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FUELS PREPARATION DEPARTMENT

HW-62621

MONTHLY REPORT - OCTOBER, 1959

DE92 019164

Compiled by Fuels Preparation Department

November 30, 1959 Richland, Washington

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A-1

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TABLE OF CONTENTS

General Summary	A-1 through A-5
Manufacturing Operation	B-1 through B-7
Engineering Operation	C-1 through C-17
Financial Operation	D-1 through D-2
Plant Facilities Operation	E-1 through E-2
Relations Practices Operation	F-1 through F-2

FUELS PREPARATION DEPARTMENT
MONTHLY SUMMARY REPORT
FOR OCTOBER, 1959

PRODUCTION

Finished production for October was 617.8 tons, 106% of forecast.

At month end there were 835 tons of bare uranium cores in storage compared to 669 tons at the end of September. Reactor charges in October exceeded finished production by 148 tons, resulting in a drop in finished inventory level to 556 tons.

A new production forecast by the Irradiation Processing Department for FY-60 - 61 increases reactor requirements 11% as compared to the previous forecast.

ENGINEERING

A joint program with the Irradiation Processing Department was initiated to resolve an X-8001 alloy groove corrosion problem. This program was initiated because examination of certain failures showed evidence of corrosion opposite tube ribs in the longitudinal direction. It is believed that damage to the autoclave oxide film during loading may be an influencing factor.

A new self-support design involving a "wrap around" principle is being evaluated. This principle, if successful, will reduce fuel element welds from 16 to 8.

Improved bonding was shown in the tubes coextruded at Adrian during the month. This is the best yet and the improved bonding is attributed to the higher reduction ratio used.

Induction beta heat treating tests at the Ajax Magnethermics Corporation indicate the feasibility of induction heat treating of coextruded NPR fuel tubing.

Tests completed indicate that the welding of zircaloy-2 by heliarc methods, using argon as a shielding gas, may be feasible.

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HW-62621

Check out of the NPR Category II nondestructive test station is going smoothly. The cladding thickness and integrity tests have performed particularly well. With this equipment bond, core, and cladding integrity and cladding thickness can be tested at a single station.

An economic analysis of the conversion of 313 Building for I & E production was completed. Estimates of the value from increased plutonium production obtained with I & E loadings to date indicate that the cost of this project was paid for by the return from approximately one week of 1959 production.

CAF-847 - New Fuel Cladding Facility - all structural steel has arrived on site and the erection is proceeding on schedule.

GENERAL

Manufacturing yield for 8" I & E fuel elements was 87.6% compared to 83.4% for September. The 8" solid fuel element yield dropped from 88.7% for September to 84.9% for October.

No autoclave failures occurred this month.

The October operating efficiency was 94.5% compared to 94% in September.

PERSONNEL STATISTICS

Number of employees September 30, 1959	730
Number of employees October 31, 1959	743

	<u>Exempt</u>	<u>Non-Exempt</u>	<u>Total</u>
General	1	1	2
Manufacturing	53	292	345
Engineering	49	29	78
Financial	11	7	18
Plant Facilities	32	258	290
Relations Practices	5	5	10
TOTAL	151	592	743

STAFF

General Manager, Fuels Preparation Department	L. L. German
Manager, Manufacturing Operation	W. M. Mathis
Manager, Engineering Operation	J. W. Talbott
Manager, Financial Operation	W. S. Roe
Manager, Plant Facilities Operation	E. Hilgeman
Manager, Relations Practices Operation	R. W. McCullugh

PATENT SUMMARY - OCTOBER, 1959

All persons engaged in work that might reasonably be expected to result in inventions or discoveries advised that to the best of their knowledge and belief no inventions or discoveries were made in the course of their work during October, 1959 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.

G. R. Hanson	A chuck for aligning a cylindrical fuel element with a small aluminum spool for welding.
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[Signature]
General Manager
Fuels Preparation Department

LLGerman/jm

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HW-62621

MANUFACTURING SECTION

October, 1959

CURRENT OPERATIONS

Production and Productivity

Statistics

	NORMAL					ENRICHED				6" O Water Mix	Total
	8" Solid	8" I & E				6" Water Mix	6" I & E				
		C	K	Rev. K	O		C	K	O		
Current Month's Production											
Acceptable Fuel Ele- ments Produced (Tons)	62.8	50.4	-	180.3	250.5	1.1	13.2	31.4	22.4	5.7	617.8
As % of Forecast Production	78	110	-	113	109	18	147	121	124	71	106
As % of Past 3 Month's Average Production	88	126	-	273	132	110	94	101	160	-	116
As % of Past 12 Month's Average Production	118	133	-	340	120	37	57	196	149	-	122
% of Forecast Achieved Last Fiscal Quarter	100	119	108	88	89	-	94	97	84	-	96
% of Forecast Achieved Last 4 Fiscal Qtrs.	115	106	103	79	104	143	98	101	93	-	101

Operating Efficiency

Current Month (%)											94.5
Forecast (%)											93.0
Previous Month (%)											94.0

Manufacturing Yield

Current Month (%)	85	92	-	87	87	78	89	88	86	70	
Forecast (%)	83	83	-	83	83	70	83	83	83	70	
Previous Month (%)	89	85	84	79	85	77	88	75	84	-	
Bare Uranium Available for Processing (Tons)	163	63	-	268	243	1	12	57	26	2	835
Finished Products in Storage (Tons)	48	111	26	116	152	4	33	24	36	6	556
Special Products Finished (Pieces) Poison Uranium Utilization											- 95.6

ACTIVITIESProduction

Finished production for October was 617.8 tons, 106 percent of forecast. Nine canning lines were operated each working day throughout the month for a total of 198 canning line shifts. Both manufacturing yields and operating efficiency were above forecast. Special Products spent one week on bismuth production which delayed the return of reprocess material to the production stream, consequently, the full benefit of the higher output factor was not realized.

Yield Control

The yield for 8" I & E fuel elements was 87.6 percent compared to 83.4 percent for September. Significant yield gains in the assembly, braze layer contamination, and welding categories accounted for the higher yield. Improved production use of the horizontal duplex agitator and better control of the duplex furnace temperatures reduced the assembly reject rate. The yield gain in the welding rate was due to improved operation of automatic welders and to more precise visual weld inspection standards. The lower braze layer contamination category was due in part to a quality gain and in part to braze layer contamination rejects backlogged in reprocess storage.

Higher assembly and component preparation reject rates reduced the 8" solid fuel element yield from 88.7 percent for September to 84.9 percent for October.

No autoclave failures occurred this month.

The Manufacturing Section has a large order for aluminum components outstanding with Harvey Aluminum Corporation, a new vendor. Terms of that order permit only limited fabrication of additional components until the nominal 5,000 fuel elements, which were clad in Harvey component, pass the reactor evaluation phase of the vendor development program. Metallographic evaluation of Harvey's "O" size components disclosed uniform dispersion of alloying elements. However, similar testing of "C" size caps received on the same order disclosed banded areas of segregation to such an extent that these pieces were unacceptable.

To evaluate the economics of extrusion versus rolling in the fabrication of components, an experimental order for extruded-rod caps and cans was placed with Alcoa, and delivery was made. Metallographic examination of these components (part from scalped billets and part from unscalped billets) disclosed bands of segregation which make the components unacceptable. Alcoa has agreed to scrap these pieces and has indicated that they do not intend to pursue further the development of extruded rod as a substitute for rolled rod.

Laboratory analyses on two recent shipments of Alcoa X-8001 alloy components revealed that again material with high cobalt content was received. This new cobalt incident did not represent another casting error by Alcoa; rather, the relatively low degree of contamination in this second incident was introduced

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HW-62621

by the vendor's inadvertent use of a small amount of contaminated bloom stock which was missed during the scrapping of 425,000 pounds of contaminated alloy after the initial incident. Some lots must be accepted in order to meet Hanford production schedules. Disposition of the balance which is either suspect or lightly contaminated is under study.

A new system of recording metal history from casting through rod-rolling and fabrication of caps and cans to the receipt of components lots at HAPO is being established. When put into effect early next year, it will be possible to correlate lot numbers with component fabricating and rod-rolling histories as well as the casting history of the metal itself. Both the vendor and FPD will gain from the new system by being able to correlate component performance with fabricating history as well as being able to isolate defective trends to smaller groups of components.

In May of this year, the circuitry of the bond test equipment was modified to make the test more reproducible. However, because of variation in the presently used quartz crystals and the inability of this type of crystal to respond to certain types of unbonding, the reproducibility of the test still needed to be improved. Laboratory work indicated that lithium sulfate crystals may provide part of the answer. On this basis, a lithium sulfate crystal was placed on 2-C tester for a one week trial. Rejection rate on this tester was in excess of 28 percent. Stripping data from these rejects gave evidence that this new type of crystal was much more sensitive than the quartz crystal to all types of unbonding, including nonwets and cracked compound layers (brittle bonding). The crystal was removed from service pending development of a more reproducible test with an acceptable sensitivity level.

Other Activities

The following pieces were processed through the Fuel Recovery Operation.

8" Solid	3,123
8" I & E	16,019
6" Water Mix	1,266
6" Enriched	<u>10,903</u>
Total	31,311

PLANT CONDITIONS, INCIDENTS AND IMPROVEMENTS

General

The October operating efficiency was 94.5 percent compared to 94 percent in September. About two thirds of canning line downtime was due to operating problems. The balance was charged to equipment, experimental programs, and production tests.

Bare uranium supplies, with one exception, were adequate throughout the month to meet planned production. Approximately 30 tons of MCW machined solid fuel elements, scheduled for processing in October, were held up temporarily by

Engineering. Apparently the prototypic attenuation tester was able to detect grain size differences previously not measurable. This material has been released and will be processed during the November production run. At month end there were 835 tons of bare cores in storage compared to 669 tons at the end of September.

Signing of the new labor contract at NLO has removed, at least for the present, concern about interruption of uranium deliveries. In view of this, all uranium scrap which was held for possible recanning has been returned to NLO for rework. Also, Engineering and HLO had a considerable amount of scrap for shipment. Three shipments containing approximately 112 tons of uranium scrap were shipped during the month.

Reactor charges in October exceeded finished production by about 148 tons, resulting in a drop in finished inventory level to 556 tons. For the next six months reactor requirements are forecast to exceed the production of ten canning lines. This will result in a further reduction in finished inventory. During this period the finished inventory level will be below normal. Shortages of finished production will be avoided by planning and scheduling on short-range reactor requirements.

Sleeve Measurement Program

When steel sleeves lot rejection was changed from number of cycles to rejection by the Sleeve Measurement Program a second lot was needed for each type of sleeve in use. This meant twice as many sleeves needed to be stored in the component preparation area. Also the new system required two lots of new and used sleeves to be stored for each 8" lot of "O" and "D" sleeves so that different size lots were available for canning 3 lines or 5 lines of material. The space arrangement previously used for storing sleeves did not take care of the increase in sleeve storage requirements. Investigation disclosed that if the sleeve boxes were turned 90 degrees and a hi-lift used to move them instead of the manual lift, boxes could be stored much closer together. This arrangement gave about twice as much space as before and made moving of sleeves faster and easier. A considerable lengthening of sleeve lot life should result from the Sleeve Measurement Program which was placed in effect October 1, 1959.

Lathe Modifications

New clutch handles have been installed on #1 and #2 Acme Gridley Lathes. These handles move in toward the lathe when the clutch disengages rather than away from the lathe. The modified design should eliminate the possibility of anyone getting hit with the handle when the clutch automatically disengages.

Also installed on these lathes were electrical scram buttons designed to quickly disengage the clutch when contacted by the operator. This addition is more convenient for the operator to use than the clutch handle and appears to disengage the clutch faster than manual action.

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HW-62621

Some temporary backlogging resulted at the lathes during the month because of tool set-up time required to keep operating within process specification and because of short tool life. The contour tool for the female end was the major problem. Work is being done to improve tooling and set up procedures which will become increasingly important when the tenth canning line is added.

Light Intensity in the Welding Area

A study was made of the light intensity at each automatic and semi-automatic welder. Light intensity at 2E automatic welder measured 24 ft. candles while the other automatics averaged 55 ft. candles. The light intensity at 1B semi-automatic welder measured 17 ft. candles compared to 25 ft. candles at the other semi-automatics. Lighting standards indicate that for a cursory inspection (similar to what the weld operators make) light intensity should be 35 ft. candles minimum. A new fixture has been flush-mounted over the inspection point at 2E welder so that light intensity at this point now measures 55 ft. candles. A new three tube fixture with diffuser has been ordered for installation at 1B welder. If this installation proves adequate, similar units will be installed in the remaining semi-automatic welding booths. In the future periodic checks of light intensity will be made to establish the optimum period for cleaning and relamping fixtures in the welding area.

OPERATING PLANS

During the month a review was made of future production schedules based on revised reactor requirements. Here are the variances from previously forecast production schedules:

Last Three Quarters, FY 1960

	<u>Normal Uranium</u>	<u>Enriched Uranium</u>
Reactor Requirements	increased 11%	increased 6%
Finished Production	increased 10%	increased 5%
Uranium Receipts	increased 12%	increased 6%

FY 1961

Reactor Requirements	increased 11%	increased 9%
Finished Production	increased 14%	increased 8%
Uranium Receipts	increased 13%	increased 9%

The tenth canning line is scheduled to start November 2 so that these increased demands can be met. Since a large portion of the increase in reactor requirements occurs in the first six months of the forecast, finished production will lag reactor usage, resulting in a temporary drop in the finished inventory level to slightly less than a month's supply. However, no adverse effect is anticipated from the lower inventory level.

A new product model, the CIVN fuel element, is scheduled for initial production about December. This new size will be charged in C reactor for the purpose of evaluating ribless process tubes and self-supported fuel elements.

No provision was made in the forecast for special programs such as E-N loading or high exposure plutonium. In the event of a decision to implement either of these programs, a review of metal requirements and operating plans will be necessary.

Two counters and one printer arrived recently. This equipment will be used to record automatically total count information from both the external and internal bond tests. The equipment will be mounted in a portable cabinet so that data can be obtained readily from any tester. Evaluation work will start soon to determine if routine collection of internal bond count data for the Quality Certification Program is useful.

EMPLOYEE RELATIONS

Safety Performance

Members of the Manufacturing Section were treated for 31 medical treatment injuries, a frequency rate of 5.46.

On October 2, 1959, an employee of Manufacturing Section, Finishing and Special Products, severely injured his left index finger when it was caught in a pinch point between an inserter rod and cover on an automatic welding machine.

Radiation Control

During the four week period ending September 16, 1959, Manufacturing personnel received a total of 2939 mrad, with no individual exposures in excess of 300 mrad and only two exceeding 200 mrad. This is the lowest level of the calendar year, and slightly below the lower control limit. It appears to be a continuation of declining exposure trend which started in July.

Security Violations

None

Reports of Invention

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

J. Mathis
Manager - Manufacturing

WM Mathis:RIB:gl

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STATISTICS

1958-59

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ENGINEERING OPERATION
October, 1959

VISITORS

<u>Name</u>	<u>Company</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
A Stewart	National Lead Co	SM Gill	10/20	Discuss uranium
WC Manser	Nuclear Metals Div., Albany	EA Guay JW Talbott		fabrication capabil- ities of NLC
Al Kaye	Mfg. Serv.	K Drumheller	10/8,9	Equipment development
L Seigeley	Schen.		"	discussions
ME Wahl	SRP	JW Talbott	10/27-29	Attend FEDC Meeting
SH Anonsen	MCW	"	10/29	" " "
FL Cuthbert	NLO	"	"	" " "
JW Ruch	CRCO	"	"	" " "
FR Dowling	AEC, Wash.	"	"	" " "
CL Karl	AEC, NLO	"	"	" " "
HJ Donahue	AEC, SRP	"	"	" " "

TRIPS

	<u>Company Visited</u>			
DC Hunter	Society for Nondestructive Testing Convention, Chicago		10/30-11/6	
	Argonne Nat. Lab. Lemont, Ill.		11/6	Discuss nondestructive testing
JT Stringer	MCW, St. Louis	Dr. Fellows	10/5-8	Discuss uranium tech. specs.,
	Nat. Lead Co., Cincinnati	CE Polson	10/8	metallurgy, fabrication practices
	Bridgeport Brass, Adrian, Mich.	DR Jefferson		
LE Kusler	"	"	"	" " "
EN Wells	Western Blower Corp., Seattle		10/19	Discuss fan specs.
GR Hanson	AEC Wldg. Forum, Chicago		10/11-10/17	Deliver paper at Forum
"	Revi-Duty El. Co. - Milwaukee, Sciaky, Chicago; SRP		"	Discuss wldg. dev.
TB Correy	Revi-Duty El. Co. - Watertown	D Krezek	10/12	Discuss revised equipment performance
	Sciaky, Chicago	WJ Farrell	10/13	Discuss wldg. equip. developments
SM Gill	Bridgeport Brass, Adrian, Mich.	DR Jefferson	10/12-13	U-Zr coextrusion program
GW Riedeman				

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HW-62621

TRIPS, Cont'd.

<u>Name</u>	<u>Company Visited</u>	<u>Contact</u>	<u>Date</u>	<u>Reason</u>
SM Gill	GE Metallurgical	RJ Stuligross	10/13	Powder Metallurgy
GW Riedeman	Prod. Div., Detroit			zircaloy products
SM Gill	MCW	JA Fellows	10/14	Ur. Billet fabrication
GW Riedeman	NLO	CE Polson	10/15-16	" " "
AE Guay	Ajax Magnathermics Corp., Youngstown	EL Keller	10/26-30	Induction heat treating
HF Zuhr	Spencer Chemical Kansas City, Mo. Sylcor, Bayside Hicksville, L.I. Martin Co., Baltimore, Md. Westinghouse Chem. Blairsville, Pa. National Lead Co., Albany, N.Y. GEL, Schen.	H Lambertis	10/5	Discuss fuel tech.
		J Vadeboncoeur	10/6	" " "
		FZ Perella	10/7	" " "
		JD Cotton	10/8	" " "
		J Farr	10/9	" " "
		GW Dunlop	10/9	" " "

PERSONNEL

<u>Name</u>	<u>Title</u>	<u>Operation</u>	<u>Nature of Change</u>	<u>Date</u>
PC Howard	Stenographer	4470	Trans. from Relations Operation	10/5
NC Davis	Eng. Asst.	4470	Trans. from Mfg.	10/26
FH Sherwood	Engineer	4420	Trans. from 4430	10/1
JE Ruffin	Engineer	4440	Trans. from 4430	10/1

INVENTIONS

All Engineering Operation personnel engaged in work that might reasonably be expected to result in inventions or discoveries advised that to the best of their knowledge and belief no inventions or discoveries were made in the course of their work during October, 1959 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.

GR Hanson

A chuck for aligning a cylindrical fuel element with a small aluminum spool for welding.

PROCESS ENGINEERINGRegular Production Rupture Experience

One enriched and five natural uranium I & E fuel elements failed in the reactors during October. A summary of these ruptures is as follows:

<u>Fuel Element Type</u>	<u>Reactor</u>	<u>Exposure (MWD/T)</u>	<u>Rupture Classification</u>	<u>Jacket Alloy</u>
I & E Natural	C	430	Hot Spot	X-8001
	D	736	Unclassified	X-8001
	DR	870	Side Other	X-8001
	H	465	Side Other	X-8001
	KW	395	*Unclassified	X-8001
I & E Enriched	DR	100	Charging Damage	C-64

*Lost in discharge

The natural I & E ruptures experienced in the D and DR Reactors this period, and one in DR during September, were associated with groove corrosion of the X-8001 cladding alloy. This type of corrosion appears to be confined to X-8001 alloy clad I & E fuel elements charged in the downstream high temperature positions of old reactor new or low corrosion index process tubes. Location of the attack is generally opposite the rib marks in the longitudinal direction, and is most severe on those fuel elements showing evidence of hot spots or hot areas. Radiometallurgical examination of a severely corroded piece from one of the rupture charges is being scheduled.

In addition to the regular production ruptures, a zircalloy clad, enriched (1.6% U-235) uranium, seven-rod cluster fuel element failed at an exposure of 2240 MWD/T in a KER loop. This rupture has been classified as a split type failure.

IPD Liaison

A joint program with IPD is being continued in an attempt to resolve the X-8001 alloy groove corrosion problem. Although corrosion of this type is confined to old reactor new or low corrosion index process tubes, configurations of the pitting attack observed in connection with a recent production test indicate scoring or other damage to the autoclave oxide film may be an influencing factor. Work currently in progress or planned to further investigate groove corrosion includes the following:

1. Tests in the 1706-KE out-of-reactor loops to determine the effect of high coolant temperatures.
2. Compare corrosion performance of X-8001 and C-64 alloys in old reactor new process tubes.
3. Determine if the use of water-mixer fuel elements in low corrosion index old reactor process tubes will relieve groove corrosion of X-8001 alloy.

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HW-62621

4. Design and run a production test to determine the effect of scoring X-8001 alloy clad I & E fuel elements before and after autoclaving on the incidence and severity of groove corrosion in old reactor new process tubes.

During October, the routine HAPO analysis of as-received X-8001 alloy components indicated additional lots of cap-spires contained pieces with a cobalt content up to 0.004 percent or about four times the specified maximum. Investigation revealed that about 1000 pounds of high-cobalt blooms, rejected by the vendor, were inadvertently used to fabricate HAPO components. As a result of this incident, it was necessary to accept 8000 KIIIE and 67,200 KIIIN cap-spires on a material waiver in order to meet November production schedules. In addition, 19,200 KIIIE and 67,000 KIIIN cap-spires are being held for six months, and will be released with IPD concurrence if no adverse irradiation effects are experienced in the use of the 300,000 sets of high-cobalt components previously accepted. Analysis has shown only 2-5 percent of the components involved in the recent incident have a high cobalt content as compared to 50 percent previously.

Production Tests

Post irradiation data for six alternated charges of chloride blank heat treated and carbonate rod heat treated I & E fuel cores, exposed to 800 MWD/T, show no significant difference in average warp, but an improvement in standard deviation as indicated below.

<u>Heat Treatment</u>	<u>Average Warp (mils)</u>	<u>Standard Deviation (mils)</u>
Chloride Blank	7.1	5.9
Carbonate Rod	7.7	7.2

Diameter changes of the chloride blank heat treated cores show no evidence of dog-boning or swelling on the ends.

Uranium Technology

As part of a production test on dingot uranium, 500 alloyed dingot cores and 400 ingot cores were canned in the pilot plant. A high reject rate was experienced due to external porosity on both types of material, therefore, another group of material is being canned. No explanation has been found for the high degree of porosity.

The remainder of the first 25 tons of alloyed dingot material will be received the first part of November. It has been delayed in fabrication and was not received as originally planned.

Considerable testing has been done on solid cores which were fabricated at MCW from NLO rolled ingot rods. Results indicate that the material has a larger grain size, but is within the grain size limits of material fabricated at NLO.

Two additional types of material have been received the past month and are awaiting evaluation. Included in these two groups are cores fabricated at NLO using Dow Grade 5 magnesium in the reducing operation and cores beta heat treated followed by an alpha anneal.

Nickel Plated Fuel Elements

Efforts on the electrolytic hydrogen test for nickel plate adherence included further standardization of test conditions and testing the effect of heat treating time and temperature on the adherence of nickel plate. Test results, summarized below, firmly established the necessity for good adhesion of plate in the as-plated condition, and the additional beneficial effect of heat treatment.

Plate characterized by poor adherence in the as-plated condition (as indicated by bend-testing) was autoclaved and subjected to the electrolytic-hydrogen adherence test. Eighty percent (average) of the surface area blistered. Baking at 300°, 350° and 400° C, for periods ranging from one to six hours reduced the extent of blistering to roughly 25-50 percent of the surface area. Samples baked up to twenty-five hours still blistered to some extent and individual samples exhibited a wide variance in behavior.

Comparatively, plate having good as-plated adherence, autoclaved and blister-tested, developed blisters over 33 percent of the surface area. Baking for 1/2 hour at 300°, 350° and 400° C, produced some improvement with blistered areas averaging 25 percent, 2 percent, and 5 percent, respectively. Baking for one hour and longer at any of the above temperatures eliminated blistering completely. The beneficial effect of heat treatment on "good-adherence" plate is particularly significant, since the material irradiated in PT-207-A probably falls into this category. Further testing is underway to evaluate the product of several vendors and to determine the effect of deep etching of the aluminum prior to plating.

Statistical analysis of data relating the tensile strength of the uranium-Al-Si bond to baking time and temperature indicates bond strength deterioration begins at 3.2 hours at 300° C, 1.4 hours at 350° C, and 0.6 hours at 400° C. These times are roughly one-half those indicated by analysis of the data reported last month. Fortunately, as reported above, a significant improvement in nickel-aluminum adhesion is achieved at shorter times than required to initiate bond-strength deterioration. Further studies of the effect of heat treatment on the Al-Si uranium bond include metallographic examination, and ultrasonic testing.

Process Development

A vertical pulse cap-spire preheating technique is being developed with favorable results. Good wetting and excellent heating rates are obtained at agitation rates of six cycles/second with a vertical stroke of about 3/8 inch..

Flux additions to the methanol used in aluminum component preparation have failed to produce the improvement being sought in bond quality.

DECLASSIFIED

HW-62621

Three hundred and eighty OIIN self-supported fuel elements were produced for irradiation testing using resistance spot welding techniques.

A new design of self-support, called the "wraparound" support, is being developed to reduce the number of support welds per fuel element from sixteen to eight. Samples of these supports are being prepared for evaluation, and will necessitate deletion of the truline end contours on I & E fuel elements.

Nine hundred fuel elements have been canned to determine the effect of a higher nickel content in the canning furnaces. Preliminary results indicate a general increase in canning bath impurities, a slight loss in fuel element reactivity, a probable build-up of nickel rich material in the canning furnace induction channels, and a slight effect on bond quality which has not been fully evaluated.

Process Technology

Continued evaluation of horizontal duplex bath agitation of I & E cores on a production canning line has confirmed this type of agitation improves bond quality with no appreciable change in yield.

Because of difficulties experienced on the production canning lines in the use of an optimized long can-sleeve preheat cycle (73 seconds) for I & E fuel elements, approximately 3000 additional I & E fuel elements were canned in the pilot plant to further demonstrate the feasibility and advantages of this cycle. No problems were experienced in controlling can-wall thickness or canning bath temperatures. Testing of the finished material is incomplete.

Six hundred I & E fuel elements, which had passed visual weld inspection for pinholes were etched, buffed, and re-inspected. Fourteen additional pinholes were found and in addition, the oxide was removed from thirteen fuel elements previously rejected for braze layer contamination.

An Instron tensile testing machine was received and installed. This equipment will be used to develop peel and stud pulling techniques as potential methods for measuring fuel element bond strength under the quality certification program.

A Blakeslee ultrasonic degreaser was received for pilot plant studies and is scheduled to be installed next month.

Specifications have been prepared and a purchase order issued for the procurement of an automatic turret lathe for special products preparation.

Al-Si Pilot Plant Activities

About 5640 uranium cores were canned in the Al-Si Pilot Plant for process development purposes. The major items of process development were:

1. Large scale test of the long preheat canning cycle to evaluate canning furnace freeze-out and can-wall control versus temperature control.
2. Effect of can submersion time on recrystallization of X-8001 alloy cans.
3. Evaluation of mechanical pulse vibration of the spires during preheat on spire wetting, bubble removal under the wafer, and heating rate.
4. Aluminum cleaning and wettability tests in molten AlSi to:
 - a. Determine solution life of 32 oz/gal. Diversey 514.
 - b. Evaluate effect of inverted spire cleaning on male weld rejects.
6. Normal canning of fuel elements to provide fuel elements for:
 - a. SORT PT-IP-219-A-2-FP.
 - b. Alloyed dingot PT-IP-280-A-FP.
 - c. Initial evaluation of CIVN self-support PT-IP-272-A-FP, and to provide standards for the bond and penetration tester.
 - d. Demonstrate the feasibility of using wraparound self supports.

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HW-62621

MATERIALS ENGINEERING

NPR Fuel Element Development

Coextrusion Program

In addition to the program outlined last month, it is planned to extrude approximately 170 ft. each of KER inner and outer fuel tubing of present geometrical dimensions. This material will have an isotopic assay of 1.6%. It is for use by HLO on the In-Loop Testing Program. Tentative plans are to have the extrusions completed by late February 1960.

Uranium Billets

Due to poor yields and less than optimum extrusion scheduling, the final billet stock from the 6,000 lbs. of 9 x 2-5/8" gamma extruded dingot was eight and five billets each of KER inner and outer, respectively. This material is far short of what is needed, and the job is being remade by a more optimum processing route. An additional four dingots were gamma extruded and pierced at Mallinckrodt on October 9 and the product of these is to be re-extruded at Bridgeport on November 7, 1959. Part of this material was pierced with a 1-7/16" hole, while the remainder was pierced to 2-5/8" hole.

National Lead Company of Ohio has cast at least ten 11" x 20" long uranium ingots for the NPR program. Sectioning of one ingot and examination of the others reveals unusually good soundness. These ingots are of a size suitable for producing coextrusion billet cores by direct alpha piercing and extrusion and will allow sufficient reduction in area to give desirable core structures. For the present time it is planned that this ingot will be the basic starting point for stock for NPR billets; the first one of these should be extruded within the next few weeks.

Zircaloy Components

Procurement of zircaloy tubing for the inner and outer shell components of composite coextrusion billets continues. A large order of zircaloy tubing is tied up in the steel strike at Allegheny-Ludlum. Failure to receive this material shortly may cause some delays in the coextrusion program. The major items of zircaloy tubing for which no stock has yet been ordered or procured are the 6" size for the KER inner tube outer cladding, and the 7-1/2" size for the NPR outer tube outer cladding. It is anticipated that this material will be procured by conversion of one 16" ingot at Bridgeport Brass, Adrian, Michigan, with delivery of the material at HAPO not later than January 1, 1960.

Metallurgical Products Department of G.E. has been successful in producing zircaloy-2 billets by powder metallurgy methods. The per pound price appears

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HW-62621

to be compatible with that of double arc melted ingots. Since these billets can be made hollow and immediately ready for an extrusion, the potential material savings appear to be significant, and hence the cost substantially reduced. APED has done some evaluation of this material and found it to be fairly satisfactory with respect to corrosion tests and other properties. For the coextrusion program it is planned to extrude some of these billets into extruded tubing or billet shell stock by conventional hot extrusion, and some by the Hunter Douglas Division of Bridgeport Brass Companies' "cold extrusion process".

Billet Preheating

Heating of NPR Billets

Tests of billet preheat rates for the 6-1/2" OD NPR billet design were started. Several runs were made with a prototype billet to get information on thermocouple placement, effects of shielding, etc. Based on this information, a second billet has been prepared with six thermocouples inside the billet assembly which will be used to study billet heating rates.

Induction Heating

The billet design for induction heating tests has been completed. These tests will be performed by the Ajax Magnethermic Corporation. When this work will be done cannot be determined until zircaloy cladding of the needed size is available.

Extrusion Runs

There were no coextrusion runs during October. Both KEER inner and outer tubing will be coextruded during November.

Evaluation of Tube Extrusions

NPR Size

Samples of the NPR tubes extruded at Adrian on 8-29-59 are being evaluated.

Clad Thickness

During the month, work continued on preparation of clad thickness samples. Work is 80% complete. Clad thickness variations are more frequent on the I.D. in comparison to the O.D. Detailed evaluation will be completed during November.

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HW-62621

KER Size

Samples of the eight KER inner tubes extruded at NMI on 8-31-59 are being evaluated.

Bonding - Eighty-six O.D. and ninety-one I.D. bond fracture tests were made on these eight tubes. All tubes showed quite good bonding and appear to be the best bonding yet observed on tubes coextruded on Materials Engineering's program. This improvement in bonding is primarily attributed to the higher reduction ratio used. These KER tubes, produced at 17.8/1, are definitely better than NPR tubing produced at 13.5/1 under similar conditions of billet history.

Clad Thickness - Preparation of clad thickness specimens is 60% complete.

Chemical and Mechanical Milling of Counterbore for Welded End Closures

Weld samples, up until the past week, were prepared using a two-step operation. The samples were rough machined and then chemical milled to final dimensions. However, with experience gained during the past month, some samples have been prepared by chemical milling only. Tolerances on samples prepared in this manner closely approach those obtained by the two-step operation.

The average tolerances now obtained on tube samples with a totally chem-milled recess of 100 mils are as follows:

Depth of recess at ϕ of wall thickness = $\pm .005"$

Depth variation across uranium surface = $\pm .005"$

Fillet radii at zircaloy-uranium interface = .012" to .018"

Contact has been made with one of the larger chemical milling companies in the hope of obtaining the benefit of their experiences with the finer points of the process, i.e. elimination of fillet radii and surface depth variation. The company has indicated a desire to do this work, but no satisfactory proposal has been received to date.

Induction Beta Heat Treating

Induction beta heat treating tests on KER inner tubing and NPR outer tubing during the week of October 26, at the laboratories of the Ajax Magnethermic Corporation, indicate the feasibility of induction heat treating the coextruded NPR fuel tubing. Both static and scanning tests were carried out on fuel sections up to one ft. in length and transformation achieved without difficulty. Temperature control throughout the sections could be held easily to within $\pm 5C$. The slowest heating rate utilized in the entire test was approximately 18" per minute. Preliminary measurements on the 12" pieces after the scanning tests indicated that no warp developed.

Fuel Element End Closures

Powder Metal Closure

Recent developments indicate that it is essential to use the metal hydride to produce reactor grade corrosion resistant metal. Processing is carried out at 800C for not less than two hours. Ralph Stuligross of MPD believes that an alteration in the process, such as flashing the powder before it is compacted in the end of the fuel element, can be made to overcome the high temperature, long time problem. He advised on 10-30-59 that he planned to start pressing the pieces on 11-9-59.

Argon Shielded Closure

On 10-23-59 a mockup was made with the manual welding machine to explore the possibility of making heliarc closure welds out of a dry box by surrounding the weld area with argon as a shielding gas. The initial visual results were good. The techniques have been improved and a total of 32 clean, bright welds have been produced. Eight of the pieces were delivered to Roger Thiede for defect tests. Another eight pieces have been autoclave tested. After autoclaving, several of the welds showed white stains or corrosion product but the major quantity were free of such defect. Thus it would appear that this technique of welding may be feasible.

D. C. Kaulitz of Fuels Design Operation reports that he witnessed welding of zircaloy-2 in Germany this month performed by a similar process.

A continuing series of tests is planned to refine the equipment and apply the technique to the NPR inner tube.

NPR Pilot Plant Equipment

Extrusion Press Tool Design

The detail design of three container-liner-stem assemblies for the co-extrusion pilot plant tooling is 90% complete. Bids will be requested during November. Mr. Paul Loewenstein of NMI will review the tool design. Detail design of the associated equipment has been started. Design work for the Appropriation Request (60-12) should be completed by 12-11-59. The complete assemblies being procured are: 6", NPR inner tube; 5", KER outer tube; 4", KER inner tube and any rod. The 7.6" assembly for NPR outer tubing will be original press tooling.

Vapor Blast

The vapor blast machine has been used extensively by HLO personnel. They report excellent performance on all sizes of coextruded fuel elements processed. Air pressure to the blast nozzles was improved by increasing the pressure at the power house and removing the air pressure regulator on the machine.

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HW-62621

Autoclave

The problem of steam leakage at the feed water seal located at the bottom of the vessel has not been remedied. Frequent tightening of this seal is necessary. It is planned to elevate the vessel about one foot so that seal will be accessible for tightening without complete removal of the vessel from the pit.

Heliarc-Electron Beam Welder

On 10-30-59, the equipment was ready for beneficial operation after adding the heliarc chamber (dry box) and repairing damage caused by the electrical power system failure from a lightning stroke. The largest problem encountered was the lack of adequate leak detector equipment. Materials Engineering's leak detector is being repaired.

KER Fuel Element Program

The new end support design for the KER AlSi canned "doe" elements has been approved by IPD. A punch and die was designed for the HLO 110-ton press to punch end supports from M-388 solid caps. The punch and die is presently being fabricated by Technical Shops.

TESTING METHODS

Process Fuel Element Testing

External Bond Test

Production line evaluation of focused Lithium Sulphate crystals has confirmed the advantages of these transducers over quartz. The wider band width of the new crystals make test results more independent of residual can wall thickness, and their lower impedance makes them less affected by external electrical transients. Unfortunately, however, their use does not improve reproducibility between testers to the degree expected.

It is becoming increasingly clear that the fundamental difficulty in operating all testers so as to give identical results stems from the nature of the AlSi bonding layer, and the high sensitivity of the ultrasonic test. Since bond quality varies over a wide range of degree, small variations in instrument operation level cause large difference in test results. More precise methods of setting up the testers are being initiated in order to improve the uniformity of test results.

Internal Bond Test

An internal probe with a fiber glass shaft has been constructed and evaluated. First results were favorable, although changes in the potting box mold were suggested by the first model.

NPR and Category II

Check out of the NPR test station is going smoothly. Circuitry for all tests have been placed in operation. The cladding thickness and integrity tests have performed particularly well on samples of material tested to date.

At present the composite test head is receiving most attention. The tape head assembly has been placed in operation, and a small test coil mounted in place. Trouble has been experienced with the special ultrasonic transducer required. A commercial unit, which has been twice returned to the vendor for fabrication improvements, is ready to be incorporated into the composite assembly for evaluation.

The completed first section of the NPR testing tank has undergone extensive laboratory use. A second section, required for internal testing of tubular elements, is nearing completion and will be placed in operation within two weeks.

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HW-62621

New Methods Development

Bare Core Station

Data obtained from 4000 I & E cores tested by the prototype Bare Core Station is being processed to provide additional data for grain size distribution curves.

The results of testing Mallinckrodt solid core material brought to light facets of the Ultrasonic Attenuation Test which have not been encountered previously. The nominally large grain structure of this material placed it near one end of the instrument's effective range of measurement, indicating that a lower test frequency may be more desirable for this material. In addition, some pieces were encountered whose grain structure within one-half inch of the core ends were exceptionally large. However, since the volume of this large grain region was small compared to the total volume, the average grain size was not much different that it would have been had the large grain material not been present. Consequently, the material was not rejected. In order for the instrument to be effective for material of this type, additional circuits are being devised that will perform an averaging measurement over a smaller volume of material. Plans are to incorporate these circuits in the production equipment.

One automatic test tank has been received from the shop. The electronic console is expected in the next few days.

Weld Bead Test

The weld bead test is undergoing further laboratory development on the basis of the unsatisfactory evaluation results previously reported. Attempts to provide complete inspection of the weld bead by causing a Rayleigh wave to flow transversally across the bead have been partially successful. However, in the laboratory tests devised to date, reflections from the element ends, around which the energy flows, causes reflections that in some cases are larger than those received from bonafide defects. This technique is undergoing further experimental development.

Customer Work

Resin Level Detector

The Resin Level Detector under development for HLO is essentially completed. A laboratory demonstration is planned within the next few days for interested parties, after which the unit will be turned over to Chemical Development Operation, HLO.

Tests of PRTR Elements

Approximately 30 to 40 PRTR zirconium tubes and swaged elements per day are being ultrasonically tested in the laboratory as a service to Ceramic

[REDACTED]

Fuels, HLO. This test follows eddy current and Zyglon penetrant tests, and has found defective material not revealed by the other tests. This work is being performed by Hanford Laboratory personnel under Testing Methods supervision. Assistance is being given Radiographic Testing Operation, HLO, in setting up similar ultrasonic testing facilities.

Zirconium Clad - Aluminum Nickel Core Elements

Zirconium clad elements with an aluminum nickel core are being tested in the laboratory for Plutonium Metallurgy, HLO. These elements, intended for thermal cycling experiments, are being ultrasonically inspected for core defects. The PRTR test program already in progress has necessitated that this work be done during swing shift hours. The test is being performed by Hanford Laboratory personnel.

Lamb Wave Testing

Techniques for extending the frequency band width of Lamb wave systems have been experimentally investigated. One technique of interest provided an exceptionally wide band of frequencies by the use of tapered barium titanate crystals. The send crystal operated on a ten megacycle center frequency, the receiver was ground to a center frequency of five megacycles.

The results of testing various plates with this arrangement clearly showed the effect of several modes generated simultaneously. In some cases, destructive interference between modes was observed.

Methods of applying a moderately wide band system so as to obtain results relatively independent of plate thickness are now being experimentally studied. Certain incident angles for which modes are nearly equally spaced and are relatively close together, have been employed with good results.

Equipment for evaluating the Lamb wave method of bond testing AlSi canned fuel elements is now being assembled.

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ADVANCED ENGINEERING

An economic analysis of the conversion of the 313 Building for I & E production was completed. Estimate of the increased plutonium production obtained with I & E loadings to date indicates that the cost of this project was paid for by the return from approximately one week of 1959 operation.

Oxide Versus Metal Fuels

A study comparing the use of uranium oxide and metallic uranium as power reactor fuels was completed. The principal conclusion of the study was that the two material forms are economically competitive, and that metallic fuels are not without future potential for power reactor use.

Irradiation Experience of Coextruded Fuels

A failure of the Zircaloy-2 cladding on a 1.6% U-235 enriched rod in a seven rod cluster (KER Loop 2) occurred. The failure was a longitudinal split about 3/4 inch long in the jacket approximately half-way between the ends of the rod. The cluster had reached an estimated exposure of 2240 MWD/T under conditions of test IP-226-A, Supplement B.

ESTIMATED OPERATING CONDITIONS

Outlet temperature, °C	250
Estimated Surface Temperature, °C	310
Power per foot of element	122 KW/ft.
Heat Flux, btu/hr/ft ²	0.4×10^6
Discharge date	10/15/59
KER Loop Number	2

The relatively clean black and shiny appearance of the cladding indicated that no generalized corrosion of the oxide layer had occurred. The coolant was maintained at a PH of 10 with LiOH. Cause of the failure has not yet been established.

Hanford Test Reactor

Routine testing continued without incident throughout the month. Assistance was provided on several special tests. Plans are firm to recalibrate the control rod during the week of November 16.

Fuel Element Thermal Stresses

Elastic, plastic, and time dependent stress models were investigated. It was concluded that plastic and time dependent calculations are excessively difficult and at best, only few simple cases have been solved and these by computer methods.

The uranium mechanical behavior during irradiation is still not adequately described by any of the above models. Hence the study to determine when the I & E will be expected to cleave was treated by comparing I & E elastic stresses with solid core stresses. Work has begun to implement suggested programs.

DESIGN & PROJECTS

CGF-810 - 306 Pilot Plant Modification

Pouring of the extrusion press foundation was completed. The press is partially assembled at Hamilton, Ohio and is scheduled for shipment November 16.

Problems are still being encountered in starting up the high pressure autoclave. The autoclave has been brought up to or above operating pressure several times, and each time leaks have developed in fittings.

Negotiations have been completed for installation of the extrusion press and a work authority has been issued to J. A. Jones to perform the installation work.

CAF-847 - New Fuel Cladding Facility

All structural steel has arrived at the building site and the erection is proceeding on schedule.

Outside utilities work was awarded to Central Heating and Plumbing Company, Yakima, Washington. The lump sum price is \$49,146.00.

Negotiations have been completed for the installation of the press room floor, lighting, and heating.

A work authority was received from the AEC authorizing procurement of the production run-out table for initial installation with the press. This will greatly reduce the work necessary to convert the press area from a pilot plant to a production facility.

DRAFTING & FILES

Major Jobs in Drafting

306 Building	Chemical Bay Equipment
313 Building	Bond and Pen Tester - Index Wheel Cap and Can Machine - Work Rail Details Water Mixer Welder
333 Building	Jib Crane and Hoist Extrusion Press - Container, Liner and Cover Plate Electrical Service Press Room Floors and Walls
Miscellaneous	NPR Billet Cores

Drawings Produced

New	48
Revised	65
Small Charts	14
Large Charts	3
Miscellaneous	53

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[Signature]
Manager - Engineering

FINANCIAL SECTION
OCTOBER, 1959

The formal report on the physical inventory of installed equipment was issued and application of identification tags to installed equipment was completed during October. This completes the program started in March, 1959.

The proposed directive policy governing FPD work assigned the J. A. Jones Construction Company was reviewed and transmitted to section managers for comment. Formal issuance is expected in November.

A detailed analysis of commitments and expenditures against the FY 1960 Financial Plan for equipment was furnished each operating section and sub-section manager. The analysis compared actual first quarter expenditures with the component's estimate and pointed out the status of those items which might have an effect on second quarter activity.

In response to a request from AEC, Contract Accounting requested information concerning HAPC requirements for administrative facilities, including a provision for a fall-out facility. FPD requirements were given as one two story, 30,000 square foot, reinforced concrete structure, estimated to cost \$1,200,000 including \$300,000 for the fall-out facility.

Field work was continued on the audit of motor vehicle usage. Action was taken to encourage better utilization of automobiles in the 300 Area Pool.

A new daily log and analysis form was designed for Utilities Operation to replace three former forms. Several forms were also improved for more extensive use in the 306 Semi-Works.

Contacts were made with operating components regarding the benefits to be gained as a result of receiving cost-to-date runs on Monday rather than Thursday.

Several components have indicated that they are now able to utilize the runs, whereas before they were of little value due to late delivery.

In September the Hanford Operations Office advised of a reduction in 2000 Program funds from the level included in the initial Financial Plan. In view of this reduction, several alternate estimates were prepared, with each assuming a different level of production. Results of the study indicated a need for additional funds within FPD. Subsequently, the FY 1960 Financial Plan was revised and FPD's portion of the 2000 Program funds was increased from \$9,150,000 to \$9,600,000. The increase of \$450,000 was made in view of the proposed increase in production. The offsetting reduction was proposed in year-end inventory balances. (Primarily coal inventory in IPD).

Preparation of the FY 1960 Midyear Budget Review has been completed in accordance with established schedules. Production costs included in the Midyear Review are 3.7% in excess of the Financial Plan. Research and Development - 2000 Program expenditures have been forecast on the basis that no transfer from production to Research and Development will be made.

Productivity, based on production of our principal product - the 8" I & E fuel element - rose seven index points during the quarter ended September 30, 1959, when compared to the second quarter of CY 1959.

Reductions in the various elements of input cost contributing to the increased productivity, compared to second quarter, are summarized below:

	<u>Third Quarter Change Compared to Second Quarter</u>	
	<u>Amount</u>	<u>Index Points</u>
Process Materials	\$ (1 300)	(0.1)
Operating Labor	11 400	0.7
Indirect Costs	39 800	2.3
SS Scrap	<u>71 700</u>	<u>4.1</u>
Total	<u>\$121 600</u>	<u>7.0</u>

Manager - Finance

WS Roe:mh

PLANT FACILITIES OPERATION

OCTOBER 1959

GENERAL

Effective October 1, 1959 the nomenclature for this Operation was changed to Plant Facilities Operation from Maintenance and Power Operation. Other nomenclature changes made at this time were as follows:

<u>From</u>	<u>To</u>
Power Operation	Utilities Operation
Instrument & Electrical Maintenance Operation	Instrument, Electrical & PR Program Crafts Operation
Area Maintenance Operation	Mechanical Crafts and Service Operation

Four additional buildings were transferred to the Department during the month. Three buildings (3704, 3707-E and 3711) were transferred from the Construction Engineering & Utilities Operation as a result of the transfer of minor construction work to J. A. Jones Construction Company. Building 3716 was accepted upon completion of Project CAF-820.

DUPLICATING

<u>Process</u>	<u>No. of Impressions</u>
Multilith	563,187
Verifax	7,118
Ozalid	8,358
Total	<u>578,663</u>

The collating backlog has reached 150,000 copies due to intermittent failure of the collating machine.

The modification of the Emergency Rescue Bus was begun on October 29, 1959.

UTILITIES

On October 14, 1959 the altitude valve on the new ground storage tank of the sanitary water system failed. This necessitated taking this reservoir out of service. Failure was caused by sand in the water, scoring and fouling the pilot stem and seat. The valve was repaired and the reservoir placed in service on October 29, 1959. Removal of this reservoir, which had been used

UTILITIES (CONT'D)

as a settling basin, adversely affected production in the 313 Building and Research & Development work in the Area due to the large amounts of sand in the process water. Corrective action is being proposed.

<u>Statistics</u>	<u>October</u>	<u>September</u>
Average steam generated (M lbs/hr)	42	31
Maximum steam generated (M lbs/hr)	74	53
Total steam generated (M lbs)	31,525	22,776
Coal consumed (Tons)	1,636.78	1,162.75
Evaporation rate (steam/#coal)	9.63	9.79
Efficiency - Actual	64.7%	65.2%
Efficiency - Theoretical	69.4%	66.3%
Number of Boilers on: 2 3 2 3 4		
Date of Change : 6 9 27 31		
Sanitary water from 3000 Area (million gallons)	80.13	87.11
Total water from 3000 Area (average rate GPM)	1,795	2,016
Total water from #3 and #4 Wells (million gallons)	13.76	11.19
Total water from #2 Well	.30	.30
Peak water consumption for 24 hours (million gallons)	3.1	3.2

INVENTIONS

All personnel in 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 October 1959.

SAFETY, SECURITY AND RADIATION EXPERIENCE

Medical Treatment Injuries	21
Frequency Rate	4.29
Disabling Injuries	0
Near-Serious Accidents	0

There were no Security Violations or Radiation Incidents reported.

MEETINGS

Round Table-Staff	21
Safety and Security	19
Information	7

EH:JPF:akm

Manager - Plant Facilities Operation

RELATIONS PRACTICES OPERATION
OCTOBER, 1959

EMPLOYMENT

Personnel Added: 24 Removed: 10

Reduction of force by FPD: 2 by seniority bumping 6

Upgrades within FPD: 7 Transfer requests active at month end: 60

Procurement: Offers 9; Interviews 12; Request for personnel 10; Transfers (all) 35

Perfect attendance recognition awards: 4

Service Pins: ten year 0; five year 6

HEALTH AND SAFETY

	<u>October, 1959</u>	<u>September, 1959</u>
Disabling Injuries	0	0
Serious Accidents	1	0
Medical Treatment Cases	54	42
Medical Treatment Frequency	4.35	3.57

There were 54 injuries reported by Department personnel in October. There were 22 injuries sustained to the hands which is the lowest percent of total this year, marking a reduction two months in a row. The percentage of hand injuries that may have been prevented by use of gloves also is the lowest this year.

The change is somewhat significant and can be attributed to the hand protection program developed by the Health and Safety Program Council.

Forty-six facility inspections were conducted in October. Corrections of unsafe conditions and practices found have been given prompt attention.

Program

Membership of the Health and Safety Program Council for the next six months will include R. K. Maxson, R. L. Brown, R. H. Sather, and J. P. Fichten, plus permanent members M. F. Doud, G. E. Towne and W. O. Goslin.

A ladder inspection, storage and identification program for 300 Area has been developed by Plant Engineering. The program should bring into more effective control the problems encountered in the present inspection procedures.

The Specialist - Health and Safety - FPD attended the National Safety Congress during October.

EMPLOYEE COMPENSATION

Suggestion Plan Participation

	<u>October, 1959</u>	<u>Year to Date</u>
Eligible employees	592	579
FPD suggestions received	31	356
Annualized rate per 1000 eligible employees	628	736
No. of suggestions adopted	13	132
Net annual saving	\$1,139	\$59,767
Amount of awards	\$ 265	\$ 4,885
Percent of total awards to savings	23.3	8.2
Average amount of awards	\$ 20.38	\$ 37.00

GENERAL

Security Violations in the Department this month: 0

Acting Manager - Relations Practices

WK Wright:mb

END

**DATE
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9 / 16 / 92**