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RL-887 (REV. 4-65)
AEC-RLOG RICHLAND WASH.

UNITED STATES ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE

HAN-93855 ~~DEL~~
Rpt. #3 (August 1966)

DATE September 9, 1966

TO: H. E. Parker
DIRECTOR - DEPUTY DIRECTOR
CHEM. PROC. DIVISION - RLOG

FROM: J. T. Christy *J. T. Christy* CHIEF,
CHEMICAL OPERATIONS BRANCH
CHEM. PROC. DIVISION - RLOG

This document consists of
9 pages, No. 3
copies, Series A

SUBJECT: 200 AREA MONTHLY REPORT FOR August 1966

RECEIVED

MJR:AWL:RER
J. T. Christy

MAY 27 1994

PROCESSING STATISTICS **OSTI**

PRODUCTION

PRODUCT				PERCENT EFFICIENCY		PERCENT WASTE LOSSES		ATM RELEASE	
PUREX REDOX URANIUM REDUCTION	URANIUM				OP	MECH	PU	U	CURIES / DAY
	NORMAL		ENRICHED		---	---	---	---	0.0006 0.005
	TONS	PERCENT FORECAST	TONS	PERCENT FORECAST					
	28.8	---							
	0		3.3	1.5					
	0	0	40.2	16.8	---	---			
PUREX REDOX	BRANDY OR NEPTUNIUM								
	KGS		PERCENT FORECAST						
	-		-						
	3.704		---						
PLUTONIUM REDUCTION	PLUTONIUM								
	KGS		PERCENT FORECAST						
	(shipped as 1.2 nitrate)		---		---	---	---		
RECOVERY	27.2		---		---	---	---		

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By Authority of CG-PR-2
DS Lewis 1-14-94
By PL Sullivan 1-27-94
Verified By DJ Bruster
1/28/94

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Classification Canceled and Changed to
By Authority of CG-PR-2
By DS Lewis 1-14-94
By PL Sullivan 1-27-94
Verified By DF Brinkley 1/28/94

~~MANEFO CODES~~ INVENTORIES

PLUTONIUM		URANIUM	
SCRAP BACKLOG <u>779.5</u> KGS		NORMAL	ENRICHED
SCRAP COMPOSITION:		DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED	
PLUTONIUM PROCESSING	34.0	UNH <u>87.2</u> TONS	<u>16.5</u> TONS
FABRICATION	11.8		
RECOVERY	0.1	UO ₃ <u>11,723.4</u> TONS	<u>40.3</u> TONS
BNW LABORATORY	15.6		
OFF-SITE	5.4		
SUPPORTING LABORATORIES	5.8		
INCINERATOR GROUP 1	27.3		
	100 %		

~~RESTRICTED DATA~~

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UREX

Following the settlement of the labor dispute on August 21, 1966, preparations for normal uranium processing were completed and the first uranium was charged to a dissolver on Swing Shift August 23, 1966. Cold feed was introduced into the columns at 5:00 a.m. on August 28, 1966 and hot feed was started later the same day at 9:30 p.m. Processing has continued at a 2.8 capacity factor. Production in August was limited to two dissolvers while the new "C" multipurpose dissolver and related equipment were being installed.

Both plutonium and uranium products met specifications. One run of out-of-specification Redox neptunium was processed through the purification facility. The resulting neptunium product was high in plutonium and uranium so it will have to be rerun. During the month, a total of approx. 3,700 grams of neptunium was received from Redox.

After completion of the thorium campaign, the solvent extraction system was flushed with hot 50% nitric acid followed by nitric acid saturated solvent. These flushes were followed in sequence by 3% nitric-5% oxalic, water, 5% caustic-2% tartrate, and water flushes. This flushing sequence appears to have been successful in removing product content, activity, and white solids (which were previously observed) from process equipment. Visual inspection of six column cartridges used during thorium processing showed them to be clean of the white solids. The cartridge inspection showed that 2E (second uranium or thorium cycle) had its four top plastic plates broken and the remaining plates in descending shades of brown to a milky white at the bottom. These plates were made from 3/4-inch thick linear polyethylene. In contrast, fluorothene plates were observed to be stainfree and flexible. Thus cartridge repairs will be made using fluorothene plates.

The 10F (number 1 organic feed) pump was replaced by a reconditioned spare due to low flow.

Jumper replacements made were:

1. HA column organic flowmeter and diaphragm operated valve.
2. Backcycle waste magnetic flowmeter.
3. First cycle waste concentrator thermohm.

MASTER

PUREX (continued)

The R2 (second organic system) column interface float was replaced.

The C3 ammonia scrubber catch tank and dissolver tower were installed.

Repairs to the OWW (organic wash waste) and F-18 (cell drainage) lines in the encasement northwest of the building were completed.

The exhaust fan in the pulse control room failed, was repaired, and returned to service.

Iodine-131 emission for the month was:

Total	.017 curie
Maximum per day	.003 curie
Average daily	.0006 curie

Three U-233 shipments to ORNL contained 35 kg of U-233 in 39 drums. Shipments continue as empty containers are returned.

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REDOX

Production of enriched UNH was 15% of forecast. A work stoppage resulting from the strike against Federal Support Services continued to interrupt the delivery of metal from the reactor areas until the end of the month. Processing of the previously-accumulated neptunium was completed.

Process Experience

The neptunium isolation campaign, which was started at the end of July, was completed on August 24. Recovery of 75% of the accumulated neptunium produced a record loadout of 3 704 grams. The neptunium product, decontaminated by approximate factors of 1.0×10^6 and 1.5×10^4 from Zr-Nb and Ru respectively, was shipped to Purex for further purification. The 25% remaining in tank heel volumes and column wastes was returned to in-process inventory for recovery in future operations.

Following the neptunium run, all processing equipment was flushed with 57% nitric acid recovering approximately 2 kg of plutonium. A water flush followed.

Dissolver heels were removed starting August 22 in preparation for building inventory. On August 24, feed batches were prepared in head-end and a dissolver was started up. The first two feed batches in head-end were high in plutonium polymer and required re-oxidation.

Feed was started to 1A Column on August 27, concurrent with reworking the plutonium recovered during equipment flushing. After twenty hours of operation, a shutdown was necessary to replace a gasket in a leaking L-12 steam chest and to replace a plugged LAW valve. Eighteen hours after startup on August 30, the steam trap on the 1CU Concentrator failed, requiring another shutdown. The 1A Column was started again on August 31.

Maintenance Experience

No significant equipment failures occurred during the month. During the strike period, only the critical items were inspected; all noncritical, routine inspections were re-scheduled.

The silo window shield was put in place on August 24. Arrangements are being made for J. A. Jones to install a new window.

REDOX (continued)

Maintenance Experience (continued)

Two failed impact wrenches were replaced on the 60-ton crane.

Two TV cameras have been repaired and put back into service; however, the CMP pan and tilt unit is damaged and is being repaired.

The L-12 tube bundle developed a leak at the upper flange. The flange was regasketed.

Six new replacement jumpers, including a flex jumper fabricated in Redox shop, were installed in the canyon during August.

A fire hydrant was installed by J. A. Jones in the raw water line between 202-S and 222-S Buildings. A loose clamp resulted in an unscheduled raw water shutdown to the 202-S Building before the installation was complete. Repairs were completed and the water service was restored the same day.

A defective smoke detector head in the east bank of the 233-S filter building was replaced on August 29. On the same day, it had sent through a false alarm, resulting in the fire department making a run to the building.

The Lo-Beta instrument at 222-S Laboratory was converted to a proportional counting instrument. Added features will account for dead time and increase the scaler speed. Testing of the instrument is under way.

Radiation Experience

Iodine emission for the month was as follows:

Daily average	0.005 ci/day
Daily maximum	0.03 ci
Month total	0.16 ci

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UO₃

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Production of enriched UO₃ was 16.3% of forecast and of normal depleted, 0% of forecast. A total of 26 UO₃ containers was loaded with enriched uranium oxide during the month.

The UO₃ Plant operations were curtailed because of the lack of manpower due to the strike against Federal Support Services. The plant remained shut down through August 10. Concentration of enriched UNH was accomplished during the day shifts starting August 11. "H" and "G" calciners were put into operation with AEC approval on August 23 and 29, respectively, to process enriched (94) feed.

PLUTONIUM REDUCTION--234-5

Button Line

The button line did not operate during the month due to lack of Pu nitrate feed solution. The equipment was completely checked late in the month preparatory to resuming operation.

Nonweapons Plutonium

One shipment of United Kingdom plutonium was received from Rocky Flats. Approximately 1 kg of Pu nitrate was shipped to ORNL. Approximately 400 grams of Pu nitrate were shipped to General Electric Vallecitos Laboratory. 4.4 kg of Pu metal containing 11.4% Pu-240 were shipped to Mol, Belgium, and three small transfers of metal were made to Pacific Northwest Laboratory.

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PLUTONIUM RECLAMATION

Plutonium scrap recovery yielded 27.2 kg of plutonium ready for feed to the button line. The reclamation facilities were operated intermittently as manpower permitted early in the month, then returned to full operation when the remainder of the operators and craftsmen returned to work on August 22. The scrap backlog is now 779.5 kg of plutonium.

Plutonium Reclamation Facility

There were 919 cans of slag and crucible fragments processed during the month which yielded 14 kg of plutonium. The 08 S&C Dissolver was removed due to leaks and is now being repaired. The 06 S&C Dissolver was installed and is in service.

The CX Column is being used to recover plutonium from organic solution from the Purex Plant. At month end, 22 of the 35 PR cans of the organic solution had been processed. This work necessarily delayed the processing of some demister solutions and organic solutions from the laboratories.

Of the 23 pumps which failed, four were beyond repair and were buried. Of the 19 Deanline pumps returned to service, 16 were repaired by replacing the mechanical seals and 3 by replacement of motor bearings.

Waste Treatment

The treatment of 81,585 liters of aqueous waste yielded 108 grams of plutonium. There were also 5.9 grams of Am-241 in crude form recovered.

Incinerator Building

No plutonium was recovered in this building. The incinerator repair was resumed by the Minor Construction forces. The completion date is now estimated at September 26. Now 626 boxes of dry waste await recovery.

Miscellaneous Recovery Activities

Recovery of plutonium from machining oil continued in Hood HC-30 of 234-5 Building. There were 208 cans processed and 1,724 grams of plutonium were recovered.

PLUTONIUM RECLAMATION (continued)

Miscellaneous Recovery Activities (continued)

The repackaging of plutonium-uranium scrap for recovery under the contract with Nuclear Fuel Services continues. The liquids are ready for shipment in 16 bottles placed in SEFOR containers. Of the solids, approximately 81% of the ANL-generated scrap has been repackaged, and approximately 89% of the Hanford-generated scrap is ready for shipment. NFS has requested 6 to 8 months' delay in this contract.

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