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Quarterly Operating Report
First Quarter 1982
DLCS 5000182

MASTER

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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 desiring to obtain 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 first quarter of 1982, the Shippingport Atomic Power Station remained shutdown for the planned 1981 - 1982 Winter Shutdown, initiated December 11, 1981. The station was in a cooldown condition at approximately 150°F and 280 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 1A, 1B, and 1C 991 psig self-actuated steam relief valves remained gagged during the quarter to prevent leakage through the valve seats. The 1D steam relief valve was removed during the Spring 1980 Shutdown for repairs and a blind flange was installed in its place. Gagging and/or removing of redundant relief valves is permitted by ASME Code and approved operating procedures.

Station heatup began on January 4. On January 8, a leak was discovered on Pressurizer Spray Valve 06-H12-1 and a station cooldown was commenced to repair the valve. Repairs were completed and a station heatup began on January 13. The station went on-line for Duquesne Light Company system grid on January 17, and maximum allowable power was achieved on January 18.

Maximum allowable power was maintained throughout the remainder of the quarter except as noted below:

Power was reduced to 50% on January 29 to repair the 1A Flywheel Generator.

Power was reduced to 59% on February 23 while both Calorimetric Computers were out of service and hand calorimetric calculations were greater than 3% from the load curve. The station returned to maximum allowable power after the load curve was redrawn. This was done in accordance with the Station Manual.

Power was reduced to 70% on March 27 to leak check the 1C Feedwater Heater.

On March 28, load was reduced to 44% to remove the 1B and 1C feedwater heaters from service due to excessive tube leakage in the 1B heater.

Power was reduced to 50% on March 31 to repair the 1D Flywheel Generator. The condenser was also backflushed at this time.

1. SUMMARY OF OPERATIONS (cont'd)

The irradiated PWR Core 2 barrel and miscellaneous refueling tools remained in storage under shielding water in the deep pit.

The LWBR Core has generated 25,873.16 EFPH from start-up through the end of the quarter.

The Reactor Coolant System average leak rate for this quarter was 10.2 gallons per hour. 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.

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 this quarter, approximately 0.0003 curies of Xenon 133 activity were released from the station. The radioactivity released from Shippingport Station is far too small to have any measurable effect on the general background environmental radioactivity outside the plant.

During the first quarter of 1982, a total of 1028 cubic feet of radioactive solid waste was shipped out of state for burial. The shipments contained 0.032 curies of radioactivity.

Generator Output and Reactor Coolant Temperature During First Quarter

2. SUMMARY OF LWBR STATION PERFORMANCE

Electrical output (Gross) to date	.kwhr	1,899,238,000
EFPH to date.	.hr	25,873.16
EFPH for the quarterly period	.hr	1,331.88
Hours reactor critical to date.	.hr	31,272.24
Hours reactor critical for the quarterly period	.hr	1,795.15
No. 1 main unit service hours (quarterly period).	.hr	1,753.18
Net Station Output (quarterly period)	.kwhr	73,717,591
No. of forced outages*.		0

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

3. CHEMISTRY

During the first quarter, the Chemistry section maintained specifications in the various plant systems and fulfilled the Station Manual requirements.

REACTOR PLANT

The station was placed in three different conditions, operating, hot standby, and cold wet layup, during the first quarter of 1982. Some difficulty was encountered with sampling and hydrogen injection for the reactor coolant system while in hot standby because of a temporary loss of building heat during freezing weather (-20°F), but reactor coolant specifications were maintained. The reactor coolant system was maintained within all specifications during all three conditions that the station was placed in during the first quarter of 1982. Refer to Tables I, II, and III.

The out-of-specification conditions which existed in the reactor plant auxiliary systems occurred in the coolant charging water system and in the canal water system.* The high pH and conductivities exhibited by the coolant charging water system were attributed to the presence of hydrazine and ammonia. Hydrazine, which is added to the coolant charging water system during periods of cold wet layup, decomposes to ammonia. Ammonia is also believed to be leaking into the coolant charging water system during chemical addition of ammonium hydroxide to the reactor coolant system. No corrective actions are required when the high pH and high conductivity is due to ammonia or hydrazine. The high out-of-specification dissolved oxygen occurred during reactor plant cold wet layup due to loss of the loop seal on the coolant charging water system storage tank which depleted the oxygen scavenger, hydrazine, and allowed air into the tank. Additional hydrazine was added to the coolant charging system to scavenge the oxygen and the seal was restored. The oxygen concentration in the coolant charging water was restored to within specification within two hours. Refer to Table VII. No water was charged to the reactor cooling system during this out-of-specification condition of coolant charging water.

An increase in the canal water system radioactivity level above the specified limit occurred once during the first quarter of 1982 due to activated corrosion product released to the water during reactor dome cleaning operations. The canal water was recirculated through the purification filter and demineralizer system to remove the activated corrosion products to bring the radioactivity level to within specification. The canal water, purification filter outlet, and demineralizer outlet were later sampled and analyzed to verify the effectiveness of the purification system and that the radioactivity level of the canal water system was within the specified limit. Refer to Table VII. There was no fuel handling or radioactive material handling in the canal during the first quarter.

*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)

In addition to the operational chemistry during the one plant startup of this quarter, Test Procedure LWBR-DLCS 58001, Reactor Coolant Fission Product Monitoring During Reactor Startup, was performed in accordance with the test requirements. As required by the test, reactor coolant samples were drawn and analyzed for Gross Iodine and Iodine 131 activities. The results showed no abnormal peaking of Iodine activities as the reactor power was increased in accordance with scheduled power range operations, verifying the integrity of the fuel cladding.

Test Procedure LWBR-DLCS 59201, Periodic Radiochemical Analysis of LWBR Reactor Coolant was also performed during the first quarter of 1982, and the results and relevant samples were forwarded to Bettis for evaluation.

Turbine Plant

The Chemistry section maintained the Main Unit Boilers within all specifications of the three conditions that the plant was placed in during the first quarter of 1982, with two exceptions.* The exceptions were high pH's and high conductivities exhibited by the Main Unit Boilers during each of two transitions into hot standby from wet layup conditions. This condition was due to the decomposition of hydrazine into ammonia. Hydrazine is added to scavenge oxygen during the wet layup condition. No corrective action is required unless either hot standby or steaming conditions have been established. Blowdowns were performed as necessary during the first quarter to maintain Main Unit Boiler specifications. Refer to Tables IV, V, and VI.

Radioactive Waste Processing

There were no liquid discharges from the Radioactive Waste Processing System (RWPS) during the first quarter of 1982.

*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 Layup (<200°F)

Chemical Conditions	Specifica- tions	Analytical Results		NH ₄ OH (liters)	H ₂ (Cubic Feet)	Degassifi- cation (Hours)
		min.	max.			
pH @ 25°C	10.10-10.30	10.19	10.23			
Specific Conductance (µmhos/cm)	Consistent with pH		39-42			
Total Gas (cc/kg)	80 cc/kg max. Heatup/ cooldown		21.7-39.4			
Hydrogen (cc/kg)	17 cc/kg max.		10.5-15.4			
Oxygen	0.14 ppm max.		<0.005			
Chloride	0.10 ppm max.		<0.10			
Chemicals Added				0.145	0	0

Table II
 REACTOR COOLANT SYSTEM
 WATER CONDITIONS AND CHEMICAL ADJUSTMENTS
 HOT STANDBY (>200°F)

Chemical Conditions	Specifications	Analytical Results	NH ₄ OH (liters)	H ₂ (Cubic Feet)	Degassification (Hours)
pH @ 25 °C	10.10-10.30	10.17-10.24			
Specific Conductance (μmhos/cm)	Consistent with pH	37-44			
Total Gas (cc/kg)	125 cc/kg max.	22.6-47.1			
Hydrogen (cc/kg)	10 cc/kg min 60 cc/kg max	10.4-29.3			
Chloride	0.10 ppm max	N.P.			
Chemicals Added			4.3	165	8.26

N. P. Analysis was not required and was not performed during the hot standby period.

Table III
 REACTOR COOLANT SYSTEM
 WATER CONDITIONS AND CHEMICAL ADJUSTMENTS
 OPERATING (>200°F)

Water Conditions	Specifica- tions	Analytical Results		NH ₄ OH (liters)	H ₂ (Cubic Feet)	Degassifica- tion (Hours)
		min.	max.			
pH @ 25°C	10.10-10.30	10.11	10.29			
Specific Conductance (μmhos/cm)	Consistent with pH	30	49			
Total Gas (cc/kg)	125 cc/kg max.	33.8	115.1			
Hydrogen (cc/kg)	10 cc/kg min. 60 cc/kg max.	20.9	49.5			
Chloride	0.10 ppm. max.	<0.10				
Chemicals Added				100.40	0	2.95

Table IV
NON-OPERATING BOILER CHEMISTRY
COLD LAYUP (<200°F) WATER CHEMISTRY

Water Conditions	Specifications	Boilers			
		1A	1B	1C	1D
pH @ 25°C	Min. 9.30 Max. 10.50	9.45 9.66	9.37 9.67	9.42 9.64	9.49 9.63
Specific Conductance	Min. ----- Max. 30 μ hos/cm	9.2 12	9.8 14	9.9 13	10 13
Chloride	Min. ----- Max. 0.20 ppm	<0.10	<0.10	<0.10	<0.10
Hydrazine	Min. 50 ppm* Max. 100 ppm	27 51	27 53	27 53	27 52
Chemicals Used (lbs.) N_2H_4		14	11	11	14

*Hydrazine may be allowed to decrease to a minimum of 10 ppm one week prior to a heat up.

Table V
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	8.76 9.87*	8.94 10.01*	8.95 9.87*	8.92 10.16*
Specific Conductance	Min. ----- Max. 10 µmhos/cm	3.9 20*	4.0 23*	3.9 22*	3.8 26*
Chloride	Min. ----- Max. 0.20 ppm	<0.10	<0.10	<0.10	<0.10
Morpholine	Min. 0.50 ppm Max. 60.0 ppm	0.70 5.95	0.80 5.90	1.05 6.00	1.12 5.75
Chemicals Used (lbs.) C ₄ H ₉ NO		2.55	2.45	2.45	2.45

*See Turbine Plant Section of QOR

Table VI
OPERATING BOILER CHEMISTRY
OPERATING (>200°F) WATER CHEMISTRY

Water Conditions	Specifications	Boilers			
		1A	1B	1C	1D
pH @ 25°C	Min. 8.50 Max. 9.30	8.50 9.02	8.51 9.22	8.52 9.03	8.51 9.01
Specific Conductance	Min. ----- Max. 10 μ hos	3.1 6.8	3.0 6.3	2.9 5.9	3.2 6.4
Chloride	Min. ----- Max. 0.20 ppm	< 0.10	< 0.10	< 0.10	< 0.10
Hydrazine	Min. .005 ppm Max. 0.125 ppm	.013 .080	.008 .037	.010 .039	.015 .085
Morpholine	Min. 0.50 ppm max. 6.0	0.77 2.00	0.77 2.00	0.77 2.00	0.77 2.06
Chemicals Used (lbs.)		23.9	23.9	23.9	23.9
N ₂ H ₄		62.8	62.8	62.8	62.8
C ₄ H ₉ NO					

Table VII
REACTOR PLANT AUXILIARY SYSTEMS
WATER CONDITIONS

System	Conductivity $\mu\text{mho/cm}$	pH @ 25°C	Concentration in ppm			Gross Gamma Activity $\mu\text{Ci/ml}$
			$\text{CrO}_4^{=}$	Cl^-	Dissolved O_2 ppm	
Component Cooling Water Specifications	N.S.	N.S.	500-1000	1.0 ppm Max.	N.S.	N.S.
Observed	N.P.	N.P.	634-775	<0.10 - 0.96	N.P.	<MDA - 2.08×10^{-7}
Coolant Charging Water Specifications	2.50 Max.	6.00-8.00	N.S.	0.10 ppm Max	**	N.S.
Observed	2.50 - 12.5*	7.66 - 9.18*	N.P.	<0.10	.005 - 1.00*	N.P.
Canal Water Specifications	5.00 Max.	5.80-8.00	N.S.	N.S.	N.S.	1.0×10^{-6} Max. ***
Observed	0.97-1.7	5.80-7.19	N.P.	N.P.	N.P.	<MDA - 6.21×10^{-6} *

MDA is 9.55×10^{-8} $\mu\text{Ci/ml}$.

N.S.: No limit needed, therefore, no limit has been specified.

N.P.: Analysis is not necessary and not performed.

*** Specification is for the canal water filter inlet.

** Specification is <0.14 ppm for reactor plant cold wet layup.

* Refer to Reactor Plant Section of QOR.

4. MAINTENANCE

Scheduled preventive as well as corrective maintenance was performed on plant equipment during this period.

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

Reactor Plant

1. Repair B & C Mueller Tc Instrumentation
2. Air Treatment Hydraulic Pressure Switch Repairs
3. Calibrate VOS D/P Cell
4. Calibrate CEEFS 4
5. Repair "A" Calorimetric
6. Repair RWP Transfer Pump
7. Charge Resin to Ion Exchanger
8. Repair Evaporator Distillate Pump
9. Repair "D" NIS
10. Replace Blowoff Tank D/P Cell
11. Installation of Thin Film Evaporator
12. Repair & Calibrate ORMS 12S
13. Repair H₂ Burner Piping
14. Calibrate "B" Calorimetric
15. Repair #2 Auxiliary Battery Room Heater
16. Overhaul "A" Vent Gas Compressor
17. Repair Evaporator Desuperheater Line
18. Remove SIS Piping Temporary Shelter
19. Hydro Evaporator Compressor

Turbine Plant

1. Repack Feedwater Valves
2. Repair Heater Drain Pump Breaker
3. Clean Main Unit Condenser
4. Replace Valve Stem in M1-K11
5. Repair Moisture Separator
6. Clean Condensate Cooler
7. Clean Piggy-Back Cooler
8. Repair #2 Service Boiler Feed Pump
9. Overhaul #1 Service Boiler Feed Pump
10. Repair MUD Conductivity Recorder
11. Repair Service Boiler Feedwater Pump Motor

Defueling

1. Install Brackets in Fuel Storage Pit
2. Defueling Preps
3. Captivation of Extraction Crane
4. Load Test & Repair Fuel Handling Building Main Crane
5. M 130 Support System Installation

5. TEST PROGRAM

The primary objective during the quarterly report period was to continue monitoring the LWBR core characteristics as it depletes for subsequent proof of breeding. The Winter 1981 - 1982 Outage for testing and maintenance, which began during the last report period, was completed on January 18.

Twenty-two (22) tests were performed during the report period. Nineteen (19) tests were completed and three (3) tests were incomplete or in progress at the end of the quarter. Table VIII lists these tests and Figure 2 indicates the performance dates.

The fiftieth and fifty-first performances of test procedure LWBR-DLCS 55201, Safety Injection System Monthly Periodic Pump Test, were completed satisfactorily during the quarter. The fifty-second performance of the test was incomplete at the end of the period due to failure of one of the No. 2 SIS heat exchanger cooling water pumps (19-G1-1) to produce flow.** This pump had been satisfactorily tested in January and February. The problem is being investigated and appropriate repairs will be made. The No. 1 and the second No. 2 heat exchanger cooling water pumps (53-G2-4009 and 19-G1-2) were tested satisfactorily each month during the quarter. Individual testing of the Boiler Feed Pumps was conducted satisfactorily in March to meet the first quarter requirements.

The seventeenth performance of test procedure LWBR-DLCS 55203, SIS Quarterly Periodic Valve Test, was completed satisfactorily in March. All valves, except the 1A and 1B Boiler Feed Pump SIS Recirculation Isolation Valves, 453-H13-4001 and 4002, were tested during this performance. These valves are periodically tested when the plant conditions permit portions of the SIS lines to be drained. The test verifies that various SIS valves are operational by opening and closing the valves and recording operating times. In addition, a continuity check is performed on contacts of the W-2 type control switches for valves 453-H12-4009 and -4013 to assure electrical continuity when the switch is returned to the AUTO position.

Five (5) performances, thirteenth through seventeenth, of test procedure LWBR-DLCS 55204, SIS Semi-Annual Periodic Valve Test, Appendix A, were completed during the quarter. The test is performed monthly to cycle valve 453-H2-4301, SIS Storage Tank/Boiler Feed Pump Suction Isolation Backup Valve. The valve operated satisfactorily each month. The two (2) additional performances, the fifteenth in February and the seventeenth in March, consisted only of fill and

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

5. TESTING PROGRAM (cont'd)

flush operations to reduce the boron concentration in the innerspace between valves 453-H2-4301 and -4002 to less than 5 ppm. These performances were required by test procedure LWBR-DLCS 80501, Opening Torque Check of MOV 453-H2-4301. This test requires the flushing operations if, after the torque check, a one-liter sample of borated water can be obtained at the condensate side of the innerspace.

The forty-sixth performance of test procedure LWBR-DLCS 58301, Delayed Neutron Loop Monitoring System (Operation During Station Startup), was performed in January during startup following the Winter 1981 - 1982 Outage. The No. 1 DN Loop Monitor remained out of service due to the monitoring tub being isolated because of leakage.** The delayed neutron activity level in the sample flow from the 1B Reactor Coolant Loop was continuously recorded by the No. 2 monitor during the startup. No indication of fuel assembly cladding defects has been detected from the data obtained during the test.

The eleventh performance of test procedure LWBR-DLCS 60901, Periodic Inter-calibration of Temperature Sensing Elements, which began in the last report period was completed in January. Testing in this report period consisted of a three-point hot calibration check under isothermal plant conditions at 510°F, 521°F, and 529°F. During these checks several instruments were adjusted per the requirements of the procedure to within the specified accuracies. In addition, the 1B Th Norwood was found out of the $\pm 1^\circ\text{F}$ acceptance band by 0.02°F at the 529°F calibration check temperature.** This condition was considered acceptable by Bettis and Duquesne Light with no further action required.

The eighth performance of test procedure LWBR-DLCS 61801, Periodic Calibration of Total Feedwater Flow and Temperature Instrumentation, was performed from January through March. During this performance, considerable maintenance was performed on both feedwater flow instrument trains. The bellows in the 1A Total Feedwater Flow transmitter was replaced and repairs were made to both the 1A and the 1B Total Feedwater Flow indicating receivers. Both channels of the flow and temperature instruments were calibrated during this performance.

The ninth performance of test procedure LWBR-DLCS 63201, LWBR Pressure Coefficient of Reactivity, was satisfactorily completed in January during the physics testing portion of the outage. The measured pressure coefficient of reactivity met the acceptance criteria specified in the test procedure.

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

5. TEST PROGRAM (cont'd)

The ninth performance of test procedure LWRB-DLCS 63202, Flow Coefficient of Reactivity was satisfactorily completed during the physics testing portion of the outage. Flow coefficients were measured during changes from four fast to three fast and three to two fast speed reactor coolant pumps operating with the respective flywheel generators on line. In addition, sound recordings were made in accordance with test procedure LWRB-DLCS 78601, Reactor Plant Sound Monitoring Using the Bell and Howell Tape Recorder, during the switch from three fast to two fast speed pumps.

The twelfth performance of test procedure LWRB-DLCS 64401, Core Shutdown Reactivity and Azimuthal Reactivity Symmetry, was satisfactorily completed in January. The ambient temperature portion (150°F) consisted of worth measurements of movable fuel assemblies I-1, II-1, III-1, and a measurement with both III-1 and III-5 being controlled on the auxiliary drawer. The hot temperature portion (521°F) consisted of symmetry measurements for the Type III movable fuel assemblies.

The tenth performance of test procedure LWRB-DLCS 64501, Reactivity Worth and Temperature Coefficient of Reactivity at Zero Power, was satisfactorily completed during the physics testing sequence. Measurements obtained during both ambient and hot plant conditions met the requirements of the test procedure.

The second performance of test procedure LWRB-DLCS 66103, Movable Fuel Assembly Scram Test, was satisfactorily completed in January. During this test, each movable fuel assembly was lifted to its maximum height and dropped while recording the drop time. Traces obtained from accelerometers on the mechanisms are used to obtain time and velocity data. Movable fuel assembly II-1 has been exhibiting a decrease in velocity but is still within acceptable limits and is expected to remain within acceptable limits through the remainder of core life. All other assemblies also met the requirements of the test procedure.

Other testing which was incomplete or in progress at the end of the quarter included:

Test procedure LWRB-DLCS 66001, Reactivity Lifetime Test, which is an on-going test.

Test procedure LWRB-DLCS 80501, Opening Torque Check of MOV 453-H2-4301, which is an on-going test.

TABLE VIII

Tests Performed During First Quarter of 1982

LWBR-DLCS 5520150-51	SIS Monthly Periodic Pump Tests
LWBR-DLCS 5520317	SIS Quarterly Periodic Valve Tests
LWBR-DLCS 5520413-17	SIS Semi-Annual Periodic Valve Test
LWBR-DLCS 5800140	Reactor Coolant Fission Product
	Monitoring During Reactor Startup
LWBR-DLCS 5830146	DN Loop Monitoring System (Operation
	During Station Startup)
LWBR-DLCS 5920108	Periodic Radiochemical Analysis
	of LWBR Reactor Coolant
LWBR-DLCS 6090111	Periodic Intercalibration of
	Temperature Sensing Elements
LWBR-DLCS 6180108	Periodic Calibration of Total
	Feedwater Flow and Temperature
	Instrumentation
LWBR-DLCS 6320109	LWBR Pressure Coefficient of
	Reactivity
LWBR-DLCS 6320209	Flow Coefficient of Reactivity
LWBR-DLCS 6440112	Core Shutdown Reactivity and
	Azimuthal Reactivity Symmetry
LWBR-DLCS 6450110	Reactivity Worth and Temperature
	Coefficient of Reactivity at
	Zero Power
LWBR-DLCS 6610302	Movable Fuel Assembly Scram Test
LWBR-DLCS 7860105	Reactor Plant Sound Monitoring
	Using the Bell and Howell Tape
	Recorder

Tests Incomplete or In Progress
at the End of the Report Period

LWBR-DLCS 5520152	SIS Monthly Periodic Pump Tests
LWBR-DLCS 66001	Reactivity Lifetime Test
LWBR-DLCS 80501	Opening Torque Check of
	MOV 453-H2-4301

Performance Dates of Tests Performed During the First Quarter of 1982

Figure 2

6. HEALTH PHYSICS

External Radiation Exposure

Table IX provides information on radiation exposure experience of Duquesne Light Company personnel at the Shippingport Station. Table IX is based on a standard form used for radiation exposure experience at central station nuclear power plants.

ANNUAL REPORT OF EXTERNAL RADIATION EXPOSURE EXPERIENCE AT SHIPPINGPORT

-1981-

TABLE IX

* & Job Function	Number of Personnel (> 100 mrem)		Total Man-Rem	
	Station Emp.	Other Emp.	Station Emp.	Other Emp.
Reactor Operations & Surveillance:				
Maintenance Personnel	0		0	
Operating Personnel	9		2.3	
Radiological Control Personnel	0		0	
Supervisory Personnel	0		0	
Engineering Personnel	0		0	
Routine Maintenance : (1)				
Maintenance Personnel	36		8.8	
Operating Personnel	0		0	
Radiological Control Personnel	10		3.6	
Supervisory Personnel	18		4.7	
Engineering Personnel	0		0	
Inservice Inspection :	0		0	
Special Maintenance :				
Maintenance Personnel	0		0	
Operating Personnel	0		0	
Radiological Control Personnel	0		0	
Supervisory Personnel	0		0	
Engineering Personnel	0		0	
Spent Resin Processing : (2)				
Maintenance Personnel	0	10*		4.7
Operating Personnel	0		0	
Radiological Control Personnel	5		2.0	
Supervisory Personnel	2		.6	
Engineering	0		0	
Fueling :	0		0	
TOTAL :				
Maintenance Personnel	36		8.8	
Operating Personnel	9		2.3	
Radiological Control Personnel	15		5.6	
Supervisory Personnel	20		5.3	
Engineering Personnel	0		0	
GRAND TOTAL :	80	10*	22.0	4.7

1) Includes the spring and winter outtages (4-20-81 through 6-1-81 and 12-7-81 through 12-31-81) respectively.

2) Includes the spent resin removal project
Resin removal subcontractors

7. GLOSSARY

AIX	after ion exchanger (outlet)
a/o	atomic percent
BAPL	Bettis Atomic Power Laboratory
BIX	before ion exchanger (inlet)
CEEFS	Concrete Enclosure Emergency Filtration System
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

7. 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
μ Ci	microcuries
V/O	percent by volume
VOS	Valve Operating System