

Regulatory Docket File

40-3453

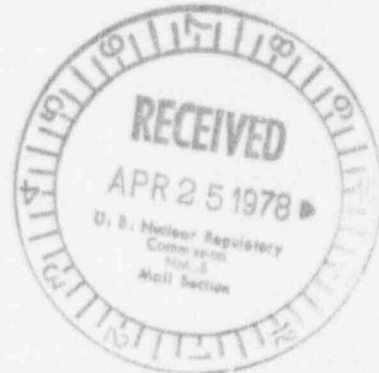
Atlas Minerals

Division of Atlas Corporation

P.O. Box 1207 Moab, Utah 84532

April 20, 1978

Nuclear Regulatory Commission
Division of Fuel Cycle and Material Safety
Fuel Processing and Fabrication Branch
Washington, D. C. 20555



ATTN: Mr. Leland C. Rouse, Chief

Dear Mr. Rouse:

Your request for information on our Yellow Cake processing air cleaning devices was referred to me. Enclosed, please find copies of the requested information as per your letter.

We hope this information will be of assistance to you in the formulation of the Yellow Cake processing equipment air cleaning devices regulatory guides which you mentioned in your letter.

Should you require additional information, please feel free to contact us at (801) 259-5131.

Sincerely,

Jeff V. Atwood
Metallurgical Engineer

JVA:jw

cc: Nuclear Regulatory Commission
Region IV
Office of Inspection and Enforcement
R. A. Adrian, General Superintendent, Atlas

Enclosures



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Response to Leland C. Rouse
Air Cleaning Devices

ITEM 1 " A review of your operating experience including; equipment used in the past, equipment presently in use, operating parameters and collection efficiency."

Yellow Cake Hearth Dryer

From 1966 to 1977 a Ducon 30 UW-4 Model II dynamic scrubber was used on the uranium hearth dryer off gases. In 1977 this was replaced with the Ducon 30 UW-4 Model III dynamic scrubber currently in use. The unit employs a recirculating water supply with the scrubber discharge solution flocculated and clarified in an 8' diameter (2,830 gal.) cone tank clarifier which subsequently overflows into an 8' x 8' (4,656 gal.) holding tank. The overflow from the holding tank is split. 14% (5 gpm) is bled from the circulating flow and an equivalent volume of fresh water makeup (approx. 5 gpm) is added through a float control valve in the scrubber solution feed pump level control box.

In general operation 30 gpm of the recycle solution is injected into the quench chamber of the scrubber with an additional 6 gpm introduced into the eye of the "dynamic wet" fan. The gas discharges from the scrubber at an average 145° F. and 1,000 cfm.

The rated efficiency of the currently used Ducon scrubber is 99+% in the 1 to 2 μ m range. A measured 99.18% collector efficiency was reported in the Atlas Minerals Safety Analysis Report (SAR dated Aug. 28, 1975 p. 4.1-4) for the replaced Model II Ducon scrubber.

Yellow Cake Packaging Area

Since 1957 a Wheelabrator Dustube #8-R Model 70-AC intermittent, bag type, dust collector with a mechanical "shake down" has been used to control dust in the packaging area (hearth discharge into 55 gal. drums). It has 730 ft² of cloth area rated to handle 2,000 cfm of air. Measured stack flow rates average approximately 1,000 cfm at ambient room temperatures. No rated or measured collector efficiency data is available.

ITEM 2 "The measured or estimated uranium release rates through the stacks and details of the source of the numbers stated."

The measured uranium (reported as U₃O₈) release rates were 3.5 lb/day and 2.2 lb/day for the Yellow Cake hearth scrubber and the packaging area dust collector respectively for the period of Dec. 1977 through April, 1978.

The aforementioned data was obtained by the monthly stack sampling procedure outlined in Table 4.1-4 of the Atlas Minerals's "Safety Analysis Report" previously referred to.

ITEM 3 "Ancillary instrumentation used to assure proper operation of the equipment, e.g. manometers, water meters, and malfunction warning alarm."

The Ducon scrubber recirculation pump and fan are interlocked with the Yellow Cake hearth. Failure of pumps or fan result in automatic shutdown of the hearth and the hearth cannot be operated without concurrent scrubber operation. The hearth is also equipped with a standard burner supervisory system, high temperature and rake load cutouts. Visual and audio alarms indicate any system malfunction.

Flowrators control the flow of solution to the scrubber and a control monitor maintains a -0.2 in H_2O pressure differential on the furnace off gases.

The Wheelabrator bag type dust collector is totally independent of the hearth scrubber system and the only automatic controls on it regulate the mechanical shake down cycling.

ITEM 4 "Maintenance experience including downtime."

Maintenance reports that current downtime for the Ducon scrubber is due principally to normal bearing and pump failure.

The main reason for replacing the Ducon Model II scrubber with the Model III was the severe corrosion experienced on the stainless steel shell of the scrubber believed due to carbonic acid generation from the carbide welds. The Model III is constructed of fiberglass reinforced plastic to prevent recurrence of the corrosion problem.

Some nozzle plugging inside the scrubber occurred initially with the recycle solution system; however, this problem has been essentially eliminated through the use of flocculants and the cone thickener holding tank system as previously described.

Maintenance on the packaging area bag dust collector is described as normal for the mechanical parts and bag replacement.

ITEM 5 "Other pertinent information."

A Mikro Pulsaire type 121S-10-20 air pulse, bag type, dust collector has been purchased to replace the Wheelabrator unit currently in use. The pulsaire unit has a rated collector efficiency of 99.9% with an air flow rating to 7,000 acfm through 1414 ft² of filter cloth. It is felt that the acquisition of this unit and redesign of the U_3O_8 packaging area with additional dust collector pickup points will not only improve the working environment but also that the total emissions from this source will be reduced due to an increase in collector efficiency.

FROM Atlas Minerals		DATE OF DOCUMENT 04-20-78	DATE RECEIVED 04-25-78	NO. 09192
		LTR X	MEMO	REPORT
TO LCrouse		ORIG 1	CC 8	OTHER
		ACTION NECESSARY <input type="checkbox"/>	CONCURRENCE <input type="checkbox"/>	DATE ANSWERED
		NO ACTION NECESSARY <input type="checkbox"/>	COMMENT <input type="checkbox"/>	BY
CLASSIF U	POST OFFICE REG. NO.	FILE CODE 40-3453		
DESCRIPTION (Must Be Unclassified) Your request for information on their Yellow Cake processing air cleaning devices was referred to me		REFERRED TO Docket File Cy LCrouse (4) JMartin I&E (2) PDR	DATE 4/25	RECEIVED BY 09192 ced
ENCLOSURES 9 cy rec'd				
REMARKS				