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Monthly Report

GENERAL ELECTRIC
COMPANY

Fuels Preparation Department

NOVEMBER 1957

DECEMBER 20, 1957

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MONTHLY REPORT

By RM Eick 10-12-92

Doyle 10-12-92

FUELS PREPARATION DEPARTMENT

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FOR

NOVEMBER, 1957

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Compiled by

Fuels Preparation Department

December 20, 1957

Richland, Washington

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FUELS PREPARATION DEPARTMENT
MONTHLY REPORT SUMMARY FOR
NOVEMBER, 1957

MANUFACTURING OPERATION

During the month the Manufacturing Operation worked on a two-shift basis with five canning lines on each shift. Five hundred nine (509) tons of acceptable uranium fuel elements were produced which was 93% of the forecasted production. Variance from forecast resulted primarily from lower manufacturing yields on all products.

At month end there was a 0.6 month supply of bare uranium in storage. Finished production was less than reactor charges of fuel elements which decreased inventory to 0.8 month's supply compared to a 1.0 month supply in October.

During November the operating efficiency was 92.3% which was the highest yet achieved during 1957. This record was accomplished while processing simultaneously three different types of products and resulted from the concentrated efforts of all Manufacturing personnel.

A new method for determining the U-235 content of enriched uranium is being used. The 305 test reactor is used to measure the reactivity of a sample core and the measurement of reactivity is converted directly to isotopic assay. This method gives an accuracy of $\pm 2\%$ compared to $\pm 5\%$ by the previously used emission spectrometer method.

A twenty-hour autoclave cycle has been approved as standard for all material.

On November 1, 1957 there was a reassignment of duties and responsibilities for the express purpose of strengthening and consolidating research, engineering development and design activities, and reducing overhead costs.

ENGINEERING OPERATION

Ten ruptures occurred in normal uranium solid fuel elements. In addition, there were 3 (U-Al) doe metal and 2 solid E metal failures. No significant rupture trend was indicated.

I & E irradiation continued without incident. About 76% of the 1500 central tubes in C reactor are loaded with I & E elements. Comparative performance to solids in this reactor indicates a tenfold improvement factor for I & E elements with a 98% confidence level.

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About 16,000 normal and 13,000 E metal I & E elements were canned with yields of 50 and 41% respectively. The 10% reduction in yield for normal uranium I & E elements was caused by an increase in internal penetration test rejects where no true AlSi penetration actually existed. I & E lots will be statistically checked until voids and wrinkles can be reduced or the tester made less sensitive to them. In addition, high canning and weld rejects further reduced the over-all yield.

Pilot plant development work was concerned primarily with yield improvement for I & E. Various modifications of the process were initiated with the objective of yield improvement and the overcoming of production yield difficulties.

Twenty-six thousand standard solid M-388 elements have been canned to date with average yields of 74%. There are 262 tubes of this material in reactors.

Equipment is being fabricated for production use to provide vibration of solid fuel element caps during preheat.

Uranium for use in evaluating the effect of high alpha temperature recrystallization on reactor performance has been received. Reactor charging is scheduled in January.

Four thousand 1.6% enriched washers were received. One thousand additional will be received in December. These will be hot-press canned in four new aluminum nickel corrosion resistant alloys for testing in KER as candidate elements for NPR.

Preparations continued for extrusion cladding tests to be completed with General Cable Company press. Efforts included uranium preheating rates, revisions in design of preheat furnace and auxiliary equipment. The cladding work is scheduled for the week of December 2. Plans for extrusion cladding on site were implemented by discussions with Mr. DeBaigne of Moczik Tool and Die Company. This company is preparing preliminary engineering drawings which will be available for review in December. These designs will permit use of an on site press for development of extrusion tool, auxiliary equipment (feeding heating) and aluminum components.

The 306 I & E bond penetration tester operated satisfactorily during the month. Pieces passed by the 306 tester were retested in 313 Building to compare operation. Good agreement was obtained. This will remove the need for retesting of 306 production in 313 Building.

Final design and specifications of the Bond-Penetration System for 313 Building I & E conversion is proceeding on schedule. Remaining detail design will be complete in December. Advance procurement of critical items has been initiated.

The assembly of eddy current equipment for testing Zircaloy clad - coextruded rods is about 75% complete. This equipment will test cladding thickness, cladding defects, core cracks and electric conductivity.

A survey was completed for possible fuel systems for gas cooled reactors. Two combinations which are attractive for possible fuel systems are a uranium dioxide element clad in stainless steel -- helium cooled, and an unclad element consisting of a mixture of carbon and uranium dicarbide -- also helium cooled.

Several potential advantages of trace addition of sodium (about 0.03%) to AlSi were developed. Sodium appears to be a grain refiner. It shifts the eutectic from 11.7% at 577 C to 14.0% at 504 C. It is a deoxidizer. Study of the implications to our process continue.

Two tests are underway in KER loops. Dip canned massive I & E's are being irradiated at coolant temperatures up to 180 C. Stainless steel clad, four element clusters are being irradiated at coolant temperatures up to 235 C. Two tests are planned for next month. They are: dip canned, washer I & E cores in M-388 cans and hot press canned washer elements clad in new high temperature alloys. Both tests will be irradiated at 235 C outlet water temperature.

The revised project proposal for CG-759 - Additional Steam Generating Facility, requesting relocation of an 80,000 lb/hr. boiler from 200-W was forwarded to the AEC. It is expected that the revised estimate will save \$150,000 and that the relocated boiler can be on the line within 12 months. All other design and project work is proceeding on schedule and within costs.

FINANCIAL OPERATION

The Midyear Budget Review was completed on schedule and resulted in a reduction from the previous budget submittal of \$167,000. Budget data developed from this review will appear on November operating reports.

Listings of uninstalled capital equipment were furnished property custodians for reconciliation in preparation for the physical inventory scheduled around the first of the year.

Planning was completed for a renumbering of OPG's and Advices, which will result in all Advices being filed directly behind related OPG's. A detailed alphabetical subject index was also prepared and will be issued in December.

MAINTENANCE & POWER OPERATION

Five cost reductions totaling \$9,900 were submitted. This brings the quarterly budget realization to 76% of budget.

Commercial steam meters in the 700-1100 Areas were modified for winter operation.

"Wetter Water" was used by Fire Protection personnel to decontaminate the 321 Building Tank Farm. Results were excellent and the method economical.

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EMPLOYEE RELATIONS OPERATION

A total of nine personnel development courses and programs were initiated or in progress during the month for exempt employees.

A special message outlining the status of the current reduction of force in the Department was developed and published in the November 18 FPD Newsletter. In addition, the outlook for lay offs among inter-departmental seniority groups was developed.

Validation of the job analysis procedure being developed for the Manufacturing Operation production jobs is continuing. Job evaluations have been completed by 16 members of Manufacturing management. These evaluations cover the 8 key production jobs being used for validation purposes.

The brochure covering the exempt Salary Plan was distributed to our exempt people during the month.

Five grievances were processed during the month, two of which involved jurisdiction, one seniority, one overtime and another one protested the attitude of his supervisor.

The Council has notified the Company of intent to arbitrate a grievance evolving out of the Company's decision to contract the tile floor covering job to be done in 3703 Building. This grievance was filed by the Painter Craft. During October the Council advised the Company of its intent to arbitrate two grievances, both involved jurisdiction. In both cases, mis-assignment of work to crafts other than Sheetmetal Workers was alleged.

The Department continued to operate without a disabling injury. There was one serious accident during the month. The medical treatment frequency rate increased from 2.80 in October to 3.34 in November. There were no fires during the month.

The employee report of Attitude Survey Results was distributed on schedule, and ten special reports concerning results have been made.

PERSONNEL STATISTICS:

Number of employees October 31, 1957 786
Number of employees November 30, 1957 777

<u>Operation</u>	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>
General	1	1	2
Manufacturing	60	299	359
Engineering	48	26	74
Financial	16	23	39
Maintenance & Power	39	235	274
Employee Relations	16	13	29
TOTAL	180	597	777

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MANUFACTURING OPERATION

November, 1957

I. CURRENT OPERATIONSA. Production and Productivity1. Statistics

	8" Solid	8" Cored	Enriched		I & E	Total
	Solid	Cored	Solid	I & E	I & E	
<u>Current Month's Production</u>						
Acceptable Fuel Elements Produced (Tons)	421	44	-	14	30	509
As % of Forecast Production	101	110		58	50	93
As % of Past 3 Months' Production	80	191			49	80
Average						
As % of Past 12 Months' Production	91	133			120	96
Average						
As % of CY-1957 Goal						97
As % of June 1958 Goal (500 MWD/Ton)	153	28			15	75
As % of June 1958 Goal (750 MWD/Ton)	421	176			10	113
% of Forecast Achieved - Last Fiscal Quarter	101	-	60		98	93
% of Forecast Achieved - Last 4 Fiscal Quarters	104	67	66		66	98
<u>Operating Efficiency</u>						
Current Month (%)						92
Forecast (%)						89
Previous Month (%)						91
<u>Manufacturing Yield</u>						
Current Month (%)	75	75	-	41	50	
Forecast (%)	81	75	81	63	63	
Previous Month (%)	80	72	77	36	60	
Bare Uranium in Storage (Tons)						388
Canned Uranium in Storage (Tons)						558
Special Products Canned						2,384
Special Products Finished						2,173
Uranium Utilization						95.1

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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 nine (509) tons of acceptable uranium fuel elements were produced which was 93 percent of the five hundred forty-nine (549) tons forecast in HW-53271-RD. The variance from forecast resulted primarily from lower manufacturing yields on all products.

b. Manufacturing Yield - Solid Production

The manufacturing yield for solid fuel element production was 74.6 percent as compared to 80.4 percent for October. Poor bond and inclusion rejects accounted, in most part, for the decrease in yield.

The thin wall reject rate increased from 0.5 in October to 1.4 percent. Variable silicon concentration in the duplex and canning furnaces was the main contributing factor.

The miscellaneous reject rate decreased from 3.0 percent in October to 2.5 percent for November. Reduced caustic pitting and improved operating techniques contributed to the lower reject rate.

During the month the inclusion rate increased from 3.2 percent in October to 8.1 percent. Brass particles from the sleeve and can cleaning machines caused the contamination. Currently the machines are being modified so as to reduce the introduction of inclusions into the process.

The canning reject rate decreased from 1.6 percent in October to 0.8 percent in November, due to further improvements in the operators' canning technique.

Bad weld reject rate decreased from 1.5 percent in October to 1.2 percent. This change is attributed to random variation.

The increase in the poor bond reject rate from 4.5 percent in October to 6.8 percent was due primarily to brittle bonding.

Marred surface and void reject rates varied little from the October experience.

c. Manufacturing Yield - Cored Production

The manufacturing yield for cored production was 75.3 percent compared to 72.2 percent for the previous month. The reject categories were quite similar to those for solid fuel element production except for the miscellaneous reject rate which was higher due to difficulties encountered in facing of the blunt nose tru-line feature.

All cored material remaining in bare storage was processed during the month. Only recovered rejects from this material remain to be canned.

d. Manufacturing Yield - I & E Production

Yield for I & E production was 49.5 percent compared to 60.1 percent for the month of October. Primary cause for the lower yield was the high reject rates at the penetration tester. The apparent difficulty was the inability of the tester to consistently differentiate between true penetrations and other characteristics such as small voids or wrinkles.

e. Manufacturing Yield - Enriched Production

The manufacturing yield for 6" I & E enriched material closely followed the yield pattern for regular 8" I & E fuel elements.

f. Manufacturing Yield - Lithium-Aluminum Fuel Elements

The overall yield (machining and manufacturing) during the month for lithium-aluminum fuel elements was 83.7 percent which was a considerable improvement over the previous production run. Improved techniques for machining the rod sections and welding the aluminum wafer-can after canning contributed to the higher yield.

g. Other Activities

At month's end there was a 0.6 month supply of bare uranium in storage. Finished production was less than reactor charges of fuel elements which decreased inventory to 0.8 month supply compared to a 1.0 month supply at the end of October.

The inventory of essential materials increased from 2.8 to a 3.3 month supply during November. The inventory value per month supply has increased because of a higher proportion of I & E components.

The following pieces were processed through the fuel recovery operation:

	<u>Pieces</u>
8" Solid	38,254
8" I & E	12,126
8" Cored	9,584
I & E Enriched	6,422
Solid Enriched	5,343
Cored Enriched	244
KER	<u>38</u>
Total	72,011

No solid uranium scrap was shipped in November.

B. Plant Problems and Incidents

1. General

During November the operating efficiency was 92.3 percent which was the highest yet achieved during 1957. This record was accomplished while processing simultaneously three different types of products. The increased efficiency resulted from the concerted efforts of all manufacturing personnel.

2. Autoclaves

A decision to reweld the circumferential weld on autoclave C-5 has been made. Spot x-rays will be made of the remainder of the autoclaves manufactured by the vendor of the C-5 autoclave. This will be done to determine if the circumferential welds lack penetration as found with autoclave C-5.

3. Caustic Fumes Exhaust

Failure of the exhaust system over the caustic tanks of sleeve machine #2 contributed to downtime. Collection of caustic residue and moisture caused the fan to fail. An interim modified cleaning procedure will be used until an improved exhaust system can be designed.

4. Autoclave Failure

No autoclave failures were experienced during November.

C. Operating Plans

1. Isotopic Determination in Enriched Uranium

A new method for determining the U-235 content of enriched uranium is being used. The 305 test reactor is used to measure the reactivity of a sample core, and the measurement of reactivity is converted directly to isotopic assay. This method gives an accuracy of ± 2 percent compared to ± 5 percent by the previously used emission spectrometer method. No additional manpower is needed for the work in the 305 reactor which means that manpower previously used for the emission spectrometer work can be utilized elsewhere.

2. Autoclave Cycle

A 20 hour autoclave cycle has been approved as standard for all material.

3. Aluminum-Silicon Alloy Vendors

Performance tests of AlSi from Federated Metals show that the product meets current canning standards. Three vendors are approved sources for purchase of AlSi.

4. Bare Uranium Quality

The transformation test reject rate for Fernald metal remained high in November. Basic causes of the problem are finer grained uranium and the deterioration of standards used for setting the transformation tester.

The rejection rate for recovered cores decreased from 13 percent in October to 8 percent in November. Better control of the fuel recovery process and more uniform application of quality standards contributed to this improvement.

5. Organizational Change

On November 1, 1957 there was a reassignment of duties and responsibilities for the express purpose of strengthening and consolidating research, engineering development and design activities and reducing overhead costs. The Tool and

5. Organizational Change - continued

Equipment Design component was assigned to the Engineering Operation; the Maintenance Engineers were reassigned to the Manufacturing Maintenance Operation; and the Industrial Engineering activities were divided between the Canning, Finishing & Special Products, Quality Control, and Materials Operations. The above reorganization resulted in the dissolution of the Manufacturing Engineering Operation.

D. Employee Relations

Members of the Operation were treated for 24 minor injuries for a frequency rate of 4.56.

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 11.5.

No security violations were reported for the month of November.

II. PERSONNEL MATTERS

A. Visits and Visitors

K. V. Stave visited the University of Washington in Seattle, Washington recruiting for BS/MS candidates, and R. I. Beaver visited Texas A&M in College Station, Texas and Rice University in Houston, Texas for the purpose of recruiting BS/MS candidates.

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 November, 1957.

C. Meetings

Members of the Operation attended 23 staff meetings, 21 information meetings and 23 safety and security meetings.

D. Significant Reports Issued

1. Routine

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-53464	Monthly Report, Quality Control Operation, FPD, October, 1957	KV Stave	11-1-57
HW-53474	General Analytical Control Program I	GB Hansen	11-5-57
HW-53526	Production Report, FPD-Manufacturing Month Ending 10-31-57	HE Berg & GB Kuklinski	11-8-57

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1. Routine Reports - continued

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-53557	Fabrication History of Uranium Cores, October 1957	RE Olson	11-11-57
HW-53629	Report of Uranium Accountability in Manufacturing Processes for Quarter Ending 9-30-57	WG Tews	11-15-57

2. Non-Routine

HW-35686	Isotopic Determination of Enriched Uranium	KV Stave	11-20-57
HW-53407	Uranium Core Requirements, FPD, November 1957 through June 1958	HE Berg	11-1-57

W Mathis
Manager-Manufacturing

WM Mathis:RIB:rhs

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8" CANNING REJECTS BREAKDOWN BY MAJOR CLASSIFICATIONS

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8" CANNING REJECTS BREAKDOWN BY MAJOR CLASSIFICATIONS

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ENGINEERING OPERATION November, 1957

VISITORS

<u>Name</u>	<u>Company</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
NC Doyle	Doyle & Webb Co., Seattle	TW Gore	11-1	Consult on moving boiler from 200 W
FP Baker	Air Preheater Corp., Chicago, Ill.	TW Gore	11-12	Consult on installation of Air Preheaters on boilers
WO Stevens	W.O. Stevens Co., Seattle	TW Gore	11-13	Interview for Architect Eng'g. services.

TRIPS

	<u>Company Visited</u>			
HF Zuhr	GE X-ray Dept., Milwaukee	MA Edwards	11-11	Discuss electron beam welding.
	GE Gen. Eng'g. Lab. and Research Lab.	JA Michaleson DW Lillie	11-12/ 13/14	Discuss fuel element fabrication
	DuPont, Wilmington, Del.	JC Woodhouse	11-15	Discuss fuel element performance
DO Hunter	International Conference on Nondestructive Testing, Chicago, Ill.		11-3 thru 11/9	Attend conference
	SRP, duPont, Aiken, S.C.	J. Ross	11-11	Discuss nondestructive testing techniques and equipment at SRP.
GW Riedeman	Hunter Douglas Aluminum Corp., Riverside, Calif.	NH Gammell	11-5 thru 11/9	Procurement of HTR aluminum components
JT Mommsen	General Eng'g. Lab., Schenectady, N. Y.	RJ Foley	11-18 thru 11/22	Attend GEL Corrosion Conference.
PH Reinker	GE X-Ray Dept., Milwaukee	MA Edwards	11-10	Discuss electron beam welding
	Res. Lab., Schenectady		11-11 thru 11-14	Attend Engineering Managers meeting

PERSONNEL

<u>Name</u>	<u>Title</u>	<u>Nature of Change</u>	<u>Date</u>
<u>Process Engineering</u>			
Allen, CH	Engineer	Transferred from M'g-FPD	11-1
Conner, LA	"	"	"
Correy, TB	"	"	"
Miller, G	"	"	"
Wells, EN	"	"	"
Bogdanovich, MS	Secretary	Terminated	11-22
<u>Materials Engineering</u>			
Massey, GB	Secretary	Transferred from Mfg.-FPD	11-8
<u>Research & Projects</u>			
Lehfelddt, DC	Engineer	Transferred from Mfg-FPD	11-1
Nickolaus, JW	"	"	"
<u>Advanced Engineering</u>			
Drumheller, K	Engineer	"	"

PROCESS ENGINEERING

Regular Production Rupture Experience

Ten ruptures occurred during the month in normal uranium solid fuel elements. Four ruptures were classified as core splits, three as side hot spot, one as charging damage, and three as unclassified because of inability to examine. The distribution of ruptures by reactor was two in B, six in C, and one each in DR, F, and H. One of the side hot spot ruptures was jacketed in low iron Hunter-Douglas cans and another had the small ball-socket tru-line end contour. Two other ruptures also occurred in fuel elements with ball-socket tru-line contours; a core split and an unclassified. No ruptures occurred in I & E fuel elements.

In addition to the normal uranium ruptures, there were three doe (U-Al alloy) metal failures and two solid E metal failures. One of the doe metal failures was classified as a side and the other two have not been examined to date. One of the E metal failures was a side hot spot and the other a core split.

Two core split failures, one regular solid and one E metal, in the bottom region of C reactor were evidently caused by transient conditions following a cold startup. Three other core split failures in regular solid elements occurred in C reactor in a central zone purposely irradiated to high goal exposures (685 to 878 MWD/T).

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I & E Program

Irradiation of normal uranium I & E fuel elements continued without incident. During the month, about 54 tubes of I & E were charged at C reactor and 7 tubes discharged at a goal exposure of 800 MWD/T. The central 1500 tubes of C reactor are about 76% loaded with I & E. Comparing the irradiation performance of I & E and solid fuel elements in C reactor, we are 98% confident there is a ten-fold improvement of I & E fuel elements.

An initial loading of 50 tubes of "C" size I & E fuel elements was charged in KW reactor during the month with a variable goal exposure of 950 MWD/T. Accelerated charging of "C" size I & E fuel elements in KW reactor will begin in December, 1957.

Irradiation of six tubes of "O" size I & E fuel elements continued without incident in D reactor. Top-of-the-annulus water temperatures were found to about 1.4 to 1.5 times the average bulk outlet water temperature. Based on these results, IPD has decided to decrease the "O" size I & E fuel element O.D. by 15 mils without changing the uranium core dimensions to reduce the temperature differential. Components are on order for the revised "O" size I & E fuel elements. In addition to the normal eight-inch "O" size I & E fuel elements, small quantities of four-inch I & E elements are required for some of the old reactors.

About 16,000 normal uranium I & E fuel elements and about 13,000 E metal I & E fuel elements were canned in the production facility during the month with a yield of about 50 and 41% respectively. The 10% reduction in yield for normal uranium I & E elements was caused by an increase in internal penetration test rejects with no true Al-Si penetration problem. Until the voids and wrinkles are reduced or the tester is made less sensitive to them, I & E lots will be checked statistically to assure a 20 mil spire wall thickness. In addition to internal penetration rejects, canning and weld rejects are high in the E metal I & E fuel elements.

There were 220 water mixer "C" size I & E fuel elements sent to C reactor this month. This fuel element is a six-inch normal uranium I & E fuel element with a two-inch water mixing device welded on each element. One or two of these elements will be used per tube in new process tubes to reduce the top-of-the-annulus water temperature.

A development test involving the preparation of large diameter I & E cores (1.395" O.D.) in cans having a 35 mil wall thickness and a 9 mil Al-Si gap indicates existing penetration testing facilities are incapable of reliably detecting Al-Si penetrations in thin-wall fuel elements averaging less than 30 mils in residual wall thickness. Since the average external wall thickness of all thin-walled I & E fuel elements scheduled to be produced in the near future are expected to be below 30 mils, it will be necessary to use the testers at a reduced sensitivity (probably 15 mils) to detect "sports" and to statistically check all lots to assure 20 mils of can wall.

New component designs for I & E fuel elements (a high boss cap with a 5 degree taper on the underside of the cap and a can with a 5 degree taper on the inside of the base) appear to be satisfactory and future orders of all I & E components will be of these types.

M-388 Alloy and Blunt Nose Tru-line Program

About 142 tubes of cored and 120 tubes of solid fuel elements in M-388 blunt nose tru-line components were charged in the reactors during the month. Also, 33 tubes of solid fuel elements in 1245 alloy blunt nose tru-line components were charged. About 50,000 blunt nose tru-line fuel elements (both solid and cored) were canned this month in M-388 and 1245 alloy with an approximate yield of 73%.

There were about 26,000 solid fuel elements canned in standard M-388 components with a yield of approximately 74%. There are approximately 262 tubes of this material in the reactors.

Dingot Program

Forging and heat treating problems at MCW have interrupted the routine receipt of low hydrogen dingot metal for evaluation at HAP0. A run-to-rupture test to compare solid dingot and ingot fuel elements has been delayed until December. The material for this test will be canned in M-388 blunt nose tru-line components and will have short charges in order to avoid side failures.

N Target Elements

The process specifications for acceptable inclusion size on N target cores was relaxed to the SRP specifications. This relaxation permits inclusions up to 1/16" x 1/4" on the core surface.

Process Technology

The vibration of solid fuel element caps during the cap preheat in the canning bath has been demonstrated to be feasible and equipment is being fabricated for extended use in the production facility.

The installation of an automatic rinse system following caustic etching for recovered cores was completed and put into immediate use. The use of the rinse system decreases uranium inhalation by the workers and contamination of the work area.

Modifications to the #1 cap and can machine degreaser to permit hot spray-cold spray-vapor degreasing, which is more efficient than just vapor degreasing, was completed this month. The #2 machine had been converted several months ago.

Installation was completed on additional pusher arms and linkages to increase the capacity of the #1 etch machine by about 19%.

MATERIALS ENGINEERING

Recrystallized Uranium

The uranium for use in evaluating the effect of high alpha temperature recrystallization on reactor performance has been received on site. Vacuum outgassing at temperatures above and below the recrystallization temperature range for beta heat

treated uranium is now being completed. Canning of the four types of test pieces (regular cores from production beta heat treated rods, cores from beta heat treated rods salt bath recrystallized prior to machining, cores recrystallized by vacuum outgassing at 640 C, and non-recrystallized cores vacuum outgassed at 450 C) for use on PT-IP-60-A-88-FP will be done in the immediate future and reactor loading is anticipated by February 1, 1958.

Enriched Uranium Washers

Approximately 4000 enriched uranium (1.6% U-235) washers were received at HAPO during November and are now available for precanning treatment. An additional 1000 washers will be on site by December 10. These washers (1.696" O.D.) are to be hot press canned in aluminum jackets of four different alloys for testing in the KER facility as candidate fuel elements for the NPR. The remaining 15,000 washers of the 20,000 originally ordered will be shipped as soon as fabrication at Fernald has been completed, now estimated sometime in February.

Aluminum Alloy Components for NPR Study

Caps and cans (I & E, hot press) of four different aluminum alloys, for use in KER corrosion studies for the NPR, are being produced by Hunter-Douglas Aluminum Corporation. Test strip of each of the alloys has been received and the components are scheduled for delivery the week of December 2, 1957.

Evaluation of Aluminum Impact Blanks

A test and evaluation order investigating various methods for fabricating direct cast aluminum impact extrusion blanks for caps and cans has been placed with Hunter-Douglas Aluminum Corporation. No results are expected until January or February, 1958.

Extrusion Cladding

Preparations continued for the extrusion cladding tests using the General Cable Corp. opposed-ram press. Efforts included determining fuel element heating rates in the preheat furnace, minor revisions in the design of the furnace and auxiliary equipment, and shipping equipment and components off-site. The cladding work is scheduled for the week of December 2.

Plans for carrying out extrusion cladding development work using a 400-ton vertical press installed in the 306 Building were implemented by a discussion of extrusion tool (die-block, container, and dies) design with Mr. Carl DeBaigne of Moczik Tool and Die Works, Detroit. Mr. DeBaigne's organization is preparing preliminary engineering drawings which should be ready for our review early in December. It is planned to extrusion clad using a single solid aluminum billet with a die block designed for extruding 90° to the direction of the ram travel. This design, though not necessarily optimum, will permit use of an on-site press for development of extrusion tool design, auxiliary equipment (preheating and feeding), and aluminum components. Likewise the single-ram right-angle extrusion method might be optimum for production, if a single extrusion press is to be used for a variety of tasks.

Evaluation of extrusion clad fuel elements was continued as follows:

- (1) A single fuel element clad by BMI was visually examined after 28 days exposure to 100 C 300 Area process water flowing at 25 gpm in a process tube. Ten mils of the 50 mil thick jacket were corroded away. No selective corrosion attack (which may indicate inhomogenous aluminum structure) was apparent. Further corrosion testing of this fuel element, along with another clad by General Cable, is planned.
- (2) Longitudinal diffusion welds in jacket of a BMI-clad piece were macro-etched and examined and appeared to be generally sound.
- (3) Tensile tests on sections of the jacket of the BMI-clad piece indicated the tensile strength of diffusion weld region was about 15,000 psi - equal to that of 25% cold worked 2S aluminum.

Development Activities - Fuel Element Pilot Plant

Development work carried on during the month was mainly for the purpose of improving yields in I & E fuel elements. There were minor variations in established processes such as a more shallow core insertion prior to cap insertion in the spire-core assembly technique; component modifications to improve cladding integrity and a continuation of the refacing and rewelding of weld rejects for fuel element reclamation. Other development work was conducted with solid fuel elements, such as cap vibration in place of cap abrading and canning techniques to reduce brittle bonding.

During the last week of November, a prototype horizontal agitator was installed on the lead-AlSi duplex bath. The agitator is equipped with a vibrator to provide vibration in the duplex preheat. Improved internal and external bonding is anticipated by use of this equipment.

The backlog of I & E canned fuel elements in the pilot plant has been tested and delivered to manufacturing. This backlog accumulated due to bond and penetration tester operating problems and unreliability of the external bond discrimination capabilities.

On preliminary evaluation of results, recent testing of a large number of fuel elements indicated satisfactory agreement of the 306 and 313 Building testers. The 306 Building tester will be approved for production test usage if final correlation of results is satisfactory.

I & E Equipment Development

Double thread cross-slide lead screws with a fly wheel and a large control handle have been provided for three Monarch lathes: 306 Pilot Plant, 313 Hot Press Room, and 313 I & E Fuel Element Finishing Line. Several other modifications were made to the 313 I & E fuel element finishing line lathe. These modifications included installation of a large control handle for carriage translation, redesigning and relocating tool position stop, and the installation of steel thread plugs in the

textolite collet pads. These modifications have increased the productive capacity of the I & E cap facing lathe by 90 to 100 pieces per eight hour shift. This is an increase of approximately 10% and now permits this equipment to keep up with one canning line.

Equipment is being fabricated which will provide a swivel joint for the hold down fixture on the manual I & E fuel element quench baskets used in the 306 fuel element pilot plant. These fixtures should reduce canning rejects which are now caused by bending the cap tube during quench.

Equipment is being fabricated to test the use of liquid carbon dioxide as an internal quench media for I & E fuel elements. This equipment will utilize two CO₂ machining coolant applicators and will fit the manual quench baskets used in the 306 fuel element pilot plant.

Tooling has been developed to machine the base end of I & E fuel elements for the purpose of rewelding. The production model of this equipment is being fabricated.

TESTING METHODS

Fuel Element Testing

The internal Bond and Penetration test reject rates for 313 I & E elements increased considerably during November. Assistance was given Quantity Control in establishing that neither the sensitivity of the testers nor the calibration standards had changed, and that the high reject rates were caused by true irregularities in the fuel elements. For the internal penetration tester, most of the rejects are attributed to an increased incidence of (1) surface bumps, (2) braze voids, (3) inclusions, (4) surface blisters with underlying voids, and (5) surface wrinkles with underlying AlSi. Efforts are underway to eliminate these effects in the canning process and to perfect an instrument capable of discriminating them from true thin walls. Until either or both of these objectives are realized, it has been recommended that the Internal Penetration Test rejects be separated and statistically sampled for destructive caustic stripping to determine the probability of finding a true thin wall. This action permits these elements to be released for reactor use with adequate assurance of proper wall thickness.

Plans were delayed for temporarily taking the prototype 313 I & E testing station out of service for a long overdue overhaul and modification pending satisfactory operation of the second station being installed by Manufacturing Maintenance. (The prototype station was shut down on Dec. 4 for an expected two weeks.) Both stations are expected to be fully operative in late December and capable of testing the I & E production from two or three canning lines.

The 306 I & E bond-penetration tester operated satisfactorily during the month and tested the accumulated backlog of elements. About 1250 of the pieces passed by the 306 tester were retested in 313. Good agreement was obtained on both external tests and the internal penetration test. Initial poor agreement for the internal bond test was later shown to be due to improper adjustment of the 313 tester. Several more comparison tests are planned, but it appears that equivalent performance of the two testing systems will soon be demonstrated. This will remove any need for retesting 306 production in 313.

Recent high Transformation Test reject rates have caused some concern. It has been determined that the grain size of metal now being received has decreased due to impurities. Many of the uranium cores have a grain size about the same as that of the calibration standard. If this condition persists, it would be possible to select a smaller grain size no-go standard. However, this increases the risk of passing untransformed metal. Some partially transformed cores are being fabricated to better determine the test sensitivity. The use of different standards for different metal is also being investigated since it is already definite that ingot metal requires different calibration standards. The possibility of using abrupt changes in ultrasonic attenuation as a reject basis is being examined with the prototype Ultrasonic Attenuation Tester. Some improvement may also be obtained by restricting the tested volume to only the outer surface, where partial transformation is most probable.

Project CG-713 - 313 Building I & E Conversion

Final design and specification of the Bond-Penetration Test systems is proceeding on schedule. All major features of the instrument systems have been determined and the remaining detailed design will be completed in December. Evaluation tests have confirmed that the Penetration Tester should be a completely new system consisting of: (a) two oscillator-alarm units, one for I and one for E testing, (b) one bump-discriminator unit for the I test, and (c) one servo system for automatically positioning the external probe at a specified distance from the fuel element surface.

A description of the proposed instrument system is being prepared and will be circulated for comments in December. Advance procurement of some critical components has been initiated. Fabrication work orders are expected to be issued by early January.

Final decisions on the mechanical drive assembly are still scheduled to be made in early January. A report describing the Testing Methods prototype system has been written and will soon be issued.

NPR and Category II Development

Satisfactory correlations have not yet been obtained between various ultrasonic grain size tests on uranium washers and metallographic measurements. This work is continuing in an effort to detect variations in samples suspected of having an undesirable duplex texture.

The assembly of eddy current equipment for testing zircaloy-clad, small-diameter, coextruded rods is about 75% complete. Three tests are planned:

- (1) Cracks and general electrical conductivity in the uranium core,
- (2) Holes, seams, and cracks in the cladding, and
- (3) Cladding thickness.

Plans are being made for evaluating several different ultrasonic bondtest methods for both the coextruded rods and the hot-pressed washer elements.

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Methods Development

During the last several years, a rather large number of different prototype and process nondestructive testers have been developed. As a first step towards removing some of the difficulty and confusion in describing, specifying, and standardizing this equipment, we are establishing a model number and nomenclature system. Each type tester will have a descriptive name and model number. Prototype, experimental, or developmental systems will be designated by an "X" suffix. Absence of the "X" will indicate that the design is accepted and standardized for routine process or laboratory use. Revisions to prototype or process testers will be designated by sequential suffixes "A", "B", "C", etc. This system will be used to assemble a "catalog" listing each model and the reference numbers of all drawings, manuals, or reports that are pertinent. Use of the nomenclature system will also help formalize the transition of a piece of equipment from prototype status under Engineering responsibility to process status under Manufacturing responsibility.

Formal document HW-51979, "Ultrasonic Detection of Surface Defects in Uranium," C.E. Fitch, was issued. Laboratory development is continuing with the prototype Ultrasonic Uranium Surface Tester - Model 1-X. Good progress is being made on the design of a new improved mechanical drive system for use with the above test and also with the prototype Ultrasonic Attenuation Test Model 1-X.

Laboratory evaluation tests continued through the month with the Sonic Orientation Resonance Tester Model 3-X. Minor changes were required in the vibration driver tip assembly. Reproducibility of the equipment has been satisfactory and plans are being made for a production test. Uranium cores with small untransformed regions (regions of preferred orientation) are being obtained for determining the system sensitivity.

Abstracts were prepared and submitted for two possible papers for the 1958 Geneva Conference. "A Broadband Electromagnetic Induction Nondestructive Testing Method" by H. L. Libby and "Automated Nondestructive Testing Systems for Reactor Fuel Elements" by R. S. Paul.

Hanford Test Reactor

Metal testing continued routinely. Fabrication of the electronic components of the sub-critical neutron flux monitor was completed. Process specifications for the test reactor were drafted and are now being circulated for comments. These were delayed until now pending issuance of a needed reference document by personnel now in IPD.

RESEARCH & PROJECTS

Status of Projects

CG-713 - Conversion to I & E Lead Dip Fuel Elements: Design progress is continuing at an accelerated pace. This phase of the project is now two weeks ahead of schedule. Drawings for non-destructive testing equipment are being reviewed. It is anticipated that they will be ready for procurement by 12-15-57. The prototype

automatic welder is being installed for testing. Pending satisfactory completion of tests, procurement of welders and transformers is scheduled for January. The additional Acme-Gridley lathe which is needed for interim production was installed and ready for testing. It is anticipated that testing will be completed by the end of the first week in December and procurement of all material necessary to face I & E fuel elements at a production rate of three lines per shift will be initiated by 12-10-57.

Fabrication of prototype radiograph tray is to start early in December.

CG-737 - Electric-Pneumatic Control System for Canning Area - 313 Building: The electrical installation is completed on canning lines #2 and #3. It is presently anticipated that all lines will be converted by 2-1-58.

CG-759 - Additional Steam Generating Facility - 300 Area: The revised project proposal requesting \$575,000 for relocating an 80,000 lb/hr. boiler from 200 West to 300 Area was forwarded to the AEC. It is estimated that the revised proposal will effect a savings of \$150,000 in capital investment and the relocated boiler can be on the line twelve months after authorization; considerably ahead of a new boiler installation.

IR-228 - 300 Area Evacuation Warning System: Completion of the field work is presently anticipated during the third week of December. Directive date, 1-28-58, allows time for testing and project closeout.

CG-774 - 300 Area Sanitary Water System Modifications: The project proposal requesting \$326,000 for water lines, ground storage tank and pump was approved by HOO-AEC on October 11, 1957. It is awaiting consideration by Washington, D.C.

Sprinkler System - 313 Building Addition: A rough draft of a project proposal requesting \$49,000 for installing sprinkler protection in the newer portion of the building is being routed for comment. It is presently anticipated that the proposal will be submitted to the AEC in January, 1958.

Research and Development

Irradiation Testing

Two tests are being carried out in the KER loops. Dip-canned, massive I & E cores in M-388 jackets are being irradiated at coolant temperatures up to 180 C. The test will determine the effect of variations in coolant composition on jacket corrosion and the dimensional behavior of massive I & E fuel elements at higher coolant temperatures. Discharge date is 1-1-58. Stainless-steel-clad, four rod clusters are being irradiated at coolant temperatures up to 235 C to determine the dimensional stability of natural uranium as a cluster element in high temperature water and to test the integrity of the cluster support system. Discharge date is undetermined.

Two tests are planned for the next month. They are: (1) dip-canned washer I & E cores in M-388 jackets and (2) hot-press canned washer I & E cores clad in new aluminum nickel alloys. Both tests will be irradiated in 235 C

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outlet temperature water. The tests will determine jacket corrosion rates, uranium stability, diffusion data and any gross defects in the cladding, core or assembly processes.

Cladding

Fabrication of fuel elements for in-reactor corrosion testing of four candidate aluminum cladding alloys has begun. The test element will be a hot-press-canned, KER-size, I & E pieces with a 1.6 enriched washer core. No major canning difficulties are anticipated. It is expected that the major portion of the ex-reactor aluminum testing program will be complete before the target charging date of 1-1-58.

One hundred feet of Zircaloy-2 clad, co-extruded natural uranium without integral end closures, will arrive on-site on 12-16-57. One hundred feet of material, having a 1.6% enrichment is expected on 2-1-58. Nuclear Metals, Inc. is having difficulty with integral end closures on co-extruded fuel elements due to a thinning of the cladding at the end of the piece. Because of this, a major emphasis will be placed on electron-beam weld closure development at HAPO.

Core Material

There has been some concern over the effect of thermal expansion of individual uranium segments in washer-type fuel elements. The net effect of expansion or "bulging" may be a "necking" effect on the jacket at the junctions of the washers. This could lead to accelerated stress corrosion of the jacket or destruction of the protective oxide coating. Tests are being planned to measure the effect and determine its consequences.

DRAFTING & FILES

Principal Jobs in Drafting:

313 Building:	Miscellaneous Cap and Can Revisions
	Universal Fuel Element Buffer (5 drawings)
	Automatic I & E Tester - Model II (36 drawings)
	Inspection Booth
	Conveyor Layout
	Inspection Tooling
Miscellaneous:	384 Building As-Builts (37 revisions)
	HLO - Miscellaneous Vessels
Drawings Produced	New 63
	Revised 60
	Large Charts 7
	Small Charts 3
	Miscellaneous 6

ADVANCED ENGINEERING

Gas Cooled Reactor Study

A study has been undertaken by the Irradiation Processing Department to select the optimum combination of coolant, fuel material and reactor configuration for a gas cooled reactor. As part of their study, a survey was completed on the possible fuel systems. Two combinations which are attractive and are being evaluated further are a uranium dioxide element clad in stainless steel, helium cooled and an unclad element which consists of a mixture of carbon and uranium dicarbide, also helium cooled.

Future work will include evaluating configurations such as tubes, plates, and rods to determine an optimum element.

Tell-Tale Fuel Element

A review of the status of the "Tell-Tale" fuel element was made. It was concluded that most previous suggestions are not acceptable. The most attractive suggestion made is that the Tell-Tale substance be added to the AlSi. One such substance is sodium, however, it was concluded that the sodium signal would be obscured by "noise" from the aluminum jacketing and piping.

During the review, several potential advantages of trace addition (about 0.03%) of sodium to AlSi were uncovered. It appears to be a grain refiner; it shifts the eutectic for 11.7% Si at 577 C to 14.0% at 564 C; it is a deoxidizer. Study of the implications to our process continues.

Isotope I & E Fuel Elements for Control Rods

An estimate was made of the fabricating cost for an I & E 10% lithium aluminum target element. The target element is proposed for use in the tips of the control rods of the NPR reactor. Additional study is being given to the possibility of reducing the alloy to 3.5% and increasing the lithium-6 concentration to obtain the desired cross section. Data currently available indicates that substantial cost savings can be made using this technique.

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 November, 1957, 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

PH Reinker:mbs

P. H. Reinker
Manager - Engineering

FINANCIAL OPERATION

NOVEMBER, 1957

AUDITS AND PROCEDURES

Auditing - Audit of Suggestion Plan Administration was started during the month, with field work largely complete at month end. Scope includes provisions of the plan, administrative procedures, examination of selected suggestions, and verification of reports. A number of recommendations, particularly with respect to reporting of suggestion statistics, are being formulated.

As part of the continuing audit of one-trip material passes, letters were sent to FPD managers requesting confirmation of prenumbered passes on hand. Following completion of confirmation and other related investigations, a summarization report will be issued.

Office Procedures - Redesign and pre-printing was completed on the final financial reports to be revised under the current report improvement program. Included are reports on Overtime, Absenteeism, and Operating Cost.

Participation in other significant procedures activities includes:

1. Evaluation of a proposed plant-wide IBM absence accounting procedure being developed by Data Processing Operation.
2. Presentation of daily time distribution system to Manufacturing Maintenance exempt personnel.
3. Scoping of Department work simplification training program.

Forms Control - Noteworthy new forms developed this month are:

1. Authorization to Mail Salary Checks to Bank - this form is now being adopted in other Departments to implement a new employee service initiated by FPD Personnel Accounting.
2. Weekly Time Distribution - Power - a precoded card adopted by Power Operation to improve accuracy of allocation of operators' time.
3. Programs and Goals - a form developed by the Specialist - Measurements to achieve uniform recording within the Department of each program, goal, applicable measurement, and periodic report of accomplishment.

GENERAL ACCOUNTING OPERATION

Internal Revenue Service has announced that more complete expense account reporting on individual income tax returns will be required in future years, starting with 1957. The ruling calls for the taxpayer to report travel

GENERAL ACCOUNTING OPERATION (Continued)

expenses reimbursed by his employer during the year and to pay tax on payments not considered tax exempt. While this requirement is not new, it has not previously been enforced. Following Country-wide objections voiced unanimously by corporate executives, tax lawyers, and accountants in regard to the unfairness and timing of the announcement, the Internal Revenue Service rescinded requirements for 1957. Prior to January 1, 1958, a recommendation will be presented to local management regarding treatment of this item for calendar year 1958.

In order to create a uniform style for all Financial reports, formats on Travel and Living expenses and Nonreimbursable costs are being redesigned and will be ready for management review early in December.

Effective December 15, 1957, Traffic Operation will discontinue the travel and hotel reservations service to employees traveling on Company business. The Kaymax Travel Agency will offer this service to all employees. Revised procedures and revision to Advice 5.3.1 will be published early in December.

November travel and living statistics compared with October are summarized below:

	<u>November</u>	<u>October</u>	<u>Increase or (Decrease) over October</u>
Travel advances to employees:			
Balance at beginning of month	\$ 599	\$4 235	\$(3 636)
Current month charges	<u>6 685</u>	<u>3 542</u>	<u>3 143</u>
	<u>7 284</u>	<u>7 777</u>	<u>(493)</u>
Less:			
Expenses accounted for	1 597	5 520	(3 923)
Advances refunded	<u>334</u>	<u>1 658</u>	<u>(1 324)</u>
	<u>1 931</u>	<u>7 178</u>	<u>(5 247)</u>
Balance at end of month	<u>\$5 353</u>	<u>\$ 599</u>	<u>\$ 4 754</u>
Outstanding travel advances:			
Current	\$4 830	\$ 599	\$ 4 231
Outstanding over 15 days	<u>523</u>	<u>-0-</u>	<u>523</u>
	<u>\$5 353</u>	<u>\$ 599</u>	<u>\$ 4 754</u>
Number of expense reports submitted	7	31	(24)
Number of cash advances	25	18	7

Initial planning for establishing an OPG Review Program has been completed. Plans have been formulated and a letter will be issued early in December to

GENERAL ACCOUNTING OPERATION (Continued)

level 3 managers describing the program and requesting the appointment of one representative from each level 3 operation to serve on a Review Council. The Council will meet monthly with the first meeting scheduled for December 19, 1957. Representatives will be furnished an agenda of subjects to be discussed prior to each meeting. It is expected that from five to ten OPGs will be reviewed each meeting.

An index and conversion list were prepared in readiness for merging the OPG and Advice systems. The numerical index was prepared to facilitate filing Advices directly behind related OPGs, the conversion list to facilitate re-numbering to the new index. Other improvements to the OPG system included preparation of an alphabetical index for ease in reference to particular subjects. The alphabetical index will be issued at the time the systems are merged.

On November 25, 1957, listings of uninstalled catalogued equipment were furnished property custodians for reconciliation prior to the official physical inventory on January 13, 1958. This provides an opportunity for correction of known discrepancies before the inventory, thus facilitating actual physical count and subsequent reconciliation.

Results to date on the reconciliation under way by General Accounting Operation and the Manufacturing Operation have effected reductions of \$47,861 in Plant and Equipment in Service and \$42,933 in corresponding reserves. As a part of the continuing program to reconcile installed equipment records, information was furnished Maintenance and Power Operation for their informal inventory. Other phases of this program call for a property record unit catalog, preparation of new property records, and the ultimate physical inventory in January 1959.

Spare equipment held by the Stores Operation at the request of FPD is being surveyed. The aim of the survey is to strengthen accounting and budgetary controls and to insure that operating components are aware of equipment being held and that needs are still prevalent.

In an endeavor to furnish project engineers with the most current cost information available, procedures were studied and revised. Improvements accomplished include posting work order costs from weekly cost-to-date tabulations and posting data received each Monday morning by telephone from Research and Projects Operation on up-to-date labor costs.

The Midyear Budget Review on Equipment Not Included in Construction Projects was conducted during November. Total submissions remained at \$502,000. Expenditure patterns will be watched closely and another review made in January. At that time any excess funds will be returned to Contract Administration for redistribution to other HAPO departments. Results of the Midyear Review with comparison to the October quarterly expenditure pattern follow:

GENERAL ACCOUNTING OPERATION (Continued)

(amounts in thousands)	<u>Equipment Projects</u>		<u>Nonproject Equipment</u>	
	<u>October</u>	<u>Midyear</u>	<u>October</u>	<u>Midyear</u>
	<u>Expenditure</u>	<u>Review</u>	<u>Expenditure</u>	<u>Review</u>
	<u>Pattern</u>		<u>Pattern</u>	
FY 1958 first quarter actual	\$ 6	\$ 6	\$ 35	\$ 35
FY 1958 Cost Forecast:				
Second Quarter	21	27	73	45
Third Quarter	20	9	99	97
Fourth Quarter	10	7	101	105
Estimated Commitments 6-30-58	<u>-0-</u>	<u>8</u>	<u>137</u>	<u>163</u>
Total Funds Required	<u>\$57</u>	<u>\$57</u>	<u>\$445</u>	<u>\$445</u>

Project CG-759, Additional Steam Generating Facility was revised and submitted to the AEC through Contract Administration December 6, 1957. The revision calls for utilization of an 80,000 lb/hr boiler now located in the 284-W Building. Revised cost is \$575,000 plus transferred capital equipment valued at \$58,536. At the request of the AEC a study was made to determine that replacement of the boiler by CPD would not be required at some future date. The results of the study indicated that removal of the boiler was feasible since activity presently budgeted by CPD for the 200-W Area will not require it.

Midyear Review of FY 1958 Plant Acquisition and Construction Budget requirements was conducted in November. The revised estimate is \$1,498,500, or \$1,069,500 less than the March budget submission. Total reductions of \$1,118,500 were accounted for by reductions in scope on several projects amounting to \$76,500; disapproval of relocation of a dormitory to the 300 Area \$60,000; discontinued requirements for fume control for 313 Building \$100,000; and a delay of the request for \$882,000 in funds for Phase II of CG-713 Conversion to I & E Lead Dip Fuel Elements. One additional project proposal for Installation of Automatic Fire Sprinkler System, 313 Building Addition, estimated at \$49,000 was included making a net reduction of \$1,069,500.

In the interest of economy, complete responsibility for handling frozen lunches has now been assigned to Product Cost Operation. Financial control previously handled by General Accounting was relinquished in November. Physical control, previously the responsibility of Maintenance and Power Operation, was assumed by Product Cost in October.

MEASUREMENTS

The Department Measurement Report HW-53578 covering accomplishments and goal progress for calendar year 1957 was issued to the General Manager - HAPO and General Manager - FPD and level 3 managers on November 27, 1957. A declassified printing of the report was issued to level 4 managers and specialists.

MEASUREMENTS (Continued)

The Department Performance Rating and the Department Productivity Report were completed and will be issued during the first week of December.

Sections 2 and 3 of the Measurement Manual, a procedural guide for Department management, were distributed in November. Section 1 of this Manual was issued in June.

Preliminary work was started on Department goals for calendar years 1958, 1959 and 1962. It is anticipated this report will be issued during the second week of December.

PERSONNEL ACCOUNTING OPERATION

Thanksgiving holidays required delivery of salary checks for both exempt and nonexempt employees two days early. Cooperation of management in submitting weekly time cards promptly made it possible for Personnel Accounting to meet the accelerated schedule with only six man-hours in overtime being required.

A proposed method of utilizing EDPM to maintain employee absence records was discussed with Data Processing Representatives. The proposed system would contribute most in terms of flexibility in that virtually any statistical combinations or computations in regard to absences could be readily and accurately extracted. More specific advantages of the proposed system are:

1. Elimination of manual clerical work required to maintain absence records for each employee.
2. Provide management with detailed reports showing past absences and current eligibility status of individual employees weekly or upon request.
3. Computation and printing of statistical reports would eliminate clerical effort and improve timeliness of reporting.

The system proposed by Data Processing was not complete in all details of programming and suggestions were made for further refinements. Data Processing is developing the system in more complete detail and will submit it for review in completed form as soon as possible.

Plans and methods were developed for accumulating, compiling, and reporting statistical information relative to 1958 Salary Review.

PRODUCT COST OPERATION

Physical inventory of Maintenance and Power shop stock was completed. Material inventoried was valued at \$10,636 and includes items that will be applied to work orders in the future. Value of this material will be carried on the monthly operating report as a memorandum showing beginning balance, receipts, issues, and ending balance. This procedure is for control purposes only and no valuation account is to be established.

PRODUCT COST OPERATION (Continued)

The work of converting old Spare Parts captions to new AEC classifications is still in progress. To date 11 AEC classifications have been segregated and booked. When complete 18 classifications are anticipated for the Department. A physical inventory of Spare Parts is scheduled for April 1958 by Relations and Utilities Operation.

Operating cost reports and the summary of operating costs were issued on new report formats. Considerable time was devoted to recasting costs to reflect November 1, 1957 organization changes.

A new report, "Summary of Maintenance Costs," was issued to level 4 managers of Manufacturing and will be issued monthly since managers' comments indicated it contained useful information.

All schedules for the FY 1958 Midyear Budget Review due on December 2, 1957, were submitted to Contract Administration on November 27, 1957. Approval from level 3 managers and the General Manager was obtained. Midyear Budget Review information by level 4 operation will be reflected in November operating statements. In addition the budget will be issued by quarters to level 4 operation as soon as possible. Following is a comparison of the Midyear Review with the FY 1958 revised budget:

	<u>FY 1958 Midyear Review</u>	<u>FY 1958 Revised Budget</u>
Personnel at 6-30-58	752	848
Direct Cost	\$ 9 817 839	\$10 144 097
Contract Fee	202 400	183 000
Charges from Others	<u>3 499 152</u>	<u>3 359 400</u>
Total Cost	<u>\$13 519 391</u>	<u>\$13 686 497</u>
Production	\$ 8 417 774	\$ 8 656 156
Research & Development	1 456 408	1 461 138
Charges to Others	<u>3 645 209</u>	<u>3 569 203</u>
Total Cost	<u>\$13 519 391</u>	<u>\$13 686 497</u>

The increase in "Charges from Others" is the result of increases in RUO assessments. The allocation of \$100,000 for NPR from Irradiation Processing Department accounts for the increase in Charges to Others.

A summary of operations and certain unit cost information for CY 1957 has been prepared for inclusion in the Department Appraisal and Measurements reports. Data for the CY 1957 Productivity Report was summarized for reporting purposes, is currently being analyzed and will be issued in early December. The format for the summary of Production Cost report was revised to reflect recent organizational changes and the development of "responsibility" cost reporting. The October report reflected these changes. Conversion unit cost goals have been developed for CY 1958, CY 1959, and CY 1962.

PRODUCT COST OPERATION (Continued)

Base data for use in budgeting CY 1958 President's Office and Services assessment was prepared and submitted to Contract Administration. The submission was based on information submitted for the Midyear Budget Review. Preliminary production cost estimates for FY 1958 and FY 1959 were also prepared and submitted to Contract Administration.

Representatives of Financial and Manufacturing Operations met to review and discuss new operating labor standards, reliability of which is now being determined. Acceptance of new standards will reduce time spent by first-line supervision in preparation of weekly time cards.

Manager - Finance

WS Roe:whm

MAINTENANCE AND POWER OPERATION

NOVEMBER 1957

GENERAL

Productive Maintenance Program:

Outstanding orders as of 10/31	110
Orders issued in November	66
Orders completed in November	44
Outstanding orders as of 11/30	125

There were five cost reductions totaling \$9,900 submitted during the month. This brings the quarterly budget realization to 76 per cent and an annual budget realization of 48 per cent.

Shop stocks for the Area Maintenance Operation were inventoried. The value of these stocks will be charged into the 401 Account and inventory controlled and rate of turn-over determined, using the initial inventory as a basis.

Midyear Reviews of Budgets for Personnel, Other Costs, and Equipment Not Included in Construction Projects were submitted to the Financial Operation. The Equipment Budget was reduced by \$10,000 as a result of the re-evaluation of requirements for FY 1958.

The Non-Reimbursable Budget for CY 1958 was submitted. A total of \$400 for Travel Variance and Conference Expense was requested.

The review of 13 Position Guides was reported to Salary Administration. In addition, 12 Position Guides were revised during the month. These Guides were revised to reflect changes in position content and re-assignments of responsibility subsequent to the last review.

AREA MAINTENANCE

Duplicating:

<u>Process</u>	<u>No. of Orders Processed</u>	<u>No. of Copies Made</u>
Multilith	819	398 747
Verifax	101	2 293
Ozalid	55	1 629
Total Impressions		<u>402 669</u>

There were 22 Formal Reports completed, consisting of 10,938 copies and 252,426 pages.

General Maintenance:

Steam line repairs and steam trap overhauls were completed in the laboratory area. This work was done in preparation for the heavy loads during the winter months.

A 5" dissolver was fabricated and installed in the 321 Building. The tanks and associated piping were stainless steel. Existing equipment was removed prior to installation of the new dissolver.

A pump test stand for the 321 Building was fabricated. This test stand permits the recirculating of fluid from the operating gallery to the piping gallery to determine pump life.

INSTRUMENT AND ELECTRICAL MAINTENANCE

The Portable Shop repaired a total of 1,155 portable radiation detection instruments. Average time per instrument was 1.03 man-hours.

Pre-service instrumentation adjustment and calibration has been completed on the new radiation detection instruments. The old instruments have been removed from the pool inventory and put into storage. These instruments can be taken out of storage and put into service in a minimum amount of time.

New fire bells have been located in the 3708 Building electric shop and the 3707-D badge house. The bell in the 3708 Building will inform the electricians as to where the signal originated so that any necessary corrective action can be taken and the system put back into service in the minimum possible time. The bell in the 3707-D badge house will notify Patrol of those runs for which access to the 303 Area will be required by fire fighting equipment.

All orifices for the steam meters in the 700-1100 Areas have now been changed to provide for winter operation.

The detecting system of the third X-Ray Deffractometer was converted from the Geiger-Mueller type to scintillation type. This latter system has the advantage of being able to operate at higher counting rates and permits adjustment to discriminate between wanted and un-wanted energy levels.

Down time due to instrument maintenance on the Consolidated Ratio Mass Spectrometer in the 325 Building has been very low. In the last two months it has been less than 2 per cent.

POWER

Statistics

	<u>November</u>	<u>October</u>
Average Steam Generated (M lbs/hr)	60.0	44.5
Maximum Steam Generated (M lbs/hr)	101.0	64.5
Total Steam Generated (M lbs)	43 168	33 117
Coal Consumed (tons)	2 758	2 218
Evaporation Rate (Steam/#Coal)	7.83	7.47
No. of Boilers on	3 2 3 4 3	
Date of Change:	1 11 18 22 25	
Sanitary Water from 3000 Area (Million Gals.)	67.5	66.3
Total Water from 3000 Area (Average Rate GPM)	1562	1486
Soft Water from #3 and #4 Wells (Million Gals.)	12.1	13.1
Water from #2 Well (M Gals.)	.30	.30
Peak Water Consumption for 24 Hours (Million Gals.)	2.7	2.4

At 9:00 A.M. on November 22, the stokers on #4 and #5 boilers ceased operating. Steam pressure in the 300 Area dropped to 90 p.s.i.g. Personnel of the Operation restored the stokers to service within an hour. Subsequent investigation indicated that the stoppage was due to an accumulation of packed coal dust in the annular space between the distributor shafts and the stoker housings. Corrective action was taken to prevent a recurrence of this type of stoppage. In the future, the annular opening will be grease purged daily.

Considerable difficulty was experienced during the month with the fly ash separator hopper outlet plugging. The choke point has been corrected and a cleanout port established in the lines. Satisfactory performance is anticipated in the future.

Above normal overtime was incurred during the month due to the transfer of four operators from IPD. This transfer resulted from these employees exercising their "bumping" rights. It was necessary to assign all relief operators to training duties with the new operators.

A temporary coal handler has been employed to work Wednesdays through Sundays from 4:00 P.M. to 12:00 Midnight. This temporary employee will provide week-end coal handling coverage and reduce the overtime incurred for coal handling activities.

The installation of the electric boiler feed pump in the 384 Building was completed. The pump has satisfactorily passed operating and performance tests.

PLANT ENGINEERING

There were 36 training classes held for maintenance personnel of HLO and FPD. This represents 413 hours of craft training.

BFF and drawing lists for the 382 Building, 3902 Water Tower and the 3905 Well House have been completed. These lists will permit the rapid reference to necessary data for maintenance or replacement purposes.

Mercury was found to have migrated from the manometer in the 313 Building steam meter to the trap provided. Since this migration occurred in spite of all operating precautions and safety features, these meters will be removed from the building. These meters will be replaced with steam measuring equipment, which does not utilize mercury. The meters were originally obtained as excess from IPD at the recommendation of the Property Management Operation, R&U.

The 1500 kw turbo generator has been removed from the scope of the PRTR Project. As a result, the emergency electricity demands of the turbo generator in the power house have been increased. Data is being obtained to justify increasing the emergency load on the present turbo generator to 900 kw with an 85 per cent power factor. Meetings were held with HLO representatives to determine total emergency power requirements for the contemplated area expansion.

FIRE PROTECTION

Fire Responses:

HAPO	3	Loss.....	None
Construction	0		
Private	0		
Outer Area	0		

There were no significant fires reported.

On November 25, the 321 Building Tank Farm was washed down by Fire Protection personnel, using a "wetter water" solution (this is a high activity detergent which reduces the surface tension of the water). The area was then flushed with plain water. Prior to calling the Fire Protection personnel, approximately 100 man-hours had been expended by HLO to lower the radiation hazard resulting from a spill at this location. The reading, following this attempt, varied from 95 to 290 mrad. Following the flushing with "wetter water" the count was 25 to 75 mrad. The cost of the decontamination work by the Fire Protection personnel was 3 man-hours of time, plus \$3.00 for the "wetter water" concentrate.

The use of "wetter water" as a rapid means of removing gross contamination is being investigated. If the method proves feasible, money will be saved by the elimination of more costly decontaminating methods and time consuming application of other reagents by hand.

REPORTS OF INVENTION

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 November 1957.

PERSONNEL

J. E. Benham retired from the Power Operation.

SAFETY, SECURITY AND RADIATION EXPERIENCE

Medical Treatment Injuries	14
Frequency Rate	3.38
Disabling Injuries	0
Near Serious Accidents	0

There were no cases of radiation overexposure reported during November; however, one potential overexposure (HL-20-R) involving two employees of this Operation occurred on October 10, 11 and 14. The incident involved regulated clothing contamination only.

There were no security violations reported.

MEETINGS

Round Table-Staff	23
Safety and Security	28
Information	6

Manager
Maintenance and Power Operation

E. Hilgeman:JPF:mkm

EMPLOYEE RELATIONS OPERATION
November, 1957

PERSONNEL DEVELOPMENT

A total of nine personnel development courses and programs were initiated or in progress during the month for Fuels exempt employees. These included: Principles and Methods of Supervision and Leadership, PBM-I, Interviewing, Labor Law, Contract Interpretation, GE Rectifies Department Technical Presentation, Manufacturing Salary Plan Group Discussion, Written Communication and Data Processing.

The Manufacturing Operation Salary Plan Group Discussion meeting was held on Saturday, November 23 in W-10 Building from 4:00 to 6:30 p.m. Approximately 60 Manufacturing exempt employees participated.

Eleven Fuels employees received PMS&L training in a course lead by the Specialist-Wage Administration who received Leader's Training directly from a Sales Analysis Institute representation in August. In addition, three Fuels employees participated in the PMS&L course presented by R&U.

Tech. grad. rotational assignments in the Department were reviewed in light of organization changes and budget requirements, and the number reduced from 11 to six. This will permit an average of six tech. grads. in Fuels per quarter.

COMMUNICATION

A special message from the General Manager outlining the status of the current reduction of force in the Department was developed and published in the November 18 FPD Newsletter. In addition, the outlook for layoffs among inter-departmental seniority groups was developed from all HAPO components. Craft employees primarily are involved, and arrangements were made for available information to be communicated orally to employees concerned via supervisors.

GE News coverage of FPD activities and employees totaled 139 column inches, 51½" routine and 87½" programmed to help meet the component and Department objectives. This is an average of slightly more than two-fifths of a GE News page per issue. A total of 4 regular Management News Bulletins were published during the month. In addition, two regularly scheduled FPD Newsletters were distributed to all employees.

Two papers for presentation at the 1958 Geneva Conference were submitted to Public Relations for approval. Titles of these papers are: Automated Nondestructive Testing Systems for Reactor Fuel Elements and a Broadband Electromagnetic Induction Non-destructive Testing Method.

Other communication activities during the month included one General Manager's meeting with exempt employees, preparation and distribution of the December Safety Topic of the month, and distribution of an updated Department telephone list. In addition, a new distribution list for combined exempt and nonexempt employees was developed and placed in effect.

SALARY AND WAGE ADMINISTRATION

Studies to determine the estimated increase to exempt and nonexempt pay for the years 1958 through 1962 were completed and reports issued. These estimates were based on predictions concerning cost of living, average merit increases, nature of 1960 HAMTC contract, and other factors. It is understood that the estimates will be used to project production costs through that period.

An analysis of the Attitude Survey questions in the areas of compensation, the Salary Plan and the Appraisal Plan has been made. A suggested action agenda resulting from this analysis has been prepared for issuance to the Manager, Employee Relations.

There were six positions audited during November. Excluding Level 2 and 3 Managers, fixed rate and vacant positions, 84 of the 84 positions as of October 1, 1956 have been audited or 171.4% of the 2 year goal on a monthly basis. A total of 95 audits have been completed of the current 164 incumbents. (At year end, new positions established will be included in the base for determination of accomplishment.)

Reorganization of certain components of the Manufacturing and Engineering Operations effective November 1, 1957 was completed with all the required position guides, evaluation records, and establishment of position forms approved in advance. Minor revisions were required to most of the Manufacturing Operation position guides. These corrections have been made. Functional charts for the Manufacturing and Engineering Operations were issued on an interim basis with a significant savings of preparation time, reproduction time, and cost for reproduction. A new polar chart for the Department was issued.

Final comments have been received from Salary Specialists regarding revisions to the Position Evaluation Guide. The final draft should be ready to transmit to the Salary Managers by month-end.

Plans for analysis of Salary Review data have been made. The work will be performed jointly by Salary and Wage Administration and Personnel Accounting Operations.

Validation of the job analysis procedure being developed for the Manufacturing Operation production jobs is continuing. Job evaluations have been completed by 16 members of Manufacturing management. These evaluations cover the 8 key production jobs being used for validation purposes. Analysis of the individual job evaluations is now in progress, and a preliminary survey of the data indicates some revision of the theoretical point values will be necessary. In addition, some new job elements must be prepared. These changes will be made and the revised evaluation procedure used to evaluate the remaining jobs.

Retroactive payment has been made by Fuels Preparation Department to the two craft trainees whose hiring rates were involved with the establishment of the 27 month hiring step for craft trainees.

Considerable investigation has been made of the Standards Technician classification in the Quality Control Operation as a result of questions concerning pay rates by these employees. Detailed comparisons have been made to determine if the present grade for the Standards Technician work is correct. Recommendations are being formulated for settling this problem.

The 1957 HAP0 Wage Survey report was received during the month. A detailed study of this report with reference to FPD nonexempt jobs is being conducted by the Specialist, Wage Administration

The .59% Cost of Living adjustment was entered on all FPD nonexempt employee record cards October 28 and 29. The adjustment to single fixed rates effective 10-28-57 was entered on Data Processing 259 Run October 31.

HEALTH AND SAFETY

	<u>November</u>	<u>October</u>
Disabling Injuries	0	0
Serious Accidents	1	0
Medical Treatment Cases	39	39
Medical Treatment Frequency	3.34	2.80
Employee Hours of Exposure	116,592	139,080
Orientation Presentations	2	2
Attendance	4	4
Inspections	18	15
Suggestions Evaluated	5	12
Medical Examination Quota	36	32
Completed	79	50

Program Development

Fuels Preparation Department has completed 456 days without a Disabling Injury through November, 1957.

The monthly safety meeting for women office employees was held on November 20. Chairman K. V. Stave arranged for presentation of a security film, and a talk by R. R. Cahall entitled, "An Engineering Approach To Safety."

Department goals for 1958 safety performance include the achievement of the General Manager's Safety Award, and a Medical Treatment Frequency Rate of 3.50.

Distribution of the "Accident Prevention Handbook" has been made to all exempt personnel who have need for a convenient reference to accident prevention standards and bulletins. The Handbook supersedes the Safety Bulletins prepared by the former Safety and Fire Prevention Unit.

A complete revision of eye protection requirements in 313 Building is being evaluated prior to being put into effect.

Industrial medical examinations through October were 119.5% completed for the year. Scheduling for October was 219.4% of the quota for the month.

Activities

Incoming requests for assistance and information included contacts on the following items: Floor openings, eye protection, trucking safety, loading procedures, safety showers, compressed gas cylinders and manifolds, loading docks, hoisting apparatus, tool usage, protective clothing, job hazard breakdowns, ventilation, guarding, operating procedures, molten metal hazards, load lugger design, safety meetings, guy anchors, sprinkler installation over canning, parking lots, fire proofing clothing, walks, area traffic, flammable and explosive gases, steam usage and control, toxic gases, insect control, solvents, electrical hazards, chemical hazards, stairway design, acid transfer, metal handling, lumber storage, purging of gas systems, pressure vessels inspection procedures, barricades, scaffolds, ladders, fans, and lighting.

FIRE PREVENTION AND CIVIL DEFENSE

	<u>October</u>	<u>November</u>
Fires and Investigations	1	3*
Fire Loss	0	0
Inspections	29	17
Hazard Reports Submitted	5	3
Orientation Program		
Number of Presentations	2	2
Attendance - Nonexempt Employees	4	4
Suggestions Evaluated	2	2

*Investigated fire alarm from 3717-B Building caused by electrician accidentally tripping the alarm system.

*Investigated short circuit in 440 volt wiring on Ajax furnace in the 313 Building caused by cable being crushed.

*Investigated fire alarm in 3734-A Building caused by failure of motorized steam control valve allowing excessive heat to build up and actuate the sprinkler system.

Program Development

The installation of the new 300 Area Civil Defense Warning System is approximately 30 percent complete.

Two fire alarm code bells were installed in 3707-D and 3708 Buildings to expedite emergency movement of fire trucks through the Exclusion Area gates and signal the electrician to scene of fires.

Arrangements were made for the Patrol Radio Operator to open the combination locked vault door to 3706 Duplicating Room for firemen in the event of fire on off-shift hours. This change in Patrol procedures was necessary due to the Shift Lieutenant being outside the 300 Area occasionally.

General Activities

Conducted a series of fire tests to determine the effectiveness of a new fire extinguishing chemical (Trimethoxyboroxine) on pyrophoric metal fires in the presence of 36 HAPD and 3 HOO-AEC personnel.

Tested the fire hazard of lithium lathe turnings in 313 Building and developed a procedure for storing and disposal of the scrap turnings.

Conducted preliminary explosion tests on aluminum oxide dusts collected from welding operations in the 306 Pilot Plant and submitted sample to Analytical Laboratory for further tests.

Assisted with the preparation of Emergency Procedures for 3717-B Building.

Approved storage facilities for two propane cylinders outside of 313 Building.

Surveyed methanol facilities on cap and can machines for possible changes to improve the fire hazard risks.

Conducted research on recommended sprinkler protection for metal industries to assist Engineering Operation with project proposal for a sprinkler system in the 313 Building.

PERSONNEL PRACTICES

Technical Personnel Placement

Experienced BS/MS Recruiting

In line with recent organizational changes and thinking on the subject, F. E. Jochen prepared and issued a revised report covering Fuels Preparation Department requirements for permanent assignment from the Personnel Development Program, FY-1958 (2nd, 3rd, and 4th Qtrs.) and FY-1959, as compiled from the analysis of information submitted by individual level 3 departmental components. Analysis of this report indicates a reduction from the September 1, 1957 forecast of eight Technical Graduates to be permanently placed in FPD from the Personnel Development Program.

Exploration through the Operation Managers of FPD made to consider possible qualified available candidates from the Fuels Preparation Department for consideration in filling the R&U opening of Telephone Engineer, resulted in three candidates being recommended. R&U felt that two of these candidates did not have the necessary qualifications and background which they were looking for to fill the opening. The third candidate has been interviewed by R&U and he is under consideration.

Received from the Irradiation Processing Department the referral of twenty-nine available engineering and exempt personnel for consideration as possible candidates for placement in the Fuels Preparation Department. IPD was notified that FPD had no current openings for which they could consider these people.

Exploration through the Operations Managers of FPD was made to consider any possible candidates from the Fuels Preparation Department for the APED openings referred to us for positions of Physicist-Critical Assembly and Engineer I in Instrumentation. No qualified candidates were available for recommendation from FPD for these openings.

We received a referral through E. P. Galbraith of two position openings at ANPD at Idaho Falls for an Engineering Consultant-Reactor and Condition Analysis and for a Shielding Analysis Engineer. Exploration through the Operations Managers of FPD revealed we had no qualified, available engineers to recommend for these openings. E. P. Galbraith, HAPO centralizer for these cases, was notified of FPD's findings.

T. K. Koerner, Manager-Engineering Personnel Placement for GE, visited HAPO November 12 and 13 on his tour of all GE Departments located in the western United States. On the morning of November 12, F. E. Jochen discussed with him, FPD's Product, kinds of engineering work, organization, locality and placement problems, in order that he have a better understanding of our problems in relation to placement of technical personnel and of those of his office. Mr. Koerner visited and discussed like problems with HLO, IPD and CPD during the remainder of his visit.

Experienced BS/MS Recruiting (9-1-57 through 11-30-57)

	<u>Cases Con-</u> <u>sidered- FPD</u>	<u>Ext.</u>	<u>In Visitations- FPD</u>			<u>Offers - FPD</u>			<u>On The</u> <u>FPD Roll</u>
			<u>Visited</u>	<u>To Vis.</u>	<u>Open</u>	<u>Ext.</u>	<u>Acc.</u>	<u>Open</u>	
Engineering									
Chemical	6	0	0	0	0	0	0	0	0
Electrical	3	0	0	0	0	0	0	0	0
Mechanical	7	0	0	0	0	0	0	0	0
Industrial	2	0	0	0	0	0	0	0	1
Metallurgical	1	0	0	0	0	1	0	0	0
Civil	2	0	0	0	0	0	0	0	0
Geological	0	0	0	0	0	0	0	0	0
Science									
Chemistry	7	0	0	0	0	0	0	0	0
Physics	4	1	1	0	0	0	0	0	0
Math-Stat.	1	0	0	0	0	0	0	0	0
Other	45	0	0	0	0	0	0	0	0
Totals	78	1	1	0	0	1	0	0	1

Ph.D Recruiting (9-1-57 through 11-30-57)

J. W. Finnigan, who has accepted the joint offer made by FPD and HLO, will make his selection as to which of the two assignments he will choose when he arrives in Richland early in January, 1958.

	<u>F P D</u>			<u>F P D</u>	
	<u>November</u>	<u>To Date</u>		<u>November</u>	<u>To Date</u>
Cases Considered:	62	66	Offers Extended:	0	1
Interviewed:	0	0	Accepted Offers:	0	0
To Be Interviewed:	1	-	On The Roll:	0	0

Terminations and Transfers

Four exempt employees terminated employment with the Fuels Preparation Department during the month of November. R. C. Aungst, C. H. Bloomster and C. E. Huck transferred to HLO and J. E. Benham retired.

Terminations and Transfers, Technical and/or exempt personnel, (9-1-57 through 11-30-57)

	<u>November</u>	<u>To Date</u>
Terminations:	4	4
Transfers to Other Components:		
Requests Received:	4	*9
Completed Transfers:	3	3
Closed Cases:	0	0
Active Cases:	4	-
Dormant Cases:	2	-

*Carry-over of two cases, one Dormant and one Active from the year September 1, 1956 to September 1, 1957.

Employment

Unfilled Requests for Personnel	2
Personnel Requirements Cancelled	0
Employees Added to the Rolls	12
Employees Removed From the Rolls	19

Transfer Data (Concerns Requests for Transfer - FPD)

Total Requests for Transfer Active at Start of Month	62
Number of Requests Received	4
Number Interviewed	2
Requests for Transfer Effected During Month	2
Requests for Transfer Cancelled	8
Requests for Transfer Active at Month's End	56

Procurement

Offers	0
Interviews	0
Requests for Personnel Received	2
Transfers (all)	11
New Applications Received	0

Upgrades within FPD 3

Personnel Records

Letters to Outside Agencies Regarding Information	11
Perfect Attendance Recognition Awards	9
Service Recognition Pins	10 Year - 3 5 Year - 6

Employee Benefits and Service

Employee Benefit Plans

Participation in the Employee Benefits Plans as of November 30, 1957 for the Fuels Preparation Department is as follows: Pension Plan 99.6%, Insurance Plan 100%, Savings & Stock Bonus 57.14%.

Selective Service and Reserve Statistics

Thirty-two non-veteran employees are subject to military service training through Selective Service System. There are 12 in classification 1-A, 8 in 2-A and 11 in all other classifications.

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

There are 57 Reservists on the roll, 18 are Standby and 39 are Ready.

Four employees are on Military Leave.

Suggestion Statistics

	<u>Fuels Preparation Department</u>	<u>From Other Departments</u>	<u>Total</u>
Received	50	6	56
Adopted	28	2	30
Net Savings	\$1,775.40	\$128.70	\$1,904.10
Cash Awards	415.00	0	415.00
<u>Awards</u>			
Net Savings	23.3%	0	23.3%

Cumulative Statistics (since Jan. 1, 1957)

Present Backlog	158	2	160
Received	521	147	668
Adopted	156	10	166
Net Savings	\$23,634.25		

<u>Awards</u>	
Net Savings	15.3%

<u>Awards</u>	
Adopted Suggestions	\$23.15

General

Ten special reports showing data on and analysis of Attitude Survey Results have been issued. The latest of these was a summary analysis of the write-in comments.

Security Violations

There was one security violation during the month of November.

UNION RELATIONS

The Council advised the Company of its intent to arbitrate a grievance filed by the Painter craft. The work in question involves the allocation of a tile setting contract in the 3703 Building to an outside firm. Also included in the grievance was a complaint that IPD had assigned a "breeching" job to an outside firm. The aggrieved is an FPD employee.

During October the Council advised the Company of its intent to arbitrate two FPD grievances both of which involved jurisdiction. In both cases the aggrieved

alleged a misassignment of work to crafts other than Sheetmetal Workers. Management assigned incidental jobs to the Millwrights and Servicemen which the Sheetmetal craft claimed as their work. The Step II answers acknowledged that the work involved is the type of work which is normally assigned to the Sheetmetal craft, however, in the interest of efficiency it was not considered appropriate to call in a Sheetmetal Worker to perform a very minor part of a job.

A grievance was filed by a steward representing 53 Chemical Workers protesting the reassignment of an Engineering Assistant to the Metal Handler classification. The employee in question had been promoted from a Grade 11 Metal Handler job to a Grade 12 Engineering Assistant in 1955 and due to a force reduction in IPD he will be returned to the Chemical Workers seniority group and the junior Metal Handler has been given a lack-of-work notice. It is the contention of the Council that the transfer to the Engineering Assistant classification did not constitute a promotion as contemplated by Article XIII, Section 7 of the HAMTC-GE Agreement. It is the position of the Company that Section 11 of Article XIII is applicable and that the transfer, in fact, did constitute a promotion under the Agreement. This subject has been discussed with UR Managers and Legal and all agree that the position of the Company is proper under this set of circumstances. The affected employee will be returned to the bargaining unit December 2, 1957.

Because of incidents in IPD whereby Electricians have refused to work overtime, in what appears to be a concerted action, management has now established a policy that, while overtime will continue to be offered to all employees on a voluntary basis, any indications of concerted refusals will result in disciplinary action to the employee (s) involved, following of course, adequate warning to such employees.

During October and November, 17 grievances were filed by the Teamsters alleging misassignment of work to personnel other than Teamsters. Five of the grievances involved other departments and were forwarded to those departments for handling. It is significant, of course, that these grievances were filed during a period of lay offs in the Teamster classifications and it is also significant that in most instances the work involved had been performed by personnel other than Teamsters for a number of years. The last grievance was filed on November 5 so it appears that this temporary protest of force reduction has subsided.

On November 6, a series of meetings involving Labor Law and interpretation of the HAMTC-GE Agreement were instituted. It was originally intended that these meetings would require approximately $3\frac{1}{2}$ hours, however, due to interest on the part of those in attendance the course has been extended by two additional hours.

Following extensive discussions involving FPD management, UR Managers and Legal, it was decided to expand the Instrument Worker group in FPD to replace the Instrument Trainee classification in the portable instrument shop inasmuch as FPD no longer requires Instrument Trainees in the same number as heretofore. The portable shop had previously been a training ground for new employees in the Instrument Trainee classification and we are not now hiring Instrument Trainees.

Grievance Statistics:

A total of 5 grievances were received and 2 were scheduled for Step II discussion. The following is a report of grievance activity:

	<u>Unit</u>	<u>Nonunit</u>
Received this month	5	0
Received since 1/1/57	85	0
Step I		
Answer unsatisfactory	3	0
Answer satisfactory	2	0
*Pending time limit	7	0
Settled this month	3	0
Step II		
Discussed this month	2	0
**Pending time limit	4	0
Settled this month	1	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 November Grievances: (5 Total)

	Mfg. Oper.	Eng. Oper.	Maint. & Power Opr.	Emp. Rel.	Fin. Oper.
Jurisdiction			2		
Seniority	1				
Overtime	1				
Miscellaneous	1				

Subject of Grievances for 1957: (85 Total)

Jurisdiction	8	45
Overtime	10	3
Absence	0	2
Ratios	2	0
Hours of Work	1	1
Seniority	2	1
Recognition	1	0
Grievance Procedure	3	1
Responsibility	1	1
Transfer	2	0
Miscellaneous	1	0

Manager - Employee Relations

**DATE
FILMED
01/20/93**