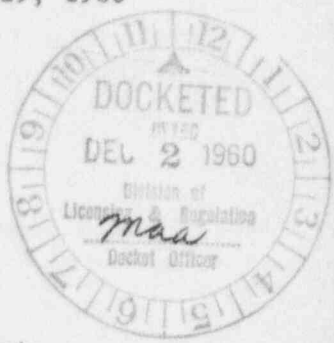
URECO DOCKET NO. 40-3453

URANIUM REDUCTION COMPANY File Cy.

Box 488 — Moab, Utah

R. F. HOLLIS
General Manager

November 29, 1960



Mr. H. L. Price, Director
Division of Licensing and Regulation
United States Atomic Energy Commission
Washington 25, D.C.

Dear Mr. Price:

Please consider this letter as an application for an amendment exempting Uranium Reduction Company from the provisions of Title 10, Part 20, of the Federal Register pertaining to the concentration of radioactive materials in liquid effluents released to unrestricted areas.

Based on previous experience, it is anticipated that the average yearly concentration of Radium 226 in our Tailings pond effluent will not exceed 40.0×10^{-9} uc/ml. Thorium 230 is expected to average approximately 1.0×10^{-8} uc/ml. Samples of river water taken just upstream from the Moab mill have indicated the average concentration of Radium 226 and Thorium 230 at this point to be $.92 \times 10^{-9}$ uc/ml and $.21 \times 10^{-8}$ uc/ml respectively.

Daily measurements of the pond effluent indicate the average volume discharged to the Colorado River to be 1219 gallons per minute. As shown in Table I, at this flow rate, there will be a minimum dilution of 978 to 1 when the effluent becomes thoroughly mixed with the river. The yearly average river flow during the period surveyed was 2,943,696 gallons per minute.

Assuming the average concentration of Radium 226 in the effluent is 40.0×10^{-9} uc/ml and the river above the mill contains $.92 \times 10^{-9}$ uc/ml, it is obvious that the resulting increase is so small as to be undetectable analytically. For example, the average river flow during the eight months of low

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water for the nine years surveyed was 1,343,800 gallons per minute. This flow will cause a dilution of 1102 to 1 of the pond effluent. The effluent Radium 226 assay of 40.0×10^{-9} uc/ml will become 0.036×10^{-9} uc/ml and the resulting total concentration will be only 0.956×10^{-9} uc/ml. During the four month period of high water, the increase is even less noticeable. The river flow during this period averaged 6,143,599 gallons per minute over the last nine years and the effluent dilution at this flow is 5040 to 1. The resulting calculated increase would be only 0.008×10^{-9} uc/ml.

The results of our river and effluent surveys are listed in Table II. This is a more extensive survey than that originally outlined. However, we felt that more data was required on which to base our application for an amendment. Upon approval of this application, we plan to revert to the original program but will monitor for Radium 226 only.

Justification for exemption from monitoring for Thorium 230 and natural uranium is based on the survey results listed in Table II. Concentration of these radionuclides in our pond effluent has been within specifications in the past and no significant change is anticipated.

Please advise us of your decision in this matter at your earliest convenience.

Very truly yours,

R. F. Hollis

R. F. Hollis
Vice President & General Manager

RFH:pr

TABLE I

AVERAGE MONTHLY COLORADO RIVER FLOW RATE 1/

SURVEY PERIOD 1951 THRU 1959

MONTH	VOLUME (GPM)	DILUTION FACTOR
Jan	1,237,427	1015
Feb	1,248,199	1024
Mar	1,345,147	1103
Apr	3,021,979	2479
May	7,828,061	6422
Jun	10,105,879	8290
Jul	3,617,578	2968
Aug	1,771,087	1453
Sept	1,192,993	978
Oct	1,249,097	1025
Nov	1,433,566	1176
Dec	1,273,334	1045
Average	2,943,696	2415

1/ Data pertaining to volume of river flow was obtained from United States Department of the Interior, Water Resources Division, and represents the river flow at the Cisco, Utah measuring station, which is about 1 mile downstream from the confluence of the Dolores and Colorado Rivers.

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TABLE II

TAILINGS POND EFFLUENT AND RIVER WAT

Location	January 1/ Ra	2/ Th	3/ U	February Ra	Th	U	March Ra	Th	U	April Ra	Th	U
Colo Above Dolores	2.0			.5			1.5			.6	.31	
Dolores Above Colo	6.7			3.0			3.1			1.6	.56	
Colo Below Dolores	1.1			1.6			.9			.6	.23	
Colo at Moab Bridge	1.5			1.9			1.2			1.3	.16	
Colo 1/4 Mile Below Mill	.5			3.0			1.4	.23		1.2	.13	
" 1/2 " " "	1.7			2.8			1.3	.30				
" 1 " " "	.6			3.0			1.3	.26		.45	.35	
" 5 " " "	1.0			2.8			1.8	.46		1.9	.55	
" 10 " " "	4.8			3.5			2.3	.50		.97	.21	
" 20 " " "	3.6			4.7			2.8	.33		1.2	.50	
" 30 " " "										.6	.26	
" 20 Miles Above Confluence	4.8			6.5			2.9	.36				
" 1 " " "	4.8			4.4			3.3	.43		1.9	.01	
Green Above Confluence	2.4			1.1			.01	.70		.03	.40	
Colo Below Confluence				3.8			2.4	.68		.38	.55	
Tailings Pond Effluent	28.8	.97		47.0	.35		40.0	.59		7.6	2.3	2

Note: Tailings Pond Effluent Assays Above Are Grab Sample Assays.
Listed Below Are Monthly Tailings Pond Effluent Composite Assays.

	1/ Ra 226	2/ Th 230	3/ U Natural
January	40.0	.23	.42
February	42.0	1.4	.60
March	47.0	.10	.60
April	61.4	.12	1.8
May	22.1	.37	1.2
June	1.6	.65	3.0
July	51.0	1.0	5.4
August	38.0	2.4	4.2
September	8.3	3.5	1.2
October	9.96	.16	8.12
Average	32.1	1.0	2.6

1/ Ra 226 (N) x 10^{-9} uc/ml
2/ Th 230 (N) x 10^{-8} uc/ml
3/ U Natural (N) x 10^{-6} uc/ml

ANALYSES - MOAB MILL

May			June			July			August			September			October			R- Total	Ave
	Th	U	Ra	Th	U	Ra	Th	U	Ra	Th	U	Ra	Th	U	Ra	Th	U		
0	.27		.52	.08		.60	.34	.0006	.50	.54	.01	.30	.30	.007	.81	.80	.016	8.1	0.8
	.16		.59	.14		2.2	.30	.01	4.1	.84	.01	2.8	.20	.02	1.4	.50	.032	27.9	2.6
	.45		.77	.15		.80	.27	.002	.40	.43	.004	.40	.20	.01	.35	.75	.021	8.2	0.9
4	.10		.82	.08		.50	.10	.02	.30	.60	.01	.40	.20	.02	.55	.23	.017	9.1	0.9
	.10		.62	.15		.30	.10	.003	.40	.17	.006	1.0	.20	.007	1.5	.33	.013	11.0	1.1
6	.17		.37	.15		.60	.27	.005	.50	.24	.01	.60	.20	.01	5.5	.16	.026	15.2	1.5
7	.23		.45	.12		.50	.10	.006	.40	.20	.01	1.5	.10	.007	2.4	.26	.022	9.5	0.9
6	.21		.28	.15		1.5	.24	.006	.80	.10	.006	.90	.20	.007	.52	.30	.019	12.6	1.3
	.10		.64	.05		1.5	.27	.008	.80	.30	.02	1.2	.20	.007	.76	.23	.017	13.1	1.3
8	.15		.79	.06		1.8	.40	.005	1.3	.20	.01	.90	.30	.002	1.2	.33	.028	20.2	2.0
	.37		.78	.07		1.7	.17	.007	1.5	.30	.02	.70	.20	.008	.71	.25	.019	24.6 8.5	2.4 0.9
	.16		.67	.10		2.1	.17	.008	2.1	.20	.01	2.5	.30	.01	2.8	.20	.017	28.8	3.0
	.20		.16	.12		2.6	.30	.007	2.2	.10	.01	2.8	.50	.01	4.7	.23	.049	28.7	2.9
1	.12		.13	.15		.40	.20	.003	.10	.10	.008	.20	.20	.004					
	.30		.96	.10		1.6	.10	.008	2.5	.70	.01	1.6	.40	.01				5.0	0.5
	.37		22.7	1.02		49.0	.47	4.8	34.0	3.5	3.0	1.9	1.5	.62	48.6	1.32	5.53	151.3	15.1
																		301.3	30.1