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MONTHLY REPORT

GENERAL ELECTRIC
COMPANY

Fuels Preparation Department

December 1957

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MONTHLY REPORT

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FUELS PREPARATION DEPARTMENT

DG checked 10/2/92

FOR

DECEMBER, 1957

Compiled by

Fuels Preparation Department

January 17, 1958

Richland, Washington

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FUELS PREPARATION DEPARTMENT
MONTHLY REPORT SUMMARY FOR
DECEMBER - 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-nine tons of acceptable fuel elements were produced which was 95% of the 599 tons forecast in HW-53271-RD. The variance from forecast resulted primarily from low manufacturing yields on all products.

At month's end there was an 0.4 month supply of bare uranium in storage. Finished inventory decreased 38 tons from previous month's inventory of 558 tons, leaving 520 tons or slightly less than a 1.0 month supply.

Operating efficiency for December was 93% which was the highest performance during 1957. The previous high for 1957 occurred in November at 92.3%.

Inclusion reject rates for both I & E and solid fuel elements were higher than normal during the greater part of the month. Since December 19, however, the average rate has been normal or below.

External bond test standards are now being fabricated by inserting mica in the braze layer of the fuel element.

ENGINEERING OPERATION

Irradiation of normal I & E elements continued without incident. Processing and irradiation of M-388 solid and blunt nose tru-line elements continued on schedule. Six thousand M-388 jacketed solid elements and 30,000 blunt nose tru-line elements were canned.

Approximately 1500 hot press C size I & E elements were received from Sylvania. Extensive out-of-reactor tests are underway.

Materials development and testing continued for dingot material, recrystallized uranium, precision cast and cold extruded uranium, and corrosion resistant aluminum alloys.

Approximately 300 eight inch, cored, nickel plated elements were extrusion clad at the General Cable Company in New Jersey. Testing is in progress. Approximately 140 feet of coextruded uranium and zirconium rod was received from Nuclear Metals Incorporated. About 100 feet appear satisfactory for reactor charging.

Two production tests for Category II type elements, utilizing massive I & E elements, were discharged at KER. A production test utilizing dip canned, wafer I & E elements was charged at the KER during the month.

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Studies have been initiated concerning the processing of N target elements. Two canning processes under consideration are the AlSi dip and unbonded C processes. These studies were initiated to determine the most satisfactory process for use in the event of a large scale E-N program at HAPO.

All project and design work is proceeding on schedule and within costs.

FINANCIAL OPERATION

In cooperation with the Manufacturing Operation standards for operating labor applicable to product models were developed. These standards are to be used for the first time during the month of January. Cost variances resulting from incorrect coding of time cards are expected to be eliminated, as will the clerical effort now required by operating personnel in entering time distribution on time cards.

Work simplification studies relating to cost accumulation posting and reporting were initiated in December. Improved procedures which are now partially in effect include written job descriptions and check sheets indicating steps completed. A substantial reduction in the reporting time lag is anticipated.

An appraisal of procedures relative to equipment utilization, control and budgeting was provided appropriate individuals of the Department at an information meeting conducted on December 20, 1957. Another purpose of this meeting was to emphasize the immediate need for committing available FY-1958 equipment funds.

A review of accumulated depreciation reserves and composite depreciation rates was started in December. Upon completion this review adjustment to reserves and revisions of rates will be made as warranted.

Based on exempt salary reviews made throughout the Department, a comprehensive summary was prepared and forwarded to the HAPO General Manager on December 23, 1957.

Organization of an OPG Review Council was completed. This Council includes representation from each level 3 operation, who will regularly review selected OPGs and Advices for adequacy and draft revisions as necessary.

MAINTENANCE & POWER OPERATION

There were two cost reductions totaling \$7,069 submitted during the month. This brings the quarterly budget realization to 108%. The CY-1957 budget realization is 106%. The total savings during 3 quarters of CY-1957 represent 4.7% of the total direct costs.

The responsibility for transporting fuel elements from the 300 Area to the 100 Areas was transferred to IPD. This reassignment of responsibility resulted in the reduction of 1 employee from the HAPO rolls. One driver, 2 diesel tractors and 2 heavy duty trailers were transferred to IPD.

The contracted floor covering installation in the 3703 Building was completed. The job was accepted and the contract closed.

EMPLOYEE RELATIONS OPERATION

There were no voluntary employee separations during December either of technically or non-technically trained people. One technical employee was added to the exempt roll from the rotational program. Forecasts indicate that 2 college juniors, 2 graduate students, and 1 college professor can be utilized on the 1958 summer program.

A self-development brochure, which explains intent and use of the new Exempt Personnel Development form and program was completed and personalized copies for each exempt employee were distributed. The third PEM-I class for the year was completed, and a fourth class is scheduled for early January, 1958.

Two technical papers were under consideration for presentation at the 1958 Geneva Conference on atomic energy; also two papers for possible presentation in the fall of 1958 before the AEC welding committee.

A shipment of fuel elements to Washington State College for their use in a nuclear engineering program was publicized internally and in the local press.

Ten grievances, all involving jurisdictional matters, were processed at Step I during the month. At year end there were 4 active, pending cases where the HAMTC had indicated intent to arbitrate, 1 of which had been dormant for some time awaiting a response from the HAMTC as to the phase of the Contract under which relief is sought and two others were approaching resolution without arbitration and with no compromise of the Company's position.

At year end the Department had operated 487 consecutive days without a disabling injury. The medical frequency rate for CY-1957 was 3.36, significantly under the goal of 3.67.

Installation of the Area Defense Warning System was nearing completion at year end.

PERSONNEL STATISTICS:

Number of employees November 30, 1957 777
Number of employees December 31, 1957 775

<u>OPERATION</u>	<u>EXEMPT</u>	<u>NON-EXEMPT</u>	<u>TOTAL</u>
General	1	1	2
Manufacturing	60	299	359
Engineering	49	26	75
Financial	16	23	39
Maintenance & Power	39	233	272
Employee Relations	16	12	28
TOTAL	181	594	775

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MANUFACTURING OPERATION

December, 1957

I. CURRENT OPERATIONSA. Production and Productivity1. Statistics

	8" <u>Solid</u>	8" <u>Cored</u>	<u>Enriched</u>		<u>I & E</u>	<u>Total</u>
			<u>Solid</u>	<u>I & E</u>	<u>I & E</u>	
<u>Current Month's Production</u>						
Acceptable Fuel Elements Produced (Tons)	446	0	4	15	104	569
As % of Forecast Production	101		40	62	83	95
As % of Past 3 Months' Production Average	98		27	250	173	99
As % of Past 12 Months' Production Average	96		50	750	385	106
As % of CY 1957 Goal						95
As % of June 1958 Goal (500 MWD/Ton)	162		10		52	84
As % of June 1958 Goal (750 MWD/Ton)	446		16		35	126
% of Forecast Achieved - Last Fiscal Quarter	101	0	78	8	98	93
% of Forecast Achieved - Last 4 Fiscal Quarters	104	67	74	8	66	98
<u>Operating Efficiency</u>						
Current Month (%)						93
Forecast (%)						89
Previous Month (%)						92
<u>Manufacturing Yield</u>						
Current Month (%)	78		47	40	56	
Forecast (%)	81		81	64	64	
Previous Month (%)	75	75	-	41	50	
Bare Uranium in Storage (Tons)	95	-	0	10	167	272
Finished Product in Storage (Tons)	342	20	3	10	145	520
Special Products Canned (Pieces)						852
Special Products Finished (Pieces)						827
Uranium Utilization (%)						95

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-nine (569) tons of acceptable fuel elements were produced which was 95 percent of the five hundred ninety-nine (599) tons forecast in HW-53271-RD. The variance from forecast resulted primarily from low manufacturing yields on all products.

b. Manufacturing Yield - Solid Production

The manufacturing yield for solid fuel element production was 77.8 percent as compared to 74.6 percent for November. Although yield increased slightly from November, poor bond and inclusion rejects continued to account, in most part, for the low yield.

The thin wall reject rate decreased a small amount from 1.4 percent in November to 1.1 percent.

The miscellaneous reject rate remained the same as last month at 2.5 percent.

For November, the can wall inclusion reject rate was reported as 8.1 percent. This was in error as the correct reject rate was 7.1 percent. A concentrated effort is being made to locate and eliminate variables causing inclusions. The reject rate dropped to 5.6 percent for December.

For November, the canning reject rate was reported as 0.8 percent. This was in error as the correct reject rate was 1.1 percent. The canning reject rate for December is 1.3 percent.

Bad weld reject rate remained the same as last month at 1.2 percent.

Poor bond reject rate decreased from 6.8 percent to 4.9 percent.*

Marred surface reject rate increased from 2.7 percent to 3.4 percent due in most part to increased handling. Increased handling resulted from flow of reprocess material.

Void reject rate remained steady at 0.3 percent.

c. Manufacturing Yield - Cored Production

About 3,000 eight-inch cored pieces were in process during the month but did not reach finished inventory. Material canned was from last month's reprocessed cores.

Remaining cored production will be negligible as only reprocess pieces are scheduled to be canned until all acceptable cores are placed in the canned uranium category.

* Brittle bonding became less frequent during the latter part of the month. The reason for less brittle bonding is still to be determined.

d. Manufacturing Yield - I & E Production

Yield for I & E production increased by a small amount from 49.5 percent in November to 55.8 percent in December. The improvement was due in most part to improved reliability of the internal penetration tester to distinguish true penetrations.

e. Manufacturing Yield - Enriched Production

Enriched I & E yield decreased from 41 percent in November to 40.3 percent in December.

f. Manufacturing Yield - Lithium-Aluminum Fuel Elements

The overall yield (ratio of acceptable pieces to bare pieces consumed) was 90.0 percent compared to 83.7 percent for November. Improvement resulted due to operator skill developed on previous production. Also void and inclusion standards on bare pieces were relaxed.

g. Other Activities

At month's end there was a 0.4 month supply of bare uranium in storage. The decrease was brought about by less material receipts from the National Lead Company, who had equipment and processing difficulties, and a larger than average inventory of reject material awaiting recovery.

Finished inventory decreased 38 tons from previous month's inventory to 520 tons or slightly less than a 1.0 month supply.

Inventory of essential materials increased from a 3.3 month supply to a 3.4 month supply.

The following pieces were processed through the fuel recovery operation:

	<u>Pieces</u>
8" Solid	27,524
8" I & E	15,834
8" Cored	1,159
I & E Enriched	7,384
Solid Enriched	<u>111</u>
Total	52,012

Sixty two thousand seven hundred twenty-nine (62,729) pounds of solid uranium scrap and 34,099 pounds of C-6 oxide were shipped in December.

B. Plant Problems and Incidents

1. General

During December the operating efficiency reached an all-time high of 93.0 percent. The previous high was 92.3 percent which was accomplished during November. This record operating efficiency was made while adding the second canning line of I & E production and making several changes in components used in 8-inch solid fuel production.

2. Autoclaves

Because it was found that the C-5 autoclave did not have sufficient weld penetration on the circumferential weld, all but four of the other autoclaves purchased from the manufacturer of C-5 have been x-ray inspected. Results to date indicate that only the C-5 unit will require repair.

3. Inclusions

A major can wall inclusion incident began with material canned November 21 and extended to December 2. This was believed to be due to copper contamination in the cleaning machines. It is known that there are numerous variables that may contribute to contamination. All known corrective and preventive steps were taken in an effort to reduce the inclusion reject rate. Some of the steps taken follow:

- (1) Replaced #2 sleeve machine brass rails with phenolic rails.
- (2) Checked lubrication on rails and other parts of the superstructure on the cleaning machines.
- (3) Changed sleeve cleaning solutions on a more frequent basis.
- (4) Used alternate sleeve and cap and can machines.
- (5) Started replacing all brass wearing surfaces with other materials on the sleeve and cap and can machine.
- (6) Replaced dry filters on the 313 Building air conditioners.
- (7) Cleaned trichlorethylene recirculating pump on the #1 cap and can machine.

On December 9, a second inclusion incident began which seemed to originate from a different source. It has been determined that this second incident coincides with the introduction of new sleeves which may have carried some iron and silicon into the process contributing to a high inclusion rate until December 12. A sustained high inclusion rate until December 19, is believed due to fly ash contamination probably aggravated during the process of installing new air filters. Since December 19, the average rate has been normal or below due in most part to a meticulous clean up campaign in all areas.

4. Autoclave Failure

No autoclave failures were experienced during December.

C. Operating Plans

1. Heat Treating Salt

Braze porosity is associated with some material that is re-heat treated in the 313 Building. The material affected is the one to two percent of the first run bare uranium which is rejected by the transformation tester and

1. Heat Treating Salt - continued

then heat treated to assure complete transformation work done by the Battelle Memorial Institute for the National Lead Company of Ohio for hydrogen pickup indicates that a 50-50 mixture of sodium chloride and potassium chloride would be superior to the salt presently being used. A quantity of the mixture is on order so that it may be tested on a production basis.

2. M-388 Scrap Metal

Eight batches of M-388 scrap metal were successfully recovered in the scrap metal recovery furnace during the month. This is part of a plan to determine the effect of M-388 metal on the Ajax recovery furnace and overall capacity of the metal recovery facility.

3. Third Line I & E Production

The third canning line of I & E is scheduled to start during the month of January.

4. Fabricated Testing Standards

Introduction of additional diameter and length dimensions for fuel elements has increased the need for more non-destructive testing standards. External bond test standards are now being fabricated by inserting mica in the braze layer of the fuel element. This simulates a void area of known size. Both go and no go areas can be placed in one standard which decreases the number of standard pieces needed.

D. Employee Relations

Members of the Operation were treated for 21 minor injuries for a frequency rate of 3.50.

Frequency of exposures greater than 200 mrad per two-week badge period was 1.0. The frequency of exposures greater than 100 mrad per two-week badge period was 16.0.

II. PERSONNEL MATTERSA. Visits and Visitors

R.E. Olson visited the National Lead Company in Cincinnati, Ohio and Mallinckrodt Chemical Works to discuss uranium quality control.

J.E. Bergman visited the Aluminum Company of America, Edgewater, New Jersey to discuss aluminum component quality and procurement problems. For the purpose of discussing their capabilities and potentials as a vendor of aluminum components, Mr. Bergman also visited the Cliff Manufacturing Company in Wickliffe, Ohio. He also visited the Savannah River Operation to discuss aluminum component procurement problems with J.W. Hammett. On December 12 and 13, Mr. Bergman visited the Hunter Douglas Corporation and Harvey Machine Company to discuss aluminum component quality problems.

A. Visits and Visitors - continued

During the month, H.E. Berg visited the General Electric Company at San Jose, California to discuss manufacturing methods, and the Harvey Machine Company and Hunter Douglas Aluminum Corporation to discuss aluminum component procurement and quality problems.

R.R. Cahall visited the University of Colorado, Colorado School of Mines, Colorado State College and University of Wyoming for the purpose of recruiting BS/MS technical and engineering candidates.

B. Reports of Invention

Members of the Operation engaged in work that might reasonably be expected to result in inventions or discoveries advise that, to the best of their knowledge and belief, no inventions or discoveries were made in the course of their work during December, 1957.

C. Meetings

Members of the Operation attended 15 staff meetings, 21 information and 24 safety and security meetings.

D. Significant Reports Issued

1. Routine

<u>Number</u>	<u>Title</u>	<u>Author</u>	<u>Date</u>
HW-52273-RD	Management Reports, Manufacturing Operation	WM Mathis	12-31-57
HW-53707	Uranium Quality Control Analytical Results	GB Hansen	11-22-57
HW-54001	Monthly Report, Quality Control Operation, FPD, November 1957	KV Stave	12-2-57
HW-54019	Fabrication History of Uranium Cores for November 1957	RE Olson	12-5-57
HW-54089	Production Report, FPD, Manufacturing Month Ending November, 1957	HE Berg/ GB Kuklinski	12-10-57

2. Non-Routine

HW-54137	Depleted I&E Fuel Cores	HE Berg/ HP Kraemer	12-11-57
HW-54148	Enriched Uranium (0.94% U 235) in Process Solutions	HE Berg/ HP Kraemer	12-13-57

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WM Mathis
Manager-Manufacturing

8" CANNING REJECTS BREAKDOWN BY MAJOR CLASSIFICATIONS

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8" CANNING REJECTS BREAKDOWN BY MAJOR CLASSIFICATIONS

LEGEND

1 & E

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ENGINEERING OPERATION December, 1957

VISITORS

<u>Name</u>	<u>Company</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
WO Stevens	WO Stevens Co., Seattle, Wn.	TW Gore	12-23	Consult on boiler problems.
H Hardt R Harpring	E.I. duPont, Savannah River Plant	EA Weakley	12-9/ 12-13	Discuss canning and welding techniques.

TRIPS

<u>Name</u>	<u>Company Visited</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
GF Jacky JH Johnson	General Cable Corp., Elizabeth, N.J.	RB Yeakle	12-2/ 12-6 12-9/ 12-12	Observe and assist in fuel element cladding operations.
	Sylvania Corning Nuclear Corp. Hicksville, L.I., N.Y.	GP Jacobs	12-11	Observe fuel element canning and plating operations.
	Moczik Tool & Die Co., Detroit, Michigan	C DeBuigne	12-13	Discuss extrusion cladding tooling.
SM Gill	Fernald, NLO, Cincinnati, Ohio	CE Polson	12-6	Discuss present & future uranium fabrication and development programs
	Cliff Mfg., Co., Wickliffe, Ohio	CH Wright	12-9	Discuss vendor problems.
	Feller Engineering Co., Pittsburgh, Pa.	EG Klein	12-10	Discuss cable cladding.
	American Bearing Corp., Indianapolis, Indiana	H Lambertus	12-11	Determine status of work on contract.
OW Rathbun	Fernald, FMPC, NLO., Cincinnati, Ohio	CE Polson	12-9/ 12-10	Discuss uranium stability.
	duPont, SRP, Augusta, Ga.	VI Montenyohl	12-11/ 12-13	Discuss uranium stability.

TRIPS (cont'd.)

<u>Name</u>	<u>Company Visited</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
AJ Karnie	General Cable Corp., Elizabeth, N.J.	O Garner R Yeakle	12-2/ 12-8	To perform cable cladding tests.
	Nuclear Metals, Inc. Cambridge, Mass.	P. Loewenstein	12-8/ 12-9	To consult with manufacturers of extrusion presses.
	Feller Eng'g. Co., Pittsburgh	EG Klein	12-9/ 12-11	" " "
RG Post	General Electric Co., San Jose, Calif.	MJ Sanderson RB Richards	12-9/ 12-11	To study fuel ele- ment manufacturing & testing facilities

PERSONNEL

<u>Name</u>	<u>Title</u>	<u>Nature of Change</u>	<u>Date</u>
<u>Process Engineering</u>			
WH Shelton	Rot. Tech. Grad.	Transferred in	11-25
RH Isom	Steno-Typist	Transferred in	12-30
<u>Testing Methods</u>			
TW Cannon	Engineer	Transferred in	12-1
GWR Endres	Rot. Tech. Grad.	" "	12-16
AN Iverson	Rot. Tech. Grad.	Transferred to IPD	12-20
JP Pilger	Rot. Tech. Grad.	Transferred to IPD	12-27
<u>Drafting & Files</u>			
RW Hutton	Draftsman	Leave of absence	12-3

PROCESS ENGINEERING

Regular Production Rupture Experience

One cored and 16 solid normal uranium fuel element ruptures occurred during the month. Nine of the ruptures were classified as core splits, 3 as side hot spot, one as side other, and 4, including the cored failure, were unclassified. The distribution of the ruptures by reactor was 2 in C, 10 in DR, 2 in F, 2 in H, and 1 in KW. Excluding DR experience, the rupture trend for regular production material was favorable.

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An outbreak of 8 core split failures was sustained in the near-central region of DR reactor, following an outage to discharge a ruptured element jacketed in a Hunter-Douglas low iron content can. All of the split failures occurred in tubes connected to one cross-header. Coolant flow to this cross-header was inadvertently shut off during the aforementioned outage, and it is suspected that the abnormal temperature rise of the fuel elements while the coolant flow was shut off may have been a primary factor influencing the rupture outbreak.

Another Hunter-Douglas jacketed element failed during the later part of the period in DR, increasing the total ruptures incurred by this material to 17. Further investigation of the quality of Hunter-Douglas cans has indicated both low iron content and fabrication problems in the vendors plant caused the cans to be more susceptible to side hot spot failure.

In addition to the normal uranium ruptures, there were two solid and one I & E enriched "E" metal failures. One of the solid elements was classified as side other and one was unclassified. The I & E failure has been classified as a side hot spit, and a more thorough examination is being made in the Radiometallurgy Laboratory.

I & E Program

Irradiation of normal uranium I & E fuel elements is continuing without incident. The central I & E loading of C reactor has been completed. Approximately 345 tubes of I & E elements have been charged in KW reactor. Exposures in the C reactor are scheduled to be decreased early next year from the present variable goal of 800 MWD/T to about 700 MWD/T as power ascension to a nominal bulk outlet temperature of 95 C is started. I & E charges in KW reactor are currently being piloted to a variable goal exposure of 950 MWD/T.

The yield for I & E fuel elements processed in the production facility during the month was about 54 per cent. Major reject categories were braze layer contamination (7.9%) and surface rejects (7.3%) for inclusions and stains. Continued effort is being expended in the Pilot Plant in support of yield improvement. About 2900 I & E "E" metal elements were processed in this facility with an average acceptable yield of 57 per cent, and yields as high as 70 per cent were achieved during the run.

M-388 and Blunt Nose Tru-Line Program

The processing and irradiation of M-388 and blunt nose tru-line solid and cored fuel elements is continuing as scheduled. About 6,000 standard M-388 alloy clad solid fuel elements and 30,000 blunt nose tru-line (M-388 and 1245 alloy clad) solid fuel elements were canned during the month with yields of 73.8 and 66 per cent, respectively. The lower yield for the blunt nose tru-line elements is primarily attributed to a general increase major reject categories during the period when this material was processed.

To date, approximately 680 tubes of M-388 standard, 260 tubes of 1245 blunt nose tru-line, and 334 tubes of M-388 blunt nose tru-line solid and cored elements have been charged in the reactors for evaluation. Further evidence of M-388 alloy longitudinal pitting was observed on solid elements discharged from H reactor and I & E elements discharged from DR reactor at exposures of 500 and 800 MWD/T,

respectively. In addition one of the tubes of solid M-388 alloy clad solid fuel elements discharged from H reactor incurred a cap failure at an exposure of 486 MWD/T. Based on results thus far, there is no apparent correlation between reactor operating conditions and the susceptibility of M-388 alloy to pitting attack. Under similar conditions the overall corrosion rate of 1245 alloy exceeds that of M-388 alloy by a factor of two or more. Available data is insufficient to establish whether there is any significant difference in the rupture resistance of the two alloys. A thorough investigation is underway in an attempt to identify the factors contributing to the M-388 alloy pitting problem for appropriate counter measures. This includes both laboratory and in-reactor tests to investigate the quality of the alloy and conditions under which it may be sensitive.

Dingot Program

A sufficient quantity of low hydrogen dingot cores was received to prepare a run-to-rupture test on solid dingot and ingot fuel elements clad in M-388 blunt nose tru-line jackets. This material is awaiting reactor charging. MCW has advised that their capacity for producing low hydrogen dingots will be limited to about 13 tons per month for HAPO until April. Dingot production is currently being shifted from their pilot plant to the new Weldon Spring Plant.

Sylvania-Corning Hot Press Program

A total of 1542 hot press C size I & E fuel elements were received from Sylvania-Corning for initial evaluation. These fuel elements are being finished, and will be subjected to a thorough metallographic examination, complete destructive and non-destructive tests for fuel element quality, and laboratory tests to determine flow characteristics, corrosion resistance, and reactivity. If acceptable for reactor charging, preliminary irradiation testing will follow to compare dimensional stability and rupture resistance with dip-canned I & E elements.

N Target Element Program

Studies have been initiated on the processing of N target elements in the event of a large scale E-N program at HAPO. Two canning processes are being considered; ALSi dip bonding, and the unbonded "C" process. The latter is more economical if a satisfactory welding technique can be developed. Several I & E "N" target pieces canned by the unbonded process have been successfully welded on the HLO experimental electron beam vacuum welder. Further work is required to determine the feasibility of adapting this type of welder to production. A number of companies have expressed interest in developing the necessary equipment, and will be contacted early in January, 1958.

Process Technology

The following additions have been made to the process specifications, and will become effective early next month when issued.

1. I & E fuel elements
2. M-388 alloy clad fuel elements
3. Standardized blunt nose tru-line fuel elements

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4. Can-sleeve vibration
5. Rewelding of weld and poor bond rejects
6. Use of argon-helium gas for welding

Two additional production welders were modified for the argon-helium, single pass, 9-second welding cycle. All remaining welders are expected to be modified by mid-January.

Preliminary tests on a fully automatic prototype welding machine have been very favorable. Testing is being continued to facilitate final design of production equipment to be installed under Project CG-713.

In order to further eliminate potential sources of inclusion rejects, the brass rail on one sleeve machine was replaced with a phenolic rail, and the work carriers were faced with Rulon and equipped with phenolic pusher-bosses. Similar modifications were made on the work carriers of a cap and can machine.

MATERIALS ENGINEERING

Recrystallized Uranium

The 640 test pieces to determine the relative dimensional stability during irradiation between normal and low hydrogen recrystallized and non-recrystallized fuel element cores were reactor charged in 20 alternately charged tubes into 105-H on December 16. Discharge and post-irradiation examination is scheduled after exposures of two tubes of each to 500 and 700 MWD/T under PT-IP-60-A-88-FP.

NPR Study - Uranium and Aluminum Components

A sufficient quantity of enriched uranium washers (1.6% U-235) and aluminum cap and cans (in all four test alloys) for current NPR development needs were delivered during December.

Precision Cast Uranium

American Bearing Corporation is under contract to develop precision casting as a competitive technique for producing uranium washers and I & E cores.

About 20 laboratory casts have been made to experiment with mold materials, times, temperatures, etc., and have shown promise.

A 1000-pound melt vacuum furnace has been installed as part of a Pilot Plant facility for scaling up their laboratory work.

Cold Extruded Uranium

Hunter-Douglas Aluminum Corporation has agreed to stand labor and tooling costs to try forming "C" size I & E uranium cores by their cold extrusion process. Their work with other hard-to-extrude materials has shown excellent dimensional control and surface condition. Negotiations are underway.

Dingot Metal

Approximately 5000 solid normal uranium fuel cores from MCW dingot metal with hydrogen contents ranging from 2 to 6 ppm have been received at HAPO. These cores were produced from 55 forged dingot bars; each bar yielding 4 rolled rods. The rods were segregated into two groups alternately as they came off the finishing mill. The rods were all beta heat treated on the same cycle; however, one group was heat treated at FMPC in the lithium-potassium salt bath and the other group at MCW in Nusal, a 50-50 mixture of potassium and sodium chlorides. Machining of the rods and inspection of the finished cores was done at FMPC following normal production practice. The cores will be canned in 1245 components at HAPO in the 306 Pilot Plant and will be faced, welded and inspected in 313 as regular production metal. Reject data, autoradiographs and visual stripped inspections will show any relationships between bond porosity, hydrogen content, and heat treating salt bath composition.

This information will be used as a guide by MCW in establishing certain final processing steps for dingot production at their new Weldon Spring Plant (scheduled to produce metal in May, 1958).

Extrusion Cladding: General Cable Corporation

Approximately 300 eight-inch long cored nickel-plated HAPO fuel elements were extrusion clad with aluminum using the 1760 ton opposed-ram Schloemann press installed at the General Cable Corporation plant at Perth Amboy, N.J. The objective of these tests was to explore the use of various configurations of extrusion tools for cladding HAPO fuel elements and produce a metallurgical bond between the aluminum jacket and the uranium core. Extrusion tools included those designed to subject the fuel element to a high radial pressure and also those used for sheathing electrical cable. In addition to extrusion tool configuration, process variables included fuel preheat temperature, extrusion speed, and mandrel tip-to-die spacing.

The major portion of the elements were clad assembled into rods of six elements each, separated by 1-1/2" long aluminum spacers. These assemblies were held together by steel tie rods. Approximately 2/3 of the aluminum spacers were nickel plated, and the remainder were degreased and chemically etched. The fuel rod assemblies were generally preheated to temperatures ranging from approximately 300 C to 500 C in a horizontal tubular furnace, which was continuously purged with argon gas at a rate of 50 to 120 cubic feet per hour. Clad rods were cooled in ambient air and preliminary examinations of surface quality, cladding thickness, and jacket-core bonding was made. Initially, difficulties were experienced with the rods stalling in the press. These were alleviated by careful alignment of the equipment (furnace, furnace-press coupling tube, and run-out tube), and by minor modification of the extrusion tools.

Preliminary destructive testing of the clad fuel elements indicate that a satisfactory metallurgical bond between the uranium and the aluminum jacket was not achieved. In general, it appeared that at fuel core preheat temperatures of about 300 C and lower, the aluminum did not bond to the nickel plating, while at preheat temperatures of 400 to 500 C, a bond between the nickel plating and the

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aluminum jacket was achieved; however, the nickel separated easily from the uranium core, exposing an oxidized uranium surface. It is tentatively concluded that failure to achieve jacket-core bonding (while apparently employing process conditions which had worked satisfactorily at SRL and BMI) was due to oxygen or moisture in the furnace atmosphere, or the quality of the nickel plate, or to both factors. A thorough investigation of the problem is planned, including metallographic examination of the clad fuel elements and testing of the preheat-furnace atmosphere.

Mechanically, the results were very gratifying in that cladding speeds in excess of 15 feet per minute were demonstrated, using the high radial pressure extrusion tools. Likewise, the cladding surface is quite acceptable, and no gross variations from the 50 mil cladding wall thickness were noted. A few measurements indicate that a tolerance of -5 mils might be expected. A preliminary report describing the cladding tests in detail has been prepared.

In addition to metallographic examination of the clad fuel elements, planned tests include corrosion resistance of the jacket, uniformity of heat transfer, post-cladding bonding by heat treatment, and further destructive tests to assess uniformity of wall thickness, and degree of bonding achieved.

Extrusion Cladding: 306 Facilities

Progress on installation of an extrusion cladding experimental facility at HAPO included discussion of the preliminary design of a die block and container for the 306 Building 400-ton vertical press with Mr. Carl DeBaigne of Moczik Tool and Die Works. A revised design is being prepared.

Development Activities - Pilot Plant

Due to process difficulty and poor yields experienced in the canning of 6" enriched I & E fuel elements in the 313 Building, the Pilot Plant assumed a production and development program to provide/or to supplement production commitments and work out process difficulties for these elements. Approximately 3000 fuel elements were canned with an average overall yield to autoclave about 65 per cent with individual lot yields ranging from 35 to 73 per cent. This represents a significant improvement over 313 yields and was attributable mainly to optimizing the canning cycle for 6" cores and modifying the spire core insertion technique. Good welding yields also assisted the general yield improvement.

Nickel enriched AlSi was added to the canning furnace to simulate nickel building up from canning of M-388 components, and the reuse of scrap from these components. Canning was performed at low, intermediate and maximum concentrations to determine the effects of cladding properties. Results indicated that nickel content had no significant effect on cladding properties of fuel elements at nickel concentration likely to be reached under normal canning conditions.

Development of a horizontal agitator for the lead-AlSi duplex bath is continuing.

I & E Equipment Development

Hold-down fixtures for the manual quench baskets have been designed and fabricated which feature a ball-joint in the cap hold-down mechanism. This modification should reduce the cap cocking associated with the present manual quench baskets. Preliminary models are undergoing test in the 306 Fuel Element Pilot Plant.

TESTING METHODS

Fuel Element Testing

The original I & E bond-penetration tester in the 313 building was shutdown 12-4-57 for scheduled overhaul and modification. This work was completed and the tester was being reinstalled with new instrumentation at month's end. Fuel elements were satisfactorily tested during this period with the second I & E tester which uses the Manufacturing Engineering mechanical drive and the new pilot-plant-type Model 3 Penetration Tester. Maintenance personnel were given instruction on the operation of the new circuits and data and assistance were provided for preparation of an operating manual. Adjustment and maintenance of the I & E testers is now being handled successfully by Manufacturing with a minimum of required assistance.

The 306 external bondtester was converted from the two-crystal Lamb Wave system to the conventional single-crystal pulse-echo system pending more complete evaluation of the Lamb Wave method. Comparison tests have established that the 306 and 313 I & E bond-penetration testers are equivalent for both inside tests and for the external bondtest. Experiments are still in progress to demonstrate that the external penetration test calibration standard for 306 is compatible with that used in 313.

High transformation test reject rates have been experienced recently due to unusually fine grained, but transformed, uranium. A number of uranium cores were fabricated with varying sized regions of untransformed metal to better define the sensitivity of the present test. All were rejected except the one having the smallest (1" long by less than 1/2" deep) untransformed surface area. This gave a borderline reject signal indicating that the calibration standards for the solid Transformation Test cannot be relaxed for the fine grained metal without some risk of passing pieces with small untransformed regions at or near the surfaces. All of the test samples rejected when tested with the angled transmission method used with hollow cores. Additional experiments are underway to determine the best method for testing the fine grained metal with existing equipment. As reported later, the prototype Sonic Orientation Resonance Tester showed very good sensitivity for detecting pieces with small untransformed regions.

Project CG-713 - 313 Building I & E Conversion

HW-54119, "Proposed Bond-Penetration Tester Instrument System for Project CG-713," D. O. Hunter, was issued for comments. The proposed integrated console mounting with pull-out-drawers for critical chassis has been accepted as a desirable design. The Tech. Shops were authorized on 1-6-58 to proceed with the fabrication of five complete consoles at an estimated cost of \$51,000. Delivery of the first complete console is scheduled for 5-15-58. However, many of the individual chassis will be completed and available for debugging prior to assembly of the first console. Procurement requisitions for most components for the Model 4 Penetration Testers were issued in December.

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Some instrument cost savings are being realized by planning for the simultaneous construction of an additional console for Quality Control and additional tester chassis for Maintenance. Appropriation Requests to cover these items are being prepared by the respective operations.

HW-54029, "Prototype Mechanical System for Automatic Nondestructive Tester of I & E or Solid Fuel Elements," D. O. Hunter, was issued. Comments were requested on this design and on the alternate mechanical design developed by Manufacturing. A number of constructive comments have been received and are being reviewed to arrive at the optimum mechanical system design. Fabrication orders for the mechanical drive assemblies will be issued in January as scheduled.

Final design specifications for the test head manipulators and sensing probes are being completed on schedule.

NPR and Category II Development

The Nuclear Metals coextruded fuel element rods were not received for testing in December as expected. The eddy current equipment for core and clad tests, a 20 megacycle pulse-echo bondtester, and a 10 megacycle Lamb Wave bondtester are now operative. These tests have been explored insofar as possible with several available short lengths of coextruded rod. Further development awaits the fuel elements from NMI.

The present techniques for coextruding zircaloy clad fuel rods with integral end closures produce ragged and irregular ends on the uranium rods. The exact location of the uranium must be determined prior to cutting off the rod in order to insure the desired cap thickness. This has been done radiographically for the small pilot quantities produced to date. For a larger quantity production process it would be desirable to have a more rapid and less expensive method than that of X-raying each rod, developing the film, and reading the film. A theoretical analysis was made of one such possible method based on measuring the differential attenuation through the rod diameter of a finally collimated beam of gamma-rays of the appropriate energy. It is concluded that adequate linear resolution and a rapid test could be developed using the 0.356 Mev gamma-rays from Barium-133 (9.5 year half-life). Ba¹³³ can be activated in the HAP0 reactors. The intensity from this source would decrease roughly 50 per cent per millimeter of uranium absorber substituted for zircaloy of equal thickness. No further development of this method is planned for now since the integral end closure rods on order are to be sectioned into lengths by the fabricator.

Ultrasonic attenuation measurements on uranium washers at frequencies of 5 and 10 megacycles correlated poorly with grain size or orientation. More promising results were obtained at 20 and 25 MC. A more refined high frequency test setup is being devised to obtain more accurate data for comparison with metallographic examinations.

Preliminary measurements on washers with the Dermatron (eddy current) instrument showed some conductivity differences. However, these differences were small compared to probe motion and temperature effects. Further tests are planned with more sensitive equipment to determine if grain size or grain orientation effects can be detected by this means.

Methods Development

Laboratory evaluations of the prototype Sonic Orientation Resonance Tester Model 3-X indicate that it is now ready for production test evaluation. An additional circuit was designed and installed to shut down the tester if the uranium cores are not being vibrated properly. Very promising results on sensitivity were found in tests with cores having small untransformed regions (see Fuel Element Testing section). All the test samples were readily rejected by SORT. From the measured vibrational frequencies it appears that much small untransformed areas are also detectable. Samples are being fabricated to determine the actual sensitivity threshold.

Some improvements were made in stabilizing the prototype Ultrasonic Surface Tester Model 1-X. Further changes are required in the accompanying mechanical core scanning assembly before this system is ready for production testing.

Development studies were renewed on broadband eddy current techniques. Special emphasis is placed on application to discrimination against extraneous signals such as the bump and void signals which handicap the present I & E internal penetration test.

The two-layer (Al and Ni) metal thickness gauge developed for HLO is now ready for use. It will be used to check the jacket thicknesses of about 300 Sylvania hot-pressed fuel elements before delivery to HLO.

An order has been placed with Metrol, Inc. for a flexible rod and tubing testing system of the eddy current type with delivery expected in two to three months. This will be used for laboratory testing of experimental fuel elements and components, to expedite the evaluation of certain test techniques, and to evaluate the performance of available commercial nondestructive testers.

Hanford Test Reactor

Metal testing continued routinely and several special tests were completed. Comments have been received on the first draft of the test reactor operating specifications and a final draft is being completed. Final development and debugging of the sub-critical neutron flux monitor is underway. A fission chamber was borrowed from IPD for temporary use while the permanent chamber is being designed and fabricated.

RESEARCH & PROJECTS

Status of Projects

CG-713 - Conversion to I & E Lead-Dip Fuel Elements: Design and procurement is proceeding on schedule and within cost estimates. Two important areas of uncertainty have been clarified the past month, i.e., the automatic welder has been tested and operated in a highly favorable manner and the design of the bond and penetration testers was essentially firmed.

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CG-737 - Electric-Pneumatic Timing Controls - 313 Building: Work is proceeding on schedule and in a highly satisfactory manner. Four lines have been converted and placed in operation with no difficulty. The fifty line is nearly complete.

CG-759 - Additional Steam Generating Facility - 300 Area: The project proposal is awaiting local AEC action. Indications are that local approval will be given early in January.

CA-774 - 300 Area Sanitary Water System Modifications: Directive AEC-123 of 12-17-57 authorized \$321,500 as requested in the proposal. Project Management was assigned to AEC rather than to GE as proposed. AEC Work Authority CA-774 (1) was issued by AEC and accepted by GE. Preparation of the design criteria has begun.

Sprinkler System - 313 Building Addition: The proposal is being circulated for approvals. Estimated cost \$49,000; Beneficial Use - 9 months after authorization.

IR-228 - 300 Area Evacuation Warning System: Installation has been completed and final adjustments are being made. An area test of the system is scheduled for January 13, 1958.

Appropriations Requests: Four approved appropriation requests were received from Manufacturing during the month for installation of equipment. Work is proceeding satisfactorily.

Research and Development

Production Test IP-75-A, irradiation of 1.800 inch massive I & E fuel elements in KER loop 2 at 180 C outlet temperature, was discharged on 12-13-57. Examination of these fuel elements in the C basin facility showed that very little corrosion had taken place. There was a slight increase in weight of the pieces indicating some film build up. No unusual surface conditions were noted during visual examinations. The ribs on all of the elements had collapsed in the center. It is quite possible that this occurred during the handling subsequent to discharge. Exposure was 838 MWD/T.

Production Test IP-119-A, irradiation of dip-canned wafer I & E fuel elements, was charged into KER loop 2 on 12-14-57. This test will operate at a maximum specific power of 80 KW/ft and is scheduled to run for a maximum of 70 days. The outlet temperature will be 235 C and the maximum surface temperature 275 C internal and 265 C external.

Examination of the massive I & E elements from PT IP-90-A operating at 200 C outlet temperature discharged from loop 4 in November indicated the pieces had not been thoroughly seated in the tube. Three of the elements remained in the gunbarrel and 7 were in the low flux fringe zone. Therefore very little, if any, data was obtained from this test.

The four rod stainless steel clad cluster elements in KER loop 3 have reached an exposure of about 700 MWD/T. Maximum exposure is limited to 1000 MWD/T in the PT, due about 2-15-58.

Present plans are to charge dip-canned washer type I & E fuel elements into loop 4 on the next outage, January 7, since the new aluminum alloy testing is progressing slower than anticipated. Loop 2 or loop 4 will be discharged to accommodate the new alloys when they are ready for charging.

Research and Development - Cladding

Approximately 140 feet of co-extruded uranium and zirconium rod was received from Nuclear Metals on December 20, 1957. The material appears to be satisfactory in most respects and about 100 feet of the material will be satisfactory for reactor charging.

Sample sections have been cut from each rod and are being machined for welding samples to gather preliminary data prior to fabrication of the remaining material into fuel element clusters. Welding of the first pieces will be done during the week of 1-6-58. HLO intends to conduct various tests on these pieces to check the manufacturing processes prior to start of fabrication of the fuel element clusters.

The ex-reactor test performance of new aluminum jacketing alloys has been below expectations. All four of the candidate alloys showed some degree of erosion, pitting or blistering after about 12 days in Elmo 6 at 300 C. However, in a static test at 360 C, at least one of the alloys looks as good as, if not better than, M-388. All tests were run with coupons machined from rolled sheet, and it is believed that the poor surface properties of the sheet may be responsible for the mediocre corrosion data. Tests are now being re-run with canned fuel elements.

Stress corrosion tests show no accelerated corrosion due to local stresses in the jacket. Nickel plating of uranium washers has proved to be a problem in the hot press canning technique. However, a new plating technique has been devised and will be tested during the early part of January.

The MIR experiment on the restraint of uranium growth by the zirconium cladding has been delayed because of damage to the test capsule. It is expected that another attempt to do this experiment will be made during the latter part of January.

Research and Development - Lost-Punch Cladding

Approval for performance (by Verson Allsteel) of R & D work has been received from HOO-AEC. Negotiations of a definitive contract is scheduled for January 9-10, 1958.

DRAFTING & FILES

Major Jobs in Drafting

306 Building:	Radiographic Inspection Trays
	I & E Tester - Drive
	Ultrasonic Uranium Surface Tester - Model 1-X
	Automatic I & E Tester

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313 Building: Universal Fuel Element Buffer
Miscellaneous Caps, Cans, Spires, Sleeves - new &
revised
Conveyor Layouts
Fully Automatic Welder

384 Building: Miscellaneous As-Builts
Two lighting drawings

Drawings Produced: New 52
Revised 32
Large Charts 6
Small Charts 17
Miscellaneous 7

ADVANCED ENGINEERING

Component Cost Forecast

Preliminary studies for the preparation of a five year forecast of component costs have been completed. It is apparent that substantial cost reduction will be obtained only through encouragement of competition. Detailed results will be issued during January.

Gas Cooled Reactor Fuels

Scope studies and detailed cost studies were in process for Process Design Operation of IPD. The results will be issued by that Operation.

Miscellaneous Studies

An analysis of the various studies concerned with fuel element optimization for present reactors was undertaken. No single study was found to be satisfactorily complete. A program to fill the gaps was undertaken.

Studies concerning the impact of an E-N load on the departments were completed and transmitted to other Operations for implementation.

INVENTIONS

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

NONE

FH Reinker:mbs

P. H. Reinker
Manager - Engineering

FINANCIAL OPERATION

DECEMBER, 1957

AUDITS AND PROCEDURES

Auditing - The audit report on Fuels Preparation Department administration of the Suggestion Plan was completed and copies forwarded to the Commission and Contract Administration. Three detailed audit memorandums containing comments and recommendations for improvements were sent to the managers responsible for administration of the plan. In general these memorandums covered reporting uniformity and accuracy, effect of Appendix B provisions on administrative practices, and adequacy of the Department Advice.

Office Procedures - The following Data Processing proposals and modifications were investigated and evaluated:

1. It was determined that recording and reporting of employee absences could most effectively be continued manually rather than mechanically in view of additional costs and limited usage of these data.
2. It was determined that the infrequent need for employees' home addresses did not justify inclusion of this information in the Data Processing personnel source file.
3. Preliminary IBM listings of the revised work order cost-to-date reports were reviewed. A revised cross-order developed by FPD Cost Accumulations for the improved work order system was processed. The new and considerably more flexible reports will be more beneficial to both Financial and Maintenance Operations.

Forms Control - Significant new FPD forms included:

1. 300 Area Duplicating and Bindery Order - Improved design reflects services available from 300 Area Duplicating and simplifies costing of orders.
2. 1958 Goals and Programs and Goals - 1958 - Revised forms for Department and level 3 operations for uniform reporting of goals, measurements, and performance.
3. OPG Evaluation Check List - A form to be used by the recently established OPG Review Council in evaluating adequacy of Department OPGs according to predetermined criteria.
4. Personnel Development Review - An employee interests and goals evaluation form designed by FPD Personnel Development to replace comparable sections of the former exempt employee appraisal forms.

GENERAL ACCOUNTING OPERATION

Delegations of authority listings have been revised to incorporate recent changes to Advice 1.1.2 and interim redelegations and organization changes during the period July 1, 1957 to January 2, 1958. New listings will be published early in January.

Efforts were continued on redesigning new report formats for travel and living expenses. New formats will be ready for management review early in January.

December travel activity was unusually heavy. A total of 188 days were spent in travel status. Travel and living expense statistics compared with November are summarized below:

	<u>December</u>	<u>November</u>	<u>Increase or (Decrease) Over November</u>
Travel advances to employees:			
Balance at beginning of month	\$ 5 353	\$ 599	\$ 4 754
Current month charges	<u>7 466</u>	<u>6 685</u>	<u>781</u>
	<u>12 819</u>	<u>7 284</u>	<u>5 535</u>
Less:			
Expenses accounted for	8 919	1 597	7 322
Advances refunded	<u>1 878</u>	<u>334</u>	<u>1 544</u>
	<u>10 797</u>	<u>1 931</u>	<u>8 866</u>
Balance at end of month	<u>\$ 2 022</u>	<u>\$5 353</u>	<u>\$(3 331)</u>
Outstanding travel advances:			
Current	\$ 2 022	\$4 830	\$(2 808)
Outstanding over 15 days	<u>-0-</u>	<u>523</u>	<u>(523)</u>
	<u>\$ 2 022</u>	<u>\$5 353</u>	<u>\$(3 331)</u>
Number of expense reports submitted	31	13	18
Number of cash advances	16	25	(9)

Revisions proposed by Contract Administration to HAPO OPG, "Acquisition of Plant and Equipment," were reviewed. Significant revisions were proposed throughout the OPG including revisions resulting from the recently accepted AEC Manual Chapter on Maintenance Policy. Comments were summarized and discussed with personnel in Contract Administration. The Department OPG and Advice on this subject will be revised upon receipt of HAPO revisions.

Appointments to the OPG Review Council were made by level 3 managers. The Specialist - Reimbursements will serve as Chairman of the Council. The first meeting to be held on January 8 will include presentation of objectives and mechanics of the program and design criteria for both Policy and Instruction OPGs, as well as a start on the discussion of OPGs. Preparation assignments were given each Council member.

GENERAL ACCOUNTING OPERATION (Continued)

A communications program for merging OPGs and Advices was developed in cooperation with Personnel Development and Communication Operation. Information letters have been drafted, conversion instructions prepared, a meeting agenda planned, and feedback cards designed. The communication aspect of the program will start January 10, 1958 and merging of OPGs and Advices will begin January 16, 1958. Target date for completion is set for February 1, 1958.

Manufacturing Operation held an information meeting on December 20 to provide opportunity for the Specialist - Plant and Property Accounting to discuss budgeting, utilization, and control of funds for Equipment Not Included in Construction Projects. The meeting was attended by various Engineering and Manufacturing Operation level 4 managers and their representatives.

Manufacturing and Maintenance and Power Operations were furnished a schedule of "available for issue" spare equipment being held by Stores Operation for FPD. The Operations were requested to review the schedule for items no longer required, and to issue Stock Adjustment Requests canceling such items. Stores Operation will take excessing action as required.

A new form for project cost estimates was placed in use January 1, 1958 in an endeavor to obtain uniformity and provide a basis for comparison among HAPO Departments. The major departure from past procedure was segregation of construction engineering and design costs into three separate categories; namely, Design, Supervision of Construction, and Management Services. A list of items chargeable to each category has been published by CEO. The Atomic Energy Commission will be furnished memorandum information to reflect the foregoing changes for each project recently approved or awaiting approval. The Fuels Preparation Department has two such projects, CG-759 Additional Steam Generating Facility - 300 Area, and CA-774, 300 Area Sanitary Water System Modification--1958. The format of weekly cumulative project cost reports is being revised to reflect the new cost segregation; however, costs incurred prior to January 1, 1958 will not be recast.

The unitization report on Project CG-676 Fuel Element Pilot Plant--Semi-Works, was published in December 1957. This report indicates an assigned property valuation of \$403,500.

A Construction Completion and Cost Closing Statement on IR-210, Oil, Paint and Solvent Storage Facility, was issued and Department costs totaling \$2,326 closed to the AEC. Costs were incurred against an authorization of \$2,361 for architect-engineer management service.

The annual review of accumulated depreciation reserves and composite depreciation rates is in progress. The purpose of this review is to determine the status of reserves and rates and to take corrective action where necessary.

The Specialist - Fire Prevention and Civil Defense requested valuation of FPD buildings and equipment contained therein. Information was to be used for compilation of fire evaluation reports for the AEC.

GENERAL ACCOUNTING OPERATION (Continued)

The data sheet for Project CG-759 Increased Steam Capacity - 300 Area, was approved by the Review Board on January 3, 1958 and forwarded to the Bureau of the Budget for release of necessary funds.

Project CA-774, 300 Area Sanitary Water System Modification-1958, was approved by the Commission as an AEC managed project. Work authority has been issued to Fuels Preparation Department authorizing \$10,600 for engineering costs.

The project covering installation of a fire sprinkler system in the 313 Building addition will be transmitted to Contract Administration in January. Funds requested total \$49,000 and will be funded as a General Plant Project.

PERSONNEL ACCOUNTING OPERATION

Final arrangements were completed and a new service instituted on December 12, 1957 for mailing salary checks to out-of-town banks for deposit to individual employees' accounts. At month's end, four exempt and 11 nonexempt employees had taken advantage of the new service. Checks were mailed to five banks in Pasco, Kennewick, Grandview and Sunnyside.

Statistical information pertaining to 1958 Exempt Salary Review was compiled and reported to the General Manager on December 23, 1957. Reports included statistics based on anticipated salary structure changes as well as the present salary structure. Related statistics were also furnished Contract Administration for HAPO consolidation.

Plans were formulated for completing year-end work. As a result of balancing and control procedures put into effect the first part of the year, no difficulty is anticipated in meeting established due dates for tax returns and other reports.

Arrangement was made with Employee Savings Operation for custody account numbers to be assigned locally for new participants in the Stock Bonus Plan. This is the first step in converting U. S. Savings Bond purchasing to Electronic Data Processing Equipment. By assigning custody numbers locally, first bonds for new participants can be purchased earlier.

PRODUCT COST OPERATION

Work simplification studies on accumulating and posting data and on report preparation were initiated. Portions of new procedures are now in effect and a reduction of reporting time is expected in January. Detailed job procedures are being written and as a part of each procedure, a chronological check sheet is established outlining steps toward obtaining end-function costs. Check sheets will be beneficial for vacation relief and absences. To date, procedures have been written for accumulation and distribution of all overhead functions and for the Engineering Operation. A study was made and a procedure written for decentralized posting of the cost ledger. Currently one clerk posts all ledgers.

PRODUCT COST OPERATION (Continued)

A meeting was held with Employee Relations Management on December 3, 1957. The effect of their operation on Unit Cost, general cost flow, and other items of mutual interest were discussed. Meetings were held with level 4 managers of Engineering for discussion of operating reports and coding procedures.

Office Equipment rental lists were distributed to level 4 managers for verification of possession. Discrepancies noted were corrected. A test check of other assigned equipment billings was also made.

Supplemental information has been prepared and submitted to Contract Administration covering off-site contracts for Research and Development included in the FY 1958 Midyear Budget Review.

Several meetings have been held with Manufacturing employees to determine the appropriateness of using operating labor standards as a basis for distributing operating labor to product models. Standards will be used in distributing operating labor to products beginning in January. Use of standards will enable pre-coding of operators' time cards and will accomplish considerable savings in clerical effort on record keeping and labor distribution.

Justification for budgeted increase in production cost during the balance of FY 1958 was prepared and forwarded to Contract Administration. Although an increase is anticipated over the going rate of approximately \$925,000 in Direct Material costs, about \$100,000 will be offset by the Department's cost reduction program.

Contract Administration's study on distribution of general HAPO overheads has been reviewed and appraised. Problems relative to determination of contributed value and elements of cost which are considered overhead remain to be resolved. Contract Administration expects to initiate this proposal in July 1958.

The first charge of this fiscal year was made to the essential material inventory reserve as a result of a purchase order cancellation. The Reserve was charged the difference between first cost and scrap value of a quantity of bar stock aluminum.

The regular quarterly physical inventory of Special Materials was conducted as of December 31, 1957. Preliminary results indicate no significant changes.

The Manager - Product Cost attended the Advanced Financial Training Seminar on Product Cost Accounting held December 2-6 at Forest Hills, New York. Several timely subjects were discussed such as work sampling, activity sampling and analysis, material utilization, labor standards, responsibility accounting, and maintenance cost control.

Manager - Finance

WS Roe:whm

MAINTENANCE AND POWER OPERATION

DECEMBER 1957

GENERAL

Productive Maintenance Program

Outstanding orders as of 11/30	125
Orders issued in December	112
Orders completed in December	81
Outstanding orders as of 12/31	156

There were two cost reductions totaling \$7,069 submitted during the month. This brings the quarterly budget realization to 108 per cent. The CY 1957 budget realization is 106 per cent. The total savings during 3 quarters of CY 1957 represent 4.7% of the total Direct Costs.

Relocation of the men's and women's rest rooms in the 3706 Building was completed. This relocation was required so that rest room facilities would comply with the American Standard Code for location and distance of these facilities from work areas.

Air locks were installed in the 3703 Building. These air locks improve the comfort in the building without the necessity of increasing the heating facilities.

Data Processing Operation was authorized to make the annual adjustments to the Overtime Hours Paid Report for FPD and HLO. Proposed adjustments were reviewed with the respective Managers, Personnel Practices prior to authorizing the adjustments.

Review and revision of Position Guides for all positions in the Maintenance and Power Operation were completed.

A Christmas letter was distributed to the homes of all nonexempt employees. This is the second Christmas letter since reorganization and employee response to this seasonal communication has been favorable.

AREA MAINTENANCE

Duplicating and Mail

<u>Process</u>	<u>No. of Orders Processed</u>	<u>No. of Copies Made</u>
Multilith	707	334 649
Verifax	71	1 908
Ozalid	58	2 200
Total	<u>836</u>	<u>338 757</u>

There were 13 Formal Reports completed, consisting of 2,368 copies and 62,617 pages.

An additional mail delivery is now being made each morning and afternoon to the administration buildings in 300 Area. These additional deliveries improve the service to FPD and HLO management.

General Maintenance

The galvanized iron duct work in the exhaust system of the final etch machine in the 313 Building was replaced. The new duct work was fabricated of stainless steel to eliminate the corrosion problem.

The new maintenance shop in the 326 Building was completed. This shop will improve the service provided to HLO by making materials and facilities more accessible to craft personnel and localizing the mechanical maintenance support in the Laboratory area.

Transportation Service

The responsibility for transporting fuel elements from the 300 Area to the 100 Areas was transferred to IPD. This reassignment of responsibility resulted in the reduction of 1 employee from the HAPD rolls. One driver, two diesel tractors and two heavy duty trailers were transferred to IPD.

INSTRUMENT AND ELECTRICAL MAINTENANCE

The Portable Shop repaired a total of 1,136 portable radiation detection instruments. Average time per instrument was 0.90 man-hours. This average time per instrument is a new low for this Operation. The low man-hours per instrument were realized as a result of continued improvements in components, standardization and employee training.

Electrical and instrument components in the calciner in the 321 Building were inspected and repaired as necessary. Twenty-nine thermocouples in the calciner were replaced. An additional thermocouple was installed on the calciner drive bearing block to monitor bearing grease temperature.

A standard Beckman Spectrophotometer in the 325 Building was converted for high temperature analysis work. The modifications included an automatic scanning device with 0.25 second read-out; new sample cells and holders; hydrogen lamp and source. This is the third instrument of its type in the country. It will be used for qualitative measurements of fused salts.

Three "unitized" counting systems have been fabricated for the Exponential Physics group. These systems are designed for fast, easy maintenance by the use of plug-in parts. In addition, external test points were provided for key voltage and scope measurements. The unitized method of fabrication permits the detection of faulty tubes without the removal of components. As a result, most repairs can be made within ten minutes.

Instrumentation on the new "C" cell revisions in the 327 Building was completed.

Electrical installation work associated with the area evacuation alarm system was completed. A test is scheduled for the first week in January.

POWER

<u>Statistics</u>	<u>December</u>	<u>November</u>
Average Steam Generated (M lbs/hr)	60.2	60.0
Maximum Steam Generated (M lbs/hr)	79.0	101.0
Total Steam Generated (M lbs)	44 156	43 168
Coal Consumed (Tons)	2 949	2 758
Evaporation Rate (Steam/#Coal)	7.49	7.83
No. of Boilers 3 4 3		
Date of Change: 1 26 27		
Sanitary Water from 3000 Area (Million Gals.)	66.1	67.5
Total Water from 3000 Area (Average Rate GMP)	1480	1562
Soft Water from #3 and #4 Wells (Million Gals.)	11.8	12.1
Water from #2 Well (M Gals.)	.30	.30
Peak Water Consumption for 24 Hours (Million Gals.)	2.5	2.7

An indicator light has been installed on the blower motor circuit in the fly ash coal system to ensure continuous blower operation and to help minimize the carry-over of fly ash.

A condensate meter was installed in the 3760 Building. During installation, the condensate line within the building was revised to eliminate "hammer." In addition, the condensate tank and pump were removed from the line. The natural gravity flow from this building to the 384 Building will be used as the means of condensate return.

All components for the Heat Recovery Equipment (Flash Tank and Heat Exchanger) have been received. Installation is scheduled to proceed when parts lists and operating instructions are received from the vendor.

PLANT ENGINEERING

There were 27 training classes held for craft personnel of HLO and FPD. This represents 390 man-hours of craft training.

The spare parts list and sketches of special spare parts have been completed on the Acme-Gridley lathe in the 313 Building. This information will assist Manufacturing Maintenance personnel in ordering necessary spare parts.

Installation of the 321 Building steam meter was completed and is being tested.

The contracted floor covering installation in the 3703 Building was completed. The job has been accepted and the contract closed.

FIRE PROTECTION

<u>Fire Responses</u>		<u>Loss</u>
HAP0	5	\$5.00
Construction	0	---
Private	0	---
Outer Area	0	---

Significant Fires: An emergency brake was left on while power wagon HO-18-720 was in use. The emergency brake lining burned, causing a loss of \$5.00.

REPORTS OF INVENTION

All personnel of the Operation engaged in work which might lead to inventions and discoveries advised that, to the best of their knowledge, none were made in the course of work during December 1957.

PERSONNEL

T. J. Larson, Tech. Grad. was rotated out of the Plant Engineering Operation. O. M. Lyso, Tech. Grad. joined the Plant Engineering Operation for a rotational assignment.

SAFETY, SECURITY AND RADIATION EXPERIENCE

Medical Treatment Injuries	21.0
Frequency Rate	4.72
Disabling Injuries	0
Near Serious Accidents	0

There was one case of radiation overexposure reported. This incident involved two employees of the Instrument and Electrical Maintenance Operation - HLO Radiation Occurrence Report No. 57-0-132.

There were no security violations reported.

MEETINGS

Round Table-Staff	26
Safety and Security	34
Information	6

Manager
Maintenance and Power Operation

E. Hilgeman:JPF:mkm

EMPLOYEE RELATIONS OPERATION

December, 1957

PERSONNEL DEVELOPMENT

A self-development brochure, which explains intent and use of the new Exempt Personnel Development form and program, was completed during the month. Personalized copies for all exempt employees were distributed to Department managers.

Together with R&U Personnel Development Operation, an order was placed for the Jam Handy "Living Right at Our Work" series of sound-slide films to be used in conducting guided-discussion programs for first-line supervisors.

The third Fuels Professional Business Management-I presentation was concluded during the month, bringing total FPD participation to 48 members of management, and the next course presentation was scheduled to begin next month.

Other personnel development programs initiated or completed during the month included: Labor Law, Contract Interpretation, Written Communication, Data Processing, Management Orientation, Conference Leading and Interviewing and Counselling.

During the month four tech. grad. rotational training assignments were vacated and two were filled leaving a net total of four assignments filled at month's end. The total number of tech. grads. in such an assignment during the month was eight. One tech. grad. was placed on a permanent Fuels assignment during the month.

COMMUNICATION

Planned communication activities for the coming year were developed and placed in the ERO Action Agenda. All activities will be aimed at improving employees' toward the attitude survey category of Communication.

Tentative plans for the FPD General Manager's report to employees were outlined and the meeting tentatively scheduled for January 30 and February 3, 1958.

Arrangements were made for two dinner-information meetings held during December: information meeting for exempt ERO employees, and the General Manager's Management Information Group meeting; one General Manager's meeting with nonexempt employees was held.

Four Management News Bulletins were prepared and distributed during the month, plus three regular and one special edition of the FPD Newsletter. A total of 164 column inches of GE News space were devoted during the month to Fuels Preparation Department activities and employees. Routine items consumed 38 column inches, and 126 inches represented material prepared to support communication programs. This is an average of nearly two-thirds of a GE News page per week.

Other communication activities included preparation and distribution of the January safety topic of the month, and communication to Fuels employees in the 700 Area concerning the 700 Area open house. Information for use by supervisors and managers in conducting round table meetings during the forthcoming quarter was prepared and distributed.

Two papers for possible presentation at the 1958 Geneva Conference on atomic energy were submitted for approval, as were two papers for possible presentation before the AEC Welding Committee during its fall, 1958, meeting.

The shipment of fuel elements to Washington State College for use in their training reactor was publicized internally through department channels and the GE News, and arrangements were made for Public Communication to release the story to local news media.

SALARY AND WAGE ADMINISTRATION

A detailed statistical analysis of actions as a result of the 1958 Salary Review was prepared in cooperation with Personnel Accounting and issued to the General Manager, Fuels Preparation Department. Additional work to be done with respect to the Review includes overall HAPO approval followed by individual appraisal interviews.

The analysis of Attitude Survey questions in the areas of compensation, the Salary Plan and the Appraisal Plan was followed with discussions of findings of the analysis with fourth level managers in components where there was a significant variation in the results.

Programs, goals, objectives and measures were submitted to the Manager, Employee Relations Operation.

The general review of position guides including necessary revisions is 94.4% complete including level 3 guides.

No positions were audited during December. A replanning of the audit schedule for exempt positions will be done in January.

Duties and responsibilities of four Area Maintenance foremen positions were reassigned effective December 16, 1957. This realignment permitted Maintenance and Power management to vacate the Foreman, Transportation position. It is planned to delete this position in the near future. A new functional chart reflecting the responsibility reassignments was issued on December 13, 1957.

IPD has stated that they have dropped their consideration to raise the level of three IPD foremen positions. Apparently, the FPD suggestion to relieve pay differential problems by full use of the upper three quarters of the salary range was favorably received.

The final draft of revisions to the Position Evaluation Guide as developed by the Salary Specialists was prepared and transmitted to the Salary Managers for their review and approval.

All positions for which no staffing is planned have been deleted with approval of the concerned Level 3 Manager.

The Materials and Planning clerk in the Manufacturing Operation was re-evaluated as a result of revision of the duties of the job.

The Northwest Area Survey report was received from Relations and Utilities, Salary and Wage Administration Operation during the month. It is planned to confer with the Specialist, Salary and Wage Surveys at an early date to clarify some of the points, whereupon, a detailed report of the analysis will be prepared.

PERSONNEL PRACTICES

Technical Personnel Placement

College Recruiting

During the week of 12-2-57, F. E. Jochen visited Washington University at St. Louis and Kansas State College as the HAPO representative on the General Electric Recruiting team to interview and recruit BS/MS candidates in Engineering and Science. Recommendations were made to consider five of the total people interviewed for the HAPO - Personnel Development Program, one for Summer Program, two for the Engineering and Science Program and two for direct placement in other GE components.

Summer Program

F. E. Jochen issued a summary report on the 1957 Professor and Student Summer Program as applied to the Fuels Preparation Department. As a result of a survey of the level 3 components of the Fuels Preparation Department, it was forecast that they would be able to utilize a total of two college juniors, two graduate students and one college professor for their 1958 Summer Program. This information was submitted to E. P. Galbraith, Manager, Technical Personnel Placement, Relations and Utilities Operation whose office will centralize the employment activities for the 1958 Program as they did in 1957.

Experienced BS/MS Recruiting

The quarterly report covering the forecast of Technical and Exempt Personnel Requirements for the period of January 1, 1958 to January 1, 1959 has been prepared from information submitted by individual departmental components. It was forecast that a total of seven technical and exempt personnel may be needed during this period (possibly five from the program and two from other sources) all of which however, to be only on a replacement basis to cover the normal attrition rate.

The Fuels Preparation Department was notified by Relations and Utilities Operation that they had selected a former telephone engineer from the Construction Engineering Operation, from the several HAPO candidates considered, for their opening of Telephone Engineer.

Two candidates from the Fuels Preparation Department were recommended to the Chemical Processing Department for consideration in filling their impending openings for Specialist - Maintenance Planning (Shops) and one for the opening of Foreman - Machine Shop.

Three candidates from the Fuels Preparation Department were recommended to the Relations and Utilities Operation for consideration in filling their opening of Electrical Engineer and two for their opening of Supervisor - Telephone Business Office.

At their request, placement possibilities in the Fuels Preparation Department were re-explored for the exempt people from other departments currently on ROF status. Fuels Preparation Department reported no current openings were available.

One Tech. Grad from the Personnel Development Program was added to the exempt roll this month.

Experienced, BS/MS Recruiting (9-1-57 through 12-31-57)

	Cases Con- sidered-FPD	Invitations - FPD				Offers - FPD			On The
		Ext.	Visited	To Vis.	Open	Ext.	Acc.	Open	FPD Roll
Engineering									
Chemical	7	0	0	0	0	0	0	0	0
Electrical	4	1	1	0	0	1	1	0	1
Mechanical	8	0	0	0	0	0	0	0	0
Industrial	2	0	0	0	0	0	0	0	1
Metallurgical	1	0	0	0	0	1	0	0	0
Civil	2	0	0	0	0	0	0	0	0
Geological	0	0	0	0	0	0	0	0	0
Science									
Chemistry	9	0	0	0	0	0	0	0	0
Physics	4	1	1	0	0	0	0	0	0
Math-Stat.	1	0	0	0	0	0	0	0	0
Other	<u>55</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>
Total	93	2	2	0	0	2	1	0	2

PhD Recruiting (9-1-57 through 12-31-57)

	F P D			F P D	
	December	To Date		December	To Date
Cases considered:	67	133	Offers Extended:	0	1
Interviewed:	0	0	Accepted Offers:	0	0
To-be Interviewed:	1	0	On the Roll	0	0

Terminations and Transfers

No technical or exempt employees terminated employment with the Fuels Preparation Department during the month of December.

Termination and Transfers, Technical and/or Exempt personnel, (9-1-57 through 12-31-57)

	December	To Date
Terminations:	0	4
Transfers to Other Components:		
Requests Received:	0	*9
Completed Transfers:	0	3
Closes Cases:	1	1
Active Cases:	3	-
Dormant Cases:	2	-

*Carry over of two cases, one dormant and one active from the year September 1, 1956 to September 1, 1957.

Employment

Unfilled Requests for Personnel	2
Personnel Requirements Cancelled	0
Employees Added to the Rolls	6
Employees Removed From the Rolls	9
Reduction of Force Initiated by F.P.D.	2
Reduction of Force Issued Due to Seniority Bumping	3
Transfer Data (Concerns Requests for Transfer - FPD)	
Total Requests for Transfer Active at Start of Month	56
Number of Requests Received	5
Number Interviewed	8
Requests for Transfer Effected During Month	2
Requests for Transfer Cancelled	9
Requests for Transfer Active at Month's End	50

Procurement

Offers	1
Interviews	4
Requests for Personnel Received	3
Transfers (all)	6
New Applications Received	1

Upgrades within F.P.D. 5

Personnel Records

Letters to Outside Agencies Regarding Information	16
Perfect Attendance Recognition Awards	12
Service Recognition Pins 10 Year - 6 5 Year - 5	

Employee Benefits and Service

Employee Benefit Plans

Participation in the Employee Benefits Plans as of December 31, 1957 for the Fuels Preparation Department is as follows: Pension Plan 99.3%, Insurance Plan 100%, Savings and Stock Bonus 55.2%.

During the month Ella B. Anderson, W-2782-4560, retired optionally.
Scott R. McCormick, W-7955-4560, retired normally - effective 12-1-57.

Selective Service and Reserve Statistics

Thirty-two non-veteran employees are subject to military service training through Selective Service System. There are 11 in classification 1-A, 9 in 2-A and 12 in all other classifications.

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

There are 57 Reservists on the roll, 19 are Standby and 38 are Ready.

Four employees are on military leave.

Suggestion Statistics

	<u>Fuels Preparation Department</u>	<u>From Other Departments</u>	<u>Total</u>
Received	50	4	54
Adopted	46	1	47
Net Savings	\$10,851.54	\$30.00	\$10,881.54
Cash Awards	1,345.00	0	1,345.00
<u>Awards</u>			
Net Savings	12.4%	0	12.4%

Cumulative Statistics (Since January 1, 1957)

Present Backlog	136	2	138
Received	571	151	722
Adopted	202	11	213
Net Savings	\$34,485.79	\$223.70	
<u>Awards</u>			
Net Savings	14.4%		
<u>Awards</u>			
Adopted Suggestions	\$24.58		

Area and Plant Tours

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

Security Violations

There was one security violation during the month of December.

HEALTH AND SAFETY

	<u>December</u>	<u>November</u>
Disabling Injuries	0	0
Serious Accidents	0	1
Medical Treatment Cases	42	40
Medical Treatment Frequency	3.29	3.43
Employee Hours of Exposure	127,436	116,592
Orientation Presentations	2	2
Attendance	5	2
Inspections	16	18
Suggestions Evaluated	10	5
Medical Examination Quota	32	36
Completed	27	79

Program Development

The monthly safety meeting for women office employees was held on December 18. Chairman F. A. Leach presented a talk entitled, "You Can Take It With You." A portion of the meeting was devoted to health and security, and a film was shown to highlight the main topic.

Fuels Preparation Department completed 487 days without a Disabling Injury through December 1957.

Industrial medical examinations for Department personnel were completed during December. Scheduling for 1958 examinations has been arranged through January.

Eye protection requirements for 313 Building have been revised and approved. The program is to become effective January 2, 1958. Aisles, operating areas, and shops have been zoned and posted to indicate protection required.

Fuels Preparation Department Safety Council Awards were distributed on December 13. The cooperation extended by each level #4 component made the task relatively fast and easy.

The Medical Treatment Frequency goal of 3.67 established for 1957 was surpassed with a resulting frequency rate for the year of 3.36.

Activities

Work activity for the month included contacts for information on the following items: Equipment design and safeguards, face and eye protection, safety rules, suggestion evaluation, medical examinations, safety awards, sheet metal hazards, welding, materials handling, inspections, steam, traffic hazards, cranes, load luggers, office equipment, gas cylinders, safety signs, metal furnaces, protective clothing, spider control, safety meetings, job hazard breakdowns, caustic disposal, tank and manhole entry, process change, news publicity, explosive gas, safety standards, stairways, guards, equipment controls, barricades, electrical hazards and grounding, housekeeping, storage, walkways, roads, building revision, and equipment layout.

FIRE PREVENTION AND CIVIL DEFENSE

	November	<u>December</u>
Fires and Investigations	3	1*
Fire Loss	0	\$5
Inspections	29	38
Hazard Reports Submitted	3	5
Orientation Presentations	2	2
Attendance - Nonexempt Employees	4	5
Suggestions Evaluated	2	1

*On 12-13-57, a brake lining on power wagon HO-1H-720 ignited from friction while being driven with hand brake engaged, causing \$5 fire loss.

Program Development

The project proposal for expanding the area water system to conform with Fire Code standards was approved by the Commission on December 17, 1957.

A project proposal to install a fire protection sprinkler system in 313 Building addition has been submitted for approvals.

Following an Engineering study of Manufacturing Operation's future storage space requirements, recommendation was made to remove the substandard Warehouse 3722-A to permit installation of a water main through the building site as specified in the area water system expansion program. Early removal would eliminate a serious fire risk problem and should reduce the cost of the water expansion project.

A program was developed to exercise the civil defense buses on a weekly schedule.

Two communication releases on Christmas Fire-Safety were published during December.

All buildings have been winterized to avoid property damage.

A survey of janitorial supplies was made to determine that no highly flammable or hazardous cleaners are used by Maintenance Operation.

The installation of the new area defense warning system is complete, except for connecting telephone communication lines. An acceptance test is scheduled for 1-13-58.

General Activities

One fire detector was added and another relocated in 3703 Building as a result of office modifications.

A defective motorized steam control valve and code violating electrical wiring in the recently modified 3734-A Paint and Oil Storage Building were replaced by the installing contractor.

An automatic carbon dioxide system for the methanol dip tanks in the 306 Pilot Plant is being studied as a replacement for the manual fire protection water spray system.

Approved 7 Engineering blueprints and specifications for structural and equipment modification work and received request for counsel and advice on 23 various subjects during December.

UNION RELATIONS

The grievance involving the reinstatement of an Engineering Assistant into the Chemical Workers' seniority group as a result of IPD reduction of force, was discussed at Step II. Although it was expected that this case would be taken to arbitration by the Council, fifteen days have expired since the Step II answer was provided and we are not in receipt of a letter to arbitrate from the Council.

On December 11, we advised the Council that it was our intent to expand the Instrument Worker force in the Portable Instrument Shop. At that time the Council advised the Company that the Company would hear further from the Council about this plan. Inasmuch as the Representative and Counsel for the HAMTC was not present during the discussion no indications were made as to what course of action, if any, will be taken.

On December 9, the Company informed the Council that beginning approximately January 1, Firemen would be assigned the duty of testing fire alarm boxes in all areas where such testing had been performed by Electricians. Electricians, of course, voiced opposition to this move, however, the change is felt to be appropriate since this is traditionally a responsibility of Fire Departments generally throughout the country. A grievance was filed in FPD and has been scheduled for Step II discussion. The Council may decide to arbitrate this case.

A meeting was held between the Manager, Union Relations, Relations and Utilities, and Council representatives concerning several cases which the Council expressed intent to arbitrate. Involved in the discussion were two FPD pending arbitration cases of Claypool and Jensen both of which concerned jurisdiction. The Council advised that a revised answer would satisfy the Council if it would express that the Company recognized the jurisdiction claim as being that of the Sheetmetal workers together with a statement to the effect that it was considered impractical to assign the work involved to the Sheetmetal workers. It is expected that this will be done. The Lynch arbitration case, which involves the laying of tile in the 3703 Building by contractor forces, was apparently discussed only briefly and the Council advised that it would be necessary to review the case with the Local involved and it is anticipated that this case will be discussed further with the Council in the future. As of the end of December there were 26 arbitration cases HAPO-wide and four involved FPD. These figures exclude the James grievance which was the Engineering Assistant returning to the Chemical Workers' seniority group and it includes the canning line grievance.

The meetings involving Labor Law and contract application and interpretation of the HAMTC-GE Agreement continued throughout the month.

Grievance Statistics:

A total of 10 grievances were received and 4 were scheduled for Step II discussion. The following is a report of grievance activity:

	<u>Unit</u>	<u>Nonunit</u>
Received this month	10	0
Received since 1/1/57	95	0
Step I		
Answer unsatisfactory	9	0
Answer satisfactory	1	0
*Pending time limit	11	0
Settled this month	4	0
Step II		
Discussed this month	4	0
**Pending time limit	4	0
Settled this month	8	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 December Grievances: (10 Total)	Mfg. Oper.	Eng. Oper.	Maint. & Power Oper.	Emp. Rel.	Fin. Oper.
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Jurisdiction	2		8		
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Subject of Grievances for 1957:
(95 Total)

Jurisdiction	10	53
Overtime	10	3
Absence	0	2
Ratios	2	0
Hours of Work	1	1
Seniority	2	1
Recognition	1	0
Grievance Procedure	3	1
Responsibility	1	1
Transfer	2	0
Miscellaneous	1	0

Manager - Employee Relations

END

DATE
FILMED

2 / 22 / 93