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Monthly Report

GENERAL ELECTRIC
COMPANY

Fuels Preparation Department

September 1957

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MONTHLY REPORT

FUELS PREPARATION DEPARTMENT

67203

FOR

SEPTEMBER, 1957

By Authority of CG-PR-2

RM Iten 10-7-92

PM Eck 10-12-92

DG Fikes 10/12/92

Compiled by

Fuels Preparation Department

October 17, 1957

Richland, Washington

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FUELS PREPARATION DEPARTMENT
MONTHLY REPORT SUMMARY FOR
SEPTEMBER, 1957

MANUFACTURING OPERATION

During the month the Manufacturing Operation worked on a two-shift basis with five canning lines on each shift. Five hundred sixty-eight (568) tons of acceptable uranium fuel elements were produced, which was 89% of forecasted production. Variance from forecast resulted primarily from lower manufacturing yields, lower operating efficiencies and from not working two scheduled over-time days.

Uranium receipts during the first part of September were delayed temporarily by an equipment outage at National Lead. However, in the latter part of the month, shipments from National Lead increased. At month's end about 370 tons of uranium cores were en route. The combined material en route and in storage was above maximum HAPO requirements, but was provided as a contingency during labor negotiations at National Lead.

The average illumination in the canning area has been increased from 17 to 45 foot candles. This improvement was achieved without the expense of relamping the area.

One production welder has been converted from the double pass welding cycle to a single pass welding cycle. Test results indicate that the single pass weld quality is equal to that of the double pass weld and that the production throughput is twice that of a double pass welding cycle.

ENGINEERING OPERATION

September's rupture experience for solid elements was significant in reaffirming the prediction that solid elements fail with increasing frequency as core temperatures approach the alpha-beta phase transformation temperature. This indicates that power levels in the reactors are closely approaching the point at which solid element ruptures may occur with increasing frequency.

It has been observed that no failures occurred in cored elements in KE reactor during August in regions where there was a high incidence of core split failures for solids. Theoretical calculations indicate that 1/2" cored elements will operate at temperatures about 100 C lower than solid pieces at the same power level. Because of these factors a renewed interest in cored elements has been expressed. IPD plans to charge about 30 tons/month of 1/2" cored, M-388 clad, tru-line elements into KE reactor until the current inventory is depleted. This is considered an interim measure of some possible value until I & E elements become available.

Over the past two months, 14 fuel element failures have occurred in 1245 aluminum alloy cans. Analysis of rupture data indicated that a revision of the specified iron content was in order. This revision has been made. A reduction of intergranular corrosion because of low iron content is predicted because of this change with a consequent reduction in ruptures.

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Irradiation of normal I & E fuel elements at C reactor continued without incident. To date there have been no ruptures in approximately 1150 tubes charged. A run-to-rupture test utilizing enriched I & E elements operating at a maximum power level up to 95 KW/ft was recently completed. A rupture of an I & E fuel element was sustained at 2186 MWD/T exposure. The solid enriched control pieces ruptured at 1000 MWD/T.

Yields of I & E elements in 313 Building varied from 37% at the beginning of the month to 65% at the end of the month. It appears that the operator's growing experience with these elements was a significant factor in the increase of yield to 65% at month end.

The KE-KER program is proceeding essentially as follows: 10 massive (1.8" O.D.) I & E elements and 20 four element stainless steel cluster elements now under irradiation.

Additional extrusion cladding experiments have been scheduled for November 18 with the General Cable Company, Perth Amboy, N.J. Design testing and preliminary preparation of material is underway. Evaluation of cable clad elements previously extruded by the General Cable Company is continuing at Hanford.

Preliminary tests indicate considerable success in the use of the Pilot Plant Lamb Wave external bond tester for discrimination against brittle bonds and porosity while still detecting voids and non-wet cans. Additional improvements are underway. It is believed that further study will show that this system is sufficiently developed to replace the present single-crystal external bond test used in 313 Building. Recent laboratory work promises development of the present penetration tester to a more simplified version. In addition another circuit capable of bump-void detections appears practical. Work on these projects is being accelerated in hope that prototypes can be fabricated and successfully demonstrated for procurement in the 313 conversion project. Advantages in these systems are apparent in cost savings, increased reliability and less maintenance.

A study is underway relative to the feasibility of adding small quantities of beryllium to the AlSi canning metal to increase the fluidity and improve the yield. Preliminary information indicates that beryllium additions in the order of .05% can produce very favorable effects on surface tension, oxide content and "fluidity" of AlSi. Vigorous study and testing is planned in this area.

Work on all active projects is proceeding on schedule and within costs. CG-759, Additional Steam Generating Capacity - 300 Area, is being revised in agreement with the AEC to consider the influence of the location of the PRPR and associated facilities in the 300 Area.

MAINTENANCE AND POWER OPERATION

Savings totaling \$4,169 annually were realized by the formal Cost Reduction Program. Total savings for the quarter are 127% of the quarterly Cost Reduction Budget.

Detailed information concerning the Operation's costs to HLO was submitted to the Manager - HLO. Their cooperation was solicited in requesting a uniform level of service throughout the year to permit the Operation to maintain a more constant work force.

The responsibility for all instrument maintenance in the 700-1100 Areas was accepted by the Instrument and Electrical Maintenance Operation.

EMPLOYEE RELATIONS OPERATION

Two grievances were processed during the month, both involved overtime. One of the grievances was marked as satisfactory at Step I - the other grievance, while marked unsatisfactory has been closed inasmuch as the HAMTC did not signify their intention to discuss the grievance at the Step II level within the contractual period of time.

The Unfair Labor Practice Charge involving the canning line was dismissed by the NLRB for insufficient evidence to substantiate the charge. Notification of this action was received on September 5, by copy of a letter to the HAMTC from the NLRB. We have been informed that the HAMTC has asked for an extension of time for filing an appeal to the General Counsel of the NLRB and that such extension has been granted to the close of business on October 7, 1957.

An article on "High Quality Fusion Welding of Aluminum" was approved and is scheduled for publication in the "Factory Management".

The Department continued to operate without a disabling injury. There were no serious accidents during the month. The medical treatment frequency rate increased from 3.84 in August to 3.96 in September. There were no fires during the month. All plans for Fire Prevention month have been completed and appointments of chairmen and all assignments are on schedule.

There were four security violations during the month of September.

FINANCIAL OPERATION

Physical inventories of process materials and special materials were taken during the month in cooperation with respective operating custodians.

The approach to be taken in reporting the Department's productivity, which has been under study for several weeks, was resolved during the month. Reports for CY-1957 are now in process, to be completed by the end of November.

PERSONNEL STATISTICS:

Number of employees August 31, 1957	791
Number of employees September 30, 1957	795

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<u>OPERATION</u>	<u>EXEMPT</u>	<u>NON-EXEMPT</u>	<u>TOTAL</u>
General	1	1	2
Manufacturing	69	306	375
Maintenance & Power	41	236	277
Engineering	44	28	72
Financial	16	23	39
Employee Relations	<u>16</u>	<u>14</u>	<u>30</u>
TOTAL	187	608	795

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MANUFACTURING OPERATION

September, 1957

I. CURRENT OPERATIONSA. Production and Productivity1. Statistics

	8" Solid	8" De- pleted	8" Cored	Enriched Solid	I&E	I & E	Total
<u>Current Month's Production</u>							
Acceptable Fuel Elements Produced (Tons)	498	-	4	17	1	48	568
As % of Forecast Production	94	-	10	131	10	120	89
As % of Past 3 Months' Production Average	92	-	50	170		192	100
As % of Past 12 Months' Production Average	110	-	13	425		369	113
As % of CY-1957 Goal							98
As % of June 1958 Goal(500 MWD/Ton)	181		3	43		240	84
As % of June 1958 Goal(750 MWD/Ton)	498		16	68		16	126
% of Forecast Achieved - Last Fiscal Quarter	100	13	81	79		39	93
% of Forecast Achieved - Last 4 Fiscal Quarters	105	36	85	70		42	100
<u>Operating Efficiency</u>							
Current Month (%)							84
Forecast (%)							89
Previous Month (%)							91
<u>Manufacturing Yield</u>							
Current Month (%)	78	-	75	75	36	58	
Forecast (%)	81	-	78	83	50	50	
Previous Month (%)	82	-	-	83	-	65	
Bare Uranium in Storage (Tons)							310
Canned Uranium in Storage (Tons)							608
Special Products Canned							Non
Special Products Finished							Non
Uranium Utilization (%)							95

* Plus about 370 tons enroute due to late shipments by National Lead.

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 sixty-eight (568) tons of acceptable uranium fuel elements were produced which was 89 percent of the six hundred thirty-five (635) tons forecast in HW-51698-RD. Variance from forecast resulted primarily from lower manufacturing yields, lower operating efficiency, and from not working two scheduled overtime days. The production schedule called for working two overtime days during September to meet the forecast. However, the overtime days were not worked because revised estimates of Irradiation Processing Department fuel element needs for September were lower than the original forecast and the reduced autoclave time cycle for solid fuel elements released material from the work-in-process inventory. Consequently, sufficient fuel elements were available to meet reactor needs even though actual production was below forecast.

b. Manufacturing Yield - Solid Production

The manufacturing yield of solid fuel element production was 78.2 percent compared to 82.4 percent in August.

The thin wall reject rate increased to 1.9 percent from 0.7 percent in August. Primarily the difficulties were due to steel sleeves and control of AlSi concentration and temperature. During the first two weeks in September, distortion of the sleeves in process increased to a point where the entire lot had to be replaced with new sleeves. Every effort is being made to resolve the problems associated with control of AlSi concentration and temperature.

In September the miscellaneous reject rate increased to 3.8 percent from 3.4 percent for the previous month. Caustic pitting of aluminum components caused the increase, but was eliminated when the sleeve lot was replaced.

The September inclusion reject rate was 5.0 percent as compared to 3.7 percent in August. Increase in the inclusion category was traced to the condition of the caustic tank of the number 1 sleeve preparation machine and the old sleeve lot.

The bond test reject rate increased to 1.9 percent from 1.8 percent in August. This slight increase was attributed to porosity in the braze layer which has been correlated to higher hydroxyl content in the Fernald salt bath.

In September the marred surface reject rate was 2.9 percent as compared to 2.3 percent in August. Primarily this increase was due to extra palletizing and handling during periods of process equipment failure.

The bad weld reject rate increased to 2.0 percent from 1.1 percent in the previous month, due mostly to oxides and moisture. Higher humidity in the 313 Building and training of new personnel were contributing factors.

Canning and void reject rates varied little from the August experience.

c. Manufacturing Yield - Cored Production

All cored production was in the blunt-nose tru-line model using the M-388 (1% Ni) components. When the first production run was made, many fuel elements had to be rejected because of male projection distortion. A change in tru-line specifications is expected to eliminate the distortion. Other reject rates were comparable with the solid production experience.

d. Manufacturing Yield - I & E Production

All I & E production was canned in the 1245 components. The manufacturing yield was 58.3 percent as compared to 65.2 percent for August.

Canning rejects remain at the same level as in August even though considerable time was devoted to training additional personnel in I & E canning techniques.

The bad weld reject rate increased from 1.4 percent to 6.3 percent in September. Oxides and moisture were major causes for increase. Higher humidity in the 313 Building and incomplete tube wall bonding were contributing factors.

Significant improvements were noted in the bond test exterior thin wall interior, and thin wall exterior reject rates.

e. Manufacturing Yield - Enriched Production

The manufacturing yield for solid enriched production was 74.7 percent compared to 83.0 percent for August. Inclusion and thin wall rejects were the main causes for the lower yield.

The manufacturing yield for I & E enriched production was 35.5 percent. Except for the spire failures, the reject rates were quite similar to the regular I & E production. Modification of the cap vibration cycle reduced the spire ruptures by month's end.

f. Other Activities

Uranium receipts during the first part of September were delayed temporarily by an equipment outage at National Lead. However, in the later part of the month shipments from National Lead increased. At month's end about 370 tons of uranium cores were enroute. This material, added to the 310 tons in bare storage, is 350 tons above minimum HAPO requirements, but was ordered as a contingency during labor negotiations at National Lead. Receipts for the coming six months will be reduced to compensate for the extra material on hand.

Finished product inventories decreased about 65 tons as reactor charges were more than fuel element output for the month. A one month's supply of finished fuel elements was available in the combined 100 - 300 storage areas.

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f. Other Activities - continued

The following pieces were processed through the fuel element recovery operation:

	<u>Pieces</u>
8" Solid	33,743
8" I & E	7,883
8" Cored	533
Total	42,159

One shipment totaling 56,615 pounds of solid uranium scrap was shipped to the National Lead Company during the month.

B. Plant Problems and Incidents

1. General

During September the operating efficiency was 84 percent, which was 7 percent below the August experience. Although the operating efficiency was significantly lower than previous months, the total amount of equipment difficulties was not excessive. However, the outages which did occur were, for the most part, directly related to production throughput. Consequently, equipment down-time caused 71 percent of the lost time with operational outages responsible for the balance. For the first time in many months, production time was lost as a result of difficulties with the non-destructive testing equipment. Fabrication of additional testing equipment is nearing completion with the first bond penetration test tester scheduled for delivery in October. Two additional testers will be completed about mid-November.

The number 2 cap and can preparation machine, number 1 sleeve cleaning machine, and the number 3 penetration etch machine failed at different times during the month. The canning lines had to be shut down as a result of the cap and can preparation machine and the sleeve cleaning machine failures. By palletizing when the penetration etch machine failed, the canning lines were able to continue operation.

2. Duplex Furnace Failure

The number 3C Ajax furnace was shut down when a fuse blew in the control cabinet. All molten metal was bailed out of the furnace. When the furnace coil was found to be in satisfactory condition, the furnace was recharged and restarted.

3. Canning Area Overhead Lighting

The average illumination in the canning area has been increased from 17 to 45 foot candles. As the result of an engineering study, this improvement was achieved without the expense of relamping the area. By replacing all mercury vapor lamps and by cleaning the reflectors, the three-fold improvement in illumination was achieved.

4. Autoclave Failure

An 8-inch I & E fuel element clad in 1245 components, failed during the autoclave process on September 18, 1957. Although the exact cause of failure has not been determined, microscopic examination of the side failure blister area indicated possible mechanical damage to the outer can wall.

C. Operating Plans

1. Bare Uranium Quality

Bare metal quality reject rates for seams and striations remained about the same as in August, except for recovered cores which decreased from 25.7 percent in August to 23.9 percent in September.

The bond test reject rate trend continues to follow the trend of the hydroxyl content in the National Lead salt bath where a slight increase was noted again this month. The transformation testing defective rate increased sharply in September to an average 4.4 percent. Testing has shown the material to be transformed but of a smaller grain size.

2. Product Mix

In the past, the nuclear safety standards limited the production level of enriched fuel elements to one canning line per shift. A recent revision of the standards will permit an increase in enriched production level to two canning lines per shift which is sufficient to meet future needs for enriched fuel elements.

Plans call for processing all of the 130 tons of bare 1/2-inch cored uranium now in storage by January 1, 1958.

Within the next few months reactor requirements for blunt-nose tru-line fuel elements will increase to 180 tons per month. Maximum utilization of equipment and shop labor will be achieved by scheduling this production on 3 canning lines, one lathe and one finishing line.

During the third week in September three types of fuel elements were processed simultaneously through the manufacturing plant for the first time. Three canning lines produced 8" solid fuel elements. One canning line was devoted to 8" I & E fuel elements. The fifth canning line assembled blunt-nose tru-line fuel elements. The two finishing lines were able to handle these products without production delays.

3. Nine-Second Weld Cycle

One production welder has been converted from the double pass welding cycle to a single pass welding cycle. A four day production test has been run on this converted welder. Test results indicate that the single pass weld quality is equal to that of the double pass weld and that the production thruput is twice that of a double pass welding machine.

Plans call for conversion of a second welder to the single pass welding cycle during October. These two converted welders will have sufficient thruput capacity to process all solid material for the number 1 finishing line.

4. Paperwork Simplification

Individual overtime records for manufacturing operators were established several years ago to provide a basis for equalization of overtime. Manual recording of data continued after development of the IBM prepared Overtime Hours Paid Report because of (1) lack of uniform practices for handling premium hours, refused hours, reclassifications, etc., (2) consequent high numbers of discrepancies, and (3) inadequate procedures for promptly correcting the report. These problems have been resolved as the result of satisfactory agreements with Union representatives and appropriate arrangements with Financial personnel. Starting September 30 manual record keeping by the Manufacturing Operation was discontinued.

D. Employee Relations

Members of the Operation were treated for 30 minor injuries for a frequency rate of 5.33.

Frequency of exposures greater than 200 mrad per two-week badge period was 0.0. The frequency of exposures greater than 100 mrad per two-week badge period was 16.0.

No security violations were reported.

II. PERSONNEL MATTERS

A. Visits and Visitors

D.W. Haught and J.W. Nickolaus visited the General Electric Company and the Herlan Machinery Company in New York, the Parker-Rustproof Company and the Adrian Machine Company in Detroit and the Verson All Steel Press Company in Chicago for the purpose of discussing the feasibility of impact extruding aluminum components here at Hanford.

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 September, 1957.

C. Meetings

Members of the Operation attended 22 staff meetings, 5 information meetings and 27 safety and security meetings.

D. Significant Reports Issued

1. Routine

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-41288-RD	Production and Inventory Report Manufacturing Operation - FPD Month Ending September, 1957	HE Berg	9-10-57
HW-49011-RD	Management Report Materials Operation, September 1957	HE Berg	9-22-57

1. Routine - continued

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-52332	Monthly Report, Quality Control Operation, Fuels Preparation Department, August 1957	TD Naylor	9-3-57
HW-52421	Production Report FPD - Manufacturing to SS Accountability Month Ending August 31, 1957	HE Berg	9-10-57
HW-52433	Fabrication History of Uranium Cores for August 1957	RE Olson	9-11-57
HW-52438	Uranium Quality Control Analytical Results	GB Hansen	9-11-57

2. Non-Routine

HW-37677, Rev. 2	Specification for Uranium Fuel Element Cores	RE Olson	9-10-57
HW-52046	Autoclave Cycle Required to Process Eleven Lines of Production	BR Black	8-23-57
HW-52304	Request to Procure Gamma Extruded Material	OW Rathbun	8-28-57
HW-52326	Excessing Hot Presses	BR Black	9-4-57

W Mathis
Manager-Manufacturing

WM Mathis:RIB:rhs

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8" CANNING REJECTS BREAKDOWN BY MAJOR CLASSIFICATIONS

NOTE :- 1956 FIGURES
INCLUDE BOTH SOLID
AND CORED.

LEGEND

SOLID 35

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8" CANNING REJECTS BREAKDOWN BY MAJOR CLASSIFICATIONS

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PREPARED BY G.X. BEARD

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ENGINEERING OPERATION

September, 1957

VISITORS

<u>Name</u>	<u>Company</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
J.A. Fellows A.E. Ruehle R. Hartman	Mallinckrodt Chemical Works, St. Louis, Mo.	S. M. Gill	9-10/ 9-12	Attend Working Comm. of the Fuel Element Development Committee
T.C. Evans C.C. McBride	Savannah River Plant, Augusta, Georgia	"	"	"
C.E. Polson A.E. Guay	National Lead of Ohio, Cincinnati, Ohio	"	"	"
A.J. Trenien	NLO, Cincinnati, Ohio	O.W. Rathbun	9-12/ 9-13	Discuss quality control techniques
R.H. Drenning	Combustion Eng'g., Inc., Seattle, Wn.	T.W. Gore	9-20	Consult on boiler problems

TRIPS

<u>Name</u>	<u>Company Visited</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
S.M. Gill G.F. Jacky	American Bearing Co., Indianapolis, Ind.	H. Lambertus	9-3	Discuss development contract
	General Cable Corp., Elizabeth, N.J.	O. Garner	9-25	Discuss fuel element cladding tests
G.L. Waldkoetter	ISA Convention, Cleveland, Ohio		9-8/ 9-12	Attend convention
	NLO, Cincinnati, Ohio	P.R. Morris	9-13	Visit non-destructive testing lab
A.J. Karnie	Impact Extrusion, Valparaiso, Ind.	J.W. Johnson	9-4/ 9-10	Consult on "lost punch" impact extrusion process.
	Verson Allsteel Press Co., Chicago, Ill.	W.W. Wishart		
	Lake Erie Mfg. Co., Buffalo, N.Y.	L.W. Coleman		Consult on extrusion press design and specifications
	Feller Eng'g. Co., Pittsburg, Pa.	K. Feller		

PERSONNEL

<u>Name</u>	<u>Title</u>	<u>Nature of Change</u>	<u>Date</u>
<u>Process Engineering</u>			
G.W. Riedeman	Engineer	Transferred out	9-9
J.T. Mommsen	Engineer	"	9-26
<u>Materials Engineering</u>			
G.W. Riedeman	Engineer	Transferred in	9-9
J.P. Pilger	Rot. Tech. Grad.	Transferred out	9-30
<u>Testing Methods</u>			
T.G. Lambert	Engineer	Hired in	9-26
H.E. Fisk	Summer employee	Terminated	9-13
M.M. Klenck	Summer employee	Terminated	9-6
J.P. Pilger	Rot.Tech.Grad.	Transferred in	9-30
<u>Design & Projects</u>			
G.L. Cooper	Summer employee	Terminated	9-13
A.C. Callen	Engineer	Transferred out	9-12
J.T. Mommsen	Engineer	Transferred in	9-26
<u>Advanced Engineering</u>			
P.A. Carlson	Engineer	Transferred out	9-23

PROCESS ENGINEERING

Regular Production Rupture Experience

Nineteen ruptures occurred during the month in normal uranium, solid fuel elements. Three of the ruptures were classified as core split, six as side hot spot, one as side other, five unclassified, and four not examined. The distribution of failures among the reactors was as follows: 3 in B, 5 in C, 2 in D, 2 in DR, 1 in F, 5 in H, and 1 in KW.

There was a significant decrease in the number of core split failures from the previous month, although at the end of the month five ruptures (probably all split failures) occurred over a weekend in H reactor at exposures between 270 and 390 MWD/T. Evidence indicates that the ruptures were associated with a cold startup during which power peaks were 20 per cent higher than normal. The sudden outbreaks of core split type failures that have occurred with increasing frequency over the past several months in C, B, KE, and H reactor indicate that the power levels in the reactors are closely approaching the point at which the solid fuel elements rupture by core splitting at increasing frequency. There has been an increasing

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tendency to attribute the increased number of core split failures to abnormal reactor operating conditions which occur particularly during startup. There is no reason to believe, however, that the reactor fluctuations during startup are any more severe than they have been in the past. The facts are that the solid fuel elements are currently operating with core temperatures very near the beta transformation temperature, that cycling into the beta phase increases the core split failure rate of solid fuel elements, and that reactor control is probably not precise enough, particularly during startup, to insure that no local reactor hot spots will occur.

Over the past two months 14 failures classified as side hot spot or unclassified, have occurred in fuel elements jacketed with 1245 aluminum alloy cans fabricated by Hunter-Douglas. Analysis of the rupture data, examination of the failed fuel elements, and comparison of the irradiation performance with fuel elements in tubes adjacent to the ruptures, which were jacketed in cans fabricated by Alcoa, indicates that the Hunter-Douglas jacketed fuel elements are more susceptible to intergranular attack than Alcoa jacketed pieces, and consequently more rupture prone. The increased susceptibility to intergranular attack is presumably caused by the lower iron content of the Hunter-Douglas aluminum (0.2% instead of 0.3% for Alcoa). Material specifications have been revised to place a lower limit on the iron content of component alloy, and all fuel elements currently on hand in low iron Hunter-Douglas components will be worked off by charging in tubes with power factors less than 1.0.

During the high incidence of core split failures in KE reactor during August, it was observed that cored fuel elements in the affected areas of the reactor were rupture free while the solid fuel elements sustained a high core split frequency. This experience, coupled with the knowledge that the four ruptures which have been incurred in 1/2 inch cored material were all hot spot failures (no splits) has led to a renewal of interest in 1/2 inch cored fuel elements for use in high power zones of the reactor. Theoretical calculations do indicate that 1/2 inch cored fuel elements should operate at core temperatures about 100 C lower than solid fuel elements operating at the same power, and for this reason, particularly in reactors operating at powers which produce temperatures near the beta transformation temperatures, cored fuel elements might be more rupture resistant than solid, particularly when canned in M-388 alloy and with contoured (tru-line) ends to prevent intergranular attack. The use of cored fuel elements to alleviate the core split rupture problem is considered to be only an interim measure, of some possible value, until I & E fuel elements become available. As the reactors approach 98 C bulk outlet water temperatures, even the cored fuel elements will be operating at core temperatures at or above the beta transformation temperature. In addition, even though the four failures in 1/2" cored material to date were all classified as hot spot failures, examination of the ruptured pieces reveals considerable core splitting and damage near the ends at the base of the counterbore. IPD plans to charge about 30 tons/month of 1/2" cored fuel elements jacketed in M-388, blunt nose tru-line components into high power tubes in KE reactor until the current inventory (128 tons) of 1/2" cored uranium is worked off.

I & E Program

Irradiation of normal uranium I & E fuel elements at C reactor continued without incident. To date, no ruptures have occurred in approximately 1150 tubes charged.

At present 781 tubes at C reactor are charged with I & E (about 52% of planned I & E utilization in C reactor).

In the run to rupture test of enriched I & E fuel elements operating at maximum power up to 95 KW/ft., a rupture was sustained at 2186 MWD/T exposure. The solid enriched controls ruptured at 1000 MWD/T. The irradiation portion of this test has been concluded with all tubes discharged.

Irradiation of four tubes of old reactor size I & E and four tubes of solid controls continued at D reactor without incident. Current exposures are approximately 320 MWD/T. Present irradiation of I & E in the old reactor is designed primarily to provide temperature data in order to establish the optimum old reactor I & E dimensions. It is not expected that large scale charging will be delayed while irradiation experience is accumulated.

The provisional process specifications for I & E fuel elements were revised and now include the following major provisions:

1. Spire-Core canning which involves partial insertion of the core in the can-sleeve assembly, seating of the cap-spire on the partially inserted core, and simultaneous seating of the core-cap in the can-sleeve.
2. Cap vibration.
3. Standardized tru-line contours (some contour for both I & E and blunt nose tru-line solids).
4. Relaxation of uranium core I.D. tolerance from ± 3 mils to plus 10 minus 7 mils. This will save 3¢ per pound on fabrication cost of the core.
5. Cap O.D. reduced 3 mils to allow easier cap insertion and reduce high cap rejects.
6. Component dimensions were modified to incorporate the thinner wall cans for C and K size I & E.

Yields of I & E in the 313 Bldg. production facility varied from 37 per cent at the beginning of the month to 65 per cent at the end of the month. Low yields appear to be associated with inexperienced operators.

M-388 and Blunt Nose Tru-Line Program

Irradiation of about 4500 fuel elements clad in M-388 jackets and charged in B, C, D, and KE reactor is nearly complete. Examination of the monitor tubes discharged from B reactor indicated excessive pitting of the M-388 alloy on fuel elements in the 3, 5, and 7 positions from the downstream end. Fuel elements clad in 1245 alloy in the 2, 4, and 6 positions showed some evidence of pitting but not as severe as the M-388. No pitting was noted in either 1245 or M-388 in the monitor tubes of C, D, and KE reactor. Pitting was more severe in the tubes exposed to 500 MWD/T when compared to those exposed to 400 MWD/T. It is

postulated that the pitting is caused by erosion resulting from conditions (pressure, flow, and temperature) favorable or conducive to cavitation. The M-388 alloy appears to be more susceptible to erosion type attack than the 1245 alloy. Examination of additional tubes and further studies are in progress to clarify the problem.

Irradiation of blunt nose tru-line fuel elements was initiated during the month and is expected to reach 75 tons/month in October. The contoured ends of the blunt nose tru-line and the I & E were standardized during the month to permit the use of the same tooling for both types of fuel elements.

Dingot Program

To date approximately 400 tubes of low hydrogen dingot material have been reactor charged with approximately 70 tubes discharged at 500 MWD/T without incident.

A production test to compare the rupture performance of 20 tubes of low hydrogen dingot material with 20 tubes of standard ingot material is in preparation.

Process Technology

The 9-second weld cycle was used to weld regular solid fuel elements on a process waiver basis. Weld rejects for 5619 pieces welded on four of five shifts was 1.2 per cent. The 9-second welds had normal penetration and satisfactory mixing of the aluminum and AlSi. A second welder will be modified in October.

The use of a thullium source to radiograph the internal weld of I & E fuel elements has been investigated and found to be wanting. The radiograms produced are fuzzy and difficult to read. Equally satisfactory weld pictures can be obtained using the conventional X-ray machine. A report on this study is in preparation.

KER and KTH Program

The KTH program to irradiate two full length charges of 1.8" O.D., M-388 clad self-supported, cored (0.75 in hole) fuel elements is awaiting decision regarding the Category II program.

Two charges, consisting of 10 massive (1.8" O.D.) I & E fuel elements, are being irradiated without incident in Loops 2 and 4. Exposures of the elements now approximate 270 MWD/T in Loop 2 and 220 MWD/T in Loop 4. As previously reported, it has not been possible to operate these loops consistently at outlet temperatures approaching the scheduled maximums of 180 C and 200 C, respectively, because of the regular solid fuel element ruptures experience in KE reactor during August. Loop 2 is scheduled to be discharged on or about November 18 and Loop 4 about November 1, allowing for maximum of 3 - 3-1/4 months total exposure time, at average specific-power of 70 KW/ft.

Loop 3 was charged with twenty 4-element stainless steel clad cluster fuel elements on September 19. Maximum specific power is about 60 KW/ft., with outlet temperatures in the range of 235-240 C. Exposure will be limited to 1000 MWD/T, with discharge being scheduled on or about January 1, 1958.

MATERIALS ENGINEERING

Centrifugally Cast Uranium

Metal quality inspection at HAPO of the first batch (approximately 115) of centrifugally cast solid fuel cores made from normal uranium conforming to chemical specifications for production metal, showed only 34 to be acceptable for canning. Nine other pieces are considered possibly acceptable. All of these pieces have undergone a single beta heat treating cycle similar to the cycle used for production metal.

Because of the lack of enough solid pieces of acceptable quality and because none of the requested 100 I & E centrifugally cast cores have yet been received at HAPO due to lack of graphite molding material at FMPC, the canning and reactor charging of production test IP-93A-93FP will be delayed at least two months. The shortage of the graphite molds has also temporarily delayed casting the uranium containing up to 1000 ppm of iron, chromium, and aluminum additions for study of grain size control in as-cast uranium.

Gamma Extrusion of Uranium

An evaluation of two alloys of uranium, 0.15% Si and 0.07% Cr, gamma extruded to HAPO size bars from dingot stock in June, is in progress. The grain size of these as-extruded alloys is below 0.100 mm. average diameter, finer than the grain size of production uranium (alpha rolled and beta heat treated) which varies from 0.110 to 0.180 mm. Evaluation of gamma extruded unalloyed uranium, as extruded, showed the grain size to be greater than 0.500 mm.

The hydrogen content of these as-extruded alloys varied from 2.10 to 4.81 ppm which is in the range of hydrogen contents of normal dingot uranium. Since the alloys were produced by the co-reduction of Cr_2O_3 or SiO_2 and UF_4 by the dingot process, the hydrogen content of the gamma extruded material may be reduced by applying the techniques used in producing low hydrogen dingot uranium. In any case it appears that the gamma extrusion process temperature will not present a hydrogen pick-up problem.

Extrusion Cladding

Preparations continued for extrusion cladding experiments which are planned for November using the Schloemann opposed-ram cable cladding extrusion press at the Perth Amboy, N.J. plant of the General Cable Corporation. Efforts included design and testing of aluminum spacers to couple regular 8" long fuel elements into a rod, design and testing of a fuel element pre-heating furnace, and planning the cladding tests.

Corrosion testing of fuel elements extrusion clad (not bonded) on the opposed-ram press in the initial extrusion test was continued, and indications are that the longitudinal diffusion weld in the jacket is not selectively corroded. Two fuel elements were exposed to 95-100 C in 300 Area process water in flow tubes for 21 days, losing 7-10 mils of jacket wall thickness by corrosion. While

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pitting was evident at the site of inclusions, visual examination did not reveal rapid localized corrosion in inclusion-free portions of the diffusion weld zone. Additional corrosion tests are planned in 300 Area process water, NaOH, H₂O₂-NaCl, and in high temperature (300 C) water (to test the diffusion welds for susceptibility to intergranular attack).

The Al-Ni-U bonding of the five fuel elements extrusion clad by BMI in June appears to be satisfactory, based on stud-pulling tests on a single element. The tensile strength of the bond ranged from 8,700 to 12,400 psi on seven studs, with two additional at 3,400 and 13,000 psi. Failures occurred at the Ni-U interface.

Aluminum Components

Testing of 1245 alloy cans fabricated by Alcoa from ultrasonic-reject bloom stock has been completed, and with one exception, the reject-stock cans appear to be equivalent in quality to standard cans. Ultrasonic and eddy-current testing of both standard and reject-stock cans gave some signals indicative of sub-surface discontinuities, but most of these turned out to be spurious. Radiography did not reveal any can-wall defects. Progressive caustic etching, removing two to five mils of wall thickness per immersion, exposed a single inclusion in one of the reject-stock cans. Metallographic examination of the inclusion is underway. The conclusion from this study is that the present bar and bloom stock inspection by Alcoa is satisfactory to prevent any significant quantity of sub-surface defects in regular production cans.

Fuel Element Pilot Plant - I & E Fuel Elements

Plans agreed to between Materials Engineering and Manufacturing are to operate the Pilot Plant on the present schedule without pressure on production, but rather to continue to develop the process to permit better production yields.

Approximately 17 tons of fuel elements, inspected and good up to the point of bond and penetration testing, were produced during September and are in storage in the Pilot Plant awaiting these tests. Lack of dependability of the penetration tester has resulted in a bottleneck at this point many times. Intensive development effort is being put forth to improve the dependability of this machine.

TESTING METHODS

Fuel Element Testing

The prototype automatic I & E internal bond and penetration tester in the 313 Bldg. operated successfully during the month with a minimum of adjustments and maintenance. For recent lots the reject rate has been about 0.5 per cent for the internal bond test and about 1.6 per cent for the internal penetration test. The low penetration reject rate is partially a result of improved operation but is primarily due to reduced sensitivity from calibrations with a standard equivalent to an AlSi penetration within 11-12 mils of the surface.

The pilot plant internal penetration tester is calibrated at 14-15 mils and is still giving undesirably high reject rates due to interfering signals from bumps and voids. Some immediate improvement in the performance of this tester is expected from the elimination of electrical transients which were induced by the welders and other process equipment.

Considerable attention is being given to utilization of the pilot plant Lamb Wave external bondtester for discrimination against brittle bonds. A more flexible crystal manipulator has been designed and is being fabricated, and a new timer-pulser-gating circuit has been developed, fabricated, and placed into operation. Preliminary tests show considerable success in discriminating against brittleness and porosity while still detecting voids and non-wet cans. Further study is underway to determine if this system is sufficiently developed to recommend it as a replacement for the present single-crystal external bond test in the 313 Bldg. The Lamb Wave system has the additional advantage of providing some discrimination against unbond length in the longitudinal direction. This can be used to increase the yield without any reduction in the assurance of quality.

External testing heads are being added to the prototype 313 I & E tester in anticipation of increased I & E production in November. Mechanical revisions are also being made to provide for automatic testing of 4, 6, or 8 inch elements. As-built prints on the complete prototype I & E testing system are complete and drawings of the minor developmental revisions are being kept current. Target dates for placement of procurement orders for the I & E testers for Project CG-713 are 11-15-57 for the mechanical drive systems and 12-15-57 for the electronic systems.

The mechanical system has been debugged and the prototypes have demonstrated very satisfactory performance in both 313 and 306. Only several minor changes are being considered for the final design. These include widening the tank to provide more room for the sensing transducers and possible substitution of the roll drive mechanism developed by Manufacturing Engineering. Drawings are being made for both of these possible changes.

Currently the most advanced electronic system is that in the pilot plant. Decisions must yet be made regarding the optimum frequency for the internal bond test and the use of the Lamb Wave external bond test. As described later, recent laboratory work gives promise of developing a significantly simplified version of the present penetration tester and possibly another circuit capable of bump-void discrimination. Work on both projects is being accelerated in hopes that prototypes can be fabricated and sufficiently well demonstrated in time for initial procurement on the project.

Methods Development

Studies to improve the internal I & E AlSi penetration tester have demonstrated that the differential multiphase probe reduces the effect on the instrument signal due to voids in the braze region. However, this seems to be accomplished at the expense of increased sensitivity to lateral motion of the probe and to

bumps. The high frequency (one megacycle) channel for bump discrimination has been modified and added to the differential probe. Operation of this combined void-bump discriminator is now being evaluated at the sensitivity level required for detection of 20 mil penetrations. The added complexity of the equipment, with the accompanying difficulty of adjustment, raises questions in regard to its practicability for production use. Experiments are in progress to determine if the expected gains (reduction of false rejects) are sufficient to justify fabrication and demonstration testing of a prototype.

The above complexities have been somewhat offset by the successful detection of AlSi penetrations with a new feedback-oscillator eddy current circuit. This opens the way towards a major simplification of future penetration testers and other eddy current devices. Advantages possible are savings in costs, need for fewer special components, reduced space requirements, reduced power consumption, reduced fabrication time, and less maintenance. Fabrication of a vacuum tube version prototype is being expedited. This circuit is also adaptable for use with transistors and transistorized model is under development to explore the possibility of further gains in reliability and ease of maintenance. If demonstrated successful, the new bump-void-discrimination techniques will be applicable to these simplified circuits.

Study was resumed on the use of the "total count" method with the ultrasonic bond test as an index of average braze porosity. Attempts are being made to devise a good method for running Production Test 105-627-A (HW-42917A Rev., Effect of Sonobond Separation on Failure of Solid Fuel Elements). Earlier trials gave very inconsistent results. The reasons for most of these inconsistencies have now been defined and it is concluded, at present, to be impractical to use the total count index from the process bondtesters when they are calibrated according to count-rate. Other calibration methods are being devised to obtain reproducible total counts. However, it now appears that these will require that elements which pass the process count-rate bondtester be retested on separate equipment for categorization according to total count. This may be sufficient to allow early initiation of the 300 area portion of the proposed production test. Meanwhile development will be continued towards obtaining simultaneous reproducibility of both the count-rate and total-count indices.

HW-52818 - A Survey of Possible Uses of Ultrasonic Agitation in Preparation of Hanford Fuel Elements - C. L. Frederick, was issued. This report describes possible advantages and problems of using power ultrasonics in component cleaning and in canning. It is recommended that a high powered generator and appropriate transducers be purchased to pursue development studies in these fields.

Laboratory work with the prototype automatic sonic grain orientation tester is progressing satisfactorily except for the functioning of the length measurement system. In order to obtain the required sensitivity, the length of each uranium core must be measured to an accuracy of about one mil. The original system has been found incapable of this and several changes are being made to improve the performance.

The problem of examining zirconium process tubing by ultrasonic reflection is being studied for the HLO. Preliminary work indicates the zirconium to be

more difficult to test than aluminum. The use of new lithium sulfate transducers increased the sensitivity and resolution but no conclusive results have yet been obtained. Work on this problem is continuing.

First attempts were made to inspect an irradiated fuel element with the ultrasonic bondtester at the 105-C basin. Mechanical troubles with the crystal translator prevented a complete inspection of the first piece, however, that part tested did not appear to be unbonded.

Another possible method for detecting unbonds in irradiated elements is being examined in cooperation with E.A. Smith of the HLO. Attempts are being made to detect local surface temperature differences on elements which are self-heated by fission product decay and which are being cooled by the basin water. First trials with a special thermocouple and elements which had been discharged over two weeks failed to show enough temperature differential between the element surface and the water. Further trials will be made with freshly discharged elements having a higher rate of heat generation.

Manuscripts for the electromagnetic testing sections of a Handbook for Non-destructive Testing which is being prepared by the Society for Nondestructive Testing are being reviewed for technical accuracy by H.L. Libby, Senior Engineer in Testing Methods.

Hanford Test Reactor

Metal testing proceeded routinely. Fabrication of the electronic components of the sub-critical neutron flux monitor are 99 per cent complete. The fission chamber detector for this monitor must next be designed and built.

DESIGN & PROJECTS

Status of Projects

CG-713 - Conversion to I & E Lead-Dip Fuel Elements - Preliminary design is complete. A proposed equipment layout has been approved by interested parties. Design has begun on conveyor layout, lathe installation and architectural work. Off-site purchasing will begin during October.

CG-737 - Electric-Pneumatic Control System for Canning Area - 313 Bldg. - Design is complete and sufficient equipment and material has arrived on plant site for construction work by plant forces to commence on October 3. As agreed with members of Manufacturing Engineering, and at their request, lines #1 and #2 will be converted first.

CG-759 - Additional Steam Generating Capacity - 300 Area - The AEC has informally advised that official action on this project will occur during October. Since it has been definitely agreed that the PRPR, Plutonium Fabrication Lab, and Metallurgical Development Facilities are now scheduled to be located in the 300 Area, the AEC has advised that they are in agreement to the need for expansion of the 384 Bldg. Official action is being deferred pending outcome and distribution of Fiscal 1958 construction funds. The incentives for installing a

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large boiler and retiring the two old Edgemoor Boilers are being considered. Initial studies indicate that an increase of \$50,000 over total project costs will insure installation of a new 100,000 lb/hr. steam generator as related auxiliaries have to be installed under any case.

CG-774 - 300 Area Sanitary Water System Modification - On September 26 the AEC Project Review Board deferred consideration of this project pending allocation of Fiscal 1958 Construction Funds.

IR-228 - 300 Area Evacuation Warning System - Field work is in progress and on schedule. The 3 H.P. siren has been set in position on Bldg. 313 and work is progressing in Bldg. 3706 with the audible alarm system.

IR-210 - Oil, Paint and Solvent Storage Facilities - Plant forces are completing actual "tie-ins" to the fire detection system and this facility will be accepted early in October.

Research and Development

The pre-heat furnace for the General Cable Cladding test has been reworked and will be in operation by October 10. Specifications for projected test work were sent to Feller Engineering Company. Specifications for an extrusion press capable of co-extrusion, extrusion and sheathing are being prepared. Verson Allsteel Press and Impact Extrusions have expressed that they can produce encapsulated bars by impact extrusion.

DRAFTING & FILES

Principal Jobs in Drafting:

306 Building	I & E Conveyor Aluminum Weld-Type Cap
313 Building	I & E Conversion Layout I & E Automatic Conveyor Interlocking Contour Tooling Rinse Cycle Layout Welding & Lathe Power & Light
Miscellaneous	300 Area Evacuation & Fire Alarm System 100 F Fuel Element Dolly Cartridge 100 K Anion Flow Diagram Automatic Badge Disassembly Machine 301 Bldg. addition - sketch 384 Bldg. Maintenance Shop - sketch As-Builts - Bldgs. 382, 384 and 3706

Drawings Produced:

New	39
Revised	49
Large Charts	7
Small Charts	38
Miscellaneous	19

ADVANCED ENGINEERING

Beryllium Addition to Canning Bath

A literature search was made during the month to determine the feasibility of adding small amounts of beryllium to the AlSi canning metal to increase the fluidity, and improve the yield. Several observers have reported beneficial results of Be additions to molten aluminum alloys and a report describing these findings will be issued in the near future. A recommendation to test the use of beryllium in the HAPO canning process in the 306 building has been accepted by the Engineering Operation, and the responsibility has been transferred to the Materials Engineering Operation. A four to one payout on cost increase is forecast on the basis of an anticipated three per cent yield improvement.

As part of an overall study of beryllium additions to AlSi, a resume was made of HAPO experience in this regard. A personal contact by a HAPO employee in 1952 (HW-25796) with the Alcoa Research Laboratory had indicated that beryllium additions of the order of 0.05 per cent produced remarkable effects on surface tension, oxide content, and "fluidity" of AlSi. A small quantity of beryllium-aluminum master alloy was procured in the hope that its use would alleviate a serious non-seat problem prevailing at the time.

A Fuel Technology group conducted a single experiment, in which 0.1 per cent beryllium was added to a small crucible of AlSi and a single uranium wafer dipped. Visual observation of the bath confirmed the Alcoa report relative to surface and entrained oxides. Metallography of the uranium wafer showed what appeared to be a slight thinning of the compound layer as compared to that of a production fuel element.

No fuel elements were ever canned in beryllium bearing AlSi. Incentive to continue the effort was diminished by alternative solution of the non-seat problem and by the uncertainty of the health hazard at that time. Considerable progress has been made in the health and safety aspects since 1952 and little difficulty is currently anticipated in this area.

Project CG-771

In conjunction with Design & Projects a high spot cost estimate was prepared for a manufacturing facility to prepare fuel elements for a project 771 reactor. The total project cost was \$2,500,000 and included a complete facility of approximately 40,000 ft.². Within the limits of the high spot estimate, this facility could produce aluminum or zirconium jacketed fuels.

Co-extruding Zirconium Clad, Natural Uranium Fuel Elements

A review was made of press capacity requirements for co-extruding fuel elements. From the experience at Nuclear Metals where a 20:1 reduction in cross-sectional area at 1200°F is used, it appears that a tubular element of 2.6" O.D. x 2.1" I.D.

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would require a 2200 ton press. A cluster element in which the individual elements are 0.704" O.D. would require a 460 ton press.

A study was also made to evaluate the possibility of using a co-axial press for both co-extrusion of tubular Zr on Uranium, and cable cladding Al on uranium. From the limited information available, it appears both presses are about the same magnitude in regard to size and capacity, with the only change required being in the design of the tools and holder.

Uranium Washers

A review is being made of the past experience in fabricating and irradiating uranium metal powder compact fuel elements to determine the feasibility of producing washers by this process.

INVENTIONS

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during September, 1957 except as listed below. Such persons further advise that, for the period therein covered by this report, notebook records, if any, kept in the course of their work have been examined for possible inventions or discoveries.

Manager - Engineering

PH Reinker:mbs

FINANCIAL OPERATION

SEPTEMBER, 1957

AUDITS AND PROCEDURES

Auditing - Auditing activities included:

1. Participation in meeting of Internal Auditors from each HAPO component with the Manager, AEC Audit Branch, to review audit objectives and to exchange ideas concerning organizations and working relationships.
2. Preliminary work on an audit of FPD safety awards plan.
3. Verification that FPD Personnel Accounting was properly handling cost allocation for vacations of employees transferred to other locations within the Company.

Office Procedures - Procedures for handling overtime records of Manufacturing employees were finally developed and adopted. New procedures permit elimination of separate overtime records maintained within Manufacturing Operation.

Periodic meetings were held with Office Procedures Specialists of other Departments to resolve proposals and problems of mutual interest. These meetings were particularly helpful for obtaining information on Data Processing developments.

Forms Control - Two improved accounting forms which were originated by FPD Product Cost were distributed to other Departments for possible adoption. A new form, Salary Accrual Distribution was designed to notify Data Processing of month-end accruals to work orders. The Material Transfer form was redesigned to simplify initial recording of information and eliminate transcribing data to a second form for transmittal to Data Processing.

Four formal suggestions pertaining to office forms and envelopes were reviewed this month. Although the proposals were not new ideas, there were two points which will soon receive additional emphasis.

GENERAL ACCOUNTING OPERATION

Effective September 1, 1957, responsibility for making Cash Advances and recording and reporting of travel, living, and entertainment expenses was transferred to the General Ledger Specialist. Work routines involved were integrated with other General Ledger responsibilities and September activity in accounting and reporting such expenses was accomplished on schedule.

September travel and living statistics compared with August are summarized on the following page.

GENERAL ACCOUNTING OPERATION (Continued)

	<u>September</u>	<u>August</u>	<u>Increase or (Decrease) over August</u>
Travel Advances to employees:			
Balance at beginning of month	\$2 148	\$3 322	\$(1 174)
Current month charges	<u>4 645</u>	<u>4 836</u>	<u>(191)</u>
	<u>6 793</u>	<u>8 158</u>	<u>(1 365)</u>
Less:			
Expenses accounted for	1 796	5 093	(3 297)
Advances refunded	<u>762</u>	<u>917</u>	<u>(155)</u>
	<u>2 558</u>	<u>6 010</u>	<u>(3 452)</u>
Balance at end of month	<u>\$4 235</u>	<u>\$2 148</u>	<u>\$ 2 087</u>
Outstanding travel advances:			
Current	\$3 335	\$1 934	\$ 1 401
Outstanding over 15 days	<u>900</u>	<u>214</u>	<u>686</u>
Balance at end of month	<u>\$4 235</u>	<u>\$2 148</u>	<u>\$ 2 087</u>
Number of expense reports submitted	18	14	4
Number of cash advances	14	11	3

Arrangements have been completed with Excess-Surplus Warehousing and Shipping Operation whereby receipt of excess capital equipment will be acknowledged at the time it is delivered to the excess yard, provided such delivery has been scheduled in advance. Previously, receipt had not been acknowledged until the equipment was checked by excess yard personnel, which has resulted in a time lapse between delivery of the property and return of the receipted excess declaration as long as several months. The burden of accountability rested with the custodian although physical possession had been relinquished. Correction of this situation is another step toward achievement of effective property control.

Schedules and procedures for the inventory of uninstalled cataloged equipment have been completed and will be discussed with custodians or their representatives during October. Schedules will be published formally upon completion of individual discussions. Inventory will be taken as assigned by organizational components and is expected to start January 13, 1958 and be completed by February 3, 1958.

Fiscal Year 1958 budget allocations for Equipment not Included in Construction Projects were established during October with the stipulation that they would be subject to reconsideration during the Midyear Budget Review. This amount which includes FY 1957 commitment carry-over funds of \$189,000 was allocated to level 3 operations as follows:

GENERAL ACCOUNTING OPERATION (Continued)

	<u>Allocation</u>	<u>Requested</u>	<u>Reduction</u>
Engineering	\$ 47 000	\$147 000	\$100 000
Maintenance and Power	68 000	96 000	28 000
Manufacturing	<u>387 000</u>	<u>493 000</u>	<u>106 000</u>
	<u>\$502 000</u>	<u>\$736 000</u>	<u>\$234 000</u>

One new appropriation request for \$14,000 and two revisions totaling \$1,730 were processed during September. Status of equipment funds as of September 30, 1957 was as follows:

	<u>Funds Available</u>	<u>FY 1958 Expenditures</u>	<u>Total Expenditures & Commitments</u>	<u>Uncommitted Funds</u>
Engineering	\$ 47 000	\$ 2 098	\$ 3 813	\$ 43 187
Maintenance and Power	68 000	9 833	24 425	43 575
Manufacturing	<u>387 000</u>	<u>29 466</u>	<u>203 905</u>	<u>183 095</u>
	<u>\$502 000</u>	<u>\$41 397</u>	<u>\$232 143</u>	<u>\$269 857</u>

Allocation of FY 1958 funds for General Plant Projects was received during the month as follows:

	<u>Allocation</u>	<u>Estimated Cost</u>
CG 774 - 300 Area Sanitary Water System Modification	\$173 000	\$321 500
Fume Control - 313 Building	10 000	100 000
Miscellaneous Work Orders	<u>30 000</u>	<u>30 000</u>
	<u>\$213 000</u>	<u>\$451 500</u>

The foregoing allocation was made with the understanding that an additional \$148,500 would be required if Project CG 774 - 300 Area Sanitary Water System Modification is approved against General Plant funds. Other possible sources of financing are Budget Items 58-b-4, Improvements to Production and Supporting Installations, and 57-a-7, Modifications to Existing Production Plants for Increased Safety and Efficiency.

Project CG 774 - 300 Area Sanitary Water System Modification, was approved by the HAPO General Manager and forwarded to AEC on September 20, 1957. Estimated project cost is \$326,000, which includes \$4,500 transferred capital equipment.

The allocation of \$10,000 for Fume Control - 313 Building was an arbitrary ten per cent based on the estimated project proposal submission date of November, 1957.

GENERAL ACCOUNTING OPERATION (Continued)

Since April, 81 Advices have been distributed to issuers and users for the scheduled six month's review. The review program will be 100 per cent current in October and will be maintained on a current basis thereafter. One OPG was issued and three Advices were revised during the month.

Documents reviewed from a reimbursement standpoint included 158 purchase requisitions and 92 work orders.

MEASUREMENTS

Several meetings were held during September with Manufacturing personnel on the development of the Operation's 1958 goals. General areas of coverage were agreed upon and tentative goals were established by Key Result area.

Considerable effort was directed toward stabilizing the Department productivity measure. The month of January, 1957 has been established as the base period for price revaluation and the productivity ratio will include services performed by the Maintenance and Power Operation. Procedures for establishing the productivity ratio are currently being tested by comparing the 2nd quarter with the 1st quarter of CY 1957. It is anticipated that final procedures will be completed during October and the first formal report issued by November 30, 1957.

PERSONNEL ACCOUNTING OPERATION

In accordance with provisions of General Electric's five-year "Better Living" program, a general three per cent increase to base salaries was effective October 1, 1957. Adjustments to salaries since September, 1955 total 11.31 per cent. The total current adder factor is 29.31 per cent, of which 5.31 per cent represents cost-of-living adjustments granted since September, 1955. This three per cent general wage adjustment increases the aggregate annual base salaries for nonexempt employees approximately \$70,000. Shift differential was increased October 1 from 17 cents per hour to 18 cents per hour and the weekly isolation pay rate was increased from \$9.57 to \$9.83. Total increases will result in an approximate \$80,000 increase in the annual gross payroll.

As the general wage adjustment was effective October 1, the second work day of the work week, considerable effort was required to develop a procedure which would permit payment of nonexempt employees at two different rates for the week ending October 6, 1957. This type of problem created additional work for Personnel Accounting as it was necessary to prepare two detail time cards for each employee. In addition, Computing is required to calculate payment of two time cards as though each were a separate payroll and then combine the two payrolls to issue a single net salary payment.

During September an investigation was made in regard to the legality and consistency of certain methods now employed for determining payments. Questions arose mostly on overtime payments. Our methods were found to be in agreement with legal and contractual requirements.

PERSONNEL ACCOUNTING OPERATION (Continued)

A Salary Administration and College Graduate report was prepared for transmittal to Consolidated Payroll Reports and Statistics, Schenectady. This report summarized salary data on all exempt employees and on all employees holding college degrees. The report is utilized in Company-wide statistical surveys.

Reassignment of duties and responsibilities of individual employees, together with some simplification of procedures, will permit reduction of one employee in Personnel Accounting on October 4. This will make a total reduction of two employees since October, 1956.

PRODUCT COST OPERATION

FPD arranged for and will host the first of a series of meetings of HAPO Cost Supervisors for the purpose of reviewing methods of accumulating and reporting costs. Areas of cost reduction will also be discussed.

A meeting was held with Management of Area Maintenance and Transportation to discuss cost procedures. TIME rates, work order procedures, inventory valuations and their effect on costs were discussed in detail.

A meeting has been arranged to discuss with Employee Relations the influence which their Operation has upon production and research costs. Other general cost information will be discussed.

A physical Inventory of special materials in custody of Fuels Preparation Department was conducted as of September 30, 1957. Material holders were assigned responsibility of weighing the material under observation of a financial representative. A report will be distributed in October covering final results of the inventory. Preliminary results indicate a reduction in platinum of \$11.00, which is attributable mainly to an unreported operational loss of 2.6 grams.

A physical inventory of all essential materials (excluding coal) was conducted as of October 1, 1957. Physical quantities of material on hand were verified by the Financial Operation. A report will be issued in October covering results of the inventory.

Plans are to keep budget detail to a minimum for the Midyear Budget Review. Instructions and forms will be ready for distribution by October 15, 1957, at which time a new production forecast is expected to be ready for use. Although a firm Financial Plan has not been received, much of the budget review groundwork can now be completed.

Productivity meetings are still being held to resolve problems connected with development of a productivity measurement for the Department. Present plans provide for the development and analysis of productivity indices for the first three quarters of CY 1957 prior to the end of October.

WS Roe:wmm

Manager - Finance

MAINTENANCE AND POWER OPERATION

SEPTEMBER 1957

GENERAL

Material and Property

Productive Maintenance Program

Outstanding orders as of 8/30	178
Orders issued in September	90
Orders completed in September	56
Outstanding orders as of 9/30	158

The Third Party Inspector from the Travelers Indemnity Company was escorted and assisted in his inspection of 28 autoclaves and 8 miscellaneous unfired pressure vessels in the 313 Building by the Analyst, Maintenance Materials and Property.

A series of meetings was held with Level 4 and 5 personnel who are equipment custodians of uninstalled mechanical equipment. These meetings provided information regarding the custodian's responsibility and clarified the objectives and responsibilities of the Plant and Property Accounting Operation.

Savings totaling \$4,169 annually were realized by the formal Cost Reduction Program. Total savings for the quarter are 127 per cent of the quarterly Cost Reduction Budget.

Detailed information concerning the Operation's costs to HLO was submitted to the Manager, HLO. His cooperation was solicited in requesting a uniform level of service throughout the year, to permit the Operation to maintain a more constant work force.

The review of Position Guides for the Operation is complete.

Climate Review Meetings were held with the Level 3 and 4 Managers. These meetings resulted in a positive program to improve the relationship with other Operations; correct salary inequities, and establish additional cost control methods.

AREA MAINTENANCE

Duplicating statistics for the period covered are:

<u>PROCESS</u>	<u>NO. OF ORDERS PROCESSED</u>	<u>NO. OF COPIES MADE</u>
Multilith	771	416 251
Verifax	79	1 622
Ozalid	78	4 486
		<u>422 359</u>

There were 29 formal reports, consisting of 11,956 volumes, printed and bound. These reports consisted of 363,980 pages.

A new type of platform step ladder with locking casters has been provided to the janitorial personnel for use in cleaning light fixtures, Venetian blinds, walls, etc. The use of this new type ladder makes the performance of these jobs safer.

Extensive jack hammer work was required in the 321 Building to expose a broken drain pipe. In addition, painting, pipe insulation and general winterizing have been accomplished for this building.

The exhaust ducts of four canning furnaces in the 313 Building were removed, steam cleaned, repaired and reinstalled. Cleaning was required to remove a carbon deposit in the ducts.

The roof flashing on the 3760, 329 and 325 Buildings was repaired. This repair work was done prior to failure of the flashing. The repairs will prolong flashing life and prevent roof leaks in these buildings.

A new AC-DC heliarc welder was received for use in the 3717 Building Maintenance Shop.

INSTRUMENT AND ELECTRICAL

The responsibility for all instrument maintenance in the 700-1100 Areas was accepted effective September 1, 1957.

The Portable Shop repaired a total of 963 portable radiation detection instruments. Average time per instrument repaired was 1.15 man-hours.

As part of the Portable Instrument Standardization Program, the batteries in all EGM and VGM survey instruments were removed. These instruments were returned to the Radiation Protection Operation for storage as standby equipment.

Interrupter type high voltage supplies, which were developed and tested for 2404 hours and 1357 hours, were considered to be acceptable. The supply having 2404 hours running time was installed in a Thyac GM survey instrument and placed in pool operation. The use of interrupter type high voltage supplies will result in improved instrument operation at reduced cost.

The thirty scintillation poppies received prior to this month have been completely serviced, tested and circuitry checked. These instruments are now in service.

An extensive cleanup and removal of unused instruments, cable and conduit is under way in the 321 Building. Additional work will be done to eliminate unused equipment.

Three separate jobs, consisting of winding elements of varying wattages and wire sizes on intricate glass equipment, for use in HLO were completed. This work required the application of considerable skill, care and effort.

A Differential Thermal Analyzer was assembled for the Chemical Research Operation. The instrumentation in this analyzer includes an indicating controller, pyrometer, and temperature and differential recorders.

POWER

<u>Power Statistics</u>	<u>September</u>	<u>August</u>
Average Steam Generated (M lbs/hr)	26.6	25.7
Maximum Steam Generated (M lbs/hr)	50.0	35.0
Total Steam Generated (M lbs)	19 118	19 137
Coal Consumed (Tons)	1 283	1 269
Evaporation Rate (Steam/#Coal)	7.45	7.54
No. of Boilers on - 2 (9/1/57 through 9/30/57)		
Sanitary Water from 3000 Area (Million Gals.)	65.9	69.1
Total Water from 3000 Area (Average Rate GPM)	1 525	1 549
Soft water from #3 and #4 Wells (M Gals.)	9.8	17.4
Water from #2 Well (M Gals.)	.30	.25
Peak Water Consumption for 24 Hours (Million Gals.)	2.6	2.5

On September 13, 1957 steam pressure was reduced from a normal 120 lbs to 90 lbs for most of the day shift to permit repairs to the steam header loop and the replacement of a pneumatically operated valve.

The No. 2 Boiler was inspected by a representative of the Travelers Indemnity Company. This completes the boiler inspection for CY 1957.

Closer scheduling of coal receipts has been undertaken to eliminate the necessity of placing coal in the stockpile to eliminate demurrage charges. Further increases in coal inventory are deemed unnecessary. A reduction in bulldozer time required on the coal pile will be realized.

PLANT ENGINEERING

There were 43 training lectures held for electrical, instrument and mechanical craft personnel. This represents 380 man-hours of training.

Final inspection of the 313 Building steam meters was completed and equipment transferred to the Power Operation. Steam consumption measurements will be effective October 1, 1957.

A contract was let by the AEC for the laying of tile in the offices and corridors of the 3703 Building. The contract award has been made to the G. W. Paulson Company, Portland, Oregon for \$2,699. Engineering follow-up of the installation of the work will be performed.

FIRE PROTECTION

Fire Responses

HAPO	- 0
Construction	- 0
Private	- 0
Outer Area	- 0

SIGNIFICANT REPORTS ISSUED

None.

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 their work during September 1957.

There was no activity in the Swaged Thermocouple Invention as new dies for the swaging machine have not yet been received.

PERSONNEL

Organization Changes

L. M. Palmer returned to work on September 17, 1957 following a removal from payroll for illness. H. E. Thilenius, temporary supervisor, was returned to technician status at the same time.

SAFETY, SECURITY AND RADIATION EXPERIENCE

Medical Treatment Injuries	- 16
Frequency Rate	- 3.85
Disabling Injuries	- 0
Near Serious Accidents	- 0

There were no cases of radiation overexposure reported.

There was one security violation reported in the Area Maintenance Operation.

MEETINGS

Round Table-Staff	- 29
Safety and Security	- 31
Information	- 7

Manager
Maintenance and Power Operation

E. Hilgeman:JPF:mkm

EMPLOYEE RELATIONS OPERATION
September, 1957

PERSONNEL DEVELOPMENT

In conjunction with Personnel Development representatives of the other HAPO components, a revised Exempt Personnel Development Review form was developed for possible use during the forthcoming performance appraisal period.

Arrangements were made for seven nonexempt shift employees to participate in an elementary algebra course provided on a special "shift" schedule by the Richland Adult Night School. The arrangement resulted from resurveying the 13 shift employees who indicated in a survey conducted this month a desire to undertake off-plant training.

Seven Fuels employees have been enrolled to participate in a Method Time Survey course to be presented HAPO-wide. Three Fuels participants were enrolled in the PMS&L course conducted by R&U.

A trial presentation of the Government's "Plain Letters" course on written communication was conducted and additional courses scheduled for the balance of the year.

Total exempt time devoted to formal Personnel Development courses totaled 302 hours during September. This compares with 379½ during August.

Three rotational training assignments were filled during the month, bringing total tech. grads. in Fuels assignments to eight. Four summer placement employees who occupied tech. grad. assignments terminated during the month to return to school.

COMMUNICATION

The communication program for the Supervisory Sensitivity Survey was planned and developed. Similarly, a communication program looking forward to the Department's achieving the Central Safety Council Award on October 11 was developed, and initial material distributed.

Communication plans were developed for Fire Prevention Week beginning September 30. This program included preparation and distribution of the October safety topic of the month.

The Specialist-Communication and the representative of Press Relations explored possible news releases on Manufacturing activities with the Manager-Manufacturing and his staff.

An article on High Quality Fusion Welding of Aluminum received clearance from Oak Ridge AEC and is scheduled for publication in a forthcoming issue of "Factory Management".

GE News space devoted to Fuels Preparation Department employees and activities totaled 99½ column inches during the month. This represents an average of slightly more than ½ page per issue. Routine material accounted for eight column inches, and 91½ inches were devoted to programmed items.

Two speeches before community groups were approved for presentation and two others are pending approval. Five Management News Bulletins were issued, plus two FPD Newsletters distributed to all employees. Arrangements were made for two General Manager's meetings, one with all members of the Management Information Group and one with a group of exempt employees.

Final approval of 10 items for publication in the January, 1958, GE Review issue was received and the items forwarded to Public Communication for forwarding to the editor.

SALARY AND WAGE ADMINISTRATION

There were twelve positions audited during September. Excluding Level 2 and 3 Managers, fixed rate and vacant positions, 70 of the 84 positions as of October 1, 1956 have been audited, or 165.2% of the two year goal on a monthly basis. A total of 81 audits have been completed of the current 169 incumbents.

A revised guide for the Supervisor, Tool & Equipment Engineering position was received and evaluated. Confirmation of the evaluation by other HAPO Salary Administration Specialists resulted in a change in position level. This was approved by the Acting General Manager effective 9-1-57.

The list of Fuels Preparation Department Representative Positions was updated for inclusion in the Salary Manual when next revised.

The coding of personnel and salary data current through September 30, 1957, has been completed for the Schenectady "Salary Administration Statistics" report.

The job audits presently being conducted in the Manufacturing Operation are centered about the nonunit nonexempt classifications. Audit of these jobs is complete within the Finishing & Special Products and Canning Operations. Quality Control Operation is complete except for receipt of revised job descriptions for three Laboratory Assistant assignments.

A request was made by the HAMTC that progression step credit be allowed to those employees in the Utility Operator classification who transfer due to lack of work, to lower rated chemical worker classifications. The recommendation was that such credit was not justified on a "blanket" basis. It was proposed such cases be handled individually.

A report intended to show comparisons of salaries as a percentage of position rate between 8-31-56 and 8-31-57 and which high-lighted the effect of reorganization and subsequent promotions on the data was prepared and presented to the Manager, Employee Relations and the Acting General Manager, FPD.

UNION RELATIONS

The Unfair Labor Practice Charge involving the canning line was dismissed by the NLRB for insufficient evidence to substantiate the charge. Notification of this action was received on September 5 by copy of a letter to the HAMTC from the NLRB. We have been informed that the HAMTC has asked for an extension of time for filing an appeal to the General Counsel of the NLRB and that such extension has been granted to the close of business on October 7, 1957.

The HAMTC has advised General Electric that the Chemical Workers' Local 369 and Operating Engineers' Local 280 stewards, business agents, and officers are no longer representatives of the Council for any purpose. The Company acknowledged this letter of notification advising the Council that we had no objection to the action taken. In the meantime, the Council has advised General Electric of the appointment of members of the Council Grievance Committee as stewards to represent members of the Operating Engineers and the Chemical Workers. We have been informed that the two locals have not remitted

per capita tax to the Council for approximately four months and the Council therefore dropped both locals. It is our further understanding that the basic cause of the failure to remit the per capita tax is due to the voting arrangement which the two locals consider as not representative of their members. The Chief Steward of the Chemical Workers who is in FPD, has been requested by the Council to be excused on two occasions in order to attend business which might result in a satisfactory solution to the problems encountered by those groups.

Two grievances were received, both of which involved overtime. One of the grievances was marked as satisfactory at Step I - the other grievance, while marked unsatisfactory has been closed inasmuch as the HAMTC did not signify their intention to discuss the grievance at the Step II level within the contractual period of time.

Two grievances filed in August, involving the Davis-Bacon Act, were discussed at Step II and answers were provided the Council.

A new starting rate in the progression schedule was established at the 27 month step which resulted in the Council withdrawing the Fritts grievance from arbitration. The Fritts grievance was filed in IPD by an employee who was bypassed by a junior employee in FPD. The facts surrounding the case were that the junior employee was moved from the 45 month step in the progression schedule to a Technician because of prior experience which had not been previously recognized by the Company and the aggrieved employee, Fritts, apparently felt he should have been advanced to a Technician. The installation of the 27 month step in the progression schedule should eliminate recurrences of this type situation in the future.

It has been agreed by all Union Relations Managers that Personnel Accounting would be requested to establish a method of accounting for the time spent by stewards on union business, particularly time spent away from the steward's base area. It is not intended to record the time spent within an area while settling or discussing grievances at the Step I level.

Grievance Statistics:

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

	<u>Unit</u>	<u>Nonunit</u>
Received this month	2	0
Received since 1/1/57	66	0
Step I		
Answer unsatisfactory	1	0
Answer satisfactory	1	0
*Pending time limit	4	0
Settled this month	9	0
Step II		
Discussed this month	3	0
**Pending time limit	1	0
Settled this month	2	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 September Grievances:
(2 total)

	Mfg. Oper.	Eng. Oper.	Maint. & Power Oper.	Emp. Rel.	Fin. Oper.
Overtime	2		0		

Subject of Grievances for 1957:
(66 total)

Jurisdiction	8		29		
Overtime	9		3		
Absence	0		2		
Ratios	2		0		
Hours of Work	1		1		
Seniority	1		1		
Recognition	1		0		
Grievance Procedure	3		1		
Responsibility	1		1		
Transfer	2		0		

HEALTH AND SAFETY

	<u>September</u>	<u>August</u>
Disabling Injuries	0	0
Serious Accidents	0	0
Medical Treatment Cases	47	49
Medical Treatment Frequency	3.96	3.84
Employee Hours of Exposure	120,026	127,643
Orientation Presentations	3	2
Attendance	10	5
Inspections	19	26
Suggestions Evaluated	5	13
Medical Examinations Quota	68	76
Completed	54	66
Safety Meetings Attended	3	2
Personnel Present	137	30
Supervisors Accident Prevention Instruction	1	0
Rotational Trainee Orientation	3	0

Program Development

During the first 12 months of FPD operation the Department achieved a Medical Treatment Frequency Rate of 3.32. Performance was 10% better than the established goal of 3.67 and 22% better than the average adjusted frequency rate for Metal Preparation Section during 1954, 1955 and 1956.

The Department has completed 395 days without a Disabling Injury through September, 1957.

Industrial medical examinations for August were 79.4% of the monthly quota. Year to date total completed was 110.4% of quota.

Forty-six steno-clerical employees of the Department attended the regular monthly safety meeting on September 18. The subject presentation was a talk on the development of safety consciousness.

The Central Safety Council Inspection of Department facilities was made on September 19. Inspection results indicate a continuing improvement of housekeeping and working conditions.

Health and Safety Program Council membership changed at month end. Each level #3 organization has appointed a new representative to the Council.

Activities

The Health and Safety office was contacted on the following items during September: Heating equipment, guarding, steam usage, equipment grounding, noise control, safety showers, floor surfacing, hydraulic pressure testing, eye protection, compressed gas manifolds and regulators, signal lights, crane hazards, sanitary water, molten metal hazards, safety valves, properties of compressed gases, publicity, public health, materials handling, safety meetings, hot water supply equipment, housekeeping, waste disposal, chemical hazards, conveyor systems, pressure vessels, equipment layout, accident statistics, work restrictions, color codes, soldering fluxes, storage, walks and roads, tank repairs, staging and ladders, explosive atmospheres, safety awards, line testing, barricades and hand rails, toxic solvents, metal fumes and dusts,

job study, switch gear, lock and tag procedures, safety rules and job hazard breakdowns, home safety, grinding wheels, degreasing equipment, welding and cutting, ventilation, ambulance revision, traffic, and portable tools.

FIRE PREVENTION AND CIVIL DEFENSE

	<u>August</u>	<u>September</u>
Fires and Investigations	3	0
Fire Loss	0	0
Inspections	11	39
Hazard Reports Submitted	2	2
Orientation Program		
Number of Presentations	2	4
Attendance - Nonexempt Employees	5	10
Attendance - Technical Graduates	0	3
Supervisors Instructed in Fire Prevention	0	1

Program Development

Completed final plans for October Fire Prevention Month Program. Chairmen have been appointed and all assignments are on schedule.

A new Civil Defense warning system for the 300 Area was approved and installation commenced on September 30, with completion date set for January 28, 1958.

Fire evacuation plans for Buildings 3703 and 3706 were revised and posted.

Caused the HAPO Standards Committee to revise five (5) fire protection standards in the interest of economy, improved safety and to provide authority for modifying the standards to fit local conditions.

General Activities

Procured copy of NBFU Standards for "Grading Water Systems" to assist the Design and Project Engineers with their study of the area water system expansion needs.

Caused Design and Projects Operation to initiate a study of the feasibility of installing an automatic fire protection sprinkler system in the 313 Building to combat the serious roof hazard.

Completed Fire Engineering Survey of the 311 Tank Farm following the installation of necessary safety devices to eliminate the potential fire and explosion hazards.

Conducted preliminary acceptance inspection of contractors work of modifying 3734-A Building and submitted list of code violating exceptions to Design and Projects Engineering.

Evaluated the fire hazards of fuel element cladding work to be performed by an outside contractor and submitted report to Materials Engineering recommending safeguards and methods of fire extinguishment.

Assisted HLO engineers with fire tests of a new experimental reactor coolant.

A single reset switch was installed on 3706 Building fire alarm system to eliminate starting each ventilating and exhaust system following actuation of fire alarm system.

EMPLOYMENT

Unfilled Requests for Personnel 4

Personnel Requirements Cancelled 19

Employees Added to the Rolls 19

Employees Removed from the Rolls 16

Transfer Data (Concerns Requests for Transfer - FPD)

Total Requests for Transfer Active at Start of Month	61
Number of Requests Received	11
Number Interviewed	3
Requests for Transfer Effected During Month	4
Requests for Transfer Cancelled	7
Requests for Transfer Active at Month's End	61

Procurement

Offers	2
Interviews	2
Requests for Personnel Received	5
Transfers (all)	15
New Applications Received	4

Upgrades within FPD 3

Personnel Records

Letters to Outside Agencies Regarding Information 9

Perfect Attendance Recognition Awards 5

Service Recognition Pins 10 Year - 11 5 Year - 5

General

Supervisory Selection Interviews 2

EMPLOYEE BENEFITS & SERVICE

Employee Benefits Plans

Participation in the Employee Benefits Plans as of September 30; for the Fuels Preparation Department is as follows: Pension Plan 99.6%, Insurance Plan 100.0%, Savings & Stock Bonus 56.7%.

Insurance Plan

One employee death occurred during the month.

JOHN H. WHITSON 9-22-57 W-11392 Maintenance and Power

Since September 1, 1956 life insurance claims total \$44,075.30.

Area and Plant Tours

During the month arrangements were made for 7 employees from the Fuels Preparation Department to tour the 313 and 305 Buildings.

Selective Service and Reserve Statistics

Total number of non-veteran employees subject to military service training through Selective Service System. Total 31

Number Classified 1A	<u>15</u>
" " 2A	<u>8</u>
All Others	<u>8</u>

Number of Technically trained and Engineering Personnel for whom deferments are currently being requested 8

Reservists Data - Total number of Reservists on Roll 59

Number of Ready Reservists	<u>40</u>
Number of Standby Reservists	<u>19</u>

Number of employees on Military Leave 8

Suggestion Statistics

	<u>Fuels Preparation Department</u>	<u>From Other Departments</u>	<u>Total</u>
Received	42	10	52
Adopted	0	0	0
Net Savings	0	0	0
Cash Awards	0	0	0
<u>Awards</u>			
Net Savings	0	0	0

Cumulative Statistics (since Jan. 1, 1957)

Present Backlog	183	12	195
Received	445	133	578
Adopted	106	5	111
Net Savings	\$19,301.32		
Awards	\$2,751.00		

TECHNICAL PERSONNEL PLACEMENT

College Recruiting

F. E. Jochen as one of the Hanford representatives, attended the Western Regional Recruiters Meeting conducted by J. B. Holmes, Manager, Western Region Engineering Recruiting, Engineering Personnel Services, which was held in the University Room, Ricky's Studio Inn at Palo Alto on September 23 - 24, 1957. The purpose of the meeting was to obtain the latest information on the use and application of the new interview Data and Record forms and on various programs for recruiting at the colleges, and to exchange ideas on interviewing and recruiting techniques in order to improve effectiveness and unity in this important company activity.

Summer Program

No activities

Experienced, BS-MS Recruiting

One technical or exempt personnel was added to the exempt roll this month. A total of 34 have been added to the exempt roll from October 1, 1956 through September 30, 1957. This represents a 94.4 per cent achievement on the roll in relation to requirements as forecast for the year October 1, 1956 to October 1, 1957. (including attrition allowance)

The quarterly report covering the Fuels Preparation Department technical and exempt personnel requirements for the period October 1, 1957 to October 1, 1958 has been completed and prepared from information submitted by individual departmental components. Conforming with the most recent budget indications and from analysis of this report, it has been determined that a total of 11 technical and exempt personnel will be needed during this period. These requirements are planned on the basis of replacements to cover the normal attrition rate.

The Fuels Preparation Department has received a total of 14 applications to date as a result of it's advertising activities. Ten of these applications have been for the position of Engineering Economist, one for the position of Electrical Engineer or Experimental Physicist, one for Metallurgical Process Engineer, one for the general position of Chemist and one for a general position as a Nuclear Physicist but whose application was directed to HAPO as a result of other advertising. All fourteen have been signed-off because it was felt that their qualifications, background and experience were not in line with those required to fill the openings.

The Small AC Motor and Generator Department were notified that there were no current openings in the Fuels Preparation Department for the available manufacturing personnel which they referred to Fuels Preparation Department for placement consideration.

Exploration was made to consider any possible candidates from the Fuels Preparation Department for an impending opening for Mechanical Maintenance Foreman in Irradiation Processing Department. The Fuels Preparation Department recommended two possible candidates, however, they were later notified by I.P.D. that the incumbent in the position had decided to remain and that no opening currently existed.

The Fuels Preparation Department has considered each of the available twelve referrals made to HAPO by APED as a result of the visit of E. P. Galbraith and T. G. Marshall to that location this month. It was found however, that the interest, background and experience of these perspective candidates did not qualify them for any of F.P.D. current available openings.

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

	<u>Cases Con-</u> <u>sidered-FPD</u>	<u>Ext.</u>	<u>Invitations - FPD</u> <u>Visited</u>	<u>To Vis.</u>	<u>Open</u>	<u>Offers - FPD</u> <u>Ext.</u>	<u>Acc.</u>	<u>Open</u>	<u>On The</u> <u>FPD Roll</u>
<u>Engineering</u>									
Chemical	1	0	0	0	0	0	0	0	0
Electrical	1	0	0	0	0	0	0	0	0
Mechanical	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	1
Metallurgical	0	0	0	0	0	1	0	0	0
Civil	1	0	0	0	0	0	0	0	0
Geological	0	0	0	0	0	0	0	0	0
<u>Science</u>									
Chemistry	0	0	0	0	0	0	0	0	0
Physics	2	1	1	0	0	0	0	0	0
Math-Stat.	0	0	0	0	0	0	0	0	0
<u>Other</u>	<u>13</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Totals	18	1	1	0	0	1	0	0	1

PhD Recruiting (9-1-57 through 9-30-57)

	<u>F P D</u> <u>September</u>	<u>To Date</u>		<u>F P D</u> <u>September</u>	<u>To Date</u>
Cases Considered:	2	2	Offers Extended:	1	1
Interviewed:	0	0	Accepted Offers:	0	0
To Be Interviewed:	0	0	On The Roll:	0	0

Terminations and Transfers

No exempt employees terminated employment with the Fuels Preparation Department during the month of September. There are three active and one dormant transfer cases.

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

	<u>September</u>	<u>To Date</u>
<u>TERMINATIONS:</u>	0	0
<u>TRANSFERS TO OTHER COMPONENTS:</u>		
Requests Received:	2	2
Completed Transfers:	0	0
Closed Cases:	0	0
Active Cases:	3	3
Dormant Cases:	1	1

GENERAL

Key punching and tabulating of the Employee Attitude Survey results are due to be completed by the middle of October, and distribution of component's results by the end of the month. The employee report is due to be distributed about November 1.

SECURITY VIOLATIONS

There were four security violations during the month of September.

Manager - Employee Relations

END

**DATE
FILMED**

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