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SUBJECT: MONTHLY STATUS AND PROGRESS REPORT

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MONTHLY STATUS AND PROGRESS REPORT

APRIL 1959

PART I

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U. S. ATOMIC ENERGY COMMISSION
HANFORD OPERATIONS OFFICE

MONTHLY STATUS AND PROGRESS REPORT
HANFORD OPERATIONS OFFICE

APRIL 1959

PART I

C O N T E N T S

	<u>PAGE NO.</u>
<u>HIGHLIGHT STATEMENT</u>	3
<u>PLANT OPERATIONS</u>	
METAL PREPARATION	4
REACTOR OPERATION	4 - 7
SEPARATIONS	7 - 9
PRODUCTION CHARTS (GRAPHS)	10 - 12
RESEARCH AND DEVELOPMENT	13 - 14
<u>PLANT ACQUISITION AND CONSTRUCTION</u>	
PROJECT AND DESIGN STUDIES	15 - 17
PLANT CONSTRUCTION	17

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HIGHLIGHT STATEMENT - APRIL 1959

OPERATIONS

CANNED FUEL ELEMENT PRODUCTION TOTALLED 511 TONS, INCLUDING 41 TONS OF SOLID AND 402 TONS OF I&E NORMAL-URANIUM, AND 0.3 TON OF SOLID AND 68 TONS OF I&E 94-METAL. THE 511-TON TOTAL IS 100.4% OF FORECAST. YIELDS WERE 74% FOR SOLID AND 85% FOR I&E NORMAL, AND 82% FOR 94-METAL PIECES. THE CANNING LINE TIME-OPERATED EFFICIENCY WAS 94.5%.

IN-PILE PRODUCTION TOTALLED 119.1% OF FORECAST, WITH AN AVERAGE TIME-OPERATED EFFICIENCY OF 78.4% AS COMPARED WITH 72% OF FORECAST. NEW MAXIMUM POWER LEVEL RECORDS WERE ESTABLISHED AT B, C, D, F, AND KW REACTORS. THERE WERE ONE SOLID AND FIVE I&E NORMAL-URANIUM FUEL ELEMENT FAILURES DURING THE MONTH. AN INDIVIDUAL PRODUCTION RECORD WAS ACHIEVED AT B REACTOR.

TOTAL SEPARATIONS PLANT PLUTONIUM PRODUCTION WAS 54.9% OF FORECAST WITH 76.3% OF THE TOTAL PRODUCED BY PUREX AND 23.7% BY REDOX. VARIATION FROM FORECAST RESULTED FROM MECHANICAL AND PROCESS DIFFICULTIES AT THE PUREX PLANT.

PRODUCTION OF NORMAL UO_3 TOTALLED 453 TONS, 100.6% OF FORECAST; PRODUCTION OF ENRICHED UO_3 TOTALLED 47.6 TONS, 95.2% OF FORECAST.

PLANT ACQUISITION AND CONSTRUCTION

NEW PRODUCTION REACTOR - KAISER ENGINEERS SELECTED AS CONTRACTOR FOR THE NPR. MOBILIZATION IS IN PROGRESS.

DESIGN AND DEVELOPMENT ARE CONTINUING. GENERAL ELECTRIC HAS 77 AND BURNS AND ROE HAS 54 PEOPLE ENGAGED IN DESIGN. (SEE PART I, PAGE 15.)

CONFINEMENT - OVER-ALL DESIGN IS SLIGHTLY AHEAD OF SCHEDULE. 105-KE FOG SPRAY IS INSTALLED AND CAN BE MANUALLY OPERATED. (SEE PART I, PAGE 16.)

PRTR - DESIGN IS COMPLETE AND CONSTRUCTION IS 23% COMPLETE VS. 20% SCHEDULED. (SEE PART I, PAGE 17.)

PLUTONIUM FABRICATION PILOT PLANT - DESIGN IS 87% COMPLETE AND CONSTRUCTION IS 57% COMPLETE VS. 53% SCHEDULED. (SEE PART I, PAGE 17.)

METALLURGICAL DEVELOPMENT FACILITY, 306 BUILDING ADDITION - DESIGN IS 98% COMPLETE AND CONSTRUCTION IS 2% COMPLETE VS. 2% SCHEDULED. (SEE PART I, PAGE 17.)

CITY HALL - DESIGN IS COMPLETE AND CONSTRUCTION IS 99% COMPLETE VS. 100% SCHEDULED. (SEE PART I, PAGE 17.)

COMMUNITY

DISPOSAL - 4,560 OF 4,806 HOUSES HAVE BEEN SOLD AND AN ADDITIONAL 102 GOOD FAITH DEPOSITS MADE. (SEE PART II, PAGE 3.)

PLANT OPERATIONS

METAL PREPARATION

CANNING - THE NET PRODUCTION OF CANNED FUEL ELEMENTS WAS:

NORMAL URANIUM	
SOLID	41 TONS
I&E	402
94 METAL	
SOLID	0.3
I&E	68
TOTAL	511.3 TONS

THE 511-TON TOTAL OF CANNED FUEL ELEMENTS WAS 100.4% OF FORECAST^{1/}. NORMAL-URANIUM I&E PRODUCTION INCLUDED APPROXIMATELY THREE TONS OF WATER MIXING PIECES. IN ADDITION, THERE WERE 2,575 Pb-Cd PIECES ACCEPTABLY CANNED.

YIELDS WERE 74% FOR NORMAL SOLID, 85% FOR NORMAL I&E, AND 82% FOR 94-METAL I&E PIECES. THE CANNING LINE TIME-OPERATED EFFICIENCY WAS 94.5%. FOUR CANNING LINES WERE OPERATED TWO SHIFTS PER DAY WITH THE EXCEPTION OF FOUR CANNING-LINE SHIFTS.

AT MONTH END, THERE WAS ON HAND A LITTLE LESS THAN A ONE-MONTH SUPPLY OF BARE FUEL ELEMENTS AND A LITTLE MORE THAN A ONE-MONTH SUPPLY OF CANNING FUEL ELEMENTS.

AUTOCLAVE FAILURES - THERE WERE FOUR AUTOCLAVE FAILURES DURING APRIL. BECAUSE THERE HAVE BEEN SEVERAL FUEL ELEMENT FAILURES IN THE AUTOCLAVES IN RECENT MONTHS, CONSIDERABLE ATTENTION IS BEING GIVEN TO THIS PROBLEM.

SCRAP SHIPMENTS - TWO SHIPMENTS OF SCRAP WERE MADE TO FERNALD. THESE INCLUDED 65 TONS OF NORMAL-URANIUM METAL, 1.2 TONS OF 94 METAL, 1.5 TONS OF DEPLETED METAL, AND APPROXIMATELY ONE TON OF NORMAL URANIUM IN C-6 OXIDE.

REACTOR OPERATION

DURING APRIL, REACTOR PRODUCTION RATES AS PERCENTAGES OF INDEX^{2/} WERE:

	B	C	D	DR	F	H	KE	KW	TOTAL
MAXIMUM POWER LEVEL DURING MONTH (INCLUDES ALL PRODUCTION)	109.0	109.8	111.1	111.8	109.7	111.1	96.2	107.8	106.9
AVERAGE LEVEL WHILE OPERATING (INCLUDES ALL PRODUCTION)	101.9	93.4	101.3	99.0	104.8	106.3	87.5	100.3	98.0
TIME-OPERATED EFFICIENCY	92.1	70.3	83.8	80.7	86.8	83.4	45.3	84.5	78.4

IN-PILE PRODUCTION FOR APRIL EXCEEDED FORECAST^{3/} BY 19.1%. AVERAGE TIME-OPERATED EFFICIENCY WAS 78.4%, AS COMPARED WITH 72% FORECAST. AN INDIVIDUAL MONTHLY PRODUCTION RECORD WAS ACHIEVED AT B REACTOR.

NEW MAXIMUM POWER LEVELS WERE ATTAINED AT B, C, D, F, AND KW REACTORS. AT THE END OF THE MONTH, ALL REACTORS WERE LIMITED BY FUEL ELEMENT FAILURE CONTROL CONSIDERATIONS.

ONE SOLID AND FIVE I&E NORMAL-URANIUM FUEL ELEMENT FAILURES OCCURRED DURING THE MONTH. TWO OF THE I&E NORMAL-URANIUM FUEL ELEMENT FAILURES WERE REMOVED FROM KW REACTOR, AND ONE EACH WAS REMOVED FROM C, D, AND DR REACTORS. THE SOLID NORMAL-URANIUM FUEL ELEMENT FAILURE OCCURRED AT H REACTOR. THIS BRINGS THE CUMULATIVE NUMBER OF NORMAL-URANIUM RUPTURE INCIDENTS TO 1,086, INVOLVING 1,105 PIECES (INCLUDING 32 I&E FAILURES). THE CUMULATIVE NUMBER OF 94-METAL RUPTURE INCIDENTS REMAINS AT 62, INVOLVING 64 PIECES AND THE NUMBER OF DEPLETED-METAL RUPTURE INCIDENTS REMAINS AT 13, INVOLVING 13 PIECES.

1/ TS DOCUMENT CLVI-605.
2/ TS DOCUMENT LXII-2211.
3/ TS DOCUMENT CLVI-605.

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PLANT OPERATIONS (CONT'D)

REACTOR OPERATION (CONT'D)

FOLLOWING IS A SUMMARY OF APRIL REACTOR OUTAGES:

B REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
3-31	4-1	38.2	CONCLUDED CHARGE-DISCHARGE AND MAINTENANCE, FOLLOWING RUPTURE REMOVAL.
4-22	4-23	35.3	PANELLIT TRIP CAUSED BY IMPROPER VALVING PROCEDURE; PERFORMED CHARGE-DISCHARGE.

C REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
3-29	4-2	98.4	CONCLUDED SCHEDULED CHARGE-DISCHARGE, MISCELLANEOUS MAINTENANCE, AND LEAK TESTING.
4-2	4-3	10.5	POISON DISCHARGE AND THERMOCOUPLE REPAIR.
4-11	4-15	81.5	SCHEDULED CHARGE-DISCHARGE AND MAINTENANCE.
4-15	4-15	6.9	POISON DISCHARGE.
4-23	4-25	39.3	PANELLIT TRIP. INVESTIGATION OF AN UNCONFIRMED RUPTURE SUSPECT. COMPLETED LEAK TESTING.
4-26	4-28	35.2	REMOVAL OF A STUCK I&E NORMAL-URANIUM FUEL ELEMENT FAILURE FROM TUBE 2281. COMPLETED CHARGE-DISCHARGE.
4-28	4-28	1.4	PANELLIT TRIP CAUSED BY A FAULTY GAUGE.

D REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
4-3	4-5	43.0	REMOVAL OF A STUCK I&E REGULAR-METAL RUPTURE FROM TUBE 3656. COMPLETED CHARGE-DISCHARGE AND MISCELLANEOUS MAINTENANCE.
4-7	4-7	0.2	PANELLIT TRIP.
4-25	4-27	59.6	REMOVAL OF A STUCK SPLINE FROM TUBE 3360. COMPLETED CHARGE-DISCHARGE AND MISCELLANEOUS MAINTENANCE.
4-29	4-29	0.2	PANELLIT TRIP WHEN THE BOARD WAS ACCIDENTALLY STRUCK BY A CHIPPING TOOL BEING USED ON A CONTROL ROOM DOOR.
4-30	EXTENDED INTO MAY		LEAK TESTING.

DR REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
4-1	4-3	31.9	LEAK TESTING AND CHARGE-DISCHARGE.
4-23	4-23	0.3	PANELLIT TRIP DUE TO IMPROPER JUMPERING WHILE CHARGING A POISON COLUMN CONTROL FACILITY TUBE.
4-24	4-28	96.6	REMOVAL OF A STUCK I&E REGULAR-METAL RUPTURE FROM TUBE 3873. MISCELLANEOUS MAINTENANCE AND PRODUCTION TEST WORK.

F REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
4-10	4-14	95.4	LEAK TESTING AND CHARGE-DISCHARGE.

PLANT OPERATIONS (CONT'D)

REACTOR OPERATION (CONT'D)

H REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
4-7	4-9	38.9	SCHEDULED CHARGE-DISCHARGE.
4-9	4-9	0.2	PANELLIT TRIP CAUSED BY AN OSCILLATING GAUGE.
4-9	4-10	21.4	REMOVAL OF A STUCK SOLID REGULAR-METAL RUPTURE FROM TUBE 0263.
4-28	EXTENDED INTO MAY		PERFORMED LEAK TESTING AND CHARGE-DISCHARGE.

KE REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
4-6	4-7	30.4	MISCELLANEOUS MAINTENANCE, FOLLOWING A KER LOOP 4 TRIP.
4-7	4-8	2.5	MANUAL TRIP BECAUSE OF INSUFFICIENT INSTRUMENTATION.
4-15	EXTENDED INTO MAY		PANELLIT TRIP, CHARGE-DISCHARGE, AND RESISTANCE TEMPERATURE DETECTOR AND GAS SEAL REPLACEMENTS.

KW REACTOR:

<u>DATE DOWN</u>	<u>DATE UP</u>	<u>OUTAGE HOURS</u>	<u>REMARKS</u>
4-20	4-23	70.4	REMOVAL OF AN I&E REGULAR-METAL RUPTURE FROM TUBE 3665. PERFORMED CHARGE-DISCHARGE.
4-23	4-24	5.2	POISON DISCHARGE.
4-28	4-30	34.0	PANELLIT TRIP CAUSED BY AN I&E REGULAR-METAL RUPTURE IN TUBE 3091, WHICH ALSO CONTAINED A STUCK SPLINE. DURING THE DISCHARGE OF THIS RUPTURE, A FLASH FIRE WAS OBSERVED. MINOR CONTAMINATION TO THE EXHAUST DUCT WAS DETECTED. THERE WAS NO CONTAMINATION TO THE OUTSIDE AREA.
4-30	EXTENDED INTO MAY		POISON DISCHARGE.

FUEL ELEMENT FAILURES - FOLLOWING IS A TABULATION OF APRIL FUEL ELEMENT FAILURES:

TABULATION OF RUPTURED URANIUM SLUGS							
TUBE NO.	DATE RUPTURED	TUBE POWER ^{1/}	CONCENTRATION (MWD/T)	ASSIGNED MWD	LOSS DAYS	METAL	TYPE FAILURE
			(NORMAL)				
3656-D	4-3	731	799	2236	1.53	I&E	INSIDE OTHER.
0263-H	4-9	584	526	2291	1.50	SOLID	UNCLASSIFIED.
3665-KW	4-20	1189	866	1013	.32	I&E	INSIDE OTHER.
3873-DR	4-24	1012	566	4193	2.94	I&E	SIDE HOT SPOT.
2281-C	4-26	1117	605	2664	1.64	I&E	SIDE OTHER.
3091-KW	4-28	1178	432	6589	2.09	I&E	SIDE HOT SPOT.

EQUIPMENT EXPERIENCE - TEN PROCESS TUBES WERE INSTALLED - FOUR AT DR, TWO AT F, TWO AT H, AND TWO AT KE.

SEVEN TUBE AND TWO VAN STONE LEAKS WERE CORRECTED.

BURNING FUEL ELEMENT AT KW REACTOR - ON APRIL 28, KW REACTOR WAS SHUT DOWN TO REMOVE AN I&E REGULAR-METAL RUPTURE FROM TUBE 3091. THE TUBE ALSO CONTAINED A STUCK SPLINE; THEREFORE, IT

^{1/} AT TIME OF RUPTURE.

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PLANT OPERATIONS (CONT'D)

REACTOR OPERATION (CONT'D)

BURNING FUEL ELEMENT AT KW REACTOR (CONT'D)

WAS NECESSARY TO SHUT OFF WATER FROM THE TUBE AND REMOVE THE TUBE AND CONTENTS FROM THE PILE. DURING REMOVAL, A BRIEF FLASH FIRE WAS OBSERVED IN THE PORTION OF THE TUBE PROJECTING FROM THE REAR FACE OF THE PILE. THE CLOUD OF RADIOACTIVE SMOKE DISSIPATED RAPIDLY INTO THE EXHAUST SYSTEM. MINOR CONTAMINATION OCCURRED IN THE EXHAUST DUCT. NO PERSONNEL RECEIVED ANY EXPOSURE, AND THERE HAS BEEN NO CONTAMINATION FOUND OFF-SITE WHICH CAN BE DEFINITELY ATTRIBUTED TO THE INCIDENT.

HIGH WATER COLLECTION AT C REACTOR - A HIGH WATER COLLECTION RATE WAS EXPERIENCED AT C REACTOR DURING MUCH OF APRIL. BECAUSE OF EXTENSIVE LEAK TESTING, THE LIKELIHOOD OF INTERNAL TUBE LEAKS NOW APPEARS TO BE NIL. THE REMAINING SUSPECTED CAUSES OF CONTINUING HIGH WATER COLLECTION AT C REACTOR ARE (1) DEFECTIVE O RINGS ON THE REAR BALL VALVES OF THE OPERATIONAL CHARGE-DISCHARGE EQUIPMENT AND (2) LEAKING GAS BELLOWS WHICH PERMIT THE CASCADE OF WATER DOWN THE REAR FACE TO ENTER THE GAS PLENUMS. A TEST PERFORMED BY INCREASING THE REACTOR ATMOSPHERE PRESSURE RESULTED IN A SIGNIFICANT DECREASE IN DRIP-LEG COLLECTION, WHICH SUPPORTS EITHER OF THESE TWO POSSIBILITIES. IN EITHER CASE, THE LEAKAGE IS NOT THE TYPE WHICH WOULD CAUSE EXTERNAL TUBE CORROSION. EFFORTS TO RESOLVE THE PROBLEM ARE CONTINUING.

F AREA OUTFALL LINE - EXAMINATION OF THE SOUTH OUTFALL LINE IN F AREA HAS REVEALED THAT THE LINE AT A POINT ABOUT 65 FEET FROM SHORE HAS A SMALL CRACK (OF ABOUT ONE-HALF INCH) AT THE TOP AND IS VENTING AIR. REPAIR WORK IS NOT PLANNED UNTIL AFTER THE HIGH WATER SEASON. AT THAT TIME REPAIR WORK WILL BE DONE TO PREVENT ENLARGEMENT OF THE CRACK AND SUBSEQUENT DISCHARGE OF THE EFFLUENT WATER NEAR THE SHORELINE.

POISON SPLINES - THE TOTAL NUMBER OF EFFECTIVE CENTRAL TUBES FOR ALL REACTORS REACHED A NEW HIGH OF SLIGHTLY GREATER THAN 77% OF THE TOTAL NUMBER OF TUBES. SPLINE USAGE AT THE D AND KW PILES CONTRIBUTED TO THE INCREASED FLATTENING. HOWEVER, MECHANICAL PROBLEMS ASSOCIATED WITH STARTUP SPLINE USAGE LATE IN THE MONTH OFFSET THE EARLIER EQUILIBRIUM CONTROL GAINS. THE TWO PROBLEMS WERE SPLINE SWELLING AND CHOPPER JAMMING. IT IS EXPECTED THAT THE SPLINE SWELLING PROBLEM, WHICH RESULTED IN TWO STUCK CHARGES, WILL BE RESOLVED BY THE USE OF A SINTERED BORON-ALUMINUM SOLID SPLINE AND THAT THE CHOPPING PROBLEM WILL BE LESSENED BY THIS CHANGE. ONE HUNDRED SOLID SPLINES HAVE BEEN ORDERED FOR EVALUATION.

KER OPERATION - EXAMINATION OF THE FUEL ELEMENTS DISCHARGED IN MARCH FROM KER LOOPS 2 AND 3 BECAUSE OF SUSPECTED RUPTURES HAS NOT CONFIRMED THE PRESENCE OF ANY RUPTURES. RADIOANALYSIS OF LOOP WATER HAS ALSO FAILED TO PRODUCE POSITIVE EVIDENCE OF A RUPTURE. THE ZIRCONIUM TUBE OF KER LOOP 2 WAS REMOVED FROM THE REACTOR DURING THE UNSCHEDULED OUTAGE OF APRIL 6. A NEW ZIRCONIUM TUBE WILL BE INSTALLED FOR TESTING NPR TYPE FUEL ELEMENTS. THE OLD TUBE WAS SUCCESSFULLY GUILLOTINED INTO SHORT SECTIONS DURING REMOVAL WITH CENTRAL ZONE SECTIONS READING UP TO 140 R/HR AT TEN FEET. PUSHING FORCES FOR THE TUBE WERE NEGLIGIBLE.

SEPARATIONS

TOTAL SEPARATIONS PLANT PLUTONIUM PRODUCTION WAS 54.9% OF FORECAST^{1/}, WITH 76.3% OF THE TOTAL PRODUCED BY PUREX AND 23.7% BY REDOX. VARIATION FROM FORECAST RESULTED PRIMARILY FROM MECHANICAL AND PROCESS DIFFICULTIES AT THE PUREX PLANT.

PUREX - A SUCCESSFUL NEPTUNIUM RECOVERY EFFORT WAS CONCLUDED ON APRIL 4. FOLLOWING JUMPER CHANGES AND EQUIPMENT FLUSHING, NORMAL PROCESSING WAS RESUMED ON APRIL 8. ON APRIL 17, THE PLANT WAS SHUT DOWN FOR FOUR HOURS TO BY-PASS THE HS EXTRACTION COLUMN WHICH HAD DEVELOPED A LEAK. ON APRIL 22, ANOTHER FOUR-HOUR OUTAGE RESULTED FROM A FEED PUMP FAILURE. A VALVE FAILURE IN THE HA EXTRACTION COLUMN WASTE STREAM ON APRIL 25 REQUIRED AN ADDITIONAL 45-HOUR OUTAGE FOR REPLACEMENT. THE PLANT RESUMED OPERATION ON APRIL 27, AND OPERATIONS WERE CONTINUOUS AND IMPROVING AT MONTH'S END.

ONLY 15% OF THE PLUTONIUM PRODUCT WAS WITHIN SPECIFICATIONS DURING APRIL; HOWEVER, AN ADDITIONAL 20% WAS ACCEPTED FOR RECUPLEX REPROCESSING. AT THE END OF THE MONTH THE MAJORITY OF THE REMAINING 65% HAD BEEN REMORKED AT PUREX. THE MATERIAL WAS SLIGHTLY OUT OF SPECIFICATIONS

^{1/} TS DOCUMENT CLVI-605.

PLANT OPERATIONS (CONT'D)

SEPARATIONS (CONT'D)

PUREX (CONT'D)

EARLY IN THE MONTH BECAUSE OF RESIN FLOW DIFFICULTIES IN THE N-CELL ION EXCHANGE UNIT AND THE SUBSEQUENT DIVERSION OF THE PLUTONIUM PRODUCT TO THE LESS EFFICIENT L-CELL UNIT. ADDITIONAL LOSS IN DECONTAMINATION FACTOR WAS EXPERIENCED WHEN THE LEAKING HS COLUMN WAS BY-PASSED.

PROCESS DIFFICULTIES FURTHER COMPLICATED NORMAL DECONTAMINATION. BOILING OFF OF REWORK IN THE F8 TANK RESULTED IN THE RELEASE OF FISSION PRODUCT ACTIVITY TO THE BACKCYCLED WASTE STREAM TO THE HA COLUMN. IN ADDITION, THE FLUSHES USED TO DECONTAMINATE THE HS COLUMN WERE BEING DISCHARGED TO WASTE THROUGH A COMMON HEADER WHICH CROSS-CONTAMINATED THE INTERCYCLE SOLVENT EXTRACTION PRODUCT STREAMS.

FORTY PER CENT OF THE URANIUM MET SPECIFICATIONS, AND AN ADDITIONAL 35% WAS ACCEPTED FOLLOWING BLENDING OR SILICA-GEL TREATMENT. THE SILICA-GEL FACILITY PROCESSED A TOTAL OF 80 TONS OF URANIUM DURING THE MONTH.

WASTE LOSSES WERE 0.47% OF THE PLUTONIUM THROUGHPUT AND 0.14% OF THE URANIUM THROUGHPUT.

IODINE EMISSIONS WERE CLOSE TO THE DAILY AND WEEKLY LIMITS DURING MOST OF THE MONTH. EACH DISSOLVER HAS ACCUMULATED WELL IN EXCESS OF THE TONS NORMALLY PROCESSED SINCE PREVIOUS SILVER REACTOR GENERATIONS. THE H-2 AND B-2 SILVER REACTORS WERE REGENERATED DURING THE MONTH, AND THE C-2 REACTOR WILL BE REGENERATED DURING MAY.

NEPTUNIUM RECOVERY - EIGHT HUNDRED GRAMS OF NEPTUNIUM WERE SEPARATED DURING THE RECOVERY WHICH ENDED APRIL 4. A NEW FLOWSHEET WAS USED SUCCESSFULLY TO RECOVER THE NEPTUNIUM BEING RETAINED IN THE BACKCYCLED WASTE STREAM. THE WASTE WAS PROCESSED THROUGH THE 2A FINAL-PLUTONIUM CYCLE COLUMN FOR PARTIAL FISSION PRODUCT AND PLUTONIUM REMOVAL; THEN, RETURNED TO THE 18X PLUTONIUM PARTITION COLUMN FOR PARTITIONING OF THE URANIUM AND NEPTUNIUM. FINAL DECONTAMINATION WAS ACCOMPLISHED BY CYCLING IN THE 2A AND 2B COLUMNS UNTIL THE GAMMA ACTIVITY WAS REDUCED FOR LOAD OUT. THE URANIUM REMOVAL IN THE 18X WAS DISCONTINUED PREMATURELY, AND THE FINAL ISOLATED PRODUCT HAD A HIGHER THAN USUAL U/NP RATIO.

THE HIGH URANIUM CONTENT OF THE RECOVERED NEPTUNIUM CAUSED AN ABNORMALLY HIGH WASTE LOSS DURING ION EXCHANGE PURIFICATION. INSUFFICIENT TEMPORARY STORAGE IN THE 222-S NEPTUNIUM PURIFICATION CELL FORCED THE DISCHARGE OF WASTE INTO AN UNRECOVERABLE SYSTEM BEFORE COMPLETE ANALYTICAL RESULTS WERE KNOWN. CONSEQUENTLY, 110 GRAMS OF NEPTUNIUM WERE LOST DURING PURIFICATION. APPROXIMATELY 80 GRAMS WERE RECOVERED AND WILL BE REPROCESSED AND ADDED TO THE NEXT RECOVERY FROM PUREX. SEVEN HUNDRED AND TEN GRAMS WERE DELIVERED FOR FABRICATION OF OXIDE ELEMENTS. ADDITIONAL STORAGE FOR NEPTUNIUM WASTE IS BEING PROVIDED IN THE 222-S BUILDING.

THE NEPTUNIUM BUILT UP RAPIDLY DURING THE FIRST PART OF APRIL'S NORMAL PROCESSING PERIOD. HOWEVER, IT REMAINED STATIC DURING THE PROCESSING DIFFICULTIES AT MID-MONTH (PARTLY BECAUSE LESS VIRGIN FEED WAS BEING INTRODUCED DUE TO REWORK) AND WAS AGAIN ACCUMULATING AT MONTH'S END.

REDOX - THE PROCESSING OF 94-METAL CONTINUED UNTIL APRIL 24. ON APRIL 27, THE PLANT BEGAN PROCESSING NORMAL URANIUM TO HELP RELIEVE A SHORTAGE OF PLUTONIUM FEED FOR THE 234-5 BUILDING WHICH RESULTED FROM PROCESSING DIFFICULTIES AT PUREX.

DISSOLVER OPERATION CONTINUED TO LIMIT 94 METAL PROCESSING. FOLLOWING FURTHER STUDY OF THE CRITICALITY CONDITIONS, THE DISSOLVER CHARGE FOR 94 METAL WAS INCREASED FROM 1.75 TO 2.0 TONS. THE DISSOLVER OPERATED CONTINUOUSLY UNTIL APRIL 16, WHEN A RELAY ON THE CRANE MOTOR FAILED. FOLLOWING REPAIRS, DISSOLVER OPERATIONS WERE RESUMED ON APRIL 18. A 32-HOUR OUTAGE WAS NECESSARY ON APRIL 26 AND 27 FOR REPLACEMENT OF THE B-3 SILVER REACTOR. THE EXTRACTION COLUMNS WERE OPERATED ON 94-METAL PRODUCTION AS FEED WAS AVAILABLE.

THE GAMMA ACTIVITY OF BOTH PRODUCT STREAMS REMAINED WITHIN SPECIFICATIONS THROUGHOUT THE MONTH. FOUR BATCHES OF UNH WERE SLIGHTLY HIGHER THAN NORMAL IN SODIUM CONTENT AND REQUIRED BLENDING AT THE UO₃ PLANT. THREE BATCHES OF PLUTONIUM WERE OUT-OF-SPECIFICATIONS ON URANIUM CONTENT AS A RESULT OF STARTUP DIFFICULTIES AND WERE REPROCESSED.

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PLANT OPERATIONS (CONT'D)

SEPARATIONS (CONT'D)

REDOX (CONT'D)

WASTE LOSSES AVERAGED 0.16% OF THE URANIUM THROUGHPUT AND 0.43% OF THE PLUTONIUM THROUGHPUT. NINE BATCHES OF WASTE MATERIAL WERE REWORKED DURING THE MONTH.

A TOTAL OF 9 CURIES OF RADIOIODINE WAS RELEASED WHEN NORMAL URANIUM PROCESSING WAS BEGUN. THE IODINE EMISSION WAS REDUCED TO NEAR NORMAL AFTER REPLACEMENT OF THE B-3 SILVER REACTOR.

THE FABRICATION OF A NEW C-2 DISSOLVER IS COMPLETE. FOLLOWING FINAL INSPECTION, TESTING, AND CALIBRATION, THE DISSOLVER WILL BE INSTALLED EARLY IN MAY. THE OLD C-2 DISSOLVER, WHICH FAILED FROM A LEAKING COIL, HAS BEEN REMOVED AND TRANSFERRED TO THE T PLANT FOR REPAIR. THE B-2 DISSOLVER WAS TAKEN OUT OF SERVICE ON APRIL 30 BECAUSE OF A COIL LEAK. REPLACEMENT OF THIS UNIT WILL BE MADE BY THE MIDDLE OF MAY WITH A REPAIRED UNIT FROM U PLANT.

UO₃ - PLANT PRODUCTION OF NORMAL UO₃ TOTALLED 453 TONS, 100.6% OF FORECAST. A TOTAL OF 47.6 TONS OF ENRICHED UO₃ WAS PROCESSED, 95.2% OF FORECAST. ALL SHIPPING SCHEDULES WERE MET.

OPERATING DIFFICULTIES AT PUREX HAVE REDUCED THE INVENTORY OF AVAILABLE UNH. GENERATION OF UNH BY REDOX IS EXPECTED TO MAINTAIN PRODUCTION SCHEDULES UNTIL ACCEPTABLE FEED MATERIAL FROM PUREX IS AVAILABLE. THE CHANGEOVER OF REDOX FROM ENRICHED TO NORMAL METAL WILL CAUSE SOME RE-ARRANGEMENT OF UO₃ PRODUCTION SCHEDULING; HOWEVER, THE SHIPPING SCHEDULE SHOULD NOT BE AFFECTED.

SECRET

REACTOR OPERATION FY-59

SUM OF MAXIMUM POWER LEVELS (UPPER LINE)

SUM OF AVERAGE POWER LEVELS WHILE OPERATING (LOWER LINE)

AVERAGE TIME OPERATED EFFICIENCY

PRODUCTION FY-59

URANIUM ACCEPTABLY CANNED
(INCLUDES NORMAL & 94-METAL)

UO₃ PRODUCED

MWD PRODUCED (TOTAL)

PLUTONIUM SEPARATED

DECLASSIFIED

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WITH DELETIONS

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DECLASSIFIED
WITH DELETIONS

DECLASSIFIED

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PLANT OPERATIONS (CONT'D)

RESEARCH AND DEVELOPMENT

RADIATION DAMAGE IN GRAPHITE - THE FACT THAT GRAPHITE CONTRACTS WHEN IRRADIATED ABOVE 300°C, AS CONTRASTED TO EXPANSION AT ROOM TEMPERATURES, SUGGESTS THAT MANY OF THE INTERSTITIALS ARE MOBILE AND DIFFUSE TO GRAIN BOUNDARIES AT HIGHER TEMPERATURES. BECAUSE VACANCIES REQUIRE A HIGHER ACTIVATION ENERGY TO DIFFUSE, THERE SHOULD EXIST A LARGER CONCENTRATION OF VACANCIES THAN INTERSTITIALS AFTER A HIGH TEMPERATURE IRRADIATION. IN ORDER TO DETERMINE WHETHER AN INITIAL CONCENTRATION OF VACANCIES WOULD DECREASE THE DAMAGING RATE UPON LOW TEMPERATURE IRRADIATION, FIVE SAMPLES WHICH HAD BEEN EXPOSED FOR APPROXIMATELY 5000 MWD/AT AT 500°C WERE IRRADIATED AT 300°C IN A COOLED TEST HOLE FOR 195 MWD/AT. SAMPLES WERE DISCHARGED AND MEASUREMENTS MADE TO DETERMINE IF THE DAMAGING RATE FOR SHORT EXPOSURES HAD BEEN AFFECTED. CHANGES IN LENGTH AND CRYSTAL PARAMETERS WERE NOT SIGNIFICANTLY DIFFERENT FROM THOSE FOUND ON CONTROL SAMPLES OF VIRGIN GRAPHITE. THESE SAMPLES WILL BE RECHARGED AND EXPOSURES EXTENDED TO 1000 MWD/AT TO INTRODUCE APPRECIABLE DAMAGE IN THE MATERIAL ON THE POSSIBILITY THAT DIFFERENCES MIGHT BECOME APPARENT AFTER MORE EXTENSIVE EXPOSURES.

CORRECTION OF K REACTOR GRAPHITE STACK DISTORTION - A METHOD FOR PARTIALLY ELIMINATING THE HORIZONTAL DISTORTION OF THE 105-K REACTORS BY APPLYING PRESSURE THROUGH INFLATABLE BAGS INSERTED IN THE GAPS BETWEEN THE SIDE CAST IRON AND THE GRAPHITE IS BEING CONSIDERED. FEASIBILITY OF THIS SCHEME IS BEING STUDIED ON A SMALL GRAPHITE STACK. STATIC COEFFICIENT OF FRICTION DETERMINATIONS MADE ON UNIRRADIATED AND IRRADIATED TSGBF GRAPHITE BARS INDICATE THAT NO APPARENT ADVERSE CHANGE IN THIS PROPERTY RESULTS FROM IRRADIATIONS UP TO 2000 MWD/AT AT 500°C. THEREFORE, THE RESULTS OF STUDIES ON SMALL UNIRRADIATED STACKS COULD BE USED TO DETERMINE THE FEASIBILITY OF THIS SCHEME.

EXPONENTIAL EXPERIMENTS - PU-BE NEUTRON SOURCES HAVE BEEN RECEIVED, AND SUFFICIENT TUBULAR FUEL ELEMENTS OF 2.5-INCH O.D. X 2.0-INCH I.D. HAVE BEEN RECEIVED TO BEGIN WORK ON NPR FUEL GEOMETRIES IN A SECOND EXPONENTIAL STACK. THE STACK HAS BEEN CONSTRUCTED, AND THE FUEL ASSEMBLIES ARE BEING PUT TOGETHER. THE FUEL WILL BE A TUBE-AND-TUBE GEOMETRY WITH AN INNER TUBE WHICH IS 1.66-INCH O.D. X 1.1-INCH I.D. THIS EFFORT MARKS THE BEGINNING OF THE ACCELERATED EXPONENTIAL PROGRAM IN SUPPORT OF NPR.

CREEP TESTING OF ZIRCALOY-2 - TWO VACUUM CREEP UNITS WERE OPERATED CONTINUOUSLY DURING THE MONTH. SPECIMENS OF COLD WORKED ZIRCALOY-2 ARE BEING TESTED IN THESE UNITS AT 400°C UNDER AN APPLIED STRESS OF 18,000 PSI. INITIAL ELONGATIONS OBSERVED WERE 0.2% FOR THE 25% AND 0.02% FOR THE 45% COLD WORKED SPECIMENS. ELONGATIONS AT THE END OF 680 HOURS ARE 0.9% AND 0.8%, RESPECTIVELY. THE CREEP RATE OF THE 45% COLD WORKED SPECIMEN AT THE END OF 680 HOURS TESTING WAS APPROXIMATELY 30% GREATER THAN THAT OF THE 25% COLD WORKED SPECIMEN. TWO OTHER CREEP UNITS WERE PLACED IN OPERATION LATE IN THE MONTH TO TEST SIMILAR SAMPLES AT 400°C UNDER AN APPLIED STRESS OF 21,000 PSI.

HEAT TRANSFER CHARACTERISTICS OF NPR-TYPE FUEL ELEMENTS - THE DESIGN OF THE FULL SCALE MOCK-UP OF A 7-ROD CLUSTER FUEL ELEMENT WAS COMPLETED, AND THE MATERIALS FOR CONSTRUCTION WERE ORDERED. THIS TEST SECTION WILL SIMULATE THE DOWNSTREAM HALF OF AN NPR FUEL CHARGE AND WILL HAVE PROTOTYPICAL HEAT GENERATION RATES IN BOTH AXIAL AND RADIAL DIRECTIONS. DESIGN WAS ALSO COMPLETED OF A 20-FOOT TEST SECTION SIMULATING A TUBE-AND-TUBE NPR FUEL ELEMENT. THE AXIAL CHANGE IN HEAT GENERATION RATES WILL BE ACCOMPLISHED BY THE USE OF VARIOUS MATERIALS WITH DIFFERENT VALUES OF ELECTRICAL RESISTIVITY.

AN ANALYSIS WAS COMPLETED OF THE DEGREE OF FLOW MIXING TO BE EXPECTED IN THE 7-ROD CLUSTER FUEL ELEMENT WITHOUT ARTIFICIAL MIXING PROMOTERS. THE RESULTS OF THIS ANALYSIS WERE APPLIED TO THE DIFFERENT SIZES OF 7-ROD CLUSTER FUEL ELEMENTS CONTEMPLATED FOR THE NPR AND, IN GENERAL, INDICATED THAT SOME TYPE OF MIXING PROMOTERS WOULD BE DESIRABLE IN ANY 7-ROD CLUSTER FUEL ELEMENT.

PRTR FUEL ELEMENT FABRICATION STUDIES - TWENTY-THREE FULL LENGTH PRTR FUEL RODS CONTAINING 1.8 W/O PU HAVE BEEN HOT EXTRUDED TO .5025 ± .001-INCH DIAMETERS. TWO RODS APPROXIMATELY ONE HUNDRED INCHES LONG ARE OBTAINED FROM EACH CAST BILLET. THE EXTRUSION OF RELATIVELY STRAIGHT RODS HAS BEEN ACCOMPLISHED BY USING A GRAPHITE CYLINDER WITH A TAPERED HOLE BORED INTO IT. THE CYLINDER IS INSERTED IN THE PLATEN OPENING, AND THE RODS ARE STRAIGHTENED AS THEY EMERGE FROM THE EXTRUSION DIE.

PLANT OPERATIONS (CONT'D)

RESEARCH AND DEVELOPMENT (CONT'D)

COATED GRAPHITE STUDIES - WORK HAS BEGUN TO EVALUATE THE OXIDATION RESISTANCE OF SILICON CARBIDE COATED GRAPHITE SAMPLES FROM NATIONAL CARBON, MINNESOTA MINING AND MANUFACTURING, AND CARBORUNDUM. FIVE SAMPLES WERE SUBJECTED TO AIR AT 1000°C UNTIL THE RATE OF WEIGHT LOSS WAS ESTABLISHED. AFTER ABOUT TWENTY HOURS, TWO SAMPLES SHOWED WEIGHT CHANGES OF ABOUT 2.0% AND HAD HAIRLINE CRACKS IN THE COATINGS. THE OTHER THREE SAMPLES, AFTER APPROXIMATELY ONE HUNDRED SIXTY HOURS, SHOWED WEIGHT CHANGES OF LESS THAN 0.2% AND WERE CRACK FREE AND CONTINUOUS. IT IS LIKELY THAT SAMPLES WITH AN ISOTROPIC BASE AND A THERMAL EXPANSION COEFFICIENT VERY CLOSE TO THAT OF THE SILICON CARBIDE COATING WILL REMAIN CRACK FREE AND RESISTANT TO OXIDATION IN AIR.

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PLANT ACQUISITION AND CONSTRUCTION

PROJECT AND DESIGN STUDIES

CA-816, NEW PRODUCTION REACTOR:

CONSTRUCTION - WASHINGTON'S APPROVAL OF THE SELECTION OF KAISER ENGINEERS FOR CONSTRUCTION OF NPR WAS MADE DURING THE WEEK ENDING APRIL 17, 1959.

NEGOTIATIONS WITH KAISER ENGINEERS WERE COMPLETED ON APRIL 24, 1959, SUBJECT TO APPROVAL FROM WASHINGTON, FOR A CPFF CONTRACT FOR CONSTRUCTION OF NPR.

ON APRIL 28, 1959, KAISER ENGINEERS WAS GIVEN A LETTER ORDER TO COVER MOBILIZATION FOR NPR. CONTRACTOR EMPLOYEES ARE NOW ON SITE.

DESIGN - OUT OF 41 DESIGN CRITERIA ON THE REACTOR, 20 HAVE BEEN ISSUED AND 8 APPROVED BY THE COMMISSION.

RECOMMENDATIONS FOR A LAST DITCH COOLING SYSTEM PROPOSE ELIMINATION OF THE PREVIOUSLY RECOMMENDED 50-CYCLE DIESEL-GENERATOR SETS WITH THEIR CONNECTIONS TO THE RIVER PUMPS AND THE SUBSTITUTION OF TWO ADDITIONAL DIESEL-DRIVEN PUMPS PROVIDED EXCLUSIVELY FOR EMERGENCY REACTOR COOLING OR DUMP CONDENSER COOLING.

A DESIGN SCHEDULE HAS BEEN PREPARED SUMMARIZING DESIGN EFFORT OF THE GENERAL ELECTRIC AND BURNS & ROE COMPANIES. A MORE DETAILED SUPPLEMENT IS BEING PREPARED BREAKING THE SCHEDULE DOWN TO ABOUT 40 MAJOR AREAS OF DESIGN. DESIGN IS SCHEDULED 8% COMPLETE AND ACTUAL 8.2% COMPLETE. BURNS & ROE HAD 54 ENGAGED IN DESIGN AND THE GENERAL ELECTRIC COMPANY HAD 77.

PROCUREMENT OF ZIRCALOY PROCESS TUBES - NEGOTIATIONS WERE CARRIED ON DURING THE MONTH FOR CONTRACTS TO PRODUCE PILOT ORDERS OF AROUND 70 ZIRCALOY PROCESS TUBES EACH. THESE NEGOTIATIONS WERE CARRIED ON WITH BRIDGEPORT BRASS COMPANY, CHASE BRASS AND COPPER COMPANY, ALLEGHENY LUDLUM STEEL COMPANY, AND HARVEY MACHINE COMPANY. AT MONTH END, A CONTRACT WITH ALLEGHENY LUDLUM HAD BEEN PREPARED PROVIDING FOR FABRICATION OF A MINIMUM OF 70 AND A MAXIMUM OF 87 TUBES, AND CONTRACTS WITH HARVEY MACHINE COMPANY AND CHASE BRASS AND COPPER COMPANY WERE BEING PREPARED.

TESTING - THE PROTOTYPE CONCEPT EVALUATION LOOP WAS ESSENTIALLY COMPLETED AND HAS BEEN TESTED TO 200 PSI AND 300°F.

THE PROCESS TUBE RUPTURE TEST FACILITY IS READY FOR TEST OPERATION.

PROCESS TUBE DEFLECTION TESTS HAVE BEEN CARRIED OUT WITH CONTRACTION OF GRAPHITE AND DEFLECTION OF A TOP CENTER TUBE SET FOR AMOUNTS EXPECTED IN 25 YEARS. THE MAXIMUM DEFLECTION WAS 8.4 INCHES, AND MAXIMUM STRESS SET UP WAS 16,250 PSI. UNDER THESE CONDITIONS THE TUBE PERFORMANCE WAS SATISFACTORY.

FITTING DEVELOPMENT CONTINUED AROUND NOZZLE-TO-TUBE CONNECTIONS. THE CANADIAN ROLLED NOZZLE-TO-TUBE CONNECTION COMPLETED 2,250 CYCLES BETWEEN 200°F AND 525°F AND 277 CYCLES BETWEEN 200°F AND 572°F AT 1900 PSI WITH NO LEAKING. TWO NPR-SIZE ROLLED JOINTS PRODUCED ON SITE HAVE WITHSTOOD 59,400 AND 67,200 PSI IN PULL-OUT TESTS AT 580°F. THE FLARED TUBE-TO-NOZZLE HAS BEEN TESTED TO 250 TEMPERATURE CYCLES BETWEEN 200°F AND 525°F AND 961 CYCLES BETWEEN 200°F AND 580°F WITHOUT LEAKING. THE CAP SEALED WITH A FLEXITALLIC GASKET LEAKED EXCESSIVELY, BUT THE BELL RING SEAL CAP IS CONTINUING OPERATION AT 525°F WITHOUT LEAKING.

FUEL RUPTURE MONITORING - A NEW TYPE RADIATION DETECTOR MANUFACTURED BY THE OHMART CORPORATION IS BEING CONSIDERED. THIS DETECTOR USES A NUCLEAR BATTERY. TWO PLATES - ONE EACH FROM OPPOSITE ENDS OF THE ELECTROMOTIVE SERIES - ARE SEPARATED BY AN INSULATOR AND ENCLOSED IN AN ATMOSPHERE OF NITROGEN OR ARGON GAS. RADIATION IONIZES THE GAS CAUSING ION PAIRS TO COLLECT ON THE PLATES. THE CURRENT SET UP IN THE CIRCUITRY IS PROPORTIONAL TO THE RADIATION. THE DEVICE APPARENTLY HAS LONG LIFE, LOW INITIAL COST, REDUCED CABLE AND INSULATION REQUIREMENTS, AND REQUIRES NO IONIZING VOLTAGE SOURCE. THERE APPEAR TO BE OTHER APPLICATIONS FOR SUCH DETECTORS.

HEAT EXCHANGER - INITIAL PRELIMINARY BID PACKAGE WAS MAILED TO SEVEN SUPPLIERS MAY 8, 1959.

PLANT ACQUISITION AND CONSTRUCTION (CONT'D)

PROJECT AND DESIGN STUDIES (CONT'D)

CG-791, CONFINEMENT OF RADIOACTIVE PARTICULATE MATTER IN 105 BUILDING EXHAUST AIR:

A REVISED DESIGN SCHEDULE HAS BEEN PREPARED ON THE BASIS OF MORE COMPLETE SCOPE. THIS SCHEDULE BREAKS DESIGN INTO THREE PHASES AND SHOWS PHASE I (FOG SPRAY SYSTEM) DESIGN COMPLETE IN MAY 1959. OVER-ALL DESIGN IS SLIGHTLY AHEAD OF SCHEDULE.

THE FOG SPRAY SYSTEM FOR 105-KE HAS BEEN INSTALLED AND CAN BE USED MANUALLY. EQUIPMENT FOR AUTOMATIC OPERATION IS ON ORDER.

THE ARTHUR D. LITTLE COMPANY HAS BEEN SELECTED TO PERFORM HALOGEN REMOVAL TESTING. THE TESTING WILL BE ON THE EFFECTIVENESS OF FILTERS AND DRY SCRUBBING UNITS IN REMOVING HALOGENS (PRINCIPALLY IODINE) UNDER VARYING CONDITIONS OF TEMPERATURE, HUMIDITY, AND GAS CONCENTRATION. WORK IS TO START IN MAY AND BE COMPLETED IN DECEMBER OF 1959.

CG-839, MODIFICATION OF FUEL ELEMENT TEST FACILITIES, 1706:

DESIGN HAS BEEN AUTHORIZED TO MODIFY THE FOUR 1706-KER TEST LOOPS TO TEST NEW PRODUCTION REACTOR FUEL ELEMENTS. MODIFICATIONS INCLUDE REPLACING CIRCULATING PUMPS, PRIMARY HEAT EXCHANGERS, CERTAIN PIPING, INSTRUMENTATION, AND PROVIDING SUPPORT FACILITIES.

CG-775, WATER PLANT EXPANSION 100-K AREA:

THE DEMONSTRATION UNIT WAS OPERATED INITIALLY ON APRIL 20. THE MOTOR ON THE LOW-LIFT PUMP FAILED AT 1300 H.P. (IT HAD BEEN REMOVED TO RAISE HORSEPOWER TO 1500 FROM FORMER 900). THE MOTOR WAS RETURNED TO THE VENDOR FOR REPAIR. LATER, TESTS WERE CONTINUED USING ONE OF THE RIVER PUMPHOUSE MOTORS ON THE LOW-LIFT PUMP. BOTH THE NEW LOW-LIFT PUMP AND THE MODIFIED HIGH-LIFT PUMP APPARENTLY OPERATED SATISFACTORILY AT THE DESIRED CAPACITY ON INITIAL TESTS. THE REPAIRED MOTOR HAS BEEN RETURNED AND IS BEING INSTALLED FOR FURTHER TESTING.

CG-806, NUCLEAR INSTRUMENTATION FOR REACTOR SAFETY AND CONTROL, ALL REACTORS:

PROTOTYPES OF THE STOP-GAP RATE OF RISE INSTRUMENTATION ARE IN OPERATION IN THE C AND D AREAS.

OXYANT MONITORING ORIGINALLY WAS SCOPED TO USE AVAILABLE SIDE HOLES IN ALL BUT B, D, AND F REACTORS IN WHICH PROCESS TUBES WERE TO BE USED. IT IS PLANNED NOW TO HAVE SIDE INSTALLATIONS IN ALL REACTORS. THIS WILL NECESSITATE DRILLING SOME SIDE HOLES. PRELIMINARY ENGINEERING IS UNDER WAY ON DRILLING, STEP PLUGS, AND SYSTEM CIRCUITRY. A PROTOTYPE OF THE SYSTEM CIRCUITRY WILL BE OBTAINED AND TESTED.

CG-824, REMOTELY OPERATED CAP REMOVERS, KE AND KW REACTOR DISCHARGE:

INSTALLATION OF ONE CAP REMOVER HAS BEEN AUTHORIZED. COMPOSITE PROPOSALS ARE BEING SOLICITED FOR DETAILED DESIGN AND FABRICATION.

CA-681, HANFORD EQUIPMENT IN THE ETR:

THE IN-PILE TUBE SECTION FOR THE 6" X 9" HOLE IS READY FOR INSERTION AND SCHEDULED FOR INSTALLATION THE FIRST WEEK OF MAY.

CA-749, HIGH LEVEL RADIOCHEMISTRY FACILITY:

THE PROJECT COMPLETION DATE HAS BEEN EXTENDED TO JANUARY 1, 1960, PRINCIPALLY DUE TO DELAY IN RECEIPT OF THE MECHANICAL MANIPULATOR. A STRIKE AT THE VENDOR'S PLANT HAS DELAYED FABRICATION. THE CONSTRUCTION CONTRACTORS SCHEDULE ALSO HAS BEEN EXTENDED TO AUGUST 3, 1959, TO PROVIDE MORE TIME FOR WORK ADDED BY DESIGN CHANGES.

CG-731, CRITICAL MASS LABORATORY:

THE BID OPENING HAS BEEN POSTPONED TO MAY 19, 1959. THE POSTPONEMENT PERMITS CHANGING THE CONTROL BUILDING FROM A SURPLUS METAL BUILDING TO A CONCRETE BLOCK BUILDING, TO PROVIDE A MORE PERMANENT TYPE OF STRUCTURE.

CG-723, CONVERSION OF RECUPLEX TO A MANUFACTURING FACILITY:

A REVISED DIRECTIVE HAS BEEN ISSUED AUTHORIZING FUNDS TO COMPLETE THE PROJECT. THE PROJECT HAS DELAYED TO PERMIT A STUDY OF ALTERNATE METHODS OF PERFORMING REMAINING WORK. COMPLETION OF CONSTRUCTION HAS BEEN RESCHEDULED TO MID-OCTOBER 1959.

PLANT ACQUISITION AND CONSTRUCTION (CONT'D)

PROJECT AND DESIGN STUDIES (CONT'D)

CA-841, CA-842 - HIGH PRESSURE LOOP AND CRITICAL REACTIVITY MEASURING FACILITY FOR PRTR:

DESIGN HAS BEEN AUTHORIZED ON THESE TWO ADDITIONS TO FACILITIES AT THE PRTR. DESIGN ONLY IS BEING ACCOMPLISHED AT THIS TIME TO DETERMINE WHAT CONFLICTS EXIST WITH PRTR BASIC DESIGN AND ELIMINATE THEM DURING PRTR CONSTRUCTION.

AEC-174, CIVIC CENTER PARKING AND SITE IMPROVEMENT LANDSCAPING OF CIVIC CENTER:

BID PACKAGE PLANS HAVE BEEN RECEIVED FOR THE CIVIC CENTER PARKING AREAS AND OTHER SITE IMPROVEMENTS. ACTUAL CONTRACT ACTION WAS DELAYED UNTIL PRELIMINARY DESIGN WAS ACCEPTED ON APRIL 28 FOR LANDSCAPING THE CIVIC CENTER. THIS WAS TO INSURE AGAINST DESIGN CONFLICTS BETWEEN THE TWO JOBS.

PLANT CONSTRUCTION

MAJOR CONSTRUCTION - THE STATUS OF MAJOR CONSTRUCTION IS INDICATED BELOW:

MAJOR PROJECTS							
PROJECT	PROJECT PROPOSAL NO.	CONSTRUCTION				DESIGN	PRESENT
		ACTUAL STARTING DATE	SCHED. COMP. DATE	COMPLETION		%	WORKING
				% SCHED.	% ACTUAL	ACTUAL COMPL.	ESTIMATE (THOUSANDS)
CITY HALL*	AEC-157	3-24-58	5-1-59	100	99	100	\$ 635
PRTR	AEC-167	3-6-58	8-30-60	20	23	100	14,000
PUREX WASTE FACILITY	CG-719	8-27-58	11-30-59	98	93	100	1,068
RMC BUTTON LINE 234-5	CG-734	2-18-58	1-31-60	73	74	100	1,480
RMC FAB. LINE 234-5	CG-745	2-18-58	7-1-59	98	92	100	1,050
PU FAB. PILOT PLANT	CA-747	3-6-58	11-1-60	53	57	87	4,000
HIGH LEVEL RADIO- CHEMISTRY FAC.	CA-749	8-14-58	6-30-59	48	48	100	960
MET. DEV. FAC. - 306 BLDG. ADDN	CA-744	3-20-59	9-1-60	2	2	98	2,685

PUREX VAPOR WASTE FACILITIES - A STRIKE AT THE MINNEAPOLIS-HONEYWELL PLANT IS DELAYING THE DELIVERY OF AN INSTRUMENT PANEL. WHEN THIS ITEM IS DELIVERED AND INSTALLED THE CONTRACT WILL BE COMPLETE.

ADDITIONAL STEAM GENERATING FACILITY - THE FACILITY WAS ACCEPTED APRIL 14, 1959.

METALLURGICAL DEVELOPMENT FACILITY - 306 BUILDING ADDITION - THE FIXED PRICE CONTRACTOR (JENSEN-RASMUSSEN) STARTED WORK APRIL 9, 1959.

PLUTONIUM RECYCLE TEST REACTOR:

PHASE I - THE CONTAINMENT VESSEL HAS BEEN SOAP TESTED AND THE CONCRETE WALLS ABOVE THE 0'-0" ELEVATION ARE COMPLETE.

PHASE II - A - THE CONTRACTOR, GEORGE A. GRANT, IS HAVING A DIFFICULT TIME EXCAVATING FOR THE RIVER PUMP HOUSE FOUNDATION BECAUSE OF WATER FLOWING FROM THE SIDE OPPOSITE THE RIVER AT APPROXIMATELY 12,000 G.P.M.

CONSTRUCTION CONTRACTS - THERE WERE 9 CONSTRUCTION BID OPENINGS FOR THE MONTH OF APRIL RANGING IN VALUE FROM \$3,600 TO \$37,000.

*CITY HALL IS INCLUDED IN DISPOSAL PROGRAM.

71976

[REDACTED]

TO: Director, Division of Production
USAEC, Washington 25, D. C.

FROM: J. E. Travis, Manager, Hanford Operations
Office, USAEC, Richland, Washington

SUBJECT: MONTHLY STATUS AND PROGRESS REPORT

SYMBOL: B:HRE

MAY 13 1959

Enclosed herewith is Part II ("Official Use Only" portion)
of subject report for the month of April, 1959.
The "Secret" portion, Part I, is forwarded as a separate
report.

Enclosure:
Monthly Status and Progress Report, Part II

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MONTHLY STATUS AND PROGRESS REPORT

APRIL 1959

PART II

U. S. ATOMIC ENERGY COMMISSION
HANFORD OPERATIONS OFFICE

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MONTHLY STATUS AND PROGRESS REPORT
HANFORD OPERATIONS OFFICE

APRIL 1959

PART II

C O N T E N T S

	<u>PAGE NO.</u>
<u>COMMUNITY OPERATIONS</u>	3
<u>OTHER CONSTRUCTION</u>	4
<u>PERSONNEL (ON-SITE)</u>	4

[REDACTED]

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COMMUNITY OPERATIONS

COMMUNITY OPERATIONS

GOVERNMENT HOUSING:

THE FOLLOWING ARE HOUSING STATISTICS FOR APRIL 1959:

	<u>APRIL 1</u>	<u>APRIL 30</u>
A. TOTAL HOUSES AVAILABLE FOR OCCUPANCY	498	410*
1. TOTAL HOUSES OCCUPIED	332	278
2. TOTAL HOUSES UNOCCUPIED	166	132
B. TOTAL APARTMENTS AVAILABLE FOR OCCUPANCY	134	134
1. TOTAL APARTMENTS OCCUPIED	134	132
2. TOTAL APARTMENTS UNOCCUPIED	0	2

C. THREE DORMITORIES ARE NOW IN OPERATION BY A COMMERCIAL OPERATOR.

*A TOTAL OF 3706 SINGLE HOUSES AND 854 DUPLEXES SOLD (5415 UNITS)

PRIVATE HOUSING UNITS (WHERRY ACT)

	<u>COLUMBIA HEIGHTS</u>		<u>SPOKANE HOUSING</u>		<u>TOTAL UNITS</u>
	<u>HOUSES</u>	<u>APTS.</u>	<u>HOUSES</u>	<u>APTS.</u>	
TOTAL UNITS	280	220	400	100	1,000
RENTED	95	70	390	84	639
VACANT	185	150	10	16	361

FHA RENTED 30 COLUMBIA HEIGHTS HOUSES IN 10-DAY PERIOD, APPARENTLY BECAUSE RENTERS BELIEVE THEY WILL HAVE PRIORITY FOR PURCHASE OF THE HOUSES.

FHA HAS AGREED WITH THE ARMY TO PUT SOLDIERS IN THE COLUMBIA HEIGHTS APARTMENTS AT RENTALS COMMENSURATE WITH QUARTERS ALLOWANCE.

DISPOSAL - THE REPORT OF SALES FOR THE MONTH OF APRIL IS AS FOLLOWS:

<u>TYPE</u>	<u>NUMBER OFFERED</u>	<u>NUMBER SOLD TO 4-30-59</u>	<u>ADDITIONAL GOOD FAITH DEPOSITS</u>
SINGLE	3,788	3,706	44
DUPLEX	1,018	854	58
TOTAL	4,806	4,560	102
COMMERCIAL	40*	5	13
NON-PROFIT	11	0	1

A TOTAL OF 96 LOTS HAVE BEEN SOLD, WITH 52 ADDITIONAL GOOD FAITH DEPOSITS.

HHFA OFFERED A LARGE NUMBER OF VACANT RESIDENTIAL TRACTS ON APRIL 12, 1959; BIDS WILL BE OPENED ON MAY 25.

HHFA OPENED BIDS ON VACANT RESIDENTIAL LOTS ON APRIL 15; 114 PROPERTIES OFFERED, 48 BIDS RECEIVED RESULTING IN 52 PROPERTY OFFERS.

HHFA ADVISED THAT THE SECOND GROUP OF MORTGAGES, IN THE AMOUNT OF \$8,500,000, WERE SOLD FOR \$116,000 ABOVE PAR.

INDIVIDUAL OFFERS WERE MADE TO THE SHUT-OUT JUNIOR TENANTS.

RECEIVED FROM FHA IN WASHINGTON LETTERS GREATLY REDUCING FAIR MARKET VALUE ON FOUR OIL STATION PROPERTIES AS RESULT OF LEASE MODIFICATIONS. ALSO RECEIVED SEVEN LETTERS ON OTHER PROPERTIES CONFIRMING EXISTING VALUES.

[REDACTED]

COMMUNITY OPERATIONS (CONT'D)

DISPOSAL (CONTINUED)

ATTORNEY WAYNE GLADSTONE FILED PETITION FOR RESTRAINING ORDER TO PREVENT HWFA FROM SELLING GROCERY AND BAKERY BUILDING TO CAMPBELL PENDING DETERMINATION OF PRIORITY RIGHTS ON THE BAKERY.

CHARLES WELLS, LOCAL MERCHANT, FILED COURT ACTION TO COMPEL AEC TO CONSIDER SIGNING OF LEASE AS A TENANT IMPROVEMENT.

COMMERCIAL PROPERTY - HEARING HELD IN FEDERAL COURT AT WALLA WALLA ON APPLICATION OF JACK HOUSTON TO PURCHASE THE AMERICAN LEGION BUILDING. COURT GAVE TENTATIVE APPROVAL TO THE PURCHASE.

OTHER CONSTRUCTION

PROJECTS

AEC-173, SCHOOL DISTRICT WAREHOUSE AND STORAGE FACILITY - BIDS WERE OPENED ON APRIL 27 BY THE RICHLAND SCHOOL DISTRICT ON THIS PROJECT.

CAR-814, STREET IMPROVEMENTS, FY 1959 - CONTRACTOR STARTED STREET WIDENING PROGRAM ON APRIL 3, BEGINNING WITH WIDENING OF STEVENS DRIVE.

PROCUREMENT - TWENTY-SEVEN AWARDS MADE BY GENERAL ELECTRIC WERE APPROVED IN THE AMOUNT OF \$842,330.00 FOR THE MONTH OF APRIL. THERE WERE 401 PURCHASE ORDERS IN THE TOTAL AMOUNT OF \$364,430.27 PLACED BY THE ATOMIC ENERGY COMMISSION DURING APRIL.

TRAFFIC - ON APRIL 14, 1959, APPLICATION WAS MADE TO THE TRANSCONTINENTAL FREIGHT BUREAU FOR A REDUCTION IN RATES ON URANIUM OXIDE MOVING FROM HANFORD TO OAK RIDGE AND PADUCAH. THE REDUCTION PROPOSED WOULD ESTABLISH THESE RATES ON A PARITY WITH CLASS RATES APPROVED FOR PUBLICATIONS GENERALLY THROUGHOUT THE COUNTRY. THE MATTER WILL BE CONSIDERED AT THE MAY MEETING OF THE CARRIERS' STANDING RATE COMMITTEE.

THE PROPOSAL ALSO CONTEMPLATES THAT THE REDUCED RATE WILL BE PUBLISHED IN THE CARRIERS' COMMODITY TARIFF RATHER THAN THROUGH AMENDMENT OF THE PRESENTLY APPLICABLE QUOTATION ISSUED UNDER SECTION 22 OF THE INTERSTATE COMMERCE ACT.

PERSONNEL (ON-SITE)

	<u>APRIL 1</u>	<u>APRIL 30</u>
ATOMIC ENERGY COMMISSION	276	278
GENERAL ELECTRIC COMPANY	7,972	7,968
TOTAL CONSTRUCTION PERSONNEL	<u>668</u>	<u>656</u>
TOTAL PROJECT PERSONNEL	8,916	8,902

KEY PERSONNEL CHANGES - NONE.

DECLASSIFIED

[REDACTED]

END

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