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MONTHLY REPORT

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GENERAL ELECTRIC
COMPANY

Fuels Preparation Department

February 1958

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MONTHLY REPORT

By J.P.P./L.M.
Date 5-17-73 FUELS PREPARATION DEPARTMENT
U. S. AEC Division of Classification

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FOR

Classification Cancelled (Change to
DECLASSIFIED)

FEBRUARY, 1958

Compiled by

By Authority of RM-PR-2 / PR-24

Fuels Preparation Department

RM Iten 10-7-92

March 19, 1958

By PM Eck 10-14-92

DG K. W. 10-14-92

Richland, Washington

Work performed under contract No. W-31-109-Eng-52 between the Atomic Energy Commission and General Electric Company.

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TABLE OF CONTENTS

General Summary	A-1 through A-5
Manufacturing Operation	B-1 through B-9
Engineering Operation	C-1 through C-15
Financial Operation	D-1 through D-6
Maintenance & Power Operation	E-1 through E-5
Employee Relations Operation	F-1 through F-11

FUELS PREPARATION DEPARTMENT
MONTHLY REPORT SUMMARY FOR
FEBRUARY, 1958

MANUFACTURING OPERATION

During the month the Manufacturing Operation worked on a two-shift basis with five canning lines on each shift. Five hundred forty-nine tons of acceptable fuel elements were produced which was 103% of the 535 tons forecast in HW-54606-RD. The variance from forecast resulted primarily from increased I & E yield, and operating efficiency being approximately 3%.

The inventory of bare uranium at the end of February totaled 420 tons, or a 0.7 month supply. Finished inventory increased by 82 tons to 696 tons, or approximately a 1.1 month supply.

The manufacturing yield for solid fuel element production was 79.7% compared to 82.7% for January; the manufacturing yield for I & E fuel element production increased to a new high of 74.1% compared to 64.7% for January.

Operating efficiency remained steady at 93.2% and was the same as the all time high obtained in January.

As scheduled, a third canning line of I & E production on each of two shifts was started on February 24.

An I & E fuel element failed in the autoclave operation. Cause of the failure was related to a pin hole in the weld bead on the female end in conjunction with non-wetting of the cap base.

ENGINEERING OPERATION

No unusual trends in rupture experience were apparent during February. No failures have occurred to date in standard I & E elements. Charging of I & E elements continued on schedule.

Arrangements have been made to procure 2000 A-2 alloy cans for evaluation. This alloy is similar in composition to M-388 with the exception of a 0.1% titanium addition. Laboratory tests indicate greater resistance to intergranular and general corrosion.

Contract work has been initiated with the GE X-Ray Department to carry out electron beam welding studies. Equipment is being built for use in the 306 Pilot Plant to develop welding techniques. Hunter Douglas is starting work to develop a cold extrusion process for uranium tubing of I & E size. Initial tests will be completed in about four weeks. Contract work with Verson Allsteel (punch cladding) and the American Bearing Company (precision pressure casting) continued satisfactorily.

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Numerous development activities were carried out in the 306 Pilot Plant. These were concerned primarily with thinwall canning and quality improvement. Sixty canned I & E elements were recovered by the "Hot Bath Process" and recanned. Examination and testing revealed good quality indicating excellent potential for reject recovery. About 60% of 306 Pilot Plant rejects are being recovered by rewelding with consequent increase in yields to autoclave by 3-4%. Shorter canning cycles are being investigated to reduce fuel element costs. Studies utilizing a 40 and 30 second canning cycle indicate potential production increases of 12 and 50 per cent, respectively.

A number of NPR and Category II fuel element tests are in progress in the KE-KER facilities. These include, in part, 4-rod stainless steel clad clusters, nickel plated washer elements, 7-rod clusters and various other shapes clad in special alloys. Pre-irradiation testing of eight zirconium fuel rods was completed. Special uranium alloys have been procured and the preparation of corrosion specimens is underway. These will be canned both by lead dip and AlSi processes and will be tested under NPR conditions.

FINANCIAL OPERATION

Due to the increase in variations in product models, the value of the materials inventory has doubled in the past 18 months and is now in excess of \$1 million.

A study of requirements concerning retention of financial records was made and retention periods and disposition schedules were formulated in cooperation with representatives from the Records Center.

MAINTENANCE & POWER OPERATION

There were six cost reductions submitted during the month. Total savings achieved was \$12,755. This brings the total quarterly budget realization to 64%. Total realization for the quarter is \$15,289.

The third Maintenance Management Information Meeting was held. Subject of this meeting was craft training. The meeting was well attended by representatives of the various HAPO components and considerable interest was demonstrated in this subject.

Information concerning the maintenance equipment and facilities required in PRTR and PFPP was forwarded to the responsible design groups. This information was provided to implement the project financing of this equipment.

The survey of Instrument Spare Parts was completed. This survey reduced the financial responsibility of FPD, for Instrument Spare Parts, from \$36,000 to \$8,000.

EMPLOYEE RELATIONS OPERATION

Final arrangements were made for the first of two General Manager's Meetings with FPD employees and their spouses. The first meeting was held on February 27 with 167 persons in attendance.

An analysis of First-Line Supervisory Pay Differentials was completed. The report shows substantial improvement in differentials and a forecast of the pattern for 1958 indicates still greater improvement.

In an effort to improve the non-exempt job audit procedure, two non-exempt clerical jobs were audited by actual interviews with the persons performing the work. This practice appears to have significant benefits, however additional study is required.

Eight grievances were processed at Step I during February. Of this number, 6 were jurisdictional and two involved overtime.

The Council advised the Company of intent to arbitrate the Franklin grievance which concerned an exempt employee returning to the Operating Engineers seniority group. The sole question concerns whether this employee should have been returned as a Miscellaneous Operator or a Junior Power Operator. This brings the total pending arbitration cases to six.

At month end the Department had operated 546 consecutive days without a disabling injury. The medical frequency rate for February was 3.96 as compared to 3.93 for January. One serious accident was experienced, however only minor personal injury resulted.

PERSONNEL STATISTICS:

Number of employees January 31, 1958
Number of employees February 28, 1958

768
758

<u>OPERATION</u>	<u>EXEMPT</u>	<u>NON-EXEMPT</u>	<u>TOTAL</u>
General	1	1	2
Manufacturing	58	298	356
Engineering	48	26	74
Financial	16	22	38
Maintenance & Power	38	223	261
Employee Relations	<u>15</u>	<u>12</u>	<u>27</u>
TOTAL	176	582	758

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W. M. Mathis
General Manager for
Fuels Preparation Department

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HW-55195

MANUFACTURING OPERATION

February, 1958

I. CURRENT OPERATIONS

A. Production and Productivity

1. Statistics

	8" Solid	8" Cored	Enriched		I & E	Total
<u>Current Month's Production</u>						
Acceptable Fuel Elements Produced (Tons)	357		1	31	160	549
As % of Forecast Production	112		10	89	94	103
As % of Past 3 Months' Production Average	78		11	194	213	96
As % of Past 12 Months' Production Average	76		10	775	400	99
As % of June 1958 Goal(500 MWD/Ton)	130		3		80	81
As % of June 1958 Goal(750 MWD/Ton)	357		4		53	122
% of Forecast Achieved - Last Fiscal Quarter	97	143	97	48	96	97
% of Forecast Achieved - Last 4 Fiscal Quarters	102	74	80	41	81	97
<u>Operating Efficiency</u>						
Current Month (%)						93
Forecast (%)						90
Previous Month (%)						93
<u>Manufacturing Yield</u>						
Current Month (%)	80		71	69	74	
Forecast (%)	81		81	66	66	
Previous Month (%)	83	72	81	66	65	
Bare Uranium in Storage (Tons)	216		7	13	177	413
Finished Product in Storage (Tons)	485		4	33	174	696
Uranium Utilization (%)						93.7
		<u>Poison</u>		<u>"N"</u>		
Special Products Finished (Pieces)		5,088		270		

2. Activities

a. Production

During the month the Manufacturing Operation worked on a two-shift basis with five canning lines on each shift. Five hundred forty-nine (549) tons of acceptable fuel elements were produced which was 103 percent of the five hundred thirty-five (535) tons forecast in HW-54606-RD. The variance from forecast resulted primarily from increased I & E yield, and operating efficiency approximately 3 percent above forecast.

b. Manufacturing Yield - Solid Production

The manufacturing yield for solid fuel element production was 79.7 percent compared to 82.7 percent for January. The yield decrease was caused principally from an increase in component preparation rejects, braze layer integrity rejects, and surface rejects.

Component preparation rejects increased from 0.9 percent in January to 1.7 percent. This was a result of caustic pitting.

Assembly rejects increased slightly from 1.3 percent in January to 1.8 percent.

Braze layer integrity rejects increased from 3.3 percent in January to 4.9 percent. Brittle bonding accounted for most of the increase in the reject rate.

Braze layer contamination rejects decreased from 3.9 percent in January to 3.7 percent.

Thin wall rejects declined slightly from 1.0 percent in January to 0.7 percent.

Marred surface rejects increased from 2.8 percent in January to 3.0 percent in February.

Facing rejects decreased from 0.2 percent in January to 0.0 percent or perfect performance.

Welding rejects decreased from 1.2 percent in January to 0.8 percent in February. Improved operator skill in using the 9-second weld cycle was instrumental in bringing about the improvement.

Surface rejects increased from 2.7 percent in January to 3.7 percent due to a surge of inclusions at month end.

c. Manufacturing Yield - I & E Production

Yield for I & E production increased to a new high of 74.1 percent for the month of February. The yield for January was 64.7 percent. This improvement in yield was the result of less welding rejects and the fact that

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c. Manufacturing Yield - I & E Production - continued

material rejected by the internal penetration tester was statistically rechecked by the caustic penetrating process. To date, a high percentage of material thus rechecked has been found to be acceptable.

d. Manufacturing Yield - Enriched Production - I & E

Enriched I & E yield remained steady at 68.7 percent compared to 66.1 percent for the month of January.

e. Manufacturing Yield - Enriched Production - Solid

Enriched solid yield decreased to 70.6 percent compared to 80.5 percent for the month of January. The percent yield decrease for February compared to January is not considered significant as yield was calculated on only one ton of finished product.

f. Other Activities

About 3,000 pieces of seven-inch I & E depleted uranium were canned for use by the Irradiation Processing Department in the High Pu 240 Program.

During the enriched I & E production run for the month, the thin wall "C" size components were used for about half of the pieces canned. While the canning assembly technique is not affected by this change in component dimensions, the variance in canning temperature and silicon content is more critical. Greater control on the variance is necessary to prevent an excessive reject rate. Consideration is being given to standardization on only one size enriched I & E component, that being the thin-wall.

The inventory of bare uranium at the end of February totaled 420 tons or a 0.7 month supply. There were 346 tons in inventory at the end of January. Increased solid receipts from the National Lead Company plus uninterrupted production of I & E during the month accounted for a build-up of bare solid material.

Finished inventory increased by 82 tons to 696 tons or approximately a 1.1 month supply based on the Irradiation Processing Department charging schedule for March.

Inventory of essential materials was at an estimated 3.2 month supply compared to a 3.3 month supply for January.

The following pieces were processed through the Fuel Recovery Operation during the month:

	<u>Pieces</u>
8" Solid	22,338
8" I & E	13,401
8" Cored	26
6" Solid	773
6" I & E	8,651
8" (1.6 material - Engineering Specials)	358
	<hr/> 45,547

f. Other Activities - continued

There was one shipment of scrap during the month. Included in this shipment were 67,314 pounds of solid scrap and 360 empty boxes.

B. Plant Problems and Incidents

1. General

During February, the operating efficiency remained steady at 93.2 percent. For January the operating efficiency was at an all-time high of 93.2 percent.

2. Autoclave Failure

There was one autoclave failure during the month which occurred on February 3, 1958. The element was an 8-inch "C" size I & E. Cause of the failure was related to a pin hole in the weld bead on the female end in conjunction with non-wetting of the cap base.

3. Caustic Pitting

Incomplete removal of caustic from sleeves during the sleeve cleaning cycle can sometimes cause caustic pitting. The pitting occurs on the surface of the canned fuel element that comes in contact with the inside surface of the sleeve during the canning cycle.

The extent that caustic pitting has caused rejects has become better defined with the introduction of the new reject classification which includes a specific category for component preparation rejects. During the month when the component preparation reject rate began to rise an investigation revealed that sleeve cleaning baskets in use, because of wear did not hold the sleeves at the proper angle to allow proper filling and emptying of the cleaning and rinsing solutions.

All baskets in use were reworked to correct this condition. An immediate reduction in the component preparation reject rate was made.

4. Hanford Test Reactor

Water leaks have been detected in a section of the roof on the Hanford Test Reactor. The section of the roof leaking is that portion covering the Control Room. Plans are under way for making the necessary repairs.

5. Nickel-Iron Segregation in Nickel Alloy Aluminum Components

During recent metallographic studies of aluminum components, a nickel-iron segregation was detected in the X-8001 (1% nickel-aluminum) alloy. This segregation appeared as light streaks in the normally dark autoclave film. In further tests the segregation was observed to be present only on the exterior surface of the components. The degree of color contrast between the light streaks and the dark areas was found to be proportional to the depth the segregation penetrated the can wall. The segregation was also found to be present only in the areas of the components formed by the cylindrical surface of the extrusion blanks. Insufficient scalping of the bloom stock prior to the rolling operation accounted for the problem.

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5. Nickel-Iron Segregation in Nickel Alloy Aluminum Components - continued

During the casting of aluminum, a concentration of the alloying elements occurs in the region which first solidifies. This region is the exterior surface of the ingot. Depth of this segregation varies according to the composition of the alloy. To assure homogeneous metal for rod stock fabrication, scalping procedures must be established for each alloy to assure complete removal of the segregation. Adequate scalping procedures had not been used on the X-8001 alloy. Thus the segregation was carried over into the finished impacts. Corrective action has been taken by the vendor.

C. Operating Plans

1. Third Line I & E Production

As scheduled, a third canning line of I & E production on each shift was started on February 24, 1958 replacing a canning line of solid production on each shift. The capacity of the bond and penetration test equipment was not sufficient to handle three lines of I & E production on each of two shifts. Therefore, it was necessary to schedule operation of the bond and penetration test equipment on the 12-8 shift. Operation of this shift for these testers is scheduled until another I & E bond and penetration tester is available and the combined reliability of the testers is sufficient to process I & E production on two shifts.

2. Cleaning Solution - Cap and Can Machine

Some better method of cleaning 1245 cans and X-8001 spires is desirable. A test was conducted in the 306 Semi-Works this month to compare Wyandotte "Altrex" cleaner and Duponal cleaner presently being used in the cap and can machines. The test indicated that "Altrex" performed quite well even with marginal vapor degreasing, whereas the surface of control pieces cleaned in Duponal with marginal degreasing was unsatisfactory.

As a result of an AlSi wetting test no major gains are expected in AlSi wetting ability. It also indicated that X-8001 components are much harder to wet in AlSi than 1245 components regardless of whether Duponal or Altrex is used in cleaning.

Further tests are planned for the 313 Building cap and can machines. Expected quality gains are fewer uncleanable cans, and less carbon in the canning furnaces with a resultant reduction in Braze Layer Contamination rejects.

3. Brittle Bonding

An intensified program for controlling brittle bonding is under way. A test was run to determine the effect that various bare core surface conditions have on brittle bonding. There are indications that a rough surface produces a finished fuel element with little or no brittle bonding. On the other hand there are indications that a polished surface produces fuel elements with extremely brittle bonding. Nearly all work in brittle bonding is planned with X-8001 components, as the problem appears to be more pronounced than with the 1245 components.

4. Dingot Uranium

During the month the testing of the variable hydrogen dingot uranium referred to in the January report was completed. Data analyzed to date leads to the following inference:

- a. Within the range of 2.0 to 5.3 ppm of hydrogen (in the as-cast dingot) there is no direct relationship between AlSi braze layer porosity and hydrogen content. This was contrary to expectations since high hydrogen ingot and dingot uranium have caused serious porosity problems in the past. Although a direct relationship (higher porosity with higher hydrogen) was not found, the reject rates for porosity type defects were higher than the reject rates for standard production metal.
- b. Dingot uranium heat treated in the (Nu-Sal) 50-50 mixture of potassium and sodium chloride was considerably better with respect to porosity than that heat treated in the lithium-potassium carbonate salt.
- c. Voids are exclusively porosity type rejects, but the bond test reject rate is a combination of porosity rejects and brittle bonding rejects. To show the effect of porosity only, the bond test rejects were autoradiographed and sorted according to the area covered by voids. If fuel elements with void areas less than 5 percent of the surface area are considered rejected for reasons other than true porosity, the analysis leads to the conclusion that Nu-Sal is a better heat treating medium than the lithium-potassium carbonate salt currently being used at FMPC. These conclusions were forwarded to FMPC for their consideration.

D. Employee Relations

Members of the Operation were treated for 22 medical treatment injuries for a frequency rate of 3.92. One of the medical treatment injuries was the result of a serious accident which occurred on February 10, 1958 in the 313 Building. The injured was using a fork lift truck to move a stack of five 200-hole type pallets. It is reported as Hanford Atomic Products Operation, Safety Investigation, Serious Accident FPD 58-1.

Frequency of exposures greater than 200 mrad per two-week badge period was 1.0. The frequency of exposures greater than 100 mrad per two-week badge period was 12.3.

II. PERSONNEL MATTERS

A.. Visits and Visitors

J.E. Bergman visited Mr. A. Klatz, Cliff Manufacturing Company, Wickliffe, Ohio on February 5, 1958 to discuss aluminum component production for new vendor evaluation. Mr. Bergman also discussed aluminum component quality problems with A.R. VanVorst of Aluminum Company of America, Edgewater, New Jersey and Mr. C.L. Kessler, Aluminum Company of America, Massena, New Jersey.

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B. Reports of Invention

Members of the Operation 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 February, 1958.

C. Meetings

Members of the Operation attended 25 staff meetings, 21 safety and security meetings and 6 information meetings.

D. Significant Reports Issued

1. Routine

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-54445 RD	Monthly Production and Inventory Report, FPD - Manufacturing Operation, January 1958	HP Kraemer	2-7-58
HW-54837	Monthly Report, Quality Control Operation, FPD, January 1958	KV Stave	2-3-58
HW-54864	Report of Uranium Accountability in Manufacturing Processes for the Quarter Ending 12/31/57	WG Tews	2-5-58
HW-54889	Uranium Quality Control Analytical Results	GB Hansen	2-10-58
HW-54939	Product Report, FPD, Manufacturing Month Ending January 31, 1958	HE Berg	2-12-58
HW-55015	Uranium Quality Control Analytical Results	GB Hansen	2-19-58

2. Non-Routine

HW-54671	Analytical Report on Lithium-Aluminum Target Material	GB Hansen	2-11-58
HW-54838	Reprocess Storage Lots	KE Carpenter	2-3-58
HW-54998	Uranium Core Requirements, FPD, March 1958 through September 1958	HE Berg	2-5-58

WM Mathis
Manager - Manufacturing

WM Mathis:RRC:rhs

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8" CANNING REJECTS
BREAKDOWN BY MAJOR CLASSIFICATIONS

LEGEND

SOLID
1957

1958

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PREPARED BY G.X. BEARD

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8" CANNING REJECTS
BREAKDOWN BY MAJOR CLASSIFICATIONS

LEGEND

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ENGINEERING OPERATION
February, 1958

VISITORS

<u>Name</u>	<u>Company</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
DW Lillie G Ehrlich	Research Laboratory Schenectady, N.Y.	HF Zuhr	2-24/ 2-27	Fuel element consultation
WO Stevens	WO Stevens Co., Seattle, Wn.	TW Gore	2-17/ 2-20	Consult on boiler facility installa- tion
RA Quadt	Hunter Douglas Corp. Riverside, Calif.	SM Gill	2-10	Discuss fuel jacket problems

TRIPS

<u>Name</u>	<u>Company Visited</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
HF Zuhr	USAEC-Wash., duPont, Wilmington	E Miller	2-10/ 2-13	Discuss fuel element fabricating tech- niques
	GE., Schenectady		2-17/ 2-19	" " "
RS Paul	ANL, Lemont, Ill.	WJ McGonnagle	2-6	Attend meeting of Executive group on nondestructive testing
CL Frederick	Minneapolis-Honeywell Seattle, Wn.	Gilbertson	2-21	Discuss ultrasonic problems
	Society for Nondestructive Testing		2-21	Attend meeting
FH Sherwood	GE X-Ray	MJ Zunick MA Edwards	2-19	Evaluation of TV X-Ray
	Phillips Electronics	CJ Woods	2-21	Evaluation of electronic fluoro- scope
JW Talbott	duPont, Savannah River	MH Wahl	2-18/ 2-21	Consult on fuel ele- ment problems and metallurgy program

TRIPS (cont'd.)

PH Reinker	duPont, Savannah River	MH Wahl	2-18/ 2-21	Attend FEDC meeting and dis- cuss metallurgy program
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PERSONNEL

<u>Name</u>	<u>Title</u>	<u>Nature of Change</u>	<u>Date</u>
<u>Advanced Engineering</u>			
RG Post	Engineer	Terminated	2-14
<u>Process Engineering</u>			
WH Shelton	Rot. Tech. Grad.	Rotated out	
<u>Drafting & Files</u>			
Kay H. McQueen	Draftsman	Hired in	2-6

PROCESS ENGINEERING

Regular Production Rupture Experience

One cored and three solid normal uranium fuel element ruptures occurred during the month. Two of the ruptures were classified as side hot spot and the remaining two had not been examined at the end of the month. Two of the ruptures were in KW reactor, one in KE reactor and one in DR Reactor. One of the side hot spot ruptures was a cored fuel element clad in an M-388, blunt nose tru-line contour jacket. In addition to the normal uranium ruptures, there were three E metal (0.94% U-235) ruptures, a solid, a cored and an I & E, and two "doe" metal (U-Al alloy) failures. Of the E metal failures, one (the cored) was a side hot spot and the other two had not been examined.

No failures have occurred to date in standard normal uranium I & E; two failures have occurred in six inch enriched I & E.

I & E Program

Charging of I & E in the C and K reactors continued on schedule. I & E loadings in C reactor are on a replacement basis with the central 1500 tubes loaded with I & E and being discharged at a variable goal of 800 MWD/T. Approximately 1420 of 2500 central tubes in KW reactor are loaded with I & E and also 1120 of 2500 central tubes in KE reactor. Beginning in March, all C size I & E fuel elements will be canned in 40 mil (vs 45 mil) can wall jackets. All enriched I & E for both C and K reactors will be canned in 38 mil can wall jackets.

The production test to irradiate old reactor I & E in D reactor in a "to rupture" test continued. Four tubes of I & E are at an exposure of 845 MWD/T; the solid controls are at an exposure of 790 MWD/T.

The I & E yield in the production facility was 72.7% for the month with yields in excess of 80% being attained on occasion. For the same period solid yields were 79.9%.

At the end of the month a second rupture occurred in a 6 inch enriched I & E at KE reactor at an exposure of 528 MWD/T. The piece has not been examined.

Dingot Program

Approximately 25 tons of low hydrogen dingot material (solid) was charged into DR reactor in February. A preliminary evaluation of data of 5 tubes of low hydrogen dingot irradiated to 475 MWD/T indicated that the warp and diameter changes did not vary significantly from standard ingot material irradiated to the same exposure.

Twenty charges each of dingot and ingot material in a "to rupture" test at DR reactor have reached exposures of 300 MWD/T.

M-388 Alloy and Blunt Nose Tru-line Program

The present in-reactor inventory of M-388 clad regular and blunt nose tru-line fuel elements is approximately as follows:

	M-388 Alloy		
	<u>Solid</u>	<u>Cored</u>	<u>Solid</u>
Regular	712 tubes	21 tubes	--
Blunt nose	516 tubes	700 tubes	772 tubes

In addition, about 910 tubes of M-388 clad I & E elements are charged in the reactors. On the order of 600 tubes of M-388 clad elements have been discharged to date, with five failures. Four of the failures have been classified as side hot spots and one as a typical cap failure. Examination of the first three failures in Radiometallurgy has failed to show any evidence of intergranular attack or any direct association between surface pitting and failure of the jackets.

Segregation of the nickel in narrow streaks, up to 6 mils in depth, along the surface of M-388 alloy cans has now been traced to inadequate scalping of the ingots after passage through the blooming mill in the vendors plant. About 2,000 cans free of segregation will be available for testing next month. Since the pitting attack of M-388 alloy observed during irradiation is quite random along the top of the columns in the downstream end of process tubes, it is doubtful that alloy segregation is directly connected with the pitting problem.

Arrangements have been made to procure 2,000 A2 alloy cans for evaluation. The chemical composition of this alloy is the same as M-388 with the exception of a

0.1% addition of titanium. Laboratory tests indicate this alloy is more resistant to intergranular and general corrosion attack. Resistance to pitting can only be determined by in-reactor tests.

Twelve tubes of M-388 alloy clad solid elements, charged in B reactor to evaluate the effects of reactor conditions on M-388 alloy pitting, have been exposed to 160 MWD/T. Two tubes are awaiting charging with thermocouple probes during the next outage.

HLO is conducting tests in two 1706 KE loops in M-388 clad elements duplicating previous H reactor test conditions which resulted in pitting attack of the alloy. The pH is being varied in one loop by decreasing the normal dichromate additions from 2 ppm to 1 ppm.

HLO has agreed to make a preliminary study of the properties of the oxide film on autoclaved M-388 clad fuel elements. This study will require one month, and should indicate whether a modification of the hardness or other characteristics of the oxide film may be warranted, for further development.

Electron Beam Welding

Approval was obtained from the AEC under the provisions of ATH-1-FPD 1958 for work with GE X-Ray Dept. for a feasibility study on the electron beam welding process. This proposed feasibility study will be to determine if aluminum clad fuel elements can be welded by an electron beam welding process with beam deflection and rotation rather than by rotating the work piece as is now the case. If this method is feasible, the optimum welding conditions are to be determined and the results demonstrated on sample assemblies. This feasibility study is not expected to be completed until the last of June, 1958.

An appropriation request for \$24,000 was issued and approved to build a vacuum electron beam welder in the 306 Bldg. Pilot Plant similar to the HLO welder to develop techniques and processes for welding various types of fuel elements and materials. The unit is designed with provisions to handle rods and tubes up to six feet long. The vacuum equipment and vacuum gages have been ordered. The high frequency equipment will be ordered when the GE X-Ray Dept. knows the approximate type and size unit required. The bell jar equipment and fuel element handling equipment are being designed and fabricated on site.

Welding tests were made on I & E lead dip canned fuel elements to compare AlSi mixing characteristics when using high frequency DC or AC current. Both methods had very good AlSi mixing characteristics. The vacuum electron beam welding process was found to be deficient for welding present lead dip elements since large gas voids are formed under the weld bead. This is due to small amounts of gas liberated from the brazing material during welding and at the welding pressure of 1×10^{-4} mm Hg a very small amount of gas will develop a large void.

Sylvania-Corning Hot Press Program

Out-of-reactor examination and evaluation of the SCNC hot press I & E fuel elements is essentially complete. During the month of March, it is expected that a decision

will be made as to whether the pieces are of adequate quality for an irradiation test. Of major concern at the present time is (1) non-uniform nickel plate on the core which promotes U-Al diffusion during hot pressing, and (2) inability to develop a weld technique that mixes the nickel in the cap-spire diffusion zone.

Process Technology

The following waivers of the Process Specifications were issued during February:

1. Waiver of requirement to bubble test lead-cadmium alloy elements until the Process Specifications are changed.
2. Waiver of F 202.5 to permit canning at lead temperatures of 612-614 C even if the AlSi temperature was higher than 605 C.
3. Waiver of F-203.1 to permit canning of 200 fuel elements with 12.0% silicon in the canning furnace.
4. Waiver of F 203.5 to permit canning of approximately 500 I & E fuel elements without cap vibration.
5. Waiver of F 203.1 to permit use of M-388 scrap on two canning lines.

The Nuclear Safety Specifications were revised to permit (1) the flooding of certain enriched arrays and (2) the use of used treater caustic to recover enriched cores (0.96% enrichment only).

A copper type of inclusion incident was encountered this month beginning on Feb. 21. The incident seems to be receding; however, there are still some fluctuations in reject rates. Preliminary examinations indicated that the as-received components could have been at fault. Fly ash does not seem to produce an inclusion but does result in particles imbedded in the can wall.

Approximately 12,000 revised C reactor 6 inch enriched I & E fuel elements were canned in the 313 building with a yield of 63% compared to 55% for normal 6 inch pieces. About 2,000 revised C reactor 8 inch pieces have been canned in the 306 Pilot Plant. As in the case of the 6 inch pieces, no unanswerable problems have been encountered and no production difficulties are anticipated. In both cases, the pieces can be assembled so that residual can walls in excess of 0.030 inch are possible to aid the non-destructive penetration tester.

About 60% of 306 Pilot Plant weld rejects are being recovered by rewelding to increase yields to autoclaves in the range of three to four per cent. A turret lathe is being set up by Manufacturing for refacing and rewelding weld rejects and it is expected that weld recovery will begin early in March.

Shorter canning cycles are being investigated to reduce fuel element costs. Initially a 40 second cycle and later a 30 second cycle to increase production by 12 and 50%, respectively, is being investigated.

MATERIALS ENGINEERING

Dingot Uranium - Canning Evaluation of Varying Hydrogen Analyses

About 4,000 solid dingot fuel element cores with hydrogen analyses from 2.0 to 5.3 ppm were canned in January to determine the effect of various hydrogen analyses and of the two different heat treating salts on the resulting AlSi braze layer porosity. Analysis of data from this test leads to the following conclusions:

1. Canned elements from dingot metal will contain less AlSi braze porosity if the parent rods are beta heat treated in Nu-Sal (50-50 mixture of potassium and sodium chlorides) than if heat treated in the currently used production lithium-potassium-carbonate salt bath.
2. Autoradiographs of bond test rejects of dingot pieces as compared to regular production ingot pieces showed only slightly more porosity with the Nu-Sal treated material but considerably greater porosity with the carbonate treated material.
3. For either heat treating salt there was no relationship found between the hydrogen analysis of the as-cast dingot and the braze porosity of the canned assembly.
4. Although not determined statistically, there appears to be no effect of one batch of material on any subsequent batch canned in the same molten bath.

Present plans are to supplement this test with a considerably larger quantity of dingot uranium heat treated in the two different salts. The larger amount of data obtained from routine canning should substantiate the above conclusions.

Dingot Uranium - Dissolving Rate Study

Samples of fine grained, course grained, high carbon, and low carbon dingot uranium have been submitted to HLO for determination of dissolving rates. Thus far the results, confirming previous studies, show that very little difference exists in the dissolving rate of the various types of dingot metal and in all cases the rate is of the order of 50% less than for ingot metal. Because of its possible adverse effect upon separations capacity, this problem is currently being studied by: (1) attempting to obtain the metallurgical properties in dingot metal which will increase its dissolution rate to that for ingot metal, and (2) attempting to find a catalyst or additive which will increase the dissolution to the desired rate.

Precision Casting of Uranium

The American Bearing Company has successfully cast 48 normal uranium washers at a time in a single core into a graphite stacked mold. The 48 washer product of one of these casts, after a surface grinding on the flat sides, have been received at HAPO. In general the appearance is good although some improved dimensional control may be necessary. Density determinations ranged from 18.95

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HW-55195

to 18.97 grams per cubic centimeter indicating that the as-cast washers contain little or no porosity or other casting defects. Ten of the washers are beta heat treated at Hanford to determine their dimensional stability. Five were quenched in water and the other five air cooled after removal from a 730 C molten salt bath. Preliminary results obtained indicate that the water quench produces the least dimensional change. Evaluation of these washers is continuing.

American Bearing has also made progress using a strip type of mold which is a multiple mold drawn underneath a standpipe of uranium with the mold cavities being filled in succession and wiped clean at the top. This principle has been adapted to a motor driven rotary mold which might be a possible production type of mechanism, and a prototype has been fabricated. It is anticipated that initial casts will be made in this prototype mold mechanism in the near future.

American Bearing is also working on the development of the casting of standard I & E uranium fuel cores. Several casts have been made and the current design is a 20-cavity mold casting 20 I & E fuel element cores simultaneously. Results appear promising, and it is anticipated that something in excess of 100 cast I & E cores will be delivered to Hanford by the end of March 1958.

Cold Extruded Uranium

Negotiations with Hunter Douglas Aluminum Corporation have been completed for the exploration of "cold" (i.e., 500-700 F) precision extrusion of uranium tubing of Hanford I & E size. The agreement calls for Hanford supplying extrusion blanks of uranium and Hunter Douglas supplying tooling and labor to actually do the exploratory work. It is anticipated that initial tests can be made in four to six weeks.

X-8001 Fuel Element Jackets

A pitting attack on the outside canned surface continues to be observed on a small percentage of X-8001 aluminum clad fuel elements after reactor exposure but as yet its cause is unknown. A light colored surface stripe found on most autoclave X-8001 clad fuel elements, which might conceivably be a contributing factor, has been determined to be due to heterogeneous aluminum nickel compound dispersion. The source of this non-uniformity has been determined and the condition corrected by the can supplier, but whether this will correct the pitting is problematical.

The pattern of occurrence in the appearance of these surface pits suggests a cavitation type of attack. Metallography has not shown intergranular attack. Laboratory tests by HLO have not succeeded in producing this type of attack experimentally outside of a reactor; however, it appears that altering the flow conditions within the reactor will produce the pitting. Study is continuing on the mechanism of this surface pitting attack.

Extrusion Cladding

Preliminary corrosion testing of fuel elements extrusion clad on the General Cable Corporation press gave encouraging results. Preparatory to flow tube and.

autoclave corrosion testing, 70 fuel elements were enclosed by fusion welding. Fifteen elements were autoclaved for 40 hours without a failure due to gross inclusions, a significant quality improvement compared to those clad last June wherein less than 50% survived 40 hours of autoclaving. Corrosion testing in 100 C process water in 314 Building flow tubes has been started. Accelerated corrosion tests have included progressive etching of four fuel elements in "Aluminex". Removal of 30-35 mils of the nominal 50-mil thick wall did not reveal any areas of selective attack or gross inclusions. These tests will be continued, including accelerated corrosion in an acid media.

Pilot Plant Development Activities

During the month the greater part of development activity in the Pilot Plant was directed to the canning of thinwall (.038") "C" size fuel elements. Various combinations of temperature and cycle times were tested to obtain maximum residual can wall thickness. A process has been established by reducing duplex and canning bath temperatures to give a residual wall thickness in excess of 30 mils. This is about the same wall thickness as obtained in using components of standard 45 mil can wall.

Tests were performed on reducing duplex preheat time in the canning cycle for I & E fuel elements. This will allow a canning cycle less than standard 45 seconds. Initial results showed that cores and components could be assembled with a core preheat as low as 10 seconds. This was made possible by raising duplex bath temperature and plugging the core holes with lead discs.

About 60 canned I & E fuel elements were recovered by immersion in the duplex bath for 70 seconds (hot bath recovery). These recovered uranium cores were immediately transferred to the canning furnace and recanned. Examination and testing of the re-canned fuel elements revealed no apparent quality inferiority. This technique has excellent promise as an economical replacement of chemical recovery methods.

TESTING METHODS

Fuel Element Testing

A non-contacting, fixed-position, probe for the external penetration test has been under evaluation. It was believed that this design would relieve the mechanical maintenance problems of the standard teflon tape contacting probe. Compensation for probe-to-surface spacing variations was obtained electronically. This probe demonstrated satisfactory performance with most production elements. However, periodic difficulties have been experienced from warped elements which caused the probe spacing changes to exceed the range of compensation. More recently, the fixed probe has shown a higher "false" reject incidence than the tape heat probe when testing thin-wall-can fuel elements. This results from some reduction in sensitivity due to removal from the surface. Consequently, the non-contacting probe is being abandoned for production use. The one in 313 was temporarily replaced by a tape head unit on a manual tank installed in series with the #1 I & E test station. The probe in 306 will be replaced as soon as possible.

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Fabrication of the first production model of the servo actuated probe (currently planned for the Project CG-713 testers) is being expedited. Because of the recent experience with thin wall elements, two alternate designs of contacting probes are also being developed. One will use a replaceable bearing shoe or surface, and the other a redesigned tape feed mechanism.

Bond-penetration testing 313 I & E production from three canning lines with two test stations requires 70% equipment availability. This has not yet been achieved and it has been necessary to backlog material and run the testers a third shift. About 50% of the downtime is charged to electronic troubles and about 45% to difficulties with the internal probe. Most of the electronic troubles are those of adjustment and alignment rather than outright component failure. Some improvement in this category should result from formal and informal training sessions for craft personnel which are underway or planned. Some further improvement should come from the new instruments being provided by Project CG-713. It is anticipated that some of this type downtime will be a continuing problem for some time because of the inherent difficulties in obtaining consistent laboratory-type high sensitivity and stability under production conditions. Further problems are created by the restrictions on work assignments of craft personnel.

The difficulties with the internal probe are mainly mechanical such as water leaks. Various minor design improvements are being made continually to resolve these defects. Additional experience in aligning and protecting the probes will also help.

Transformation testing the new "K" size I & E uranium cores has been investigated. It was decided to use the "C" size calibration standards in testing these as the dimension differences are small and generally self-cancelling. The slightly smaller signal through the "K" cores may result in a slightly lower reject rate.

Project CG-713 - 313 Building I & E Conversion

All phases of the work on the new Bond-Penetration testers are on schedule. The Testing Methods Control Panel will now be used with the mechanical assemblies designed by Manufacturing Engineering. Two more panels were ordered. This standardizes the control systems for all five new stations.

NPR and Category II Development

Eight NMI coextruded zircaloy clad uranium rods were nondestructively tested for cladding depth, cladding and core quality, and bonding. The greatest variations in instrument readings were found due to variations in outside diameter. This ranged from 627 to 631 mils. Cladding depth was indicated to vary from 27 to 33 mils. No evidence of poor bonding was found.

Twenty-two NMI rods with integral end closures were also examined. Half of these indicated a minimum cladding thickness below 26 mils. One indicated only 5 mils on the instrument. Some uncertainty exists in these readings due to the split condition of the ends of the uranium cores and the associated core tapering as revealed by radiography. The minimum cladding depth occurs over a small area and is difficult to locate manually. Some scanning system will be needed for inspecting larger quantities.

Four of the twenty-two pieces gave unbond signals with the 20 mc pulse-echo ultrasonic bondtester. The unbond signals occurred near the ends where the uranium tapers. No consistent results were obtained with the Lamb Wave bond tester due to the extreme criticality of aligning the crystals on the small diameter rods.

New Methods Development

Favorable results are being obtained with an "abrupt change" circuit for the prototype Ultrasonic Attenuation Tester. This detects an abrupt change from large grain size to small grain size; the condition found in partially transformed cores. This circuit will also allow testing over a large range of grain size with only one gain setting.

Work is underway to attempt correlating results from the prototype Sonic Orientation Resonance Test with X-ray diffraction grain orientation measurements. These data will be used to calculate the expected irradiation induced dimensional changes by the growth index method developed at SRP. If successful, this may allow a good evaluation of SORT without extensive and expensive reactor irradiations.

Test equipment is being assembled for the inductive thermometry bondtesting studies. In its present form the temperature sensing system has a sensitivity of about 1.75 millivolts per °F temperature change in aluminum. Calculations indicate that the testing for hot or cold spots must be done almost concurrently with the heating or cooling of the fuel element. An attempt will be made to operate the test probe in the field of the induction heater coil.

Several possible tests for the plutonium-aluminum alloy MTR fuel plates are being developed for the HLO Plutonium Metallurgy Operation. In the fabrication process, the core alloy may "dogbone"; that is, increase in thickness at the end from the nominal 20 mils to 25 or more mils. This could decrease the cladding thickness to less than the desired minimum. Experiments are in progress to evaluate methods for detecting "dogboning" based on direct counting of the plutonium gamma activity, and on through-transmission density-thickness measurements using the 26 Kev gammas from an americium-241 source. Both give promising results which are being compared with destructive examination data.

Hanford Test Reactor

Metal testing continued routinely. A number of special experiments were completed including neutron flux profiles in three special fuel capsules and reactivity measurements for IPD. Development testing of the prototype subcritical neutron flux monitor continued. During tests simultaneous with reactivity experiments, the prototype monitor detected one error in reactor operator calculations. It was also helpful in giving early indication of too slow, unuseable, reactor periods.

Communications

The two papers submitted by Testing Methods for the 1958 Geneva Conference have been combined with several other papers from other sites. R.S. Paul and

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HW-55195

W. J. McGonnagle of Argonne National Laboratory are preparing a survey on "New Developments in Nondestructive Testing Reactor Fuels" for written presentation at the Conference.

A meeting of the AEC Executive Committee on Nondestructive Testing was attended. Technical information was exchanged and plans were made for a classified review session in October, 1958. Attendance will be by invitation from Wash.-AEC to all interested AEC contractors. Discussions were also held concerning the Division of Reactor Development's intention to support a more active program of fundamental studies in nondestructive testing. A request for suggested studies and possible HAPO contributions are expected through appropriate channels.

RESEARCH & PROJECTS

Status of Projects

CG-713 - Conversion to I & E Lead Dip Fuel Elements: Detail design is complete. All major equipment is on order. A set of drawings has been furnished to Minor Construction with whom discussions are in progress regarding schedules and costs.

A purchase requisition has been issued for the complete mechanical portion of the automatic welding machine located in the welding laboratory.

CG-737 - Electric Pneumatic Control System - 313 Building: The project was physically complete on January 20, 1958, approximately 10 weeks ahead of the April 1, 1958, directive date. The physical completion which has been issued indicates an underrun of approximately \$6,900 on the authorized \$44,000.

The indicated underrun is attributed to design improvements resulting in savings in labor and material, and to the fact that anticipated off-shift premium time was avoided by careful coordination of the work.

CG-759 - Additional Steam Generating Facility - 300 Area: Preparation of Design Criteria and Specifications for a design and construction contract is in progress and scheduled to be issued in April.

W.O. Stevens and Company, Consulting Engineers of Seattle, Washington, provided consulting service during the month.

Construction funds have not yet been released by Washington, AEC.

CA-774 - 300 Area Water System Modifications: Gray & Osbourne, Architect-Engineers, are to complete design May 10, 1958, according to schedule approved by the AEC.

CG-787 - Sprinkler System - 313 Building Addition: Directive HW-451, dated February 21, 1958, authorizes \$49,000 for the project. Directive completion date is January 31, 1959. Preparation of criteria by GE for a design-construct contract scheduled to start one month after authorization and be completed two months after authorization.

WO-A59358 - Warehouse Space - FPD: Project proposal requesting funds for 6,400 square feet of storage space scheduled for routing during week ending March 15, 1958. Proposed structure would be due west of building 303-J adjacent to railroad track.

Research & Development

I. Irradiation Testing

A. Status of KER Test Facilities

Loop 1: The conversion from organic coolant is complete and the high temperature shakedown run is in progress. The power is being supplied by 4-rod clusters of stainless steel clad unbonded uranium. This material was charged under PT IP-144-A.

Two 7-rod clusters will be fabricated for charging in KER loop 1 late in March. Fuel Element Design Operation, HLO, has requested the PT. Flow testing of the charge will be required prior to charging. Fabrication is progressing satisfactorily. A triangle support will be used. Fuel element design is shown on Dwg. SK-3-7814. In the event that fabrication difficulties are encountered in the assembly of 7-rod clusters, 4-rod clusters will be substituted.

Loops 2, 3, & 4: These loops have been on low temperature process water during the month pending the repair of rear face dump valves. Loops 2 and 4 were charged with aluminum dummies. Loop 3 retained its charge of unbonded stainless steel clad 4-rod cluster elements operating on low temperature process water throughout the month; exposure of these fuel elements is now about 1100 MWD/T. Repair parts for the dump valves were received about 2-28-58. The loop 3 dump valve has been repaired and the loop is operating at 235 C outlet temperature. Loop 2 and 4 dump valves will be repaired at the next outage. One charge of fuel elements clad in aluminum alloy A-2 is ready for reactor testing. Expected charging date is March 17 in KER 4.

B. New KER Tubes

New zirconium tubes to permit increasing the pressure in KER loop 2, 3 and 4 are expected about July 1. These tubes are 2.020"-2.036" I.D. as compared to 2.100" I.D. for the present tubes. This diameter decrease gives a 28% reduction in outer annulus area for a 1.800" fuel element. This will give an intolerable pressure drop; therefore, calculations are in progress to determine the optimum size fuel element to use in these tubes.

II. Fuel Element Development

A. Aluminum Clad

Alloys A-2 and C-2 show only slight uniform corrosion after over 800 hours in 360° deionized autoclave water. Alloy A-2 continues to be the

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HW-55195

best alloy tested (including 8001-F and M-400). No dynamic testing data was obtained during the month. Elmo 6 and 7 are expected to start up the second week in March, after completing repairs.

Hot press canning difficulties have been eliminated. Intermetallic compounds of nickel and aluminum were causing weak, brittle bonds; shorter canning cycles reduced the size of the intermetallic layer and resulted in stronger bonds.

B. Zirconium Clad

Pre-irradiation testing of eight fuel rods was completed during the month.

Cladding depth was tested with a Dirmatron Tester and two layer metal gage. Results of the two tests were comparable and both indicated a minimum clad depth of .028".

General cladding integrity was tested with a 250 KC surface tester. The results of the test indicated no cladding imperfections, however, the sensitivity of the test is not advanced to the point that minor clad imperfections can be detected. H.L. Libby of Testing Methods Operation is presently procuring equipment to develop more extensive test reliability. The sensitivity of this test is not satisfactory at this time. Additional development is required.

Bond testing was done with 20 megacycle pulse echo equipment. No unbond indications were observed.

III. Rupture Testing

Fuel elements with washer nickel-plated all over and other elements with washers plated only on the rims were rupture tested in Elmo 4. Those elements with fully-plated washers had the better rupture properties in 280 C water. Ni-U diffusion at washer faces is not expected to be detrimental. However, because of reactivity losses associated with the greater weight of nickel, fully-plated washers are not being considered for reactor testing.

Two 7-rod clusters with one active rod were failed destructively in 290 C water in Elmo 4 loop. Test results were good. End cap failures were present on both rods, one resulting from a drilled defect hole and one from a crack in the weld zone resulting from fabrication difficulties. Both samples were brought to temperature and held at 290 C for two hours. Both were easily removed from the tube.

Corrosion of the pieces progressed about 2 inches from the point of origin. The clad split as oxidization progressed. The failed rod contacted both the process tube wall and adjacent dummy fuel rods. Rod-to-tube clearance was about .040" to .050" and rod-to-rod clearance about .055" to .065". This

failure was very encouraging. This is the first fuel element cladding that has restrained fuel material corrosion to the extent that would allow continued operation of the loop at these temperatures.

IV. Extrusion Press

With the help of the local AEC, we were able to locate three used extrusion presses. Letters will be sent to the owners of the three presses requesting information that may be of value to us in deciding whether or not we can use the presses for extrusion development.

V. Uranium Alloys

The alloying materials and components have been procured and the preparation of corrosion specimens is to begin this month. These alloys are: U-1 w/o Nb, U-0.5 w/o Mo, U-0.25 w/o Cr and U-3.8 w/o Si. It is planned to can these alloys by both the hot press and AlSi dip methods. These canned alloys will then be corrosion tested by defecting the jacket and testing under conditions similar to those that might exist for the NPR.

The corrosion testing of alloys will yield information which is applicable only to those specimens tested. Other sites have found that there is a variation in the corrosion rates, within limits, even of specimens from the same ingot.

VI. Restraint of Uranium

The high temperature operation of a zirconium jacketed uranium specimen is at the MTR site and is to be charged early in March. This specimen is for studying the effects of restraint of uranium at high temperature.

VII. Diffusion of Aluminum

A-2 aluminum alloy is being checked for diffusion rates. Couples will be made up consisting of A-2 alloy, nickel and uranium. There is some doubt as to what part the titanium in the aluminum will play in the diffusion of A-2 alloy/nickel/uranium couples.

DRAFTING & FILES

Major Jobs in Drafting

306 Building:	Automatic I & E Tester Probe - Assembly and details
313 Building:	Fully Automatic Welder
	Tool revisions
	Universal Buffer
	CG-713 - I & E Conversion - miscellaneous drawings

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HW-55195

384 Building: Cascade Coal Handling - Electrical as-built
CG-759 Boiler House Extension - scope drawings
Key Plan

Miscellaneous: NPR - Fuel Element Facilities - layout

Drawings Produced:

New	46
Revised	48
Large Charts	14
Small Charts	34
Miscellaneous	75

ADVANCED ENGINEERING

A study was made at the request of the AEC to determine the operating costs for increased production quantities of uranium dioxide elements clad in zirconium and stainless steel, and I & E elements, both normal and enriched, clad in aluminum. The quantities were above those presently forecast.

INVENTIONS

All Engineering Operation personnel 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 February, 1958, except as listed below. Such persons further advise that for the period therein covered by this report, notebook records, if any, in the course of their work have been examined for possible inventions or discoveries.

NONE

Manager - Engineering

PH Reinker:mbs

FINANCIAL OPERATION

FEBRUARY, 1958

AUDITS AND PROCEDURES

Auditing - A final review was made of the action taken on last years findings and suggestions by the GE Traveling Auditors. In addition, various internal controls were examined and several minor changes made to strengthen these controls.

An analysis was made of present cost and level of service received from certain CEO components. Based on estimated future requirements, appropriate recommendations were made for adjustments in the amount of service to be provided during FY 1959.

A revised audit schedule covering the period through July 31, 1958 was prepared and forwarded to Contract Accounting for consolidation and transmittal to the Commission.

Office Procedures - Arrangements were completed for simplifying preparation and distribution of cumulative maintenance overtime hours paid reports. Duplication of work in separately listing all overtime hours each week and independently verifying the IBM prepared reports was eliminated.

A study was made of possible advantages of installing an IBM Transceiver in the 300 Area for direct transmission of input data to Data Processing Operation. The conclusion of both FPD and HLO Office Procedures, was that such equipment would not be economically advantageous at this time.

Other procedures activities included:

1. Assistance in selecting and formalizing several individual projects as part of the work simplification course.
2. Completion of preparations for daily recording of Area Maintenance employees' time distribution, effective March 3, 1958.
3. Determination of procedures for providing supervisors and managers with absence information helpful in reducing absenteeism.
4. Study of retention requirements for accounting records and evaluation of a proposed accounting record classification and disposal schedule.

GENERAL ACCOUNTING OPERATION

Initial planning for periodic meetings of Managers, General Accounting has been completed. The first meeting is scheduled for March 19, 1958 with FPD acting as host.

Mechanization of work in regard to Government Cost Transfers was accomplished by RUO in February. While advantages were primarily realized by RUO, benefits carried through to FPD. Journalization details are now supplied automatically by IBM tabulations and billing is received once monthly. The old method required

GENERAL ACCOUNTING OPERATION (Continued)

manual accumulation of journalization details from eight to ten billings per month.

Responsibility for preparation of contract checks on payroll deductions was transferred to Personnel Accounting effective with March business.

On February 10, 1958, major domestic airlines increased fares 4% plus \$1.00 per ticket. Based on calendar year 1957 activity, increase to annual costs will be \$2,250.

Travel and living expenses reimbursed by the Commission totaled \$3,527. February activity compared with January is summarized below:

	<u>February</u>	<u>January</u>	<u>Increase or (Decrease) Over January</u>
Travel advances to employees:			
Balance at beginning of month	\$ 4 668	\$2 022	\$ 2 646
Current month charges	5 824	6 198	(374)
	<u>10 492</u>	<u>8 220</u>	<u>2 272</u>
Less:			
Expenses accounted for	3 878	2 045	1 833
Advances refunded	1 163	1 507	(344)
	<u>5 041</u>	<u>3 552</u>	<u>1 489</u>
Balance at end of month	<u>\$ 5 451</u>	<u>\$4 668</u>	<u>\$ 783</u>
Outstanding travel advances:			
Current	\$ 5 451	\$4 668	\$ 783
Outstanding over 15 days	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
	<u>\$ 5 451</u>	<u>\$4 668</u>	<u>\$ 783</u>
Number of expense reports submitted	17	7	10
Number of cash advances	12	14	(2)

New OPGs issued in February were A 1.8 FPD Objectives, A 1.3 Alphabetical Index, and B 2.4 Maintenance and Power Operation. In addition, six Guides were revised.

Programs and goals outlined last September for improvement of the OPG system have now been accomplished; however, continued improvement is still a long range goal. Notable phases of the program were:

1. Formation of an OPG Review Council. (Completed January 8)
2. Conversion to a new numbering system and merging of Advices with OPGs. (Completed January 31)
3. Centralized OPG books in key locations. (Completed February 5)
4. Distribution of new binders and tabs. (Completed February 6)

GENERAL ACCOUNTING OPERATION (Continued)

5. Publication of an alphabetical index. (Completed February 19)
6. Combination of distribution lists for OPGs and Advices and supplying needed copies to complete all books. (Completed February 27)

A review was made of HAPO-wide guides to determine that all have been properly implemented within the FPD System. Results indicate our system is in compliance with all but two, which are currently under consideration.

At the present time the initial issuance of OPGs and Advices is 94% complete. From a total of 190 Guides only 11 remain to be issued. Efforts are being concentrated on completion of these Guides.

AEC approval was obtained on Contract Modification No. 15 concerning provision for supplying employees with overtime meals. Advice C 15.5.1 Overtime Meals is being revised accordingly.

Physical inventory of uninstalled, cataloged equipment was started January 13, 1958 and completed as scheduled on February 3, 1958. A total of 1,221 items were inventoried having an acquisition cost of \$727,778. Reconciliation of inventory results with property accounts is generally complete. Four portable instruments with a total valuation of \$870 have been determined to be missing. Information available indicates one was disposed of without documentation and three were excessed. All missing equipment will be retired from record by means of Property Disposal Request and Missing Property Report. Twenty-eight items located with a total valuation of \$7,521 were not on property accounting records. These will be picked up by an inventory adjustment.

A meeting of HAPO Plant and Property Accounting Specialists was held to review appropriate portions of the FPD Plant Record Unit Catalog for concurrence and standardization. Necessary changes were made and the catalog is now in reproduction. Issuance is expected prior to April 1, 1958.

The annual review of depreciation reserves completed during the month has revealed that reserves are inadequate and require an adjustment of \$388,279. Major factors contributing to this situation were the undepreciated portion of capital assets retired prior to the end of estimated useful life \$349,719; current additions to systems requiring use of the in-service date established for the whole system \$17,080; and, miscellaneous minor adjustments of \$21,480. An adjusting entry has been made charging "Depreciation Reserve Adjustment", an account set up specifically for this purpose to be closed to the AEC at the end of the fiscal year.

During the month eight appropriation requests totaling \$103,208 were processed, of which four, totaling \$53,748 have been approved. Increased commitment activity has completely utilized equipment funds assigned to both Engineering and Maintenance and Power Operations. The Manufacturing Operation still has \$70,000 available for commitment.

Project CG-787 Installation of Automatic Fire Sprinkler Protection - 313 Building Addition, was approved. The work authority was received February 26, 1958, covering authority to manage the project and to incur costs of \$49,000.

MEASUREMENTS

A study of the area of functional measures for the Manufacturing Operation was started in February to develop better measurements from which minimum performance levels can be derived. The first part of the study is concerned with the use of contributed value as a base for determining performance levels.

Final draft of the Financial Operation's programs and goals for calendar year 1958 has been completed.

Charts covering the Department's 1958 performance, 1958 goals, and other major activities were prepared. Charts are available for use by all Operations of the Department.

PERSONNEL ACCOUNTING OPERATION

Consumer Price Index for January, 1958 rose to 122.3%, an increase of .7% over the preceding month. Should the Index remain at this level through March or fail to show a decline of at least .6%, the "adder" factor to nonexempt salaries will be increased by another .59% in April. A slight increase of .1% in the Index in March will result in the "adder" factor being increased by 1.18% in April.

Considerable effort was expended during the month revising data processing procedures and reports in order to effect further mechanization. Some of the changes instituted are:

1. Initial steps were taken to utilize machine preparation of Savings and Stock Bonus Plan purchase lists. A block of custody numbers were received to use for individual employee accounts.
2. Arrangements were made to discontinue the weekly payroll numerical force report. The weekly nonexempt force report segregating employees by organizational component will be revised to include information formerly shown on the discontinued report. Provision was made to include benefit plan participation statistics, thus eliminating manual preparation of participation reports and permitting more effective utilization of information.
3. The weekly listing of absence hours was discontinued since experience with the recently revised payroll register disclosed that this report had lost its utility value.
4. The weekly adjustments to earnings report was discontinued since adjustments are now detailed on the payroll register.
5. The weekly listing of vacation payments was discontinued since information is shown on the payroll register.
6. A new report was initiated to provide a listing of insurance deductions not made, thus eliminating manual check of the payroll register for these items.
7. Arrangements were made for Data Processing to combine FPD and HLO weekly time cards and sort in numerical sequence by time clock location. This eliminates manual sorting and facilitates placing

PERSONNEL ACCOUNTING OPERATION (Continued)

cards in racks. The latter responsibility will be equally shared by Personnel Accounting representatives of FPD and HLO.

Improvements cited above largely represent a consolidation of gains made possible by adoption of the new payroll register. Two months experience has proven this method to be a very successful venture and has created additional possibilities for improvement. The full potential of electronic data processing of payroll work has not yet been realized. This particular incident serves to illustrate some of the decided advantages to be gained.

Five additional employees authorized mailing salary checks to out-of-town banks, making a total of nineteen nonexempt and seven exempt employees taking advantages of this service.

PRODUCT COST OPERATION

Procedures for the annual physical inventory of coal and the semi-annual physical inventory of special materials were written and distributed during the month. Coal survey and physical count of special materials are to be taken on the morning of March 31, 1958. Procedures have been discussed with personnel directly responsible for preparation and completion of physical inventories.

Returnable containers received at HAPO prior to July 1, 1957, and delivered to FPD were reviewed at the request of Relations and Utilities Operation. All containers were either physically located or transfers traced to other Operations.

The February balance of process materials exceeded the million-dollar mark for the first time since reorganization. The Fuels Preparation Department's value of such material at reorganization was approximately \$500,000.

Special studies were made on Employee Relations and Industrial Medical assessments to Fuels Preparation Department, Irradiation Processing Department, and Chemical Processing Department for comparison of percapita cost.

Budget estimates are being prepared for two production programs for fiscal years 1959 and 1960. The difference in product mix, personnel, and dollar requirements needed for the two programs necessitates preparation of separate data for each program. The budget is progressing on schedule despite additional effort required on the second program. This was accomplished from better clerical utilization made possible by centralizing the location of Product Cost Personnel

Preliminary estimates were prepared for additional labor and material costs required to accomplish the production schedule in Case I as compared to Case II. The production estimate in Case I, higher by approximately 23% in FY 1959 and 24% in FY 1960 than Case II, requires an increase in personnel of about 7% and additional funds of 18% in FY 1959 or 19% in FY 1960.

A study was made to bring to management's attention the need for a procedure whereby the Department can recover a portion of the costs related to the manufacture of product models which become obsolete. Since inactivity in these inventories is generally due to changes in reactor requirements, it is felt that IPD should bear a portion, if not all, of the costs which have accrued

PRODUCT COST OPERATION (Continued)

against these products. At the present time out-of-pocket dollar loss to FPD is approximately \$50,000 and consists of operating labor, materials, consumed, and a supply of obsolete components; however, if SS material with no scrap value is considered, the dollar loss approximates \$500,000. As the variety of models continues to increase, it is reasonable to assume that obsolescence will increase and the need for an established procedure will become increasingly important.

Manager - Finance

WS Roe:mh

MAINTENANCE AND POWER OPERATION

FEBRUARY 1958

GENERAL

Productive Maintenance Program

Outstanding orders as of 1/31	150
Orders issued in February	65
Orders completed in February	71
Outstanding orders as of 2/28	90

There were six cost reductions submitted during the month. Total savings achieved were \$12,755. This brings the total quarterly budget realization to 64 per cent. Total realization for the quarter is \$15,289.

As a result of the new traffic flow pattern in the parking lot, a patrolman has been assigned to control traffic, at the end of day shift, on the cross walk to the south parking lot. This patrolman was considered necessary to protect pedestrians as a result of the increased vehicle traffic at this point.

Office personnel moves made during the month were: Product Cost Operation was consolidated in the 3707-A Building. Personnel Development and Communications moved from the 760 Building to the 3706 Building. Specialist, Technical Personnel Placement moved from the 760 Building to the 3703 Building. The Mail Room was relocated from Room 111 to Room 307 in the 3706 Building.

A safety rail was installed on the 313 Building roof. A platform hand rail on the 313 Building roof was also raised. These changes serve to increase safety in this location.

Interior painting of the 3703 Building was completed.

The third Maintenance Management Information Meeting was held. Subject of this meeting was Craft Training. The meeting was well attended by representatives of the various HAPO components and considerable interest was demonstrated in this subject.

AREA MAINTENANCE

Duplicating

<u>Process</u>	<u>No. of Orders Processed</u>	<u>No. of Copies Made</u>
Multilith	809	383,513
Verifax	103	2,050
Ozalid	62	2,572

There were 12 Formal Reports completed, consisting of 4,409 copies - 198,104 pages.

Mail Service

The Reproduction Operation of CEO has discontinued distribution of blueprints. Blueprints will now be distributed through regular plant mail. CEO personnel will continue to transport tracings.

General Maintenance

A new experimental ion exchange unit for the purification of the plutonium product stream at Purex was fabricated for the 321 Building. This unit has proved extremely satisfactory. Impurities have been reduced from 14,000 parts per million to less than 50 parts per million.

Fabrication of an experimental dissolver coil of heavy walled titanium tubing was completed. The coil was bent by carefully heating the material to the proper temperature for bending. Temperature control, accomplished by using temperature crayons, was extremely critical to insure that the material would reach the temperature at which it becomes brittle. The dissolver will be used for experimental work associated with the dissolving of stainless steel jacketed fuel elements. This work is a part of the Darex Project.

Exhaust ducts from the component parts cleaning tanks and the caustic penetrator in the 313 Building were replaced. This replacement was required to permit the relocation of these units. The exhaust duct and blower housing of the No. 2 pickle machine were replaced with stainless steel. This replacement was required as a result of corrosion to the former galvanized ducts due to acid fumes.

Twenty-five 300 hole fuel element pallets were converted for use with 4" material rather than 8" material.

INSTRUMENT AND ELECTRICAL MAINTENANCE

The Portable Shop repaired a total of 1,025 radiation detection instruments. Average time per instrument was 1.31 man-hours. Unit costs for the repair of portable instruments is expected to increase due to the elimination of trainees in this shop. Trainees are being replaced by Instrument Technicians as the result of ROFs in other components.

The amount of portable test meter repair and calibration work increased by a factor of 2 over the previous month. This is considered to be the result of the recent brochure circulated HAP0-wide on the services provided by this component.

The 300 Area evacuation system was routinely tested on the first Monday of the month and functioned normally. Minor repairs to the siren on the 313 Building were required to obtain required speed to produce the noise level desired.

Considerable wiring, conduit, and unused electrical equipment were removed from the 321 Building to provide for anticipated expansions.

Two special low noise pre-amplifiers were fabricated for the Radiological Physics group in the 325 Building. These amplifiers were based on designs obtained from Oak Ridge.

A special 20 amp circuit was installed in the counting room of the 325 Building. This circuit was required for the installation of a new 256 Channel Analyzer.

A 100 Channel Analyzer was received by the Irradiation Testing Group, 326 Building. This instrument was manufactured by the Technical Measurements Group. This is a digital rather than an analog analyzer. Installation of the instrument and its associated equipment required 100 man-hours. The long installation time required for this instrument points up a problem peculiar to this location. The lack of standardization and uniformity among the types of instruments and other equipment used results in excessive requirements for specialists to service the equipment. If equipment similar to the recent 256 Channel Analyzer had been procured, installation time would have been reduced by at least 25 per cent.

The installation of bias switches in 33 Samson meters was completed.

POWER

<u>Statistics</u>	<u>February</u>	<u>January</u>
Average Steam Generated (M lbs/hr)	52.1	61.6
Maximum Steam Generated (M lbs/hr)	70.0	83.0
Total Steam Generated (M lbs)	34,999	45,842
Coal Consumed (Tons)	2,288	3,074
Evaporation Rate (Steam/#Coal)	7.65	7.46
Efficiency - Actual	62.7	59.8
" - Theoretical	66.7	67.5
No. Boilers on 2 3 2 3 2 3 2		
Date of Change 1 2 8 11 13 15 16		
Sanitary Water from 3000 Area (Million Gallons)	56.1	63.5
Total Water from 3000 Area, Average Rate (GPM)	1,392	1,422
Soft Water from #3 and #4 Wells (Million Gallons)	10.7	11.9
Water from #2 Well (M Gallons)	.30	.30
Peak Water Consumption for 24 Hours (Million Gallons)	2.3	2.3

As in the previous month, operations were uneventful with no major operating problems. Continued mild weather again permitted several of the boilers to remain idle. However, all units were available for service during the month.

The 200,000 gallon sanitary water ground storage reservoir was drained and flushed to remove accumulated sand. Prior to this clean-up, sand in the water in the 313 and 306 Buildings had resulted in operating problems. The possible elimination of sand is being studied as a part of the sanitary water supply expansion project. If the elimination of sand cannot be achieved in this project, it is proposed to investigate the possibility of installing sand traps in various critical locations.

The IBM machines in certain rooms in the 3760 Building have resulted in excessive heat in these locations. Considerable air balance work has been required to correct the situation.

Corroded couplings between hood doors and exhaust duct controls in the 329 Building were replaced with new couplings fabricated of aluminum.

The 3/4" slot grate bars in the coal crusher were replaced with 1" bars. The coal now has less "fines" following crushing, which results in improved operation of the coal handling equipment, stokers and boilers.

PLANT ENGINEERING

There were 34 training classes held for Craftsmen of HLO and FPD. In addition, 10 training classes for janitorial personnel of FPD were held. This represents 396 man-hours of craft training and 144 man-hours of janitor training, or a total of 530 hours of training. The janitorial training program is 50 per cent complete. Improvement in morale and increased cleanliness indicates good results are being obtained from the program.

In support of the Research and Projects Operation, Steam Generation and Use Estimates were prepared for CY-1958, 1959 and 1960. Monthly estimates and peak load by buildings, both heating and process, were also calculated for CY-1960. This data was collected as the result of a request for information from AEC, Washington. The answers to several other minor questions were provided to Research and Projects for forwarding to AEC in Washington.

Information concerning the maintenance equipment and facilities required in PRTR and PFPP were forwarded to the responsible design groups. This information was provided to implement the project financing of this equipment.

The survey of the Instrument Spare Parts was completed. Over 4,000 items valued at over \$400,000 were checked. Of the original 450 line items assigned to FPD, 100 will be sent to Excess, 200 transferred to General Supplies and 150 left in Spare Parts. This will reduce the financial responsibility of FPD from \$36,000 to \$8,000.

Special Reports Issued

<u>Cathodic Protection for 300 Area Elevated Water Tanks</u>	by T. D. Gibbs
<u>300 Area Steam Forecast by Months from June 1958 through June 1959</u>	by T. H. Whatley
<u>300 Area Peak Steam Requirements for Space Heating and Process Forecast by Month from June 1958 through June 1959</u>	by T. H. Whatley
<u>300 Area Steam, Actual and Forecast Requirements by Building by Month for Space Heating and Process Steam from Jan. 1959 through Dec. 1960</u>	by T. H. Whatley
<u>300 Area Condensate Corrosion</u>	by O. M. Lyso
<u>PRTR Maintenance Equipment and Facilities</u>	by R. G. James
<u>PFPP Maintenance Equipment and Facilities</u>	by R. G. James

FIRE PROTECTION

<u>Fire Responses</u>		<u>Loss</u>
HAPO	1	None
Construction	0	--
Private	0	--
Outer Area	0	--

There were no significant fires reported.

INVENTIONS

All personnel of the Operation engaged in work which might lead to inventions and discoveries advised that, to the best of their knowledge, none were made in the course of work during February 1958.

The swaged thermocouples are being evaluated by the Instrument Department, West Lynn, Massachusetts. They are to evaluate such properties as Stability at Elevated Temperatures, Time Response, and Reproducibility.

Result of these tests have not been received to date.

SAFETY, SECURITY AND RADIATION EXPERIENCE

Medical Treatment Injuries	22
Frequency Rate	5.26
Disabling Injuries	0
Near Serious Accidents	0

There were no radiation overexposure cases reported.

There were no security violations reported.

MEETINGS

Round Table-Staff	24
Safety and Security	31
Information	10

Manager
Maintenance and Power Operation

E. Hilgeman:JPF:mkm

EMPLOYEE RELATIONS OPERATION
February, 1958

SALARY AND WAGE ADMINISTRATION

A revised edition of the Position Evaluation Guide, transmitted to Relations and Utilities Salary and Wage Administration Operation, is being held pending concurrence by Employee Relations managers and Level 2 managers at HAPO.

Forms recording final approval of salary review actions effective in the second quarter 1958 were distributed to the field.

Documents for establishment of a new position, Supervisor, Maintenance Engineering, have been transmitted for the General Manager's approval. The position Forman, Transportation was deleted effective February 1, 1958.

An analysis of First-Line Supervisory Pay Differentials was completed. The report shows substantial improvement of the supervisors' differentials with respect to the salaries of their crews. A forecast of the pattern of differentials for 1958 indicates still greater improvement will be experienced.

A representative of the AEC began an audit of the FPD exempt salary records on February 19, 1958.

The exempt personnel keysort system was demonstrated to representatives of all other HAPO Salary and Wage groups.

In an effort to improve the nonexempt job audit procedure, two nonexempt clerical jobs were audited by actual interviews with the persons performing the work. Although additional study is required, this practice appears to have significant benefits.

A .59% cost of living adjustment was implemented for FPD nonexempt employees effective January 27, 1958.

Wage rate comparisons of manual jobs at HAPO with AEC industries were prepared from results published in the Goodyear Atomic Corporation wage survey.

A request that prompt notification of the Consumer Price Index and the date the Index is issued from Employee Compensation Service was favorably acted upon and pointed up to ECS a communication void. In the future, we will be able to notify our employees of the effect in terms of cost of living adjustment, if any, within a day or two after the CPI appears in the newspaper.

Revision of the Change of Employee Payroll Status forms--both exempt and nonexempt--has been started. These forms have not been revised in accordance with changes in procedures and organization, and therefore are resulting in the need for correcting minor inaccuracies in nomenclature and other information.

PERSONNEL DEVELOPMENT

Four Personnel Development programs were concluded, initiated or in progress during the month.

1. Professional Business Management I course sessions 3 through 6 were completed during the month by 16 participants.
2. Four FPD participants completed the PMS&L program presented by R&U and one Fuels' employee completed the course by making up the final three sessions from a previous PMS&L presentation.
3. Thirteen employees participated in the Written Communication course during the month.
4. The 18 Work Simplification participants completed the third of eight cycles of meetings. Each sub-group of 3 participants has reported at least one project of considerable economic value to which work simplification techniques will be applied.

Two new pages for insertion by each exempt employee in his personal copy of the "Self Development Brochure" were developed and distributed via Department Managers. The material re-defines the benefits and intent of the Exempt Personnel Development Review Program.

The Non-Exempt Personnel Development program and its attendant interview was implemented for 1958 with a letter and new worksheet sent to appropriate supervisors. The worksheet suggests to the supervisor additional use of the portion: "What improvements can be made".

One new Technical Graduate joined the Department during the month and one completed his assignment, leaving a total of 6 Technical Graduates in FPD rotational assignments at month's end.

COMMUNICATION

Final arrangements were made for the first of two General Manager's meetings with FPD employees, and the first meeting was held February 27 starting at 7:30 p.m. in the Jason Lee School auditorium. Both employees and their spouses were invited to attend, and 167 persons attended the February 27 presentation. The second presentation was scheduled for March 3.

Four Management News Bulletins were issued during the month. The January 31 "P&ER News" issue on "What Makes Jobs" was distributed with the February 20 issue. The December 31, 1957 P&ER News entitled "Better Defense, Better Living - or Both?" was distributed to Level 4 Management.

Two FPD Newsletter issues were prepared and distributed to all employees. One priority message, concerning injury to a fork lift operator, was disseminated.

Recognition of a Fuels' Engineer in the February 21 GE News issue was arranged in connection with National Engineers Week. In addition, a dinner meeting at which Senator Jackson spoke, sponsored by the local professional societies,

was publicized.

Other internal communication activities during the month included preparation and distribution of the Safety Topic of the month, editing a duplicating services booklet, and completing final phases of the improved janitorial services program.

A total of 155 GE News column inches was devoted during the month to Fuels' activities and employees. Of this number, 55 column inches were devoted to routine items, and 100 column inches to planned communication in support of Department programs. This represents an average of more than one-half GE News page per issue.

Two speeches by Fuels' employees before local groups were cleared and presented. Two other speeches were cleared for presentation in the near future, and a third was submitted to Public Communication for approval.

A Technical paper prepared by two Fuels' employees entitled "Relationships Between Weld Power Sources and Aluminum Weld Quality in Aluminum-Silicon-Bonded Fuel Elements" was selected for presentation during the October, 1958 meeting of the AEC Welding Committee.

Assistance was provided to Public Communication in arranging for the two student tours of Hanford which included the FPD 305 Test Reactor.

UNION RELATIONS

On February 10, 1958, HAMTC advised General Electric of their intention to proceed to immediate arbitration on two FPD cases, namely, R. W. James and P. A. Lynch. The former involved reinstatement of an employee in the Chemical Workers seniority group who had formerly been promoted to a position outside the bargaining unit. The arbitrability question is "What constitutes a promotion?". W. M. Mathis has been selected as the Company member of the arbitration committee and Professor Paul L. Kleinsorge of the University of Oregon will probably be the third party arbitrator since both the Company and the Council have agreed on this selection.

The Company requested that the Council clarify the issues in the P. A. Lynch case as well as advising the Company the relief which the Council is seeking. The Council advised that Article VII, Section 11 of the contract pertaining to the "propriety of the Company's contracting the particular work out while failing to maintain a stabilized work force of maintenance craftsmen" is subject to arbitrability. The Company was not advised of the relief which the Council seeks. However, on the surface it appears that there are no damages so that it is probably advisable to proceed with immediate arbitration.

The Council notified the Company of intent to arbitrate the D. J. Franklin case which concerned a shift supervisor returning to the Operating Engineers seniority group. The sole question concerns whether this employee should have been returned as a Miscellaneous Operator or a Junior Power Operator.

Negotiations are under way to obtain Council concurrence toward establishment of a special graveyard shift in the Finishing Operation.

The contractual time limit for the Council to request arbitration of the Instrument Worker situation has now expired. It appears that the Council will take no further action in this matter.

A meeting was held with the Chemical Workers concerning overtime distribution and it was agreed that the Company would submit a written overtime distribution procedure to the Council for their review.

Grievance Statistics:

The following is a report of grievance activity:

	<u>Unit</u>	<u>Nonunit</u>
Received this month	8	0
Received since 1/1/58	18	1
Step I		
Answer unsatisfactory	7	0
Answer satisfactory	1	0
*Pending time limit	15	0
Settled this month	6	
Step II		
Discussed this month	7	0
**Pending time limit	6	0
Settled this month	4	0

*Includes Step I grievances which Council indicated desire to discuss at Step II but not scheduled, are considered settled at Step I at two months.

**Step II grievances which Council indicated their intention to arbitrate but no further action taken, are shown settled at Step II after three months.

Subject of February Grievances:
(8 Total)

	<u>Mfg.</u> <u>Oper.</u>	<u>Eng.</u> <u>Oper.</u>	<u>Maint. &</u> <u>Power Oper.</u>	<u>Emp.</u> <u>Rel.</u>	<u>Fin.</u> <u>Oper.</u>
Jurisdiction			6		
Overtime	2				

Subject of Grievances for 1958:
(19 Total)

		<u>Nonunit</u>
Jurisdiction	2	1
Seniority		2
Absence	1	
Overtime	2	

PERSONNEL PRACTICES

Technical Personnel Placement

During the weeks of 2-10-58 and 2-17-58, F. E. Jochen visited the campuses of California State Polytechnic College, California Institute of Technology, the University of California at Los Angeles and the University of Southern California as the HAPO representative on the General Electric recruiting team for the purpose of interviewing and recruiting BS/MS candidates in Engineering and Science. As a result of the visit, he recommended for consideration, four of the total people interviewed for the HAPO-P.D.P., eight for Summer Program, three for Engineering and Science Program, one for the Manufacturing Training Program, one for the Technical Marketing Program and five for Direct Placement consideration.

At the request of R. W. McCullough, Personnel Development Programs, Relations and Utilities Operation, F. E. Jochen issued on 2-5-58 a revised report covering the Fuels Preparation Department's Forecasted Requirements for Permanent Assignments for the Personnel Development Program covering third and fourth quarters of FY 1958, FY 1959 and first and second quarters of FY 1960.

Received referral of four exempt people on R.O.F. status from the Construction Engineering Operation for consideration for placement in the Fuels Preparation Department. Construction Engineering Operation notified that Fuels Preparation Department had no current openings for which they could be considered.

The Light Military Electronics Equipment Department, Johnson City, New York, reported no openings for which they could consider the four exempt personnel of the Fuels Preparation Department referred to them for consideration in filling their reported Engineering openings.

The Chemical Processing Department notified the Fuels Preparation Department that the opening for Foreman- Machine Shop, for which Fuels Preparation Department had submitted a candidate for consideration, would be filled by the selected candidate Dave Taylor from the Hanford Laboratories Operation, effective March 17, 1958.

Received referral of seven exempt people on R.O.F. status from the Irradiation Processing Department for consideration in placement in the Fuels Preparation Department. These have been referred to the Level 3 components of the Fuels Preparation Department for consideration.

Experienced and BS/MS Recruiting (1-1-58 through 2-28-58)

	Cases Con- sidered FPD	INVITATIONS - FPD				OFFERS - FPD			On The
		Ext.	Visited	To Vis.	Open	Ext.	Acc.	Open	FPD Roll
<u>Engineering</u>									
Chemical	1	0	0	0	0	0	0	0	0
Electrical	2	0	0	0	0	1	1	0	0
Mechanical	1	0	0	0	0	1	0	1	0
Industrial	1	0	0	0	0	0	0	0	0
Metallurgical	0	0	0	0	0	0	0	0	0
Civil	0	0	0	0	0	0	0	0	0
Geological	0	0	0	0	0	0	0	0	0
<u>Science</u>									
Chemistry	1	0	0	0	0	0	0	0	0
Physics	1	0	0	0	0	0	0	0	0
Math-Stat.	0	0	0	0	0	0	0	0	0
<u>Other</u>	17	0	0	0	0	0	0	0	0
	24	0	0	0	0	2	1	1	0

PhD Recruiting

D. C. Worlton of the Atomic Products Equipment Department at San Jose has accepted the Fuels Preparation Department offer, with transfer date tentatively set as May 1, 1958. Although Mr. Worlton is not a PhD, he will satisfy the opening for PhD - Physicist or Electrical Engineer in the Testing Methods Operation.

	F P D			F P D	
	February	1958 To Date		February	1958 To Date
Cases Considered:	5	35	Offers Extended:	0	*1
Interviewed:	0	0	Accepted Offers:	0	0
To Be Interviewed:	0	-	On The Roll:	0	0

* - Carry over of one case from 1957.

Terminations and Transfers, Technical and/or Exempt personnel

There were two employees who terminated employment from the Fuels Preparation Department exempt roll during the month of February. R. G. Post and H. E. Carey terminated employment to accept assignments outside the Company.

	February	1958 To Date
Transfers Considered:	-	*27
Transfers Completed:	1	3
Closed Cases:	7	11
Active Cases:	12	-
Dormant Cases:	1	-

* - Carry over of five cases from 1957, three active and two dormant.

Employment

Unfilled Requests for Personnel	3
Personnel Requirements Cancelled	0
Employees Added to the Rolls	7
Employees Removed From the Rolls	17
Reduction of Force Initiated by F.P.D.	1
Reduction of Force Due to Seniority Bumping	5

Transfer Data (Requests for Transfer - F.P.D.)

Active at Start of Month	50
Received	3
Interviewed	2
Effectuated During Month	3
Cancelled	1
Active at Month's End	49

Procurement

Offers	5
Interviews	8
Requests for Personnel Received	6
Transfers (all)	2
Upgrades within F.P.D.	2
Supervisory Selection Interviews	8
Letters to Outside Agencies Regarding Information	26
Perfect Attendance Recognition Awards	11
Service Recognition Pins	10 Year - 3 5 Year - 6

Employee Benefits and Service

Participation in the Employee Benefit Plans as of February 28, 1958 for the Fuels Preparation Department is as follows: Pension Plan 99.6%, Insurance Plan 99.9%, Savings and Stock Bonus 55.8%.

Thirty-two non-veteran employees are subject to military service training through Selective Service System. There are 12 in classification 1-A, 2 in 2-A and 11 in all other classifications.

There are 2 occupational deferments active for technical and engineering personnel.

There are 56 Reservists on the roll, 20 Standby and 36 are Ready.

Three employees are on military leave.

Arrangements were made for six F.P.D. employees to tour the 105 KW Reactor facilities.

Suggestion Plan Statistics

	<u>February 1958</u>	<u>Year to Date</u>	
		<u>1958</u>	<u>1957</u>
Average number of eligible employees	582	585	580
Number of FPD suggestions received	35	117	100
Number per 100 eligible employees	6.01	20.0	17.2
Number of suggestions adopted	0	0	36
Net annual savings	0	0	\$8,400.80
Amount of awards	0	0	\$ 795.00
Percent of total awards to savings	0	0	9.46%
Average amount of awards	0	0	\$ 22.08

In addition, 15 suggestions have been received from other departments of which 2 have been adopted, resulting in net savings of \$691.00 and awards of 0.

General

A Personnel Practices information letter on Vacation Scheduling was issued on February 5, 1958.

A follow-up analysis was made to determine where Department employees generally ranked on the seniority lists; the trend is toward a lower rank.

No requests for leaves of absence were processed during the month and no requests are outstanding.

There were two security violations during February.

HEALTH AND SAFETY

	<u>February</u>	<u>January</u>
Disabling Injuries	0	0
Serious Accidents	1	0
Medical Treatment Cases	48	53
Medical Treatment Frequency	3.96	3.93
Employee Hours of Exposure	121,147	134,721
Orientation Presentations	1	1
Attendance	2	3
Inspections	16	20
Suggestions Evaluated	7	9
Safety Instruction		
Supervisors	0	1
Technical Graduates	1	6
Safety Talks	1	1
Attendance	58	25

Medical examinations during January totaled 93 for the Department, which was 136.8% of quota.

Program Development

Fuels Preparation Department completed 546 days without a Disabling Injury through February 1958. One Serious Accident involving a fork lift truck was investigated and necessary corrective action has been initiated.

The monthly meeting for women office employees was held on February 19. The meeting chairman was F. A. Leach. Caesar Branchini of Public Health was guest speaker. Mr. Branchini presented a talk and movie on home safety and health.

Plans for the spring clean-up have been completed, and the activity has been titled "Operation New Broom - 1958."

Campaign officers are R. R. Cahall - General Chairman, J. C. Williamson - Publicity Chairman, W. J. Woodruff - Inspection Evaluation Chairman, F. A. Leach - Office Housekeeping and Inspection Standards Chairman, and R. D. Ellingson - Safety Topic of The Month Chairman. M. F. Doud, B. G. Pigg and W. O. Goslin are advisors.

Distribution of general instructions and inspection team schedules was completed during the week of February 24.

Two nonexempt employees were given the health and safety orientation, and one Technical Graduate was briefed on the health and safety business as a part of the management orientation program.

Activities

Work activity during February included contacts on the following items: Molten metal hazards, chemical treatment of water, traffic, safety shoes, training, medical services, safety meetings, work restrictions, inspection, acids and caustics, safety showers, protective clothing, toxic solvents and gases, breathing air systems, explosive atmospheres, injury analysis, chemical hazards control, lock and tag procedures, material handling, investigations, housekeeping, ladders, temperature extremes, equipment evaluation, compressed gas systems, roads and walks, cranes, guarding, zoning, barricades, vehicle usage, painting, safety standards, roof work, steam equipment, building layout, construction hazards, railroad specifications, storage facilities, process changes, noise control, and job procedures.

FIRE PREVENTION AND CIVIL DEFENSE

	<u>January</u>	<u>February</u>
Fires and Investigations	0	0
Fire Loss	0	0
Number of Inspections	29	34
Fire Surveys Completed	1	0
Hazard Reports Submitted	6	5
Orientation Presentations	3	2
Attendance - Nonexempt Employees	3	2
Attendance - Technical Graduates	6	1
Fire Prevention and Civil Defense Talks Given	1	1
Number of Employees in Attendance	24	58

Program Development

Operation New Broom - 1958 was planned and developed through the Health and Safety Program Council. The program will be carried out during the entire month of March. The program goal is to obtain correction of all housekeeping problems in Fuels Preparation Department. The theme being "A Clean Department Is A Safe Department."

The handsets on the Crash Alarm telephones are being painted red to identify them as emergency equipment and to simplify Civil Defense training.

A proposal to replace the inefficient water-fog fire extinguishing system over the methanol diptanks in 306 Building with an automatic CO₂ system is being studied by Maintenance Engineering.

Initiated an engineering study of the oily lint hazard in the ventilating ductwork in the Canning Area of 313 Building to determine means of controlling the oil vapor problem, the lint hazard and the frequency for cleaning the duct system.

Recommended removal of code violating wiring in the 303-J Warehouse to eliminate a potential fire hazard, the installation of adequate fire extinguishers and methods of stacking material with adequate aisle space to meet Fire Code requirements.

Initiated an engineering study for a sprinkler system in 303-J Warehouse and new warehouse space to accommodate the stock now stored in the substandard 3722-A Warehouse.

Approved emptying the 200,000 gallon ground water reservoir to inspect for sand conditions in the water system. A two-inch layer of sand was flushed out with fire hoses. Approved Maintenance Engineering plans for changing the intake piping to permit the tank to be used as a sand trap for the area water system. The sand could then be flushed out as need requires.

A large opening in the 313 Building fire wall was closed with metal plating to prevent fire spread between the two sections of the building.

Gray and Osborne, architectural firm has been given a contract to design the 300 Area water expansion project with a completion date set for May 10.

The AEC Project Review Board approved a project to install a sprinkler system in the 313 Building on February 6.

General Activities

Reviewed and approved 12 engineering blueprints. Caused repairs to be made on one of the Defense Warning sirens found to be operating at half speed. Obtained better disposal of paint rags in the 3713 Building. Conducted investigation of Fork lift accident during the Health and Safety Specialist's absence. Provided assistance to IPD on methods for backflushing sprinkler systems and CEO on plans for fire alarm and defense warning system for the PRTR project. Enrolled in Work Simplification course and completed a cost saving project. Issued one welding permit and refused a permit to weld a guard rail on the roof of 313 Building. Revised Advice on Reporting Fires.

Manager - Employee Relations

END

**DATE
FILMED**

1 / 15 / 93