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43 pages.**CHEMICAL PROCESSING DEPARTMENT
MONTHLY REPORT
FOR****DECLASSIFIED**SEPTEMBER, 1962

HW--75145

DE93 009172

By Authority of CG PR-2DS Lewis 8-3-92By J Tancy 8-21-92TL Phillips 8-21-92Compiled By
OPERATION MANAGERS

October 23, 1962

HANFORD ATOMIC PRODUCTS OPERATION
RICHLAND, WASHINGTONWork performed under Contract No. AT(45-1)-1350 between
the Atomic Energy Commission and General Electric Company.

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I. SUMMARY

Production through September, as compared with the July 25, 1962 HAPO Production Forecast (HW-74256), is summarized below:

	<u>Percent of Forecast Achieved</u>	<u>Fiscal Year</u>
	<u>September</u>	<u>To Date</u>
Separated plutonium nitrate	75.8	95.7
Separated uranium nitrate	87.9	103.9
Uranium oxide	100.1	105.4
Plutonium metal buttons	33.0	78.0
Fabricated parts	117.0	101.7

With the exception of uranium oxide and fabricated parts, the production of other products was below that forecasted for September. The low production was caused by: (1) numerous mechanical failures in Redox, Purex, and the Button Line; (2) inability of the separations plants to process all of the supernatant solutions from the Button Line Task I process.

Following the August shutdown to recover the neptunium inventory and to perform maintenance work, Purex plant operations were resumed with non-representative plutonium feed on September 3. This program was completed by mid-month, however, and normal processing was again resumed. The plutonium and uranium products met specifications except for a brief period following each of two outages, both of which were caused by jumper failures.

The Purex acid recovery system was operated with single stage evaporation during September. Although decontamination capability under equilibrium conditions has not been completely defined, preliminary results indicate that acid can be produced within permissible activity limits.

Excellent results were achieved from a full scale plant test run on cesium recovery by ferrocyanide precipitation of Purex tank farm supernatant. Cesium recovery exceeded 99 percent, with a sodium decontamination factor of 900. Thirty kilocuries of purified cesium were shipped to Hanford Laboratories for packaging studies.

The HAPO II-2 cask was loaded with approximately 94 kilocuries of purified strontium-90, and released to the AEC on September 29 for shipment.

Further changes were made to the Redox flowsheet when interim nitric acid flushes continued to show evidence of plutonium deposition in the precycle column. Some decrease has been noted in the rate of plutonium deposition, but a longer period is needed for a thorough evaluation of the changes.

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Additional process revisions were also made at Redox to bypass the backcycle waste concentrator, which had developed a serious leak. It is planned to replace the vessel; however, repairs to the "Y" pads and cell area will have to be done first.

Project CGC-821, "Project Palm-Purex," and Project CGC-895, "Reliability Improvements-Purex," were completed and closed out, with exceptions, on September 30, 1962.

A summary of the logic and considerations leading to the current process design of the proposed Purex 241-AX Waste Tank Farm and Essential Waste Routing Systems was completed and transmitted to the AEC.

P. H. Reinker

General Manager
Chemical Processing Department

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II. ACHIEVEMENTS

A. PRODUCTION OPERATION

1. Production Statistics

September Fiscal Year
 to Date

a. Percent of Forecast⁽¹⁾ Achieved

Separated plutonium nitrate	75.8	95.7
Separated uranium nitrate	87.9	103.9
Uranium oxide	100.1	105.4
Plutonium metal buttons	33.0	78.0
Fabricated parts	117.0	101.7

b. Purex

September August

Uranium nitrate produced (tons)	498.97	271.05
Average production rate during operation (T/D)	21.5	22.3
Total waste loss (%)		
Plutonium	0.54	0.70
Uranium	0.36	0.38
On-line efficiency (%)	77.4	54.3

c. Redox

Uranium Nitrate produced (tons)	112.03	138.59
Average production rate during operation (T/D)	7.6	8.4
Total waste loss (%)		
Plutonium	0.54	0.53
Uranium	0.22	0.19
On-line efficiency (%)	77.9	72.0

d. Uranium Reduction (tons)

Normal UO ₃ loaded	614.85	646.73
Enriched UO ₃ loaded	167.76	99.86
Normal UO ₃ approved for shipment	595.21	796.78
Enriched UO ₃ approved for shipment	149.36	99.27
Normal UO ₃ shipped	546.03	598.44
Enriched UO ₃ shipped	99.42	99.29
Normal UNH backlog	339	356
Enriched UNH backlog	52	81

(1) HW-74256, HAPD PRODUCTION FORECAST, dated 7-25-62

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e. Plutonium Metal Processing

	<u>September</u>	<u>August</u>
Input to Task I (batches)	187	266
Reduction yield (%)	93.7	96.1
Product Recovery output (Kgs)	25.60	77.29
Product Recovery backlog (Kgs)	1328.04	1069.61
Waste disposal (grams)	310	211

f. Power

	<u>200-East</u>	<u>200-West</u>
Raw water pumped (gpm)	10,097	4,903
Filtered water pumped (gpm)	993	985
Maximum steam generated (lbs./hr.)	205,000	120,000
Average steam generated (lbs./hr.)	163,000	77,500
Total steam generated (M lbs.)	117,243	55,813
Coal consumed (tons)	5,918	2,915

With the exception of uranium oxide and fabricated parts, the production of other products was below that forecasted for September. The low production was caused by: (1) numerous mechanical failures in Redox, Purex, and the Button Line; (2) inability of the separations plants to process all of the supernatant solutions from the Button Line Task I process.

E.E. Smith
for Manager, Production

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II. ACHIEVEMENTS (Continued)

B. PUREX OPERATION

1. Operating Continuity

Plant operation was resumed on September 3, following the scheduled August outage. A sixteen-hour outage occurred on September 8 to replace a faulty feed jumper to the (2A) final plutonium column. Operation then continued until September 20, when a leak developed in a co-decontamination column (HA) jumper. Operation was resumed on September 24, following equipment repair and recovery of product-bearing sump solution.

Uranium product was within specification except for initial batches following the September 3 startup. All plutonium product met specifications except that produced in a very brief period following the September 3 and September 24 startup. Rework of the out-of-specification plutonium product was in progress at the end of the month.

2. Processing Operation

A non-representative plutonium run was conducted during the period September 3 through September 15. Conversion to representative plutonium processing was accomplished on September 16, and rework of supernate from the Weapons Manufacturing Operation resumed.

Cesium recovery of greater than 99% was achieved in a plant test of the nickel ferrocyanide process for precipitation of cesium from Purex tank farm supernate. Decontamination factor for sodium was excellent. Approximately thirty (30) kilocuries of cesium recovered in the run were shipped to 300 Area for future packaging studies.

At the conclusion of the cesium developmental run, strontium recovery activities were resumed. A test run of the single cycle flowsheet utilizing hydrogen peroxide to recover crude strontium for Strontium Semiworks was conducted. Strontium recovery was satisfactory, but cerium decontamination was inadequate.

The HAPO II-2 cask was loaded with approximately ninety-four (94) kilocuries of purified strontium-90 and was released to HOO for shipment on September 29.

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3. Mechanical Experience

The feed jumper (2AF) to the final plutonium extraction column developed a leak and was replaced on September 8.

The co-decontamination column interface-float control jumper failed on September 20. Following this failure, a diaphragm-operated valve in the organic piping (HAX jumper) to the HA column seized. Maintenance of these systems including replacement of a leaking feed (HAP) jumper and recovery of sump solutions required a four-day outage.

Jumper installations for Purex Palm Project (CGC-821) were continued.

4. Radiation Experience

The total radio-iodine I31 emission during the month was 0.85 curies with a maximum seven-day emission of 0.38 curies.

5. Analytical Experience

A standard and referee program to measure accuracy and reliability of cesium, strontium and cerium analyses was placed in service for the laboratory during September.

PR McMuray
Manager - Purex

PR McMuray/AJW/mas

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II. ACHIEVEMENTS (Continued)

C. REDOX OPERATION

1. Operating Continuity

The plant produced 111.7 tons of the 120 tons of production scheduled for September, 1962. Operating rates were reduced to 5.0 tons/day for the first and last weeks of the month, and 48 hours downtime occurred 9-10 to 9-12-62, all because of major cell equipment difficulties. The average production rate for the total time operated was 7.5 tons/day. The mechanical efficiency this month was 75%.

All production was within shipping specifications except 10.6 Kgs of plutonium which were high in gamma ratio, resulting from sub-standard volume scrub solution to the L-18 anion exchange column. This material will be reprocessed through the L-18 column. Waste discards averaged 0.22% and 0.54% for uranium and plutonium, respectively.

A total of 961 recycle containers of Task I supernate was received from Z-Plant and added to the Redox process stream during September.

2. Processing Operations

A serious leak developed in the D-14 backcycle waste concentrator pot on 9-20-62, which requires the installation of a new vessel for correction. A visual inspection of the vessel supports, and the D Cell floor, definitely established that the D-14 carbon steel dunnage has been decomposed to the point of permitting the vessel to settle on the "Y" pads proper. Also, the cell floor and support structure of other vessels in the cell show effects of corrosion in varying degrees.

A new process flowsheet was developed by Redox Process Engineering personnel and adopted the latter part of the month, which bypasses the D-14 backcycle concentrator. This will permit the time necessary for planned long-range repairs to the "Y" pads and cell area before installing the new vessel.

3. Mechanical Experience

The repair work of the D Cell rehabilitation has been classed as contingency maintenance and a request (No. MA-36) has been approved and assigned.

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Failure of a jet and an off-gas thermohm in the B-2 dissolver on 9-1 and 9-2-62 caused 48 hours lost time in dissolver operation, resulting in low feed supply to the extraction columns the following week.

The E-13 ozonizer pump failed because of leaks around the throttle bearing and was replaced on 9-1-62.

The east tube chest of the D-14 backcycle concentrator failed on 9-10 and was replaced with a helical-type reboiler. Difficulty encountered with replacement of jumpers caused 48 hours shutdown of processing operations. The D Cell equipment supports have shifted enough to cause elevation changes resulting in dimensional misfits.

Two hundred feet of two-inch black iron piping were replaced with stainless steel line in the 211-S transfer system. This will eliminate a maintenance problem caused by leaks in this caustic piping and valves system.

4. Radiation Experience

The total radioactive iodine emitted from the Redox stack for September 1962 was 21.72 curies, with a maximum of 8.7 curies for a 24-hour period on 9-13 and 9-14-62. The large numbers are correlated with a special iodine emission test run conducted in the C-2 dissolver and are not indicative of an iodine emission problem.

5. Analytical Experience

Assistance was provided to the Separations Chemistry Laboratory and the Uranium Oxide Operation by performing nitric acid determinations on a series of samples taken from the nitric acid recovery system at the Uranium Oxide plant. These results were to provide data in defense of General Electric's position relative to a suit which has been filed claiming a patent infringement in the Uranium Oxide Operation's acid recovery process.

Greater accuracy in the determination of quantitative plutonium valence state, using the DK-2 Beckman Spectrophotometer, has been reached by the combined efforts of the Separations Chemistry Laboratory and the Analytical Control Laboratory. This was realized by a more precise calibration of the instrument, and the new procedure places emphasis on making all the determinations in acid solutions of specific normalities in order to provide the best results.

A savings in excess of \$2,000 will be realized in the operation of the water quality laboratory at the NPR facility. This has been due to the fact that an excess model DU Beckman Spectrophotometer was renovated and placed in service.

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6. Waste Handling and Decontamination

Equipment valued at \$60,000 was received for decontamination, repair, inspection or burial. Equipment valued at \$47,000 was returned to the customers. This represents a savings of approximately \$21,000.

Manager - Redox

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II. ACHIEVEMENTS (Continued)

D. FINISHED PRODUCTS OPERATION

1. Operating Continuity

Model 1251 assemblies were fabricated at increasing rates with no significant interruptions during the month. The production of unfabricated plutonium was curtailed due to a combination of minor mechanical failures, shortages of empty supernate containers, and the tie-in of the ion-exchange unit to the plutonium processing equipment. Recovery activity was limited because of a shortage of empty product containers. Incinerator operation improved, but the calciner burner belt failures caused significant interruption to processing. The uranium oxide plant operated normally with shipping container shortages causing slight delay.

2. Processing Operations

a. Plutonium Fabrication

Information on plutonium fabrication is presented in Document HW-75233 entitled "Chemical Processing Department, Finished Products Operation, Z Plant Monthly Report, September, 1962" which is classified "Secret, Atomic Weapon Data, Production Rate and Stockpile Quantity Information."

b. Plutonium Processing

Operation of the plutonium processing line was intermittent during the month. The principal reason involved the inability of the primary plants to process supernates at rates equal to those at which the supernates were generated. Also, there were several minor mechanical difficulties, including several line plugs. The tie-in of the new ion-exchange unit to the button line required several days outage time.

Recovery activity was limited to the burning of skulls and incineration of dry wastes. Dissolving of the oxide was not performed in September because of a shortage of empty PR (product receiver) containers.

Incinerator operation improved significantly in spite of major difficulties with the burner belt. It was necessary to install a new belt and also to replace the blades of the chopper during the month. A fire occurred in the feed hopper of the incinerator when sparks escaped from the chopper. There were no injuries, no damage, and no spread of contamination as a result of the fire. Design and procedure changes are being made to prevent a recurrence.

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c. Uranium Reduction

Uranium oxide production was normal during the month.

3. Mechanical Performance

Plutonium fabrication equipment performed satisfactorily during the month except for the loss of cooling capacity of the cold treatment equipment which was repaired and returned to normal by month end.

Plutonium processing equipment required excessive maintenance effort because of failure of minor equipment and because of plugged lines. The new ion-exchange system was connected to the button line equipment during the month. A contamination problem which had persisted for the last two months was corrected by installing a new lucite panel on the top of Hood 9-B.

The material handling equipment in the incinerator continues to require considerable maintenance effort with the burner belt and drive contributing the principal problems. A new belt was installed and this corrected several of the problems. Studies are in progress by both Maintenance and Engineering to correct those remaining.

Equipment at the UO_3 Plant performed satisfactorily with no major breakdowns. Test equipment in support of Research & Engineering acid recovery studies was installed on "L" calciner.

4. Radiation Experience

Radiation and contamination control statistics show performance to be normal and satisfactory.

One case of plutonium deposition occurred when an operator received a puncture wound while working in a process hood. Tests revealed that he received less than one per cent of the maximum permissible body burden.

5. Analytical Experience

	<u>August</u>	<u>September</u>
Number of Samples Received	3,093	1,774*
Number of Determinations	19,908	14,356
Total Metallic Impurities, Buttons	735 ppm	1,550 ppm
Total Carbon Content	445 ppm	390 ppm
Buttons Rejected	0.6%	5.6%
Pu ²⁴⁰ - NRF Buttons (by Mass. Spec.)	7.67%	7.58%
Pu ²⁴⁰ - Normal Buttons (by Mass. Spec.)	6.07%	5.93%

*The drop in the number of samples resulted from reduced activities in both the button line and the scrap oxide dissolvers.

W. J. Garton
Manager
Finished Products

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II. ACHIEVEMENTS (Continued)

E. POWER AND GENERAL MAINTENANCE OPERATION

1. Operating Continuity

The supply of steam, water and emergency electrical services to the production facilities continued uninterrupted during the period covered by this report.

2. Inspection, Maintenance and Repair

All currently authorized P&GM work on the Redox NPR Processing Facilities project is complete.. Mock-up of the A-cell dissolver equipment was completed, and the unit subsequently disassembled and shipped to the Redox Facility for installation. The secondary filter and associated pipe jumpers, required in connection with A- and B-cell operation, were ready for delivery to the job site at month's end.

The spare Purex dissolver reflux tower was modified to conform with latest engineering specifications.

A radius-sweep gauge of extreme precision was fabricated by the section's tool and die makers for use in the Weapons Manufacturing Operation's final inspection facility. Commendation for excellent workmanship was received from the customer.

Installation of the Stokes #5 vacuum-induction heating furnace and associated equipment continued at the Weapons Manufacturing Operation. The equipment is for use by Research and Engineering to develop improved methods for casting plutonium shapes. The work is approximately 95% complete at this time.

Equipment installation at Hanford Laboratories Operation's 292-T Building (Fission Product Volatilization and Test Facility) was complete at month's end. The equipment is for use in oxidizing highly irradiated fuel elements under high temperature to determine fission product release.

Two vacuum induction heating furnaces located in Hanford Laboratories Operation's 231-Z Facility were modified and equipped with instrumentation designed to measure and record vacuum temperatures and the vacuum system leakage rate. The equipment will be used to evaluate present methods of storing and shipping finished plutonium shapes.

Improved facilities for loading fission products are being installed in D-cell at the Hot Semiworks. Included was the fabrication of

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six special pipe jumpers, a lead-shielded piping hood and the replacement of existing piping with new improved piping arrangements. Overall status of the work was approximately 75% complete at month's end.

New parking areas were established at 222-T and 222-B Buildings, and parking lots at six other locations in the 200 Areas were repaired. Some 9,000 square feet of blacktop surfacing was used in performing this work.

A new platform for supporting a HAPO-III cask was fabricated and installed in ATMX Car #212. When the cask was unloaded at the Hot Semiworks, considerable contamination was found on the cask and in the buffer compartment. The existing platform collapsed as it was being removed for decontamination. The new structure was fabricated on an overtime basis to avoid interference with the shipping schedule.

At the request of the Waste Handling and Decontamination Operation, pipe jumpers were installed in the 241-SX and 151-S diversion boxes for the purpose of rerouting Redox waste materials. Radiation exposure rates at the 151-S box were excessive. The work was accomplished remotely, however, and without incident.

Equipment to permit remote automatic density measurements of plutonium shapes is being installed in the Weapons Manufacturing Operation's final inspection facility. The work involves modification of an existing hood, fabrication and installation of an additional hood and mechanical equipment for remote handling of plutonium shapes. A Hadley Balance is also being installed.

During the month, No. 5 boiler in the 200-East Power House experienced a ruptured water-wall tube. Inspection disclosed that some adjacent tubes had developed small bulges. An inspection of No. 4 boiler revealed that some of its tubes were similarly affected. These boilers had received third-party inspection in August 1962, and were reported "in good general condition and satisfactory for continued operation." To assist in determining the cause of these peculiar tube distortions, the third-party inspector was recalled and the Betz Laboratory was consulted. Repairs were effected; the condition is not serious. Samples of the material on the interior of the tubes and a small section of a bulged tube were sent to the Betz Laboratories in Philadelphia, Pa., for analysis.

T. S. LaFayette

Manager
Power and General Maintenance

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II. ACHIEVEMENTS (continued)

F. FACILITIES ENGINEERING OPERATION

1. Purex

a. Process Design Engineering

241-AX Waste Tank Farm & Essential Waste Routing Systems

A summary of the logic and considerations leading to the current process design of the proposed 241-AX Waste Tank Farm and Essential Waste Routing Systems was completed and transmitted to the Commission. A complete re-analysis was made of the waste routing flexibility required, the principles and limits of the diverter systems, and the design concentrations of the waste tanks.

Detail design work was completed, and procurement and construction initiated for a mock diverter system to be installed and tested in 271-T Building.

Titanium Tube Bundle

Test results from the experimental titanium tube bundle section have indicated, in confirmation of earlier theoretical studies, that tube vibration will not be a factor in limiting tube bundle life. These test results confirm an earlier decision to delete tube bundle supports.

The summary report covering the tube bundle vibration studies will be prepared in a form suitable for presentation at a technical society meeting. It is believed that the Hanford test work will prove of real value to industry.

Single Stage Waste Concentration

Plant runs under full level single stage waste concentration conditions have greatly increased the confidence in the technical feasibility of this operation on a permanent basis. Physical entrainment of LW into the recovery acid system has been held within acceptable limits by the F-F6 Prototype Demister; ruthenium volatilization has been adequately suppressed by the addition of sodium nitrate. Process design

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work has been virtually completed to define equipment changes needed for single stage waste concentration.

Organic Wash Wastes Concentrations-242-T Building

Process design work was completed and the scope document and drawings covering the concentration of Purex OWW in the 242-T Evaporator facility were issued for approval.

Plutonium Recycle

Process design work was completed and a draft report covering the Purex plutonium recycle system was prepared for review and approval.

b. Project Engineering

CGC-821 - Project Palm - Purex

This project was completed and closed out, with exceptions, on September 30, 1962.

CGC-895 - Reliability Improvements - Purex

This project was completed and closed out, with exceptions, on September 30, 1962.

CGC-965 - In-tank Waste Solidification - 200-E Area

Bovay Engineers started detail design on September 12, 1962, A design schedule is being prepared.

CGC-981 - Fission Product Packaging Facility - "B" Plant

A preliminary project proposal to request design of a demonstration fission product packaging unit to be installed in "B" Plant, was transmitted to the AEC on September 4. This project will provide the "B" Plant, Phase II, portion of the Waste Management Program.

c. Manufacturing Engineering

Storage Boxes for D-3 and D-4 Vessels

Design was completed and a work order issued to build two special shielded storage boxes for long-term above-ground storage of the D-3 and D-4 vessels to be removed from Purex. Design of these boxes will permit their use for extended above-ground storage and permit their future use as a burial container.

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2. Special Separations Processing

a. Process Design Engineering

Special Electrical Connector

In connection with Redox "A" Cell conversion, a special connector was designed to re-wire wall receptacle A-G34. The new design pre-wires an equipment head attached to a male plug, and the device eliminates problems of pulling and bending heavy wires within limited space.

SX Tank Farm

Remote motor control for the 114 Tank pump was completed. Remote stop, start, and indicating light functions are controlled by tone signal equipment. This work is in conjunction with chemical waste recycle.

PRTR Fuel Storage

Process design work was completed covering the installation of a tank in the Redox J-1 Cell position for storage of PRTR fuel element canisters prior to processing in the Mark V Dissolvers. It was determined that an existing tank would be modified for this service. Target date for installation of the tank and jumpers is December 1, 1962.

b. Project Engineering

CGC-941 - Revision No. 1 - Railroad Tunnel Airlock and Decontamination Facility - Redox

This proposal was returned unapproved on September 19, 1962.

3. Finished Products

a. Process Design Engineering

Fabrication Line Oil Processing

Increased emphasis was placed on the problem of fabrication oil because of the large number of cans presently in storage and the rapid rate at which additional cans are being accumulated. It has been estimated that the inventory of cans will be approximately 1,500 by the time Project CAC-880 is completed, and the backlog could not be worked off until mid-year 1964. Of the means considered for plutonium recovery from fabrication oil, the preferred scheme is a new

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facility having geometrically favorable Pyrex glass vessels. These include a packed-solvent extraction column, an oil feed vessel, and a nitric acid extractant vessel.

Scope design work has been initiated for a fabrication oil sampling and storage facility for the RMA and RMC Fabrication Lines. This facility will provide storage for oil and solvents from all the machining, degreasing, and briquetting facilities, and will be located in the RMC Fabrication Area.

Nitrogen Generation

Scope drawings have been prepared for a new building to house a nitrogen generation facility, and a new area arrangement of the over-all installation has been made. The information has been provided for a total project cost estimate.

New Fabrication Equipment

Complete process design and basis for cost estimating was provided during the month on project proposals for a new mezzanine and new equipment for mold make-up and break-out, ingotting, and weighing for the RMA Line.

200-North Area Waste Storage

Engineering work was initiated on modifying the 212-N Bldg. in 200-North Area to allow storage of low-level plutonium wastes.

Floturn Machine

A drawing was prepared for a tracer lathe template to be used for making Floturn blanks designed according to a modified shear theory. Also, designs were initiated on new tooling for the Floturn machine for producing a different model.

b. Project Engineering

CGC-978 - RMC Button Line Filtrate Handling Facility-"Z" Plant

Detail design was completed as of September 21, 1962. All equipment installation work on this project is virtually completed. It is now expected that the scheduled beneficial use date of November 15 will be improved one month.

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CGC-984 - Electrical & Hydraulic Equipment Mezzanine - RMA
Line - 234-5 Building

A project proposal was prepared requesting \$75,000 for a new mezzanine in the RMA Line - 234-5 Building. The proposal is being circulated for approval.

4. General

a. Process Design Engineering

Serious Hazards Event Hardware

A tentative system has been worked out for sampling the ¹³¹I content of the Redox stack gas. Tests were conducted on the gas and the results indicate the system is feasible.

Radioactive Waste Storage Tanks-Liquid Level Measurement

Replacement components have been tested and installed in the guage head mechanism. A thorough system re-work has been accomplished and several problems eliminated. The guage head has been moved from TX Farm and is now installed in 113-SX Tank.

EMI Photomultiplier Tube

An evaluation is being made of a new British-made photomultiplier tube. The tube is an EMI-9536B. A voltage divider and coupling network have been designed and seem to give satisfactory results. Tests are being conducted and results compared to similar tests on the RCA-6655A, (the most commonly used photomultiplier tube on-plant).

Plastic Fabrication - Panel Changing Technique

A new technique for changing panels on an enclosure contaminated with plutonium has been successfully demonstrated. Fluorescent powder was used to simulate plutonium contamination. The principal feature of the method is the elimination of even momentary open-air passage between the interior of the enclosure and clean working areas outside the enclosure.

b. Project Engineering

Project Cost Information as of 9-23-62:

Total Authorized Funds - 17 active Projects	\$ 11,354,000
Total Cost-to-date	8,959,000
Commitments and Open Work Releases	703,000
Unencumbered Balance	1,692,000
Costs Charged to above Projects	469,000
8-19-62 to 9-23-62

Manager - Facilities Engineering

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CHEMICAL PROCESSING DEPARTMENT
MONTHLY REPORT

SEPTEMBER, 1962

II. ACHIEVEMENTS (Continued)

G. RESEARCH AND ENGINEERING OPERATION

1. Purex Process Engineering

a. Solvent Extraction

Solvent-extraction performance during September was generally very good despite numerous equipment failures that necessitated emergency shutdowns. After startup on "cold" recycled uranium feed, non-representative metal (high MWD/T) was processed for half of the month. The transition to normal irradiated feed material was accomplished by recycling "cold" uranium as feed material to purge the system of plutonium. Emergency shutdowns and erratic behavior of the HA Column, resulting from periodic plugging of the feed and backcycle flow systems, caused fluctuations in the plutonium product gamma activity. The abnormal behavior also caused excessive product losses, necessitating segregation of two batches of high activity waste (IWW) for rework. Performance of the Final Uranium Cycle was excellent throughout the month and all uranium product was within shipment specifications.

Failure of the HA Column interface float jumper drained the column contents to the cell floor and resulted in a crash shutdown. The subsequent startup proceeded without undue difficulty and general performance of the First Cycle appeared to be considerably improved. However, maloperation of the Plutonium Ion Exchange System necessitated temporary routing of the product from the Final Plutonium Cycle to the concentrator package. Processing of normal metal was resumed on September 27 and continued for the remainder of the month.

b. Neptunium Recovery

Overall neptunium accumulation in the Backcycle Waste System has been somewhat lower than the preceding two months due to the erratic performance of the HA Column. However, most of the "loss" was confined to the IWW waste which was segregated for reprocessing. Losses via the Final Uranium product were less than 3 per cent.

c. Final Plutonium Processing

During normal plant operation, five cans of off-standard plutonium product were reworked through the Plutonium Ion

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Exchange Unit (N-Cell) by blending with the normal 2B Column plutonium product following a ferrous sulfamate valence adjustment step. While the solvent extraction cycles were shutdown, twenty-seven cans were reworked without valence adjustment. The mechanical operation of the unit was excellent during this rework; however, the observed DF was only approximately five rather than the expected twenty.

d. Solvent Treatment

The transfer of the used aqueous wash solutions from the No. 2 to the No. 1 Solvent Treatment Systems for reuse and disposal was started on September 19, 1962. The carbonate-permanganate wash was jetted from the Batch Wash Tank R1 to its counterpart Tank G1 and the used 20 Column dilute acid scrub solution was jetted from the Scrub Collecting Tank R2 to its counterpart Tank G2. The purpose of the test is to reduce solvent losses and chemical consumption in the solvent treatment systems.

e. Acid Recovery and Waste Handling

During the month, the Acid Recovery System (F-Cell) has been operated using single-stage evaporation exclusively. Because of non-equilibrium operation due to plant shutdowns and rework, decontamination capability of the system has not been completely defined. Preliminary evaluation indicates that the system is capable of producing acid within plant limits as determined by the personnel exposure in the Sample Gallery. During the month, the Ru activity remained below 3×10^4 uc/gal and the ZrNb below 1×10^4 uc/gal. The addition of sodium nitrite to both the concentrator feed and the No. 4 Concentrator tray for better suppression of ruthenium is under test.

f. Fission Products

Head-End

A full scale plant test to demonstrate cesium recovery by precipitation as the insoluble cesium nickel ferrocyanide was made on typical tank farm supernatant solution. A recovery efficiency of 99 per cent with a sodium decontamination factor of 900 was demonstrated. The cesium was precipitated by making the supernatant solution 0.001 M in nickel and 0.005 M in sodium ferrocyanide. Precipitated cesium was separated by centrifugation at 1500 G's and metathesized twice with 0.05 M silver nitrate. Waste losses were equally divided between the precipitation step and the metathesis step. Thirty kilocuries of purified cesium were shipped to Hanford Laboratories for future packaging studies. At the completion of the cesium precipitation run, strontium production was resumed.

Strontium Semiworks

The HAPO-II-2 cask was loaded with strontium for the Martin Company. The precipitation and cask behavior were abnormal with the cask plugging at 60 per cent of its capacity. Continuing laboratory tests indicated the precipitate is very fine and will not settle on standing.

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2. Redox Process Technology

a. Solvent Extraction

The 1A Column flowsheet changes made in August, have not been effective in preventing the deposition of plutonium(IV) polymer in the 1A Column. These changes were: 1) the addition of sulfamic acid in the 1AA stream, and 2) the introduction of half of the 1AA stream at the 1AS entry point (eight feet from the bottom of the scrub section). Three weekly 10 percent nitric acid flushes of the 1A Column, made after the August flowsheet changes, provided a crude measurement on the rate of plutonium polymer deposition. The amounts of plutonium removed in these three flushes were 100, 300, and 175 grams, respectively. Additional 1A Column flowsheet changes made in September were: 1) the increase of the acid composition of the 1AA stream from 0.4 M to 0.5 M HNO_3 , and 2) the introduction of all (instead of half) of the 1AA stream into the column at the 1AS entry point. These flowsheet changes were designed to maintain an acid composition of 0.05 M HNO_3 in the organic phase in the scrub section of the 1A Column. A single ten percent nitric acid flush of the 1A Column was made two weeks after the September flowsheet change. This flush removed 80 grams of plutonium which, when compared with the plutonium pickup in previous flushes, indicates a lower plutonium deposition rate. However, a longer operating period is required before a meaningful evaluation of the present 1A Column flowsheet can be made.

During the report period, the HABS (D-14) Concentrator developed a leak approaching the throughput rate in magnitude. In order to continue processing, the entire LAW stream has been jettied batchwise to the HAF (H-4) Concentrator, thus bypassing the HS Column and HABS Concentrator. This flow pattern has proven reasonably satisfactory, and the capability of the HAF Concentrator should permit attainment of rates as high as 10 tons per day. Actual processing rates were limited to 6 tons per day by the capacity of the HAF pump and the need for reworking sump waste. The neptunium losses with this flow pattern, based on analyses of the concentrated salt waste, were approximately 26 percent of the neptunium in the virgin feed, approximately twice the loss for the normal flow pattern.

b. Tail-End Ozonation Treatment

Because of short-circuits in the E-13 gamma monitor probe at elevated temperatures, it has not been possible to continue the use of the monitor for evaluating tail-end ozonation treatment of the uranium product solution. The runs made before the probe failed, showed that the addition of periodic acid (HIO_4) oxidant was most effective if delayed until the uranium product batch had been treated with ozone in E-13 for about two hours. The operating procedures have been modified to take advantage of the effect of delaying the oxidant

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addition. The failed gamma monitor will be replaced with a similar type probe except that polystyrene and polyethylene insulators in the probe and high voltage cable, respectively, will be replaced with Teflon.

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3. Finished Products Chemical Technology -

a. Metal Finishing Operation

1. Button Line

A start-up flowsheet has been prepared for the anion exchange facility currently being installed (Project CGC-978) for the recovery of plutonium present in low concentrations in the filtrate solutions from the oxalate precipitation step. It is expected that the facility will be completed during the coming month. Basically, the flowsheet presents loading and elution conditions for the three batch operated resin columns. The columns will reduce plutonium concentrations in the supernatants to throw-away limits (< 0.001 g/l) and produce a product solution containing 30 g Pu/l, suitable for reintroduction to the button line. This flowsheet is presented in detail in HW-74792 (Confidential).

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4. Separations Chemistry Laboratory -

a. Purex Process Assistance

Nineteen samples representing various 234-5 rework solutions were evaluated for potential processing through Redox or Purex. Evaluation was based on visual inspection, the infrared spectra of an organic extract, and chemical analysis. Criterion for acceptance was low sulfate or halogen content, and absence of organic material or solids. Most of the solutions were rejected due to presence of visible solids and/or organics. Samples representing 43 PR cans were acceptable. Further evaluation will be required in cases where duplicate samples varied in composition.

A sample of the Tank 301 UNH solution was tested for acceptability as rework at Purex. This material from UO₃ Plant contains 64 g/l uranium, degreasing solvent, and several Turco decontaminating agents. As received the sample had solid material, so both the supernate and a slurry of the solids were tested. Each fraction was contacted with carbon disulfide and the infrared spectra of the organic phase was examined for presence of extraneous organics. Of the two, only the solid slurry contained organic material - apparently hydrocarbons. Therefore, the Tank 103 solution must be filtered before reprocessing at Purex.

Samples from the 103A tank dissolution test showed that less than 3% of the sludge was dissolved in 52 days. The density increased from an initial 1.020 g/ml to 1.070 g/ml during this period.

b. Redox Process Assistance

A laboratory study was made to determine whether tetravalent uranium would reduce plutonium to the trivalent state in hexone. Plutonium was readily reduced under these conditions, and, if an aqueous phase was present, the trivalent plutonium immediately stripped from the hexone with no further valence change. Should no aqueous phase be present, the plutonium would re-oxidize to the tetravalent state in several minutes.

c. Neptunium Purification

One batch of Purex crude and one batch of rework neptunium were purified by the normal flowsheet using ferrous sulfamate and hydrazine as reducing agents. Decontamination factors of 229 for plutonium, 1×10^4 for thorium, 1.8×10^3 for Zr-Nb, and greater than 1×10^3 for both uranium and ruthenium were observed for the Purex crude. A 1665 gram shipment of purified neptunium nitrate was made to Savannah River.

d. Fission Product Assistance

Precipitation characteristics of the purified strontium from Tank 64 were investigated. The sample, though colorless when received, turned brown on neutralization with sodium hydroxide, and the precipitate

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formed upon addition of potassium bicarbonate remained suspended in the solution rather than settling normally. A sample of purified strontium from Tank 6 demonstrated good precipitation characteristics, however.

e. Laboratory Assistance

Plutonium pins. An improved package was developed for standard plutonium pins. A screw cap tube containing a small amount of molecular sieve absorbent was used for the container. After inserting a weighed pin, the tube was sealed in a plastic envelope. This operation was carried out in an argon atmosphere.

Carbonate. An analysis for carbonate present in caustic solutions was developed for concentrations down to 0.25 g/l. Carbonate was precipitated as the barium salt using $\text{Ba}(\text{NO}_3)_2$ reagent spiked with a Ba^{133} tracer (0.36 and 0.30 Mev gamma energy). For samples with high fission product values, decontamination was achieved by dissolving the carbonate precipitate in acid, and then reprecipitating the barium with sulfate. The carbonate concentration was calculated from Ba^{133} activity in the final precipitate mount as measured by gamma ray spectrophotometry. An overall method efficiency of 95% was found for a standard carbonate-caustic solution. A reagent blank was necessary to correct for carbonates and sulfates contributed by these sources.

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5. Plutonium Chemistry Laboratory

a. Electrolytic Reduction Of Plutonium Trichloride

Two three-inch electrowinning cells were operated in a test of electrode geometry.

In one test the major electrode surfaces were parallel, and in the other they were perpendicular. A carbon anode and an 0.5" tungsten rod for the cathode were used for the parallel arrangement. Anode-cathode separation was 0.88". The LiCl-KCl-10% PuCl_3 electrolyte was used.

The major difficulty encountered was that currents above about 100 amps produced chlorine of such a rate that melt was spattered from the cell. The parallel arrangement provided a current of 150 amps at 8.4 volts--the other a current of 90 amps at 8.4 volts. One cell was operated at 130 amps for about 30 amp hours. An anode effect was found at 4 amps/cm². (Very high resistance above this value.)

Operating at 130 amps in the perpendicular arrangement produced some free alkali metals on top of the electrolyte. This may indicate insufficient mixing. The energy lost as heat at this current was enough to heat the cell above 900 C. The high feed rate required at this amperage produced more frothing than usual with this melt.

Reducing the anode area in the parallel arrangement increased the resistance from 0.03 to 0.04 ohms. Increasing the distance between the electrodes in the perpendicular cell from 0.25" to 1.5" did not affect the resistance appreciably.

The resistance of the cell is not as dependent on electrode separation as in the refining work. The anode area seems to have the greatest effect of any variable studied so far. Comparing the resistances of the two arrangements indicates that there is an effective anode area involved and that this is proportional to the amount of area parallel to the cathode.

b. Recovery Of Plutonium From Chloride-Bearing Slag And Crucible

Plutonium is being recovered from the chloride-bearing slag and crucible produced in the electrolyrefining and electrowinning experiments.

Slag and crucible received from the electrolyrefining experiments contains 10 w/o fluoride. This material is incompatible with the present recovery flow sheet (leaching in 1 M HCl, precipitation as plutonium(III) oxalate, and calcination to PuO_2). The fluoride causes the plutonium to reprecipitate as Pu(III) fluoride in the leach step and prevents separation.

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The use of aluminum (as AlCl_3) to complex the fluoride in the leach step was tested and found successful. Precipitation of plutonium(III) oxalate from this leach solution (1 M HCl - 1 M AlCl_3) gave filtrate losses of 0.05 - 0.1 g/l Pu.

Leaching at a solution temperature of 70 C was shown to speed up the rate of dissolution of the slag.

The rate of dissolution of slag could also be improved if the slag were ground up. A laboratory crusher has been procured for this purpose and tested with synthetic slag (50 w/o NaCl , 40 w/o KCl , 10 w/o NaF) and cold crucibles. Procurement of a hood and installation of the crusher will proceed.

c. Drying Of The Recuplex R&B Hood Floor Sludge

The laboratory work on processing the floor sludge has been completed and a letter covering the work was issued. The summary paragraphs of the letter appear below.

The ignition method of processing the floor sludge appears to be the most feasible. This method has three advantages over the drying method of processing. These are (1) a product safe for storage, (2) a relatively short time cycle, and (3) a reaction easily identified as being complete (i.e., the reaction is complete when smoking ceases). There are, however, two disadvantages. They are (1) an off-gas scrubber will be required, and (2) ignition might provide the activation energy required for a rapid decomposition of the organic material present in the sludge.

This possibility is deemed remote because of the low nitric acid concentrations present in the hood ($< 3 \text{ M}$). It should also be mentioned that sludge samples ignited in the lab to $> 200 \text{ C}$ showed no tendency to a rapid decomposition. However, to add an additional degree of safety, it is recommended that the ignition process be limited to temperatures less than 130 C.

H. S. Frank

Manager
Research and Engineering

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CHEMICAL PROCESSING DEPARTMENT
MONTHLY REPORT

SEPTEMBER, 1962

II. ACHIEVEMENTS (Continued)

H. FINANCIAL OPERATION

1. Production Cost

Functional breakdown of the second quarter FY 1963 budget (in accordance with most recent assumptions) and a revised quarterly breakdown for the fiscal year was recently completed. Because of extremely tight O2 production funds, it is necessary to review and update budget allocations both by month and function on a fairly current basis. Concurrent with the updating, the transfer of UO₃ Operation from Finished Products (now Weapons Manufacturing) to Redox Operation was reflected in the FY 1963 budget.

Call letters for manpower, overtime and planned maintenance requirements were issued to operating management in connection with FY 1963 Midyear Budget Review.

At AEC request and in collaboration with operating management, estimated amounts were developed for (1) O3 Program equipment requirements for fiscal years 1963, 1964 and 1965, and (2) the Nossen Patent Infringement suit.

Other studies completed during the month included (1) level of engineering service FY 1957 through FY 1964 and (2) estimated cost of redesign and construction of HAP0 I and IA casks.

The annual review of subscriptions to periodicals and magazines was completed in September. Active subscriptions have decreased in amount by about 70% in the last two years, for a savings of \$1,200 annually.

CPD's investment in inventories at August 31, 1962 compared with budgeted amounts is as follows:

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(in thousands)	<u>Balance 8-31-62</u>	<u>Control Allocation</u>	<u>Surplus (Deficit)</u>
<u>Inventories</u>			
Essential Materials	\$ 806	\$ 832	\$ 26
Spare Parts & Standby	1 663	1 400	(263)
Special Materials	<u>121</u>	<u>100</u>	<u>(21)</u>
Gross Inventories	<u>2 590</u>	<u>2 332</u>	<u>(258)</u>
<u>Reserves</u>			
Essential Materials	62	62	-0-
Spare Parts & Standby	<u>763</u>	<u>350</u>	<u>413</u>
Total Reserves	<u>825</u>	<u>412</u>	<u>413</u>
<u>Net Investment</u>	<u>\$1 765</u>	<u>\$1 920</u>	<u>\$ 155</u>

2. Financial Analysis

The Chemical Processing Department Data Book was updated this month to reflect current activity through FY 1962. The previous issue had been prepared at the close of FY 1960. This document includes such data as personnel changes, cost information, organizational changes and other important historical information from beginning of FY 1956 through FY 1962.

3. General Accounting

Proposals were made to the AEC and accepted by them to change the estimated service lives of the UO₃ calciners from five years to ten. This change will reduce annual depreciation expense against uranium reduction by \$85,000.

As of August 31, 1962, sixteen active projects had incurred costs of \$8,546,136 against authorized funds of \$11,289,200. Outstanding commitments totaled \$706,240.

During September, Modification No. 3, Directive No. AEC-201, was received from the AEC for decrease in funds on Project CAC-950, Cesium Loadout Facility - 241-C, total authorization \$46,000.

Four (4) Appropriation Requests were approved in September authorizing an expenditure of \$27,600.

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Appropriation Requests Approved*

<u>AR Number</u>	<u>Description</u>	<u>Section</u>	<u>Amount</u>
36010	Electrical Hacksaw	P&GM	\$ 4 800
36011	Replacement HC-26 Ingotting Hood	FPO(WMO)	9 500
36013	E-3 Ph Meter	Purex	4 000
36014	Air Atmosphere Furnace	R&EO	9 300
Total Funds Authorized			<u>\$27 600</u>

*Funding approvals only. May differ from costs stated in other sections of this report which include non-fund equipment transfers.

4. Auditing

A semiannual visual inspection was made of appliances purchased by CPD personnel under the terms of the GE Employee Purchase Plan. Only one exception was noted and disposition has not been made to date.

Manager - Finance

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CHEMICAL PROCESSING DEPARTMENT
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III. PERSONNEL ACTIVITIES

A. FORCE SUMMARY

<u>Operation</u>	<u>Monthly Salaried</u>		<u>Weekly Salaried</u>		<u>Total</u>	
	<u>8-31-62</u>	<u>9-30-62</u>	<u>8-31-62</u>	<u>9-30-62</u>	<u>8-31-62</u>	<u>9-30-62</u>
General Manager's Group	11	11	2	2	13	13
Financial	13	13	15	15	28	28
Research & Engineering	64	62	27	28	91	90
Facilities Engineering	61	61	23	21	84	82
Power & General Maintenance	39	28	250	244	289	282
Production	5	6	5	4	10	10
Redox	50	49	202	200	252	249
Purex	64	64	248	247	312	311
Finished Products	<u>53</u>	<u>54</u>	<u>261</u>	<u>260</u>	<u>314</u>	<u>314</u>
Total	<u>360</u>	<u>358</u>	<u>1 033</u>	<u>1 021</u>	<u>1 395</u>	<u>1 379</u>

B. PERSONNEL CHANGES

There were no personnel changes.

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C. TRIPS

<u>Visitor</u>	<u>To</u>	<u>Nature of Discussion</u>
<u>To Other G.E. Components</u>		
W. Watson	New York, N.Y.	Personnel placement. (9/10-11/62)
R. E. Van der Cook H. E. York	Metallurgical Products Dept., Detroit, Mich.	Preparation of specification for tungsten carbide. Dis- cussion on new concepts of machine tools. (9/20-21/62)
<u>To AEC and Other AEC Contractors</u>		
B. F. Judson J. H. Warren L. L. Zahn	AEC, Washington, D.C. Div. of Production	Briefing meeting prior to US-UK Exchange. (9/7/62)
M. H. Curtis	The Dow Chemical Co. Midland, Michigan	Electrochemical technology. (9/11-12/62)
A. E. Smith	The Dow Chemical Co. Rocky Flats Plant Denver, Colorado	Consultation with product engineer on design changes. (9/24/62)
W. J. Gartin W. S. Frank A. E. Smith R. C. Hollingshead	Sandia Corp. Albuquerque, N. M.	To attend IMOG general in- formation meeting. (9/25-27/62)
R. G. Barnes	Savannah River Lab. Aiken, S. C.	Discuss aluminum nitrate re- covery and general separa- tions subjects. (9/24-25/62)
	Oak Ridge Nat. Lab. Oak Ridge, Tenn.	Attend annual information meeting. (9/26-28/62)
R. E. Van der Cook R. C. Hollingshead R. B. Hershey	The Dow Chemical Co. Rocky Flats Plant Denver, Colorado	Consultation on gaging results. (9/27-28/62)
<u>To General Industry</u>		
R. E. Van der Cook	Ex-Cell-O Corp. Detroit, Michigan	Discussion on new concepts of machine tools. (9/21/62)

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<u>Visitor</u>	<u>To</u>	<u>Nature of Discussion</u>
<u>To General Industry (continued)</u>		
H. E. York	Super Tool Co. Elk Rapids, Mich.	Preparation of a specification for tungsten carbide. Grinding wheel developments as applied to precision grinding. (9/17/62)
	Modco Tool Detroit, Michigan	" (9/18/62)
	B&W Tool Co. Detroit, Michigan	" (9/19/62)
	Wolverine Grinding Wheel Co., Detroit, Mich.	" (9/24/62)
	A. A. Crafts Co. Boston, Mass.	" (9/25/62)
M. L. Oldfather	Turnkey Engineering Co. Southgate, Calif.	Engineering for remote samplers (9/18-19/62)
P. S. Kingsley C. W. Smith	Kaiser Aluminum Co. Spokane, Wash.	Corrosion of aluminum-indium alloys. (9/21/62)
P. S. Kingsley	Boeing Airplane Co., Seattle, Wash.	Welding and welder qualifications. (9/26/62)
<u>To Conventions and General Meetings</u>		
P. S. Kingsley	Seattle, Wash.	Attend N.W. Council meeting of ASTM. (9/25/62)
<u>To Other Government and Foreign Agencies</u>		
B. F. Judson J. H. Warren L. L. Zahn	United Kingdom Atomic Energy Authority, Windscale and Risley, England	Inspect the new UK separations plant at Windscale and discuss with UK plant personnel unclassified aspects of plant technology. (9/10-14/62)

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D. VISITORS

<u>Visitor</u>	<u>From</u>	<u>Nature of Discussion</u>
<u>From Other G.E. Components</u>		
Lloyd Nickerson	Institutional Programs Op. Marketing & Public Relations New York, N.Y.	Waste Handling & Decon- tamination Operation act- ivities to advertise de- contamination. (9/7/62)
F. K. McCune	New York, N. Y.	Z-Plant tour. (9/28/62)
<u>From AEC and Other AEC Contractors</u>		
G. J. Fischer W. J. Mecham W. B. Seefeldt M. J. Steindler	Argonne National Lab. Lemont, Illinois	Discuss fluidized bed con- versions; criticality con- trol in the Purex Plant; tour of facilities. (9/11-12/62)
R. W. Beamer W. H. Vandergrif	The Dow Chemical Co. Rocky Flats Plant Denver, Colorado	Plutonium anion exchange; tour of Purex Plant. (9/12/62)
L. L. Bennett J. W. Ullmann	Oak Ridge National Lab. Union Carbide Nuclear Co. Oak Ridge, Tenn.	Zircaloy cladding - Purex processing. (9/12/62)
J. A. Leary	Los Alamos Scientific Lab. Los Alamos, N. M.	Electrorefining, nitride problem. (9/12-13/62)
N. Ketzlach	Atomic International Canoga Park, Calif.	Criticality control - methods of calculation and administration. (9/12/62)
G. J. Keto G. W. Wilttrout J. Cho	AEC, Washington, D. C.	Plant Tour. (9/18/62)
J. Behrend	AEC, Washington, D. C.	Plant Tour. (9/19/62)
A. C. Dumrose D. J. Braid	Los Alamos Scientific Lab. Los Alamos, N. M.	Waste incinerator. (9/18-19/62)
L. Michener	U.S. AEC Oak Ridge National Lab. Oak Ridge, Tenn.	Tour of brandy facility. (9/24/62)

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<u>Visitor</u>	<u>From</u>	<u>Nature of Discussion</u>
<u>From AEC and Other AEC Contractors (continued)</u>		
M. Martin	Lawrence Radiation Lab. Livermore, Calif.	Consultation on plutonium fabrication. (9/25-26/62)
J. W. Morris	Savannah River Lab. Aiken, S. C.	Waste management. (9/27/62)
<u>From General Industry</u>		
P. Berner	Star Machinery Seattle, Wash.	Discussions on new lathe concepts. (9/5/62)
J. E. Garon	Ex-Cell-O Corp. Detroit, Mich.	Discussions on new lathe concepts. (9/5/62)
J. Leinbach	Batton-Barton-Durstine & Osborn, New York, N.Y.	Waste handling and decontam- ination. (9/7/62)
V. Terry	DuBois Chemical Co. Portland, Oregon	Decontamination chemicals. (9/10/62)
C. Luft	DuBois Chemical Co. Walla Walla, Wash.	Decontamination chemicals. (9/10/62)
C. S. Caldwell E. K. Halteman Z. Shapiro K. Puechl	Nuclear Metals Concord, Mass.	Continuous oxalate preparation. (9/13/62)
I. R. Higgins	Chemical Separations Corp. Oak Ridge, Tennessee (Private Concern)	Remote operation of ion exchange. (9/17/62)
<u>From Other Government and Foreign Agencies</u>		
Paul Amaury	Eurochemic Co. Mol, Belgium	Off-gas treatment (filtration, scrubbing, sampling and mon- itoring); criticality control in chemical separations plants. (9/10-11/62)
W.B.H. Lord A. E. Kay A. J. Martin J. F. Sachman J. S. White	Atomic Weapon Research Establishment Aldermaston, England	Metal purification technology; technical exchange on plutonium metallurgy and fabrication. (9/17-19/62)
D. Haon A. Schneider-Maunoury S. Trouve	French AEC Fontenay-aux-Roses France	Purification & reduction; cri- ticality control in plutonium processing. (9/20-21/62)

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IV. SAFETY AND SECURITY

<u>Operation</u>	<u>FEO</u>	<u>Finance</u>	<u>FPO</u>	<u>P&GM</u>	<u>Purex</u>	<u>Redox</u>	<u>Prod.</u>	<u>Rel. Prac.</u>	<u>R&E</u>	<u>Total CPD</u>	<u>YTD</u>
Dis. Injuries											3
Ser. Accidents											1
Med. Treat. Inj.	1	1	13	20	8	10			2	55	358*
Rad. Occur.			6		5					11	144
Contam. Wd.			1							1	7
Pu Dep.			3			1				4**	15
Fires			2***							2	15
Sec. Viol.									1	1	13

* Injury occurred on 8/24/62, but not reported until September; therefore carried only on YTD total.

** These cases were sustained in previous months and just confirmed. Two concerned skin injuries, one was by inhalation, and one by absorption. Three involved less than 1 percent MPBB, the remaining one less than 5 percent MPBB.

*** Weapons Manufacturing - Processing - 234-5 Building - 200-W Area

Failure of a pressure vessel gasket allowed process materials to escape to the hood atmosphere where spontaneous ignition occurred.

Weapons Manufacturing - Processing - 232-Z Building - 200-W Area

Sparks from a waste material chopper ignited feed bin contents in the incinerator building. Damage to a dust collector bag approximately \$ 33.00.

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HW-75145

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V. REPORTS

A. PREPARED AND ISSUED

HW-73601, Official Use Only, "Preliminary Project Proposal, Fission Product Packaging Facility - 'B' Plant (CGC-981)", dated August 15, 1962, by L. W. Finch.

HW-74607, Secret, "Project Proposal, Rev. #1, Additional Plutonium Storage Facilities - 234-5 Building (CGC-968)", dated September 13, 1962, by M. N. Raile.

HW-74741, Secret, "Progress Report - Finished Products Fabrication Technology Operation - August 1962", dated September 5, 1962, Compiled by Members of the Finished Products Fabrication Technology Operation, Research and Engineering Operation.

HW-74773 RD, Secret, "Purex Plant Production Schedule - September, 1962", dated September 4, 1962, by D. McDonald.

HW-74774 RD, Secret, "Redox Plant Production Schedule - September, 1962", dated September 4, 1962, by D. McDonald.

HW-74775 RD, Secret, "UO₃ Plant Production Schedule - September, 1962", dated September 4, 1962, by D. McDonald.

HW-74776 RD, Secret, "234-5 Plant Production Schedule - September, 1962", dated September 4, 1962, by D. McDonald.

HW-74789 RD, Secret, "Process Flow Sheet, Rolling and Drawing", dated August 30, 1962, by A. E. Smith.

HW-74806, Secret, "Security of Recycle Slightly Enriched Uranium", dated August 31, 1962, by J. H. Warren.

HW-74812, Secret, "The Relative Effect of Tool Point Geometry on Generated Contour Accuracy", dated August 17, 1962, by R. C. Hollingshead.

HW-74941, Secret, "Analyses of Brandy Nitrate Batch 61", dated September 12, 1962, by J. H. Warren.

HW-74966, Secret, "Security of Recycle Slightly Enriched Uranium", dated September 17, 1962, by J. H. Warren.

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HW-75011 RD, Secret, "Forecast of CPD Nuclear Materials Requirements for FY 1963 - 2nd, 3rd, and 4th Quarters", dated September 20, 1962, by R. E. Roberts.

HW-75051, Unclassified, "Purex Plant Test of the Cesium Nickel Ferrocyanide Process", dated September 25, 1962, by S. J. Beard and W. C. Schmidt.

B. PREPARED FOR SIGNATURE AND ISSUANCE

HW-74803, Secret, "Production - August 1962", dated September 4, 1962, by W. E. Johnson.

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VI. PATENT SUMMARY

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during the period covered by this report, except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

INVENTOR

TITLE

NONE

P. H. Reinker

General Manager
Chemical Processing Department

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END

DATE
FILMED
5/12/93