

UNITED STATES ATOMIC ENERGY COMMISSION

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee or permit holder  Uranium Reduction Company 557 First Security Building Salt Lake City 11, Utah	2. Date of inspection  December 10, 1957
	3. Type of inspection  Initial (Routine)
	4. 10 CFR part(s) applicable  20 - 40

5. License (or permit) number(s) and expiration date(s)					
Number	Date	Exp. date	Number	Date	Exp. date
R-161	6/1/55	4/1/62			

6. Scope of license(s) and permit  
 "To receive possession of an) title to raw source material, without limitation as to quantity, from producers and distributors thereof licensed by the Atomic Energy Commission to transfer and deliver possession and title to such material, for processing at your plant at Moab, Utah, in accordance with Contract Number AT(05-1)-266 between Uranium Reduction Company, First Security Bank of Utah as trustee and the Atomic Energy Commission.

(Continued)

7. Special conditions and limitations of license(s) or permit  
 "As a condition of continuance of this license, you are required to report your inventories, processing and receipts and deliveries of raw and refined source material periodically on Form AEC-4, in accordance with the instructions on the form, or in such other manner as may be mutually agreeable.

"Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954. (Continued)

8. Inspection findings  
 The licensee is processing uranium ore for the extraction of  $U_3O_8$  under Contract AT(05-1)-266 with The Division of Raw Materials and administered by the Grand Junction Operations Office. Records of procurement, processing, and shipment of final product are maintained by the licensee and reported monthly to GJOO. Areas and containers having amounts of natural uranium in excess of the limits contained in Sections 20.203 (e) (2) and 20.203 (f) (2), respectively, are not posted and marked as required by those sections. Surveys have not been made by the licensee, as required by Section 20.201 (b), to determine the existence of possible radiological hazards.

9. Items of noncompliance  
 Section 20.201(b) (See par. 22)  
 Section 20.203(e) (2) (See par. 19)  
 Section 20.203(f) (2) (See par. 19)

10. Give date of last previous inspection: None  
 11. Is "Company Confidential" information contained in this report? Yes  
 (Specify page(s) and paragraph(s)) Appendix "B"

DISTRIBUTION  
 Inspection Div., Hq. (4) ←  
 Inspection Div., IDO (1)  
 Approved by: Donald I. Walker  
 Division of Inspection  
 Idaho Operations Office  
 (Operations office)

(Date report prepared)

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using foot to head format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of form under appropriate item.

RECOMMENDATIONS SHOULD BE SET FORTH IN A SEPARATE COVERING MEMORANDUM

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Item 6 (Continued)

"To sell and transfer refined source material in the form of uranium concentrates to the Atomic Energy Commission pursuant to Contract Number AT(05-1)-266.

Item 7 (Continued)

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the United States Atomic Energy Commission.

"The provisions of this license dealing with your acquisition of raw source material from licensed producers and distributors shall expire at 12:01 a.m., E.S.T. on April 1, 1962, and the provisions dealing with your sale and transfer of refined source material to the Atomic Energy Commission shall expire at the same time, or at the end of any extension of said date, not in excess of nine months, required to complete the processing of ores and their delivery to the Commission pursuant to the above-mentioned contract; provided however, that in the event said contract expires prior to 4/1/62 or your company ceases to be a party thereto prior to said date, this license shall expire upon the occurrence of either of such events."



12. An initial, routine inspection of the Uranium Reduction Company was made at the uranium processing mill at Moab, Utah, on December 10, 1957. Mr. L. A. Painter, Mill Superintendent; Mr. Robert R. Mates, Plant Metallurgist; and Mr. Richard C. Reynolds, in Public Relations, Personnel, Security and Safety; all of the Uranium Reduction Company, were interviewed during this inspection. Accompanying the inspector were Michael P. Mehan and Durrel Brown of the Division of Concentrate Procurement, Grand Junction Operations Office; Arthur J. Whitman, Division of Inspection, Albuquerque Operations Office; Lynn M. Thatcher, Utah State Department of Health; and Mr. J. D. Torrey, Colorado State Department of Public Health.
13. The Uranium Reduction Company is under the direction of the following officers with their titles and location: Mitchell Melish, President, Moab, Utah; Richard Young, Executive Vice President, St. Louis, Missouri; Roy Hollis, General Manager, Moab, Utah; and L. A. Painter, Mill Superintendent, Moab, Utah. Chairman of the Board of Directors is Edward H. Snyder, who was formerly president and who signed the application for the license in 1955.
14. No Radiological Safety Officer has been appointed as such by Uranium Reduction Company. Mr. Richard C. Reynolds is in charge of general plant safety for Uranium Reduction Company and is also the public relations officer, personnel officer, and chief security officer at the uranium mill.
15. The operations of the Uranium Reduction Company consist of the extraction and concentration of  $U_3O_8$  from uranium ores. The process illustrated in the flow sheet, Appendix A of this report, consists of the following: primary crushing, secondary crushing, sampling, grinding by means of ball mill, acid leaching, separation of the sands and slimes by classifiers, the extraction of the soluble uranium from the slimes by means of the resin-in-pulp ion exchange process, the eluding of the ion exchange resins, precipitation of the uranium as the uranate, thickening of the precipitate, drying of the precipitate, and packaging of the final product.
16. Incoming shipments of ore are received at the Moab Uranium Reduction Company mill at the scale house (Flow Sheet 1 and 2) where the weight of the incoming ore is determined. The uranium ore is then dumped on the ore pad (FS 3) as shown in Photograph 1, Appendix C of this report. The ore is then passed through a 12" grizzly (FS 4) and carried by conveyor belt to the primary crusher (FS 5 and 6). The top and bottom views of the primary crusher are shown in Photographs 2 and 3. The ore is next passed through a secondary crusher (FS 8) as shown in Photograph 4. Both primary and secondary crushers are equipped with dust collection units as shown in the photographs, the ducts passing to the dust collector (FS 41) which is located on the outside of the primary and secondary crushing building as shown in Photograph 5. The ore then passes to the ore sampling tower (FS 10) where samples are cut from each ore lot. Photograph 6 is a picture at the bottom of the sampling tower where the samples are dried, ground, and blended prior to analysis for uranium content. The ore then passes to the storage bins (FS 11) by means of conveyor as shown in Photograph 7 in Appendix C. As needed, the ore passes by conveyor belt from the storage bins to the ball mills (FS 13) one of which is pictured in Photograph 8. From the ball mill ore passes in the form of a slurry to the leach tanks (FS 16) as shown in Photograph 9. After the sands are separated from the slimes by the classifiers (FS 17) the slime is passed to the resin-in-pulp ion-exchange cells (FS 24), Photograph 10, where the soluble uranium is removed from the slimes. The uranium is then eluded from the ion exchange resins by means of ammonium nitrate, precipitated as the ammonium diuranate with liquid ammonia (FS 31), passed through the thickener (FS 33), and to the yellow cake driers (FS 35), which are illustrated in Photograph 11. The yellow cake, in the form of a thick slurry is fed into the hearth dryer (FS 38), the lower part of which is shown in Photograph 12. Photograph 12 also illustrates the packaging of the final product in 55-gallon drums. The packaging unit is equipped with a dust collection unit to collect final product dust as shown in Photograph 13 of Appendix C. This dust collector has been added to the facility after the flow sheet was made.



17. Production figures for Uranium Reduction Company as reported by Mr. Painter, are considered Company Confidential information and are in Appendix B of this report.
18. The Uranium Reduction Company maintains complete records of the amount of uranium ore received together with the total amount of  $U_3O_8$  shipped to Concentrate Procurement Division, Grand Junction Operations Office for each month. The records of incoming ore include the name of the shipper, the amount of material shipped, the date on which it was received, and the uranium content of the ore. The monthly inventory also includes the amount of ore on hand on the ore pad, in the storage bins, and in process, the amount of final product in process, and the amount of final product on hand. In addition to the monthly records submitted to the Division of Raw Materials at Grand Junction, the company also maintains daily records of each of the above items.
19. Throughout the tour of the processing mill, no signs were observed as required by Section 20.203(e) (2). Similarly, none of the containers of final product which contain between 500 and 700 pounds of  $U_3O_8$  were marked as required by Section 203(f) (2).
20. All uranium ores and final product at the uranium mill are within a fenced area at the mill area. This area is considered a restricted area by the company in that access of all personnel is controlled.
21. The waste products of the process consisting of sands, slimes, and process water are pumped to a tailings pond estimated to be about 5 acres in area. Through percolation and seepage the water in the tailings pond passes into the water table of the area. The tailings pond is an estimated 1 mile from the Colorado River.
22. At the time of inspection, Uranium Reduction Company had performed no surveys of the possible hazards existing at the mill as required by Section 20.201(b) and Section 20.401(a). None of the personnel of the mill were badged and no surveys for radiation have been made. According to Mr. Reynolds, Uranium Reduction Company was in the process of starting a uranalysis program for the employees, the forms for which are shown in Appendix D of this report. No results had been obtained at the time of this inspection.
23. No independent measurements of radiation backgrounds, air contamination within the mill or of effluents released from the mill were made by the inspector.