

UNITED STATES GOVERNMENT

Memorandum

TO : Files

DATE: NOV 23 1962

FROM : Don Harmon *Don Harmon*
Source and Special Nuclear Materials Branch
Division of Licensing and Regulation
SUBJECT: EFFLUENT DISCHARGE, ATLAS CORPORATION URANIUM MILL, MOAB, UTAH
DOCKET NO. 40-3453

DLR:DFH

CONCLUSIONS AND RECOMMENDATIONS

Based on the information submitted in an application dated November 29, 1960, as supplemented October 17, 1962, and observations made during a visit to the mill on July 15, 1962, by C. Beck, R. G. Page, D. A. Nussbaumer and D. F. Harmon it is recommended that the licensee's request to release effluents containing concentrations of radioactivity exceeding the limits in 10 CFR 20 be approved subject to the conditions specified in the proposed license amendment.

ANALYSIS AND FINDINGS

Location and River Data: The Atlas Corporation uranium mill, formerly Uranium Reduction Company, is presently discharging liquid effluents into the Colorado River approximately one mile northwest of Moab, Utah, (population 6,000). The average annual river flow at this point is approximately 2,943,696 gallons per minute (this gives an average dilution factor of 1,960) with a high monthly average flow of 10,105,879 gpm (dilution factor of 6,800), and a low monthly average flow of 1,192,993 gpm (dilution factor of 795). It appears that very little of this water is used by local inhabitants for any purpose. According to a survey conducted by the licensee, the city of Moab does not use river water for drinking or irrigation purposes; only one small farmer approximately one mile below the mill uses the water for limited irrigation; a potash plant presently under construction 18 miles below the mill will obtain process water from the river; and the next inhabited area along the river is at Page, Arizona, approximately 200 miles downstream.

Tailings Retention System and Discharge Data: The mill is presently using an alkaline leach circuit to process approximately 1500 tons of ore per day. This results in an average waste discharge of about 2,000 gpm liquid and about 1,500 tons solids per day. This material is discharged to an 85

acre retention system originally constructed from native soil and enlarged, or extended, with solid tailings. The licensee, in support of his application, has submitted information regarding the structural integrity of the system including top widths, side slopes, heights, construction methods, specifications, seepage control, inspection and maintenance, etc. This information has been reviewed by the Fuels Processing Branch and appears satisfactory from a structural integrity standpoint. The system, from a liquid capacity standpoint, is not capable of retaining the total quantity of liquid discharged from the mill. Availability of land in the mill vicinity prohibits enlarging the system. After solids have settled out of the initial mill discharge slurry, the liquid is decanted to another smaller pond for further settling. This second pond then overflows to a wash which goes into the Colorado River. The flow rate of this discharge varies from 1,000 to 2,000 gpm and the radioactivity content is approximately 4 times the concentration permitted to be released by 10 CFR 20. Since the mill uses the alkaline leach circuit, radium-226 is the isotope of major concern (thorium is only slightly soluble in an alkaline leach circuit).

SURVEY PROGRAM: To demonstrate that it is not likely that any individual will be exposed to concentrations in excess of the limits specified in Appendix B, Table II, Part 20, the licensee has instituted a liquid survey program. In addition to sampling the effluent and a well adjacent the tailings system, the licensee has in the past regularly sampled 15 locations along the Colorado River basin. A summary of the survey results obtained at these locations are given in Table I.

As noted, all of the averages, except the effluent, are within Part 20 limits for the sum of radium, thorium and natural uranium. This is to be expected considering the large dilution factor offered by the Colorado River in this vicinity. However, it should be noted that some average concentrations several miles below the mill are higher than would be expected. One of many possible explanations is that in previous years quantities of solid tailings may have been discharged into the Colorado River or its tributaries resulting in an accumulation in the river bottom of these solids containing relatively insoluble radium and through a gradual leaching process radium-226 is being solubilized and released into the river. It should also be noted, however, that these concentrations appeared to be higher

in 1960 than 1961 indicating a gradual decrease in the radium content of the river. In any case, there does not appear to be any likelihood at present of any individual being exposed to concentrations of radioactivity in excess of Part 20 limits as a result of the discharge of liquid effluent by the Atlas Corporation uranium mill. In order that we may be in a position to evaluate the situation at regular intervals we propose to grant the authorization for a one year period and require a report of survey results before considering any request for renewal of the authorization.

TABLE I

Sampling Location	Avg. Concentra- tions times Part 20 limits for the sum of Ra-226, Th-230 and natural uranium for 1961					Avg. Concentra- tions of Ra-226 x10 ⁸ uc/ml for 1961		Avg. Concen- trations of Ra-226 x10 ⁸ uc/ml for January through June 1960	
#1-Colorado River one mile above confluence with Dolores River						.106	.100	.099	
#2-Dolores River " " " " " Colorado "						.157	.152	.288	
#3-Colorado River " " below " " Dolores "						.094	.088	.108	
#4- " " " " above mill						.084	.079	.124	
#5- " " $\frac{1}{4}$ " below "						.100	.094	.130	
#6- " " $\frac{1}{2}$ " " "						.080	.075	.139	
#7- " " 1 " " "						.090	.088	.106	
#8- " " 5 miles " "						.080	.078	.142	
#9- " " 10 " " "						.086	.081	.229	
#10- " " 20 " " "						.122	.116	.233	
#11- " " 30 " " "						.136	.132	.130	
#12- " " 50 " " "						.160	.155	.346	
#13- " " one mile above confluence with Green River						.185	.188	.272	
#14- Green " " " " " Colorado "						.036	.031	.073	
#15- Colorado " " below " " Green "						.125	.120	.185	
Effluent (grab)						4.6	4.5	2.797	
(comp)						3.3	3.27		

AEC

UNITED STATES
ATOMIC ENERGY COMMISSION
Washington 25, D. C.

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3. *file* Docket 40-3453

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FOR IMMEDIATE RELEASE
(Friday, August 17, 1962)

AEC APPROVES ASSIGNMENT OF URANIUM REDUCTION COMPANY
CONCENTRATE CONTRACT TO ATLAS CORPORATION

The Atomic Energy Commission has approved the transfer to the Atlas Corporation, 80 Pine Street, New York City, of the uranium concentrate purchase contract between the AEC and Uranium Reduction Company, operators of a uranium processing plant at Moab, Utah. The documents effecting the arrangement were signed in the Commission's Grand Junction, Colorado, Office today.

The transfer involves no contract modification as to purchase commitment or price. The contract calls for deliveries of about 15,000,000 pounds of U_3O_8 at a total price of approximately \$120,000,000 between March 31, 1962, and December 31, 1966.

The approval of the assignment to Atlas of the existing contract with Uranium Reduction Company was in response to a request by the two companies, which are effecting a merger.

The first purchase contract between AEC and Uranium Reduction Company was signed on June 1, 1955, and the mill delivered the first concentrate to AEC in November, 1956. On August 3, 1959, the contract was amended and extended to December 31, 1966.

Uranium Reduction Company headquarters offices are at 557 First Security Building, Salt Lake City, Utah. E. E. Snyder is chairman of the board and Mitchell Melich is president. President of Atlas Corporation is David Stretch of New York City.

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(NOTE TO EDITORS AND CORRESPONDENTS: This announcement is being issued simultaneously in Grand Junction, Colorado, by the Commission's Grand Junction Office.)

8/17/62