MASTER

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Quarterly Operating Report
Second Quarter 1979
DLCS 5000279

Approved by: _____ for
T. D. Jones
Superintendent

Contract E-(36-1)-292
United States Department of Energy

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Preface

This Quarterly Report is prepared and issued by the Duquesne Light Company to disseminate information relative to all significant activities conducted at the Shippingport Atomic Power Station. Consistent with the premise that Shippingport was built to provide information and not power at competitive costs, this report makes no effort to analyze power production costs and makes no deductions regarding costs which might be achieved if Shippingport had been built and operated solely to produce power.

In preparation of these reports, it has been presumed that the reader has a working knowledge of nuclear reactors, reactor technology and/or electric utility generating station operations. The reader is reminded, however, that this is an operating report rather than a technical report. Anyone desirous of obtaining information on recent technical progress related to the nuclear portion of the Shippingport Atomic Power Station is, therefore, referred to the United States Department of Energy, Technical Information Center at Oak Ridge, Tennessee, where this information is readily available.

1. SUMMARY OF OPERATIONS

At the beginning of the second quarter of 1979, the Shippingport Atomic Power Station remained shutdown for the normally planned semi-annual maintenance and testing program, initiated March 23, 1979. The station was in a cooldown condition at approximately 150°F and 300 psig with a steam bubble maintained in the pressurizer and the reactor coolant pumps in slow speed. The reactor plant cooldown heat exchanger was in service to maintain coolant temperature. The 1A, 1B, 1C, and 1D reactor coolant loops and the 1AC and 1BD purification loops remained in service. The remainder of the expended PWR Core 2 was in storage under shielding water in the deep pit of the Fuel Handling Building.

The 1A, 1B, 1C, and 1D 991 psig self-actuated steam relief valves remained gagged during the quarter to prevent leakage through the valve seats. Gagging of redundant relief valves is permitted by ASME Code and approved operating procedure.

The LWBR Core has generated 10,771.43 EFPH from start-up through the end of the quarter.

The station remained in a cooled down condition until April 13, when a plant heat-up was initiated and completed on April 15, from which time normal operating parameters were maintained. The reactor was operated at low power levels as required for cold and hot planned testing. An extended test period was conducted until May 24 to determine the cause and effect of an increase in the measured flow coefficient of reactivity.

On May 24, a Station start-up was initiated following the Spring Shutdown for maintenance and testing. Upon start-up of the turbine-generator at a speed of approximately 200 RPM, a rubbing noise appeared internal to the main unit generator inner fan blower. The turbine-generator was immediately shutdown and placed on turning gear. The generator remained shutdown for disassembly and repair of the hydrogen circulation fan at the end of the quarter. The reactor was shutdown on May 26 with fuel unlatched and on the bottom.

A Station cooldown was initiated on June 6 and completed on June 8. All boilers were filled and placed on the Reactor Plant Cooldown Heat Exchanger to maintain and control primary temperature. A bubble was maintained in the pressurizer with the primary system maintained at approximately 180°F and 325 psig.

1. SUMMARY OF OPERATIONS (cont'd)

During the station cooldown, the 1A boiler feed pump overheated and caused extensive damage to the pump impeller and casing. The pump was shipped to the manufacturer for complete overhaul. Flushing of feedwater lines, inspection of the motor, and Station Manual revisions were initiated prior to returning the pump to service.

The Station Service was backfed through the No. 1 Station Transformer instead of the 138KV Station Transformer from June 15 to June 26 to perform relay testing on the normal 138KV Station Service Transformer Electrical Feeder.

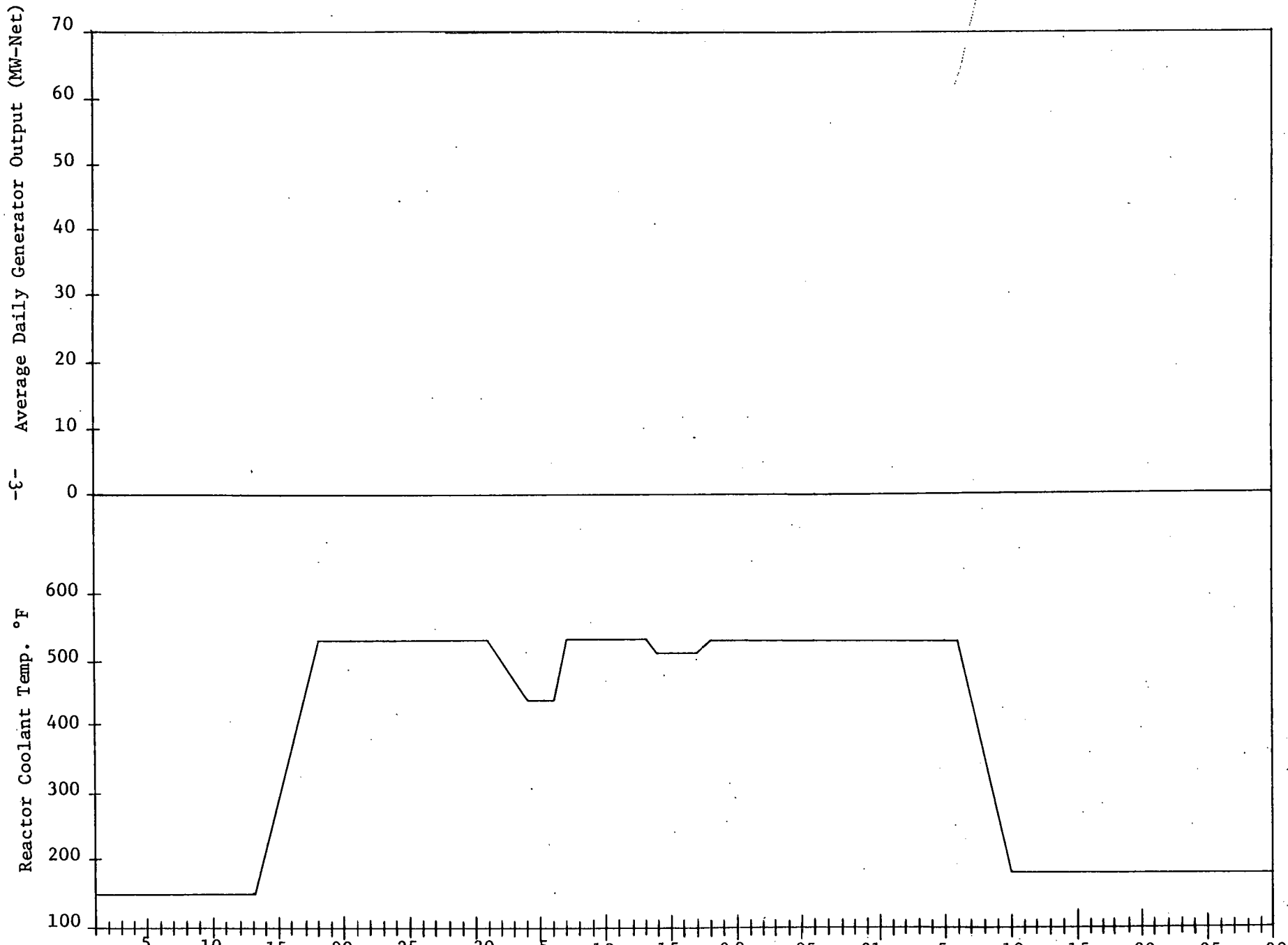
The Reactor Coolant System average leak rate for this quarter was nine (9) gallons per hour when the plant was at normal operating temperature and pressure. The leakage is collected in the Radioactive Waste Processing System and processed as reuse water for the reactor plant water storage tank.

On shift Casualty and Emergency Drills were performed during the quarter. The Station Manual Operating Details were thoroughly reviewed and various changes were completed to update the manual casualty procedures.

There were no radioactive liquid discharges from the Radioactive Waste Processing System to the river this quarter. The radioactive liquid waste effluent line to the river remained blanked off to prevent inadvertent radioactive liquid waste discharges.

During the quarter, approximately 10,100 cubic feet of gas was discharged from Radioactive Waste Processing containing approximately 0.006 curies of Xe 133 activity.

During the second quarter of 1979, 920 cubic feet of radioactive solid waste was shipped out of state for burial. These shipments contained 0.067 curies of radioactivity which does not include irradiated components and irradiated fuel which was shipped offsite. (See Maintenance Section)



Generator Output and Reactor Coolant Temperature During Second Quarter

DLCS 5000279
Figure 1

2. SUMMARY OF LWBR STATION PERFORMANCE

Electrical output (Gross) to date	kwhr	802,352,000
EFPH to date	hr	10771.43
EFPH for the quarterly period	hr	0
Hours reactor critical to date	hr	12562.30
Hours reactor critical for the quarterly period	hr	313.80
No. 1 main unit service hours (quarterly period)	hr	0
Net Station Output (quarterly period)	kwhr	0
No. of forced outages*		0

* Interruption of electrical output due to protective equipment action and/or operator action.

3. CHEMISTRY

During the second quarter of 1979, the Chemistry Section maintained specifications in the various plant systems and fulfilled the station manual requirements.

Reactor Plant

The reactor coolant system was maintained within all chemical specifications during the period of cold layup and hot standby with only one exception during the period of hot standby. Refer to Tables I and II. The out-of-specification condition which occurred in the reactor coolant system was that of a low hydrogen concentration*. This condition was a direct result of high speed pump operation which caused degassification of the system. Subsequent addition of hydrogen to the reactor coolant system raised the hydrogen concentration to within specifications.

The only out-of-specification conditions which existed in the reactor plant auxiliary systems occurred in the coolant charging water system and the canal waters. The out-of-specification conditions which existed in the coolant charging water system were that of high pH and specific conductance values*.

The high pH and specific conductance values in the Coolant Charging Water System were attributed to the presence of ammonia which entered the system by back leakage during addition of ammonium hydroxide to the primary coolant system; and the decomposition of hydrazine which was added in order to scavenge any dissolved oxygen. Refer to Table V.

The canal water out-of-specification pH was attributed to the absorbtion of carbon dioxide from the atmosphere. Continued recirculation of the canal waters through the canal water demineralizers aided in raising the water's pH to within specification. See Table V.

Turbine Plant

The station was placed in two different conditions, that of hot standby and cold wet layup during the quarter. During the extensive period of cold wet layup, the boilers were maintained within all specifications. Refer to Table III.

* All of the out-of-specification conditions were of short duration and are not expected to have had a detrimental effect on plant materials.

3. CHEMISTRY (cont'd)

During hot standby, the boilers experienced high and low pH values and high specific conductance values as well as low morpholine concentrations*. The out-of-specification high pH and high specific conductivities were attributed to the steaming down of the boilers which resulted in the concentration of chemicals. Subsequent boiler drain downs and refilling operations aided in restoring the pH and specific conductances to within specifications. Refer to Table IV. The low morpholine concentrations and low pH values were a result of fluctuating water levels within the boilers. The subsequent chemical addition of morpholine raised both the pH and morpholine values to within specifications.

Radioactive Waste Processing

There were no liquid discharges from the Radioactive Waste Processing System to the river during this quarter.

Approximately 10,100 cubic feet of gas was discharged from the Radioactive Waste Processing System containing approximately 0.006 curies of radioactivity, mostly Xenon 133. The radioactivity released from Shippingport is far too small to have any measurable effect on the general background environmental radioactivity outside the plant.

* All of the out-of-specification conditions were of short duration and are not expected to have had a detrimental effect on plant materials.

TABLE I
Reactor Coolant System
Water Conditions and Chemical Adjustments
Cold Lay up (<200°F)

Chemical Conditions	Specifications	Analytical Results		NH_4OH (liters)	H_2 (Cu. Ft.)	Degassification (Hrs.)
		Min.	Max.			
pH@ 25°C	10.10-10.30	10.10	10.26			
Specific Conductance (μmhos/cm)	Consistent with pH	28	46			
Total Gas (cc/kg)	125 cc/kg max.	16.2	40			
Hydrogen (cc/kg)	*No specification	6.3	17.9			
Chloride	0.10 ppm max.	---	<0.10			
Oxygen	0.14 ppm max.	----	<0.005			
Chemicals Added				8.5	0.0	45.0

* No specification if H_2 is not used to scavenge oxygen.

TABLE II
Reactor Coolant System
Water Conditions and Chemical Adjustments
Hot Standby (>200°F)

Chemical Conditions	Specifications	Analytical Results Min.	Max.	NH_4OH (Liters)	H_2 (Cu. Ft.)	Degassification (Hrs.)
pH@ 25°C	10.10-10.30	10.12	10.27			
Specific Conductance (μmhos/cm)	Consistent with pH	33	46.5			
Total Gas (cc/kg)	125 cc/kg max.	18.9	42.5			
Hydrogen (cc/kg)	10 cc/kg min. 60 cc/kg max.	4.2*	28.6			
Chloride	0.10 ppm max.	----	<0.10			
Oxygen	0.14 ppm max.	0.005	0.030			
Chemicals Used				10.0	747.5	0.0

* Refer to Reactor Plant section of QOR

TABLE III
Non-Operating Boiler Chemistry
Cold Layup (<200°F) Water Chemistry

Water Conditions	Specifications	Boilers			
		1A	1B	1C	1D
pH @ 25°C	min. 9.30	9.34	9.38	9.37	9.40
	max. 10.50	9.74	9.76	9.78	9.75
Specific Conductance	min. -----	12	13	13	13
	max. 30 µmhos/cm	18	18	18	17
Chloride	min. -----	----	----	----	----
	max. 0.20 ppm	<0.10	<0.10	<0.10	<0.10
Hydrazine	min. 50 ppm	55	54	54	53
	max. 100 ppm	100	95	95	95
Chemicals Used (lbs.)					
N_2H_4		26.9	16	20.9	20.9

TABLE IV
Non-Operating Boiler Chemistry
Hot Standby (>200°F) Water Chemistry

Water Conditions	Specifications	Boilers			
		1A	1B	1C	1D
pH @ 25°C	min. 8.50 max. 9.30	8.18* 9.64*	8.27* 9.62*	8.50 9.61*	8.58 9.67*
Specific Conductance	min. ---- max. 10 µmhos/cm	2.5 49*	2.9 15*	3.1 16*	3.4 19*
Chloride	min. ---- max. 0.20 ppm	----- <0.10	----- <0.10	----- <0.10	----- <0.10
Morpholine	min. 0.50 ppm max. 6.00 ppm	0.25* 6.00	0.30* 6.00	0.30* 6.00	0.30* 6.00
Chemicals Used (lbs.) C_4H_9NO		28.59	24.06	25.69	22.33

* Refer to Turbine Plant Section of QOR

TABLE V

Reactor Plant Auxiliary Systems
Water Conditions

System	Conductivity µmhos/cm	pH at 25°C	Conc. - ppm			Gross Gamma Activity - µCi/ml
			CrO_4^{--}	Cl^-	Dis. O_2	
Component Cooling Specifications	N.S.	N.S.	500-1000	1 ppm max.	N.S.	N.S.
Observed	N.P.	N.P.	520-771	0.10 - 0.80	N.P.	1.91×10^{-7}-6.43×10^{-7}
Coolant Charging Water Specifications	2.50 max.	6.00 - 8.00	N.S.	0.1 ppm max.	**Note	N.S.
Observed	3.15* - 6.50*	8.44* - 9.10*	N.P.	<0.10	<0.005-0.35	N.P.
Canal Water Specifications	5.00 max.	5.80 - 8.00	N.S.	N.S.	N.S.	N.S.
Observed	1.3 - 1.4	5.38* - 5.91	N.P.	N.P.	N.P.	<MDA - 1.1×10^{-6}

** Specification is <0.14 ppm for reactor plant cold wet layup.
* See Reactor Plant Section of QOR

N.S.: No limit needed, therefore, no limit has been specified.
N.P.: Analysis is not necessary and not performed.
MDA is 8.39×10^{-6} µCi/ml

4. MAINTENANCE

Scheduled preventative, as well as corrective maintenance, was performed on plant equipment during this report period. The scheduled testing and maintenance shutdown, which started March 23, 1979, continued through the quarter.

Significant work items completed or in progress during this period are summarized as follows:

Turbine Plant

The Main Generator was completely disassembled to repair damage caused by the failure of a Hydrogen Cooling Fan. Reassembly was in progress at the end of this period. The generator was assembled with no stationary blading and only a single row of moving blade on each end.

The 1A Boiler Feedwater Pump was shipped to Byron-Jackson in Texas for refurbishment. The pump's motor was disassembled for replacement of damaged bearings.

The Turbine Deck Crane was load tested for the work on the Main Generator.

Reactor Plant

The 1D Flywheel Generator collector rings were resurfaced during the quarter.

Also, disposal of the underwater racks and equipment in the Fuel Storage and Deep Pits was in progress.

PWR Core 2 Fuel Shipment

The eighth and final shipment of the PWR Core 2 spent fuel in the M-160 irradiated fuel shipping container was completed this quarter. The expended fuel assemblies were shipped off-site for disposal.

5. TEST PROGRAM

The primary objective of the test program for the entire quarterly report period was to support the third scheduled testing and maintenance shutdown and recovery. The shutdown began on March 23, 1979, and continued throughout the second quarter.

Fourty-three tests were performed during the report period. Thirty-nine tests were completed and four remained in progress at the end of the quarter. Table VI lists these tests and Figure 2 indicates the performance dates.

Test Procedure LWBR-DLCS 55201, Safety Injection System Monthly Periodic Pump Tests, was satisfactorily completed twice during the quarter. The test was not performed during the month of April due to the testing effort devoted to the determination of the flow coefficient of reactivity. Deep-well pumps 19-G1-1 and 2 continued to show steady performance. The new deepwell pump 53-G2-4009 showed a slight decrease in flowrate from that measured in the previous quarter. This pump has showed a downward trend since the beginning of this monthly test. However, the measured flowrate of 275 gpm is still well above the acceptance limit of 250 gpm. Individual testing of the boiler feed pumps was not performed during the quarter, due to the plant not being at power.

The third performance of test procedure LWBR-DLCS 55202, SIS Semiannual Periodic Pump Tests, was satisfactorily completed during the quarter. All the pump testing for this procedure was successfully completed during the first quarter, with the exception of the 1A gravity drain pump. The 1A gravity drain pump was tested just prior to the spring shutdown, but did not develop full flow due to a flow restriction in the test flow path. This is one of four redundant components and could not have prevented proper operation of Safety Injection. A change to the test procedure was initiated to alter the flow path for the pump discharge. The 1A gravity drain pump was retested, and met the required flow rate acceptance criteria.

The sixth performance of test procedure LWBR-DLCS 55203, SIS Quarterly Periodic Valve Test, was satisfactorily completed during the quarter. The test, which verifies that various Safety Injection System Valves are operational by opening and closing the valves and recording the operating times, was conducted in June for all the valves except 53-H12-4004 and 4005. These valves will be tested during the next plant shutdown which requires the SIS lines to be drained, which is in accordance with the test procedure.

5. TEST PROGRAM (cont'd)

The third performance of test procedure LWBR-DLCS 55204, SIS Semi-annual Periodic Valve Test, was satisfactorily completed during the quarter. In this test, various SIS motor operated and solenoid operated valves are tested for proper operation using both switch and/or relay control. All valves were completed during the first quarter, except valve 53-H12-4301. Due to controlling plant conditions, this valve was not tested until the second quarter. The valve operated satisfactorily, thus completing the performance of the test.

The second performance of test procedure LWBR-DLCS 56801, Reactor Plant Container Integrity Test (Containment Isolation Penetrations), was satisfactorily completed during the second quarter. The objective was to verify acceptable leak rates for various containment isolation valves. Valves 43-H12-4005, 16-H16-4007, 41-H12-4001, and 41-H12-4002 were satisfactorily tested during the first quarter. The remaining valves to be tested, 16-H12-4002, 41-H12-4003, and 41-H12-4004 were satisfactorily completed in April.

The sixth performance of test procedure LWBR-DLCS 58201, Delayed Neutron (DN) Loop Monitoring System Checkout, was satisfactorily completed on April 16, when proper flow rates through both DN Loop Monitors were established. One amplifier channel in the number one monitor was placed out of service prior to the completion of the test procedure*. Both DN Loop Monitors are now in service with four operational amplifiers each, which is an acceptable mode of operation as specified by the test procedure. The count rate calibration portion of the test procedure was performed four additional times during the quarter as prerequisite testing for additional DN Loop Monitoring System testing upon return to power. Both DN Loop Monitors operated as required during each test performance.

The fourth performance of test procedure LWBR-DLCS 60801, Nuclear Protection System (Checkout of High T_h and P/F Circuitry), was satisfactorily completed while the main unit generator repairs were in progress. The test procedure checks various circuit response times and setpoints associated with the NPS. Two minor problems were encountered during the test performance, in that, the 1D T_h Norwood indicating receiver required maintenance to meet its required response time; and the Flow Condition 1 Test Switch, S29, required replacement*. In addition, two P/F circuitry scram setpoints were found to be slightly out of tolerance*. This P/F test data was determined to be acceptable since an early trip would occur for a reactivity insertion transient. In addition, these setpoints are not in effect during plant shutdown conditions and in such conditions additional protection is provided by the implementation of recorder contact scrams. All other test data met the acceptance criteria of thetest procedure.

* None of the out-of-specification measurements or equipment problems compromised reactor safety or core protection.

5. TEST PROGRAM (cont'd)

The third performance of test procedure LWBR-DLCS 60802, Nuclear Protection System (Checkout of Pump Power and LOFA Circuitry) was satisfactorily completed during the period the main unit generator repairs were in progress. All circuit response times met the acceptance criteria of the procedure with one exception. The response time of the pump timing relay for the 1D pump, Low Flow 2 Circuitry, (T14), was found to be slightly out-of-specification*. The timing resistor for this circuit was adjusted and an acceptable response time was obtained.

The fourth performance of test procedure LWBR-DLCS 61002, Comparison of Reactor Plant Pressure Instrumentation at Operating Pressure and Temperature, was satisfactorily completed at the beginning of June. The purpose of this test procedure is to identify any reactor plant pressure instrumentation which requires recalibration per test procedure LWBR-DLCS 61001, Periodic Calibration of Pressure Instrumentation. This performance of the test indicated that the Pressurizer Pressure Narrow Range, Pressurizer Pressure Wide Range and the 1D Loop Pressure instrument required recalibration*. All other pressure instrumentation tested met the acceptance criteria of the test procedure. Based on the data obtained in this test, test procedure LWBR-DLCS 61001, Periodic Calibration of Pressure Instrumentation, was satisfactorily performed for the sixth time, while the main unit generator repairs were in progress. As previously discussed, the Pressurizer Pressure Narrow Range, Wide Range, and the 1D Loop Pressure Instruments were satisfactorily calibrated during this performance of the test.

The seventh performance of test procedure LWBR-DLCS 61301, Periodic Calibration of Reactor Plant Flow Instrumentation, was satisfactorily completed during the month of June while the main unit generator repairs were in progress. The 1B and 1D coolant loop flow instruments were calibrated at this time. The 1D instrument required zero and span adjustment to bring it within the acceptance criteria of the test procedure*. No adjustments were required for the 1B instrument.

The third performance of test procedure LWBR-DLCS 61401, Periodic Calibration of Reactor Plant Differential Pressure Instrumentation was conducted for the 1A Reactor Vessel D/P cell in April. Attempts to repair this instrument had been made at the beginning of the Spring Shutdown. The performance of this test verified that the cell has a ruptured bellows and cannot be calibrated*. The cell will be scheduled for replacement and calibration during the next scheduled maintenance and testing shutdown.

* None of the out-of-specification measurements or equipment problems compromised reactor safety or core protection.

5. TEST PROGRAM (cont'd)

The fourth performance of test procedure LWBR-DLCS 61801, Periodic Calibration of Total Feedwater Flow and Temperature Instrumentation, was satisfactorily completed during the month of May. Both the 1A and 1B Feedwater instrumentation was successfully calibrated during this performance. However, maintenance was required on the 1A Feedwater Temperature Instrument in order to get it to respond properly*. The maintenance was performed and the test completed satisfactorily.

The sixth and seventh performances of test procedure LWBR-DLCS 62101, Periodic Checkout and Calibration of the Inverse Kinetics Simulator (IKS), were satisfactorily performed during the quarter. The two performances were required to maintain current prerequisite requirements for scheduled plant physics testing. The eighth performance of the test remained in progress at the end of the quarter.

The fourth performance of test procedure LWBR-DLCS 62202, Periodic Calibration of Pressure Switches in the Steam Pressure Instrumentation, was required following revisions to the Nuclear Protection System setpoints for the pressure switches. The test was performed satisfactorily and all twelve switches were adjusted to the revised acceptance criteria.

The following physics and associated test procedures were performed as planned for the spring shutdown:

The fourth performance of LWBR-DLCS 63201, LWBR Pressure Coefficient of Reactivity.

The fourth performance of test procedure LWBR-DLCS 64401, Core Shutdown Reactivity and Azimuthal Reactivity Symmetry. (Both Hot and Cold Portions were performed).

The fourth performance of test procedure LWBR-DLCS 64501, Reactivity Worth and Temperature Coefficient of Reactivity at Zero Power. (Both Hot and Cold Portions were performed).

The first performance of test procedure LWBR-DLCS 78201, Reactor Plant Sound Monitoring During the Spring 1979 Shutdown.

During the third planned performance of test procedure LWBR-DLCS 63202, Flow Coefficient of Reactivity, an unexpected higher value of the flow coefficient of reactivity was measured. Additional testing was developed to investigate the increased value and the results will be reported separately. The testing which was conducted is as follows:

The fifth performance of test procedure LWBR-DLCS 63201, LWBR Pressure Coefficient of Reactivity.

* None of the out-of-specification conditions or equipment problems compromised reactor safety or core protection.

5. TEST PROGRAM (cont'd)

The third and fourth performance of test procedure LWBR-DLCS 63202, Flow Coefficient of Reactivity.

The seventh and eighth performances of test procedure LWBR-DLCS 63501, Flux Wire Activations.

The fifth and sixth performances of test procedure LWBR-DLCS 64201, Neutron Noise Monitoring Test. (The 6th performance was interrupted by the repairs required on the main unit generator).

The fifth, sixth and seventh performances of test procedure LWBR-DLCS 64401, Core Shutdown Reactivity and Azimuthal Reactivity Symmetry.

The second performance of test procedure LWBR-DLCS 66101, Movable Fuel Control System Drive Mechanism and BIF Periodic Test. (This was a regularly scheduled test for the Spring Shutdown, but had to be performed with several modifications due to the flow coefficient of reactivity testing).

The first performance of test procedure LWBR-DLCS 78201, Reactor Plant Sound Monitoring During the Spring 1979 Shutdown. (This performance of the test was a continuation of the planned Spring testing).

The first and second performances of test procedure LWBR-DLCS 78501, Movable Fuel Assembly Critical Bank Height in Response to Primary Coolant Temperature Transients.

The following special test procedures were performed satisfactorily as scheduled for the Spring Shutdown:

Test Procedure LWBR-DLCS 78101, Hydrostatic Test of Repair Weld on System Side of 1C Fill Line Vent Valve (08-H16-125).

Test Procedure LWBR-DLCS 78301, Operational Check of the 48" Butterfly Valve Hydraulic System.

Finally, the following test procedures, which are on-going tests, remained in progress during the quarter:

Test Procedure LWBR-DLCS 66001, Reactivity Lifetime Test.

Test Procedure LWBR-DLCS 70801, Transferring Test Tank Water to a Canal Pit.

TABLE VI

Tests Performed During Second Quarter Of 1979

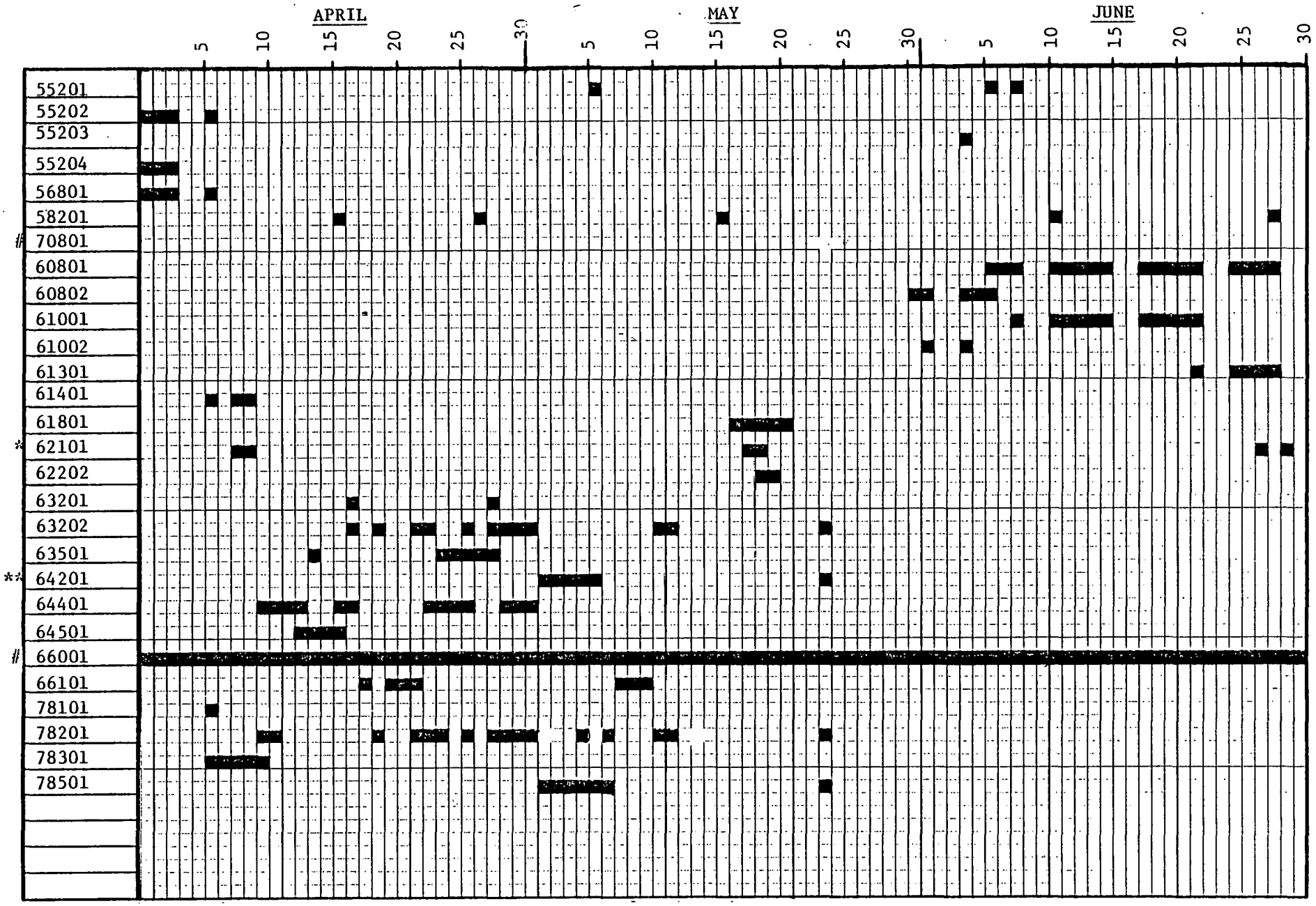
LWBR-DLCS 5520119-20	SIS Monthly Periodic Pump Tests
LWBR-DLCS 5520203	SIS Semiannual Periodic Pump Tests
LWBR-DLCS 5520306	SIS Quarterly Periodic Valve Test
LWBR-DLCS 5520403	SIS Semiannual Periodic Valve Test
LWBR-DLCS 5680102	Reactor Plant Container Integrity Test (Container Penetrations)
LWBR-DLCS 5820106-10	DN Loop Monitoring System Checkout Test
LWBR-DLCS 6080104	Nuclear Protection System (Checkout of High T_h, Low Loop Pressure and High P/F Circuitry)
LWBR-DLCS 6080203	Nuclear Protection System (Checkout of Pump Power and LOFA Circuitry)
LWBR-DLCS 6100106	Periodic Calibration of Pressure Instrumentation
LWBR-DLCS 6100204	Comparison of Reactor Plant Pressure Instrumentation at Operating Pressure and Temperature
LWBR-DLCS 6130107	Periodic Calibration of Reactor Plant Flow Instrumentation
LWBR-DLCS 6140103	Periodic Calibration of Reactor Plant Differential Pressure Instrumentation
LWBR-DLCS 6180104	Periodic Calibration of Total Feedwater Flow and Temperature Instrumentation
LWBR-DLCS 6210106-07	Periodic Checkout and Calibration of the Inverse Kinetics Simulator (IKS)
LWBR-DLCS 6220204	Periodic Calibration of Pressure Switches in the Steam Pressure Instrumentation
LWBR-DLCS 6320104-05	LWBR Pressure Coefficient of Reactivity
LWBR-DLCS 6320203-04	Flow Coefficient of Reactivity
LWBR-DLCS 6350107-08	Flux Wire Activations
LWBR-DLCS 6420105	Neutron Noise Monitoring Test
LWBR-DLCS 6440104-07	Core Shutdown Reactivity and Azimuthal Reactivity Symmetry

TABLE VI (cont'd)

LWBR-DLCS 6450104	Reactivity Worth and Temperature Coefficient of Reactivity at Zero Power
LWBR-DLCS 6610102	Movable Fuel Control System Drive Mechanism and BIF Periodic Test
LWBR-DLCS 7810101	Hydrostatic Test of Repair Weld on System Side of 1C Fill Line Vent Valve (08-H16-125)
LWBR-DLCS 7820101	Reactor Plant Sound Monitoring During the Spring 1979 Shutdown
LWBR-DLCS 7830101	Operational Check of the 48" Butterfly Valve Hydraulic System
LWBR-DLCS 7850101-02	Movable Fuel Assembly Critical Bank Height in Response to Primary Coolant Temperature Transients

Tests Remaining In Progress At End Of Report Period

LWBR-DLCS 6210108	Periodic Checkout and Calibration of the Inverse Kinetics Simulator (IKS)
LWBR-DLCS 66001	Reactivity Lifetime Test
LWBR-DLCS 6420106	Neutron Noise Monitoring Test
LWBR-DLCS 7080101	Transferring Test Tank Water to a Canal Pit



* Two Performances complete, one in progress

\# On-going tests

** One performance complete, one interrupted

Figure 2

6. GLOSSARY

AIX . . . . . after ion exchanger (outlet)

a/o . . . . . atomic percent

BAPL. . . . . Bettis Atomic Power Laboratory

BIX . . . . . before ion exchanger (inlet)

CIC . . . . . compensated ionization chamber

DAS . . . . . .Data Acquisition System

DE . . . . . demineralizer effluent

DF. . . . . decontamination factor

DOE . . . . . Department of Energy

EFPH . . . . . equivalent full power hour

Hc . . . . . .critical height

LWBR . . . . . .Light Water Breeder Reactor

magamp . . . . . magnetic amplifier

MDA . . . . . .Minimum Detectable Activity

mR . . . . . milliroentgen

mrem . . . . . milliroentgen equivalent man

NIS . . . . . Nuclear Instrumentation System

NPS . . . . . .Nuclear Protection System

ORMS . . . . . .Operational Radiation Monitoring System

PWR . . . . . .Pressurized Water Reactor

QOR . . . . . Quarterly Operating Report

R . . . . . roentgen

6. GLOSSARY (Cont'd)

RC . . . . . resistance capacitance

RCS . . . . . Reactor Coolant System

rem . . . . . .roentgen equivalent man

RPC . . . . . .Reactor Plant Container

RWPS . . . . . .Radioactive Waste Processing System

STP . . . . . .standard temperature and pressure

su . . . . . .smear unit (100 sq. cm)

Tavg . . . . . .average reactor coolant temperature

Tc . . . . . .reactor inlet coolant temperature

Th . . . . . reactor outlet coolant temperature

Ts . . . . . time of sample isolation

µCi . . . . . microcuries

V/O. . . . . .percent by volume

VOS. . . . . Valve Operating System