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RL-337 (REV. 4-65)
AEC-RLOG RICHLAND WASH.UNITED STATES ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE

WITH DELETIONS

HAN-93855

Rpt. #7 (July 1966)

TO: H. E. Parker / O. J. Elgert
DIRECTOR - DEPUTY DIRECTOR
CHEM. PROC. DIVISION - RLOGDATE August 9, 1966FROM: J. T. Christy CHIEF,
CHEMICAL OPERATIONS BRANCH
CHEM. PROC. DIVISION - RLOG

This document consists of

pages, No. 7copies, Netics 7SUBJECT: 200 AREA MONTHLY REPORT FOR July 1966

DC:AWL:EAA:MDR

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PROCESSING STATISTICS

PRODUCTION

PRODUCT				PERCENT EFFICIENCY		PERCENT WASTE LOSSES		ATM RELEASE	
PUREX REDOX URANIUM REDUCTION	URANIUM				OP	MECH	PU	U	CURIES / DAY
	NORMAL		ENRICHED		---	---	---	---	.007
	TONS	PERCENT FORECAST	TONS	PERCENT FORECAST					
	---	---	68.4	30.4					
	0	---	0	0					
PUREX REDOX	BRANDY OR NEPTUNIUM				---	---	---	---	0.33
	KGS		PERCENT FORECAST						
	---	---	---	---					
	---	---	---	---					
PLUTONIUM REDUCTION	PLUTONIUM				---	---	---	---	---
	KGS		PERCENT FORECAST						
	112.4		40.8						
RECOVERY	48.4		---		---	---	---	---	---

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

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DS Lewis 1-14-94
By PL Sullivan 1-27-94
Verified By DG Brundage 1/28/94

MASTER

MANFORD CODE 62 INVENTORIES

PLUTONIUM			URANIUM	
			NORMAL	ENRICHED
SCRAP BACKLOG	<u>794.0</u>	KGS		
SCRAP COMPOSITION:				
PLUTONIUM PROCESSING	<u>35.2</u>		UNH <u>57.9</u> TONS	<u>161.7</u> TONS
FABRICATION	<u>12.0</u>			
RECOVERY	<u>.1</u>		UO ₃ <u>117,23.4</u> TONS	<u>0</u> TONS
BNW LABORATORY	<u>15.7</u>			
OFF-SITE	<u>5.3</u>			
SUPPORTING LABORATORIES	<u>4.7</u>			
INCINERATOR	<u>27.0</u>			
GROUP 1	<u>100 %</u>			
EXCLUDED FROM AUTOMATIC DOWNGRADING				

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PUREX

Thorium processing continued at 5.7 tons per day through July 5, 1966, when dissolver heel cuts were completed. Cold thorium was then recycled through the extraction section to strip the equipment of U-233. Stripping was completed July 10, 1966. Since that time, chemical flushing and equipment changes have been in progress to prepare the plant for normal processing. Activities have been limited at the plant since July 8, 1966, when more than half of the operating personnel refused to come to work. Practically none of the essential craft workers have returned to the job at month end. Maintenance work is being performed as necessary by exempt employees.

The product quality remained excellent for U-233 and satisfactory for the final thorium batches. U-233 shipments to NFS were completed and a shipment was made to ORNL during the month. All of the thorium product has now been trucked to the WR Vault for storage.

The new C3 multipurpose dissolver was set in place and some jumpers were installed. Dissolver calibration has also been performed. Completion of the installation awaits the reflux tower being modified at T-Plant.

The "A", "B", and "F" Cell silver reactors were regenerated.

The thorium jumper routings have been removed and normal canyon routings are being restored.

A new 3AF jumper was installed.

The OWW (organic wash waste) line failed in the encasement northwest of the building. The leak was located and repairs were begun by J. A. Jones Company.

Iodine emission for the month was .22 curie. The maximum daily emission was .04 curie.

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REDOX

Production of enriched UNH was 30.4 % of forecast. The process performed satisfactorily until July 8 when the plant went down for an acid flush. Subsequently, a work stoppage resulting from the strike against Federal Support Services interrupted the delivery of metal from the reactor areas through month end. It was then decided to process the neptunium that had accumulated in the system.

Process Experience

Following the shutdown on July 8, intercycle inventories were processed to final product solutions, and equipment was flushed with dilute acid. The product remaining in the building consists of approximately 20 tons of metal solution in head-end storage and the dissolver heels.

The neptunium inventory was divided into two batches, one of which has been processed and is in storage in E-6 (Rework Receiver) awaiting ruthenium volatilization by ozonation. At month end, the second neptunium batch is in 2A-2B columns for fission product decontamination.

Maintenance Experience

There were no major failures in canyon equipment during the month. Mechanically, the facility has operated very well, with necessary maintenance being accomplished with one millwright and occasional assistance from exempt personnel. All critical lubrication and inspections, such as ventilation equipment and compressors have been adequately maintained.

Two maintenance jobs were completed. The No. 6 valve on the A-dissolver off-gas line in the 293 Building was changed out on July 7. Considerable trouble had been experienced with the off-gas system, which was traced to this leaking valve. The supply transformer to dispatcher's office burned out and was replaced by a substitute transformer from spare parts. The new unit has a higher rating and should improve handling of the electrical load which has gradually increased in recent years due to added instrumentation.

Hand and foot counters, critical incident alarms, air monitoring instruments, and effluent stream samplers have all been given top priority since the work stoppage started July 8. Instruments that are critical to the monitoring of process streams and specific gravity instruments have received normal, routine inspection and maintenance.

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REDOX (continued)

Radiation Experience

Iodine emission for the month is as follows:

Daily average	0.33 ci/da
Daily maximum	0.83 ci
Month total	10.28 ci

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UO₃

Production of enriched UO₃ was 0% of forecast. The uranium oxide plant did not operate during the month due to the scheduled vacation period (June 24-July 18) and the work stoppage resulting from the strike against FSS. Maintenance planned during the vacation period has proceeded as manpower is available so that by month end it would require about two full shifts to complete the work and place the plant in a startup condition.

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PLUTONIUM FINISHING, 234-5

Production of unfabricated plutonium metal was only 40.8% of forecast.

Processing Experience

The button line operated during the first five working days of the month, at which time the plutonium nitrate feed was exhausted. Additional nitrate has not been available from the separations plants. The only maintenance problems were routine matters with fluorinator vacuum and with the filter cloth on the vacuum drum filter. The line operated only 17 % of the available time. The average rate while operating was 1.42 kg per hour. Reduction yields were good at 97.4% recovery.

Beginning July 8, the plutonium finishing organization experienced excessive absence of workmen, amounting to 36% absenteeism of the non-exempt personnel during July.

Product Quality

Metal button purity was normal, with no buttons rejected for either low density or high impurities. Total metallic impurities, plus carbon, averaged 907 ppm; average metal density was 19.41 g/cc.

Nonweapons Plutonium

Plutonium product analyses from NFS in West Valley, New York were evaluated, with the conclusion that the nitrate solution was acceptable to Hanford.

Studies were made on methods and costs of meeting ZPPR plutonium requirements for fiscal year 1967.

Shipments on nonweapons plutonium were as follows: 25 kilograms as oxide to Argonne National Laboratory and 15 kg of plutonium metal also to ANL. Other shipments were deferred while transportation people were on strike. The plutonium for Euratom mentioned last month, and samples of the same, remain at Hanford.

PLUTONIUM RECLAMATION

There were 48.4 kilograms of plutonium recovered and returned as nitrate to the production line. The plutonium scrap backlog is now 794.0 kilograms.

Plutonium Reclamation Facility

Operation of slag and crucible dissolvers recovered 11.5 kilograms of plutonium from 490 cans of slag and crucible material. The 04 dissolver plugged on July 5 and 6, but flushing and rodding of the dissolver completely cleared the blockage after 14 days of intermittent effort. The 08 dissolver developed a leak at the lower flange. Both dissolvers are now operable. There has been intermittent operation of the solvent extraction equipment since July 8 in support of cleanouts of equipment and hoods and processing of cell floor flushes. No column feed was generated other than that extracted from machining oil. Pump failures continued in the plutonium reclamation facility, with 12 Deanline pumps failing due to mechanical seal problems; another Deanline pump failed after solution drained over it; and two Chempumps failed with bearing trouble. There were 78 new seals received for repair of these pumps.

Waste Treatment

The waste treatment facility processed 62,324 liters of aqueous waste from which 158 grams of plutonium were recovered. This work also yielded 16.6 grams of americium-241 in crude form.

Incineration Building

Essentially no work was accomplished on repairs to the incinerator. No waste was processed. The backlog is now 622 boxes, containing approximately 70.3 kg of plutonium.

Miscellaneous Recovery Activities

In Hood HC-30 of 234-5 Building, 60 cans of machining oil were treated with nitric acid to recover the contained plutonium.

In preparation for shipment of mixed actinide scrap contracted to NFS at Erwin, Tennessee, approximately 11% of the Hanford-generated scrap was repackaged to fit shipping containers.

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PLUTONIUM RECLAMATION (continued)

Analytical Laboratory Activities

The thorium--U-233 program resulted in extra samples for the 234-5 Analytical Laboratory. Due to the work stoppage, the backlog of samples for the emission spectrograph was essentially completed by month end. The backlog of samples for the mass spectrograph was reduced 25% by month end.

Attempts to recover plutonium from silica nitride crucible fragments were successful on a laboratory test. Essentially all plutonium was leached from the crucible fragments in one hour's time.

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