YANKEE NUCLEAR POWER STATION

OPERATION REPORT NO. 117

For the Month of

September 1970

Submitted by

YANKEE ATOMIC ELECTRIC COMPANY

Westboro Massachusetts

October 20, 1970

This report covers the operation of the Yankee Atomic Electric Company at Rowe, Massachusetts for the month of September, 1970.

At the start of the period the plant was in a shutdown, hot standby condition following the maintenance period described in Operation Report No. 116. At 0013 hours on September 1, the turbine generator was phased to the high line, and at 0238 hours, plant load was 540 Mwt. Following return to power, continued plant stretchout operation resulted in a load decrease from 164.3 MWe to 152.6 MWe at the end of the report period.

The seventh, Core VIII vapor container air leakage surveillance period commenced coincident with return to power operation and continued through the report period. Leakage during the period was normal.

All routine tests were completed, successfully.

Plant Abnormal Occurrences

There were no plant abnormal occurrences during the report period.

Plant Load Reductions

September 12 (1305-1745):	Load reduction to 70 MWe to permit maintenance of check valve in heater drains tank pump discharge header.
September 18 (2210-2345):	Load reduction to 140 MWe due to electrical storm.
September 22 (1730-1915):	" " " "
September 23 (0045-0222):	" " " "

Plant Shutdowns

Shutdown No. 111-8-70: (continued)	Scheduled plant shutdown which commenced 8-21-70 for steam generator leak repairs; and which was terminated 9-1-70. Total outage time: 240 hours, 59 minutes.

Plant Maintenance

The following is a list of pertinent maintenance items performed by the plant staff during the month of September, 1970.

1. A new gasket was installed for the check valve cover in the heater drains tank pump discharge header.

2. The No. 1 charging pump was repacked; and a lube oil change was performed.

3. The mechanical seals for the low pressure surge tank cooling pump were renewed.

4. The No. 3 boiler feed pump was repacked in entirety, and the pump motor was inspected.

5. The two inlet valves and the common outlet valve, for the No. 2 waste gas compressor, were replaced.

6. The two inlet and two outlet valves, for the No. 1 control air compressor, were replaced.

7. The service air compressor was inspected, and the six inlet and six outlet valves were replaced.

Instrumentation and Control

The following is a list of pertinent instrumentation and control maintenance items performed by the plant staff during the month of September, 1970.

1. Installed new controls on the fire pressure maintenance pump system.

2. Commenced installation of atmospheric temperature gradient measuring system.

3. A recalibration was performed of all plant area radiation monitors.

4. The Th narrow range temperature channels were recalibrated.

Reactor Plant Performance

The following parameters were determined by means of incore instrumentation:

526 MWt; 510.8°F Tavg; Control Pod Groups A, B, C and D @ 90^{3}"; 0 ppm boron.

F_Q = 1.9

$F_{\Delta H}$ = 2.0

Minimum DNBR = 4.3

Maximum Outlet temperature = 569.5°F

Secondary Plant Performance

Feedwater heater terminal differences were as follows:

No. 1 = 5.4°F No. 2 = 10.3°F No. 3 = 5.7°F

The condenser performance was as follows:

163.3 MWe; 1.98" Hg.B.P.; 534 MWt; 56.99°F C.W. in; TTD = 19.17°F; cleanliness factor = 59.87%.

Chemistry

At the start of the period the main coolant boron concentration and pH were 199 ppm and 5.60, respectively. Boron dilution reduced the concentration to 18.4 ppm on September 1. At this time anion exchange was commenced reducing the boron to 1.2 ppm by September 4, when an ammoniated mixed bed ion exchanger was placed in service.

Reammoniation of the main coolant system was commenced on September 2. The average ammonia concentration and pH for the duration of the report period were 14.9 ppm and 9.50, respectively.

The average gross beta-gamma specific activity and crud level were 9.24×10^{-2} uc/ml and 0.05 ppm, respectively.

The main coolant tritium concentration was decreased to 4.0×10^{-2} uc/ml on September 1 due to dilution. At the end of the period the tritium concentration had increased to 5.54×10^{-1} uc/ml.

The average iodine-131 specific activity was 3.97×10^{-5} uc/ml and the iodine 131/133 atomic ratio was 0.69 indicating the absence of detectable fuel defects.

A representative crud sample for the month, collected on September 16, had the following radiochemical analyses: dpm/mg crud

Cr-51 1.41×10^{8}	Mn-54 6.41×10^{6}	Fe-59 7.65×10^{6}
Co-58 7.16×10^{7}	Co-60 1.26×10^{7}	Ag-110M 1.09×10^{6}

A main coolant gas sample for the month, collected on September 9, had the following radiochemical analyses: uc/cc gas

Xe-133 3.66×10^{-3}	Xe-135 1.02×10^{-2}	Ar-41 5.43×10^{-1}

Health and Safety

Waste disposal liquid releases totalled 118,941 gallons containing 0.161 mc of gross beta-gamma activity and 102.60 curies of tritium. Gaseous releases during the period totalled 0.304 curies of gross beta-gamma activity and 28.5 mc of tritium. Secondary plant water discharged totalled 399,681 gallons containing 0.261 mc of gross beta-gamma activity and 4.09 curies of tritium.

Radiation exposure doses for Yankee plant personnel as measured by film badge, for the month of September, 1970 were:

Average accumulated exposure dose: 70 mrem

Maximum accumulated exposure dose: 310 mrem

Operations

Attached is a summary of plant operating statistics and a plot of daily average load for the month of September, 1970.

YANKEE ATOMIC ELECTRIC COMPANY - OPERATING SUMMARY

September 1970

ELECTRICAL		MONTH	YEAR	TO DATE
Gross Generation	KWH	113,974,500	1,059,351,100	11,275,009,600
Sta. Service (While Gen. Incl. Losses)	KWH	7,469,870	64,098,074	734,102,938
Net Output	KWH	106,504,630	995,253,026	10,540,906,662
Station Service	%	6.55	6.05	6.51
Sta. Service (While Not Gen. Incl. Losses)	KWH	-	2,158,079	31,066,008
Ave. Gen. For Month 720	KW	158,298	-	-
Ave. Gen. Running (719.78)	KW	158,346	-	-

PLANT PERFORMANCE				
Net Plant Efficiency	%	28.45	29.24	28.49
Net Plant Heat Rate	BTu/KWH	11,996	11,672	11,979
Plant Capacity Factor	%	86.65	86.59	75.62
Reactor Plant Availability	%	100.0	92.81	84.53

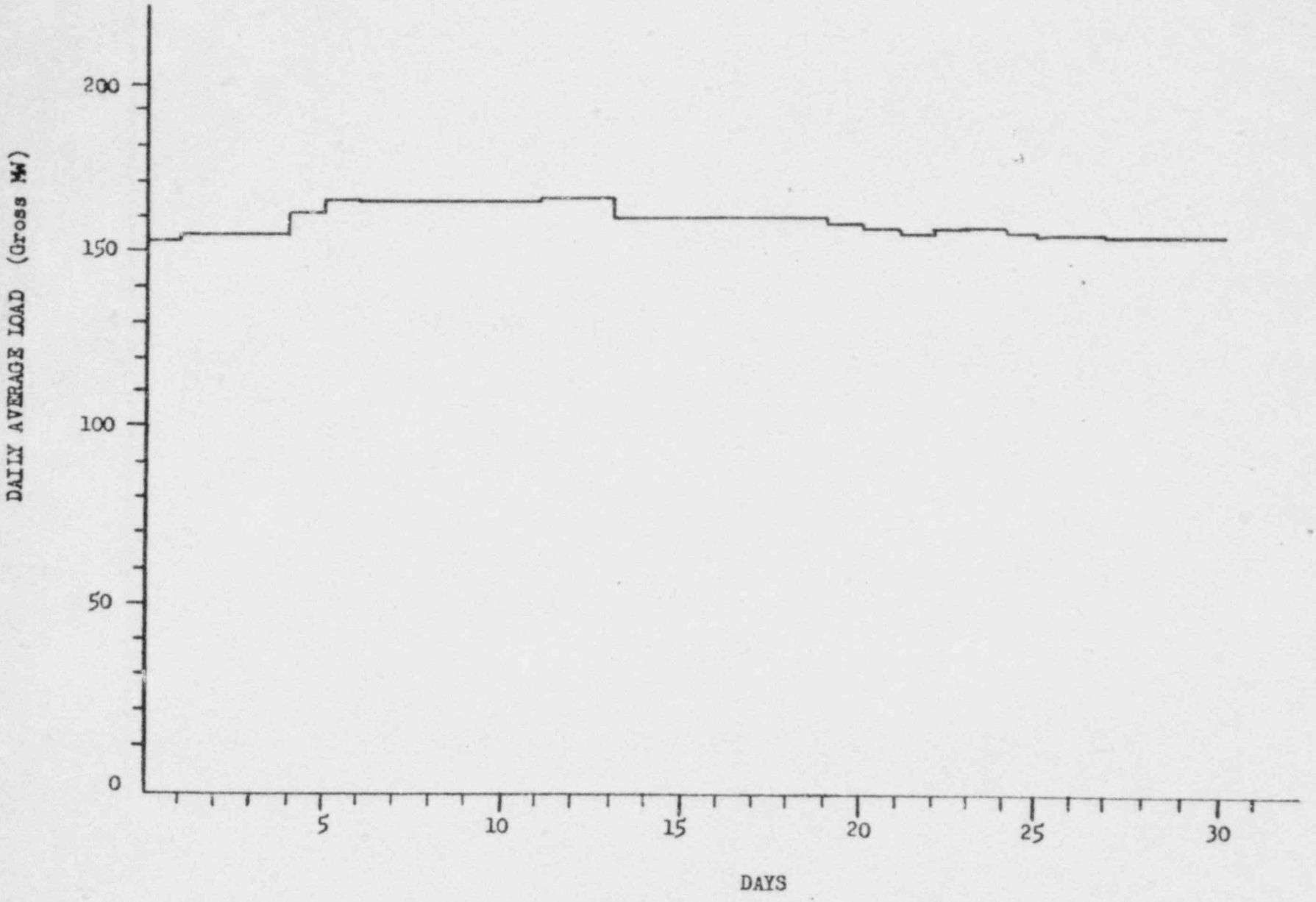
NUCLEAR		MONTH	CORE VIII	TOTAL
Hours Critical	HRS	720	8,507.84	74,327.62
Times Scrammed		0	5	62
Burnup				
Core Average	MWD/MTU	750.68	9,585.26	-
Region Average	MWD/MTU			
A (INNER)		744.13	8,981.88	28,912.78
B (MIDDLE)		847.43	10,950.11	22,986.17
C (OUTER)		654.46	8,261.82	8,261.82
D (ZIRCALOY)		-	-	-

YANKEE ATOMIC ELECTRIC COMPANY

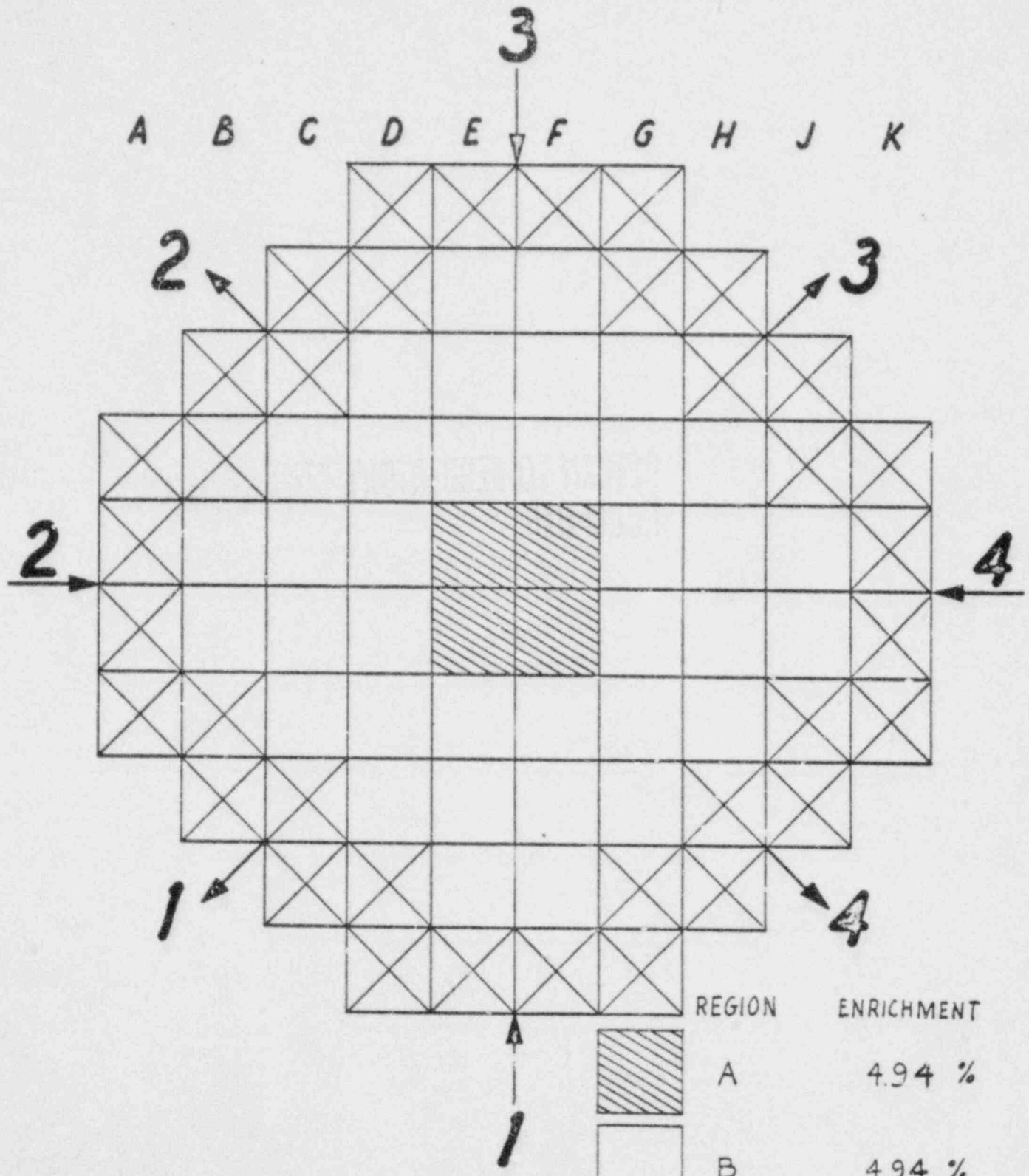
DAILY AVERAGE LOAD

for

September 1970



CORE VIII



FORM RE-5

YANKEE ATOMIC ELECTRIC COMPANY

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TELEPHONE 617 366 9011

Regulatory File Cy.

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October 20, 1970

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OCT 23 1970
U.S. ATOMIC ENERGY COMMISSION

U. S. Atomic Energy Commission
Washington, D. C. 20545

Attention: Division of Reactor Licensing

Dear Sirs:

We are enclosing herewith for your use and information twenty-five (25) copies of Operation Report No. 117 covering operations at the plant for the month of September 1970.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

G. Carl Andognini for
Wendell P. Johnson
Manager of Operations

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