge results reviewed during this follow-up inspection showed that the film processor had erroneously reported the second quarter 1964 results and had resubmitted a corrected set of data. A review of the data, plus data for the third quarter 1964, showed the maximum recorded quarterly gamma exposure for the second quarter 1964 to be 165 mr, for the third quarter 1964 to be 135 mr.

Posting and Labeling

17. The licensee's posting and labeling remains as previously reported. The perimeter of the Climax Uranium mill property was posted as required by 10 CFR 20.203(e)(2). In addition, all entrances to the mill building were posted as required by 10 CFR 20.203(e)(2). The entrances to areas in which airborne activity is potentially present were posted "Caution - Airborne Radioactive Area", as required by 10 CFR 20.203(d).

Instruction of Personnel

18. Form AEC-3 and the company's "Radiological Safety Procedures" were posted on bulletin boards in the chemistry lab and just outside the entrance to the employee's change room.

Discussion with Management

19. The inspector, accompanied by Mr. Roeder, met with Mr. Wire and Mr. Maurer at the conclusion of the inspection and discussed the licensee's progress in correction of the previously noted items of noncompliance. The air sampling program, as now conducted, fulfills the requirements of 10 CFR 20.103(a) in determining concentrations of airborne activity. A "clear" form AEC-591 was issued to the licensee.

MEMO ROUTE SLIP

Form AEC-93 (Rev. May 14, 1947)

See me about this.

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For action.

Note and return.

For signat.

For information.

TO (Name and unit) J. A. McBride Director DML BETH 010	INITIALS DATE 	REMARKS RE: CLIMAX URANIUM COMFAM., UNIT OF AMERICAN METAL CLIMAX, INC., GRAND JUNCTION, COLORADO - LICENSE C. SUA - 10 (DOCKET NO. 40-1142)
TO (Name and unit) Dan	INITIALS DATE 	REMARKS Attached for your information is a copy of the backup information for an inspection of the subject licensee conducted on November 19, 1964. Paragraph 13 of the attached contains some results of environmental air surveys conducted by the licensee.
TO (Name and unit) 	INITIALS DATE 	REMARKS Attachment: As stated
FROM (Name and unit) Leo Dubinski CO BETH 010	REMARKS cc: D. I. Walker, CO:IV w/o att.	
PHONE NO. 7356	DATE MAR 21 1968	

USE OTHER SIDE FOR ADDITIONAL REMARKS

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