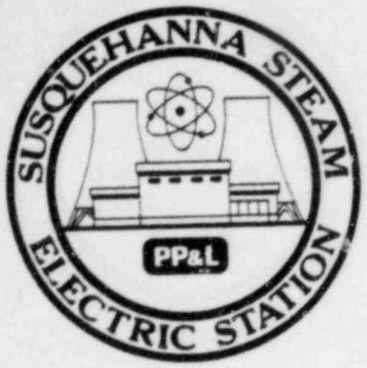


AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-387
UNIT One
DATE May 9, 1984
COMPLETED BY L.A. Kuczynski
TELEPHONE (717)542-3759

MONTH April, 1984

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	980	17	924
2	1,057	18	847
3	1,059	19	844
4	1,057	20	921
5	1,051	21	1,055
6	1,058	22	1,054
7	1,053	23	1,057
8	1,008	24	1,057
9	1,058	25	1,055
10	1,059	26	1,052
11	1,057	27	1,048
12	1,055	28	1,046
13	1,053	29	983
14	601	30	1,043
15	817	31	
16	1,023		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

(9/77)

IE24

OPERATING DATA REPORT

DOCKET NO. 50-387
DATE May 9, 1984
COMPLETED BY L.A. Kuczynski
TELEPHONE (717)542-3759

OPERATING STATUS

Unit 1

1. Unit Name: Susquehanna Steam Electric Station
2. Reporting Period: April, 1984
3. Licensed Thermal Power (MWt): 3,293
4. Nameplate Rating (Gross MWe): 1,152
5. Design Electrical Rating (Net MWe): 1,065
6. Maximum Dependable Capacity (Gross MWe): 1,068
7. Maximum Dependable Capacity (Net MWe): 1,032
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:
   None
9. Power Level To Which Restricted, If Any (Net MWe): None
10. Reasons For Restrictions, If Any: None

Notes

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	719	2,903	7,872
12. Number Of Hours Reactor Was Critical	719	1,153	4,998.3
13. Reactor Reserve Shutdown Hours	0	0	156.7
14. Hours Generator On-Line	719	1,075.8	4,844.1
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	2,255,077	3,055,110 *	14,316,771 *
17. Gross Electrical Energy Generated (MWH)	745,490	998,240	4,664,790
18. Net Electrical Energy Generated (MWH)	719,795	960,716	4,497,089
19. Unit Service Factor	100	37.1	61.5
20. Unit Availability Factor	100	37.1	61.5
21. Unit Capacity Factor (Using MDC Net)	97.0	32.1	55.4
22. Unit Capacity Factor (Using DER Net)	94.0	31.1	53.6
23. Unit Forced Outage Rate	0	34.2	18.1

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):
    None

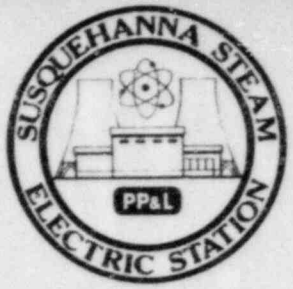
25. If Shut Down At End Of Report Period, Estimated Date of Startup: N/A

26. Units In Test Status (Prior to Commercial Operation):

	Forecast	Achieved
INITIAL CRITICALITY		
INITIAL ELECTRICITY		
COMMERCIAL OPERATION		

* Updated Figures
Better data became available.

(9/77)



UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH April, 1984

DOCKET NO. 50-387
UNIT NAME One
DATE May 9, 1984
COMPLETED BY L.A. Kuczynski
TELEPHONE (717)542-3759

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
3	840413	S	0	H	4	N/A	IC	CONROD	A power reduction from 100% to 60% was initialized to change the control rod pattern. No corrective action is required for this power reduction. It was a planned event.

1
F: Forced
S: Scheduled

2
Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method:
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Other (Explain)

4
Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I - Same Source

(9/77)

UNIT 1
SUSQUEHANNA STEAM ELECTRIC STATION

Docket Number 50-387 Date May 9, 1984

Completed by L.A. Kuczynski Telephone (717)542-3759

Challenges to Main Steam Safety Relief Valves

None.

Changes to the Offsite Dose Calculation Manual

See Attachment.

Major Changes to Radioactive Waste Treatment Systems

None.

ATTACHMENT TO UNIT ONE

April, 1984, Monthly Operating Report

Changes to the

Offsite Dose Calculation Manual

These revised pages were made effective on January 20, 1984 upon signature by the Manager-Nuclear Support.

Changes have been denoted by revision bars in the right margin. The reasons for the changes are as follows:

1) To include setpoints for Service Water and RHR Service Water.

2) To include setpoint methodology for Vent Flow Rates and SPING Sample Flow Rates.

PENNSYLVANIA POWER & LIGHT COMPANY
SUSQUEHANNA STEAM ELECTRIC STATION
OFFSITE DOSE CALCULATION MANUAL

Prepared By J.E. Widner Date 1/20/84

Reviewed By K.E. Shank Date 1/20/84

PORC Review Required Yes ( ) No (✓) Date

Approved By [signature] Date 1/20/84
Manager-Nuclear Support

TABLE OF CONTENTS

$$\frac{F + f}{f} = \frac{Y \cdot (A)}{MPC}$$

where $\frac{F + f}{f}$ = the setpoint dilution factor

The requirements of Equation (2) are then met as follows:

$$Y \cdot (A) = MPC\left(\frac{F + f}{f}\right)$$

Since, by definition, $Y > X$ and $Y(A) > X(A)$, then

$$(c) = X(A) < MPC\left(\frac{F + f}{f}\right)$$

The setpoint concentration (c) can then be converted to a setpoint count rate value by use of the monitor calibration factor.

$$\text{Setpoint (cpm)} = \frac{c\ (\mu Ci/ml)}{\text{Cal. Factor } (\mu Ci/ml \text{ per cpm})} \qquad (3)$$

The setpoint for the dilution water flow (cooling tower blowdown) is 5000 gpm from either cooling tower basin. The setpoint for the LRW discharge flow can then be determined from:

$$\frac{F + f}{f} = \frac{(A)}{MPC} \cdot Y$$

Sample calculations for determining the release concentration limits and setpoints are given in Section A.1.1 of Appendix A.

The Service Water System provides screened water from the cooling tower basin for cooling plant systems and equipment. The Residual Heat Removal (RHR) Service Water System provides water from the Engineered Safeguard Service Water (ESSW) spray pond to the RHR heat exchangers. In post-accident conditions, RHR Service Water can supply water for vessel and containment flooding. The Service Water and RHR Service Water Systems are not normal pathways for liquid effluents. Radiation monitors are in place on these systems to provide indication of leaks across heat exchangers into the service water. The high

JAN 20 1984

radiation setpoints for these monitors are set at 2E-5 µCi/cc cesium-137 equivalent. Considering the radionuclides predominant in SSES liquid effluents, e.g., Co-58, Co-60, Fe-59, Mn-54 and Cr-51, use of a setpoint based on the Cs-137 MPC is conservative based on the following parameters:

1) photon abundance (85%)
2) magnitude of applicable MPC (2E-5 µCi/cc)

Because Service Water & RHR Service Water are not normal release pathways for liquid effluents, no credit should be taken for possible dilution scenarios. All service water should be maintained below 2E-5 µCi/cc Cs-137 equivalent.

2.2 GASEOUS EFFLUENT MONITORS

SPECIFICATION 3.3.7.11 - THE RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION CHANNELS SHOWN IN TABLE 3.3.7.11-1 SHALL BE OPERABLE WITH THEIR ALARM/TRIP SETPOINTS SET TO ENSURE THAT THE LIMITS OF SPECIFICATION 3.11.2.1 ARE NOT EXCEEDED. THE ALARM/TRIP SETPOINTS OF THESE CHANNELS SHALL BE DETERMINED IN ACCORDANCE WITH THE METHODOLOGY AND PARAMETERS IN THE ODCM.

Noble gas activity monitors, iodine samplers, and practiculate samplers are present on the reactor building ventilation system (Units 1 and 2), the turbine building ventilation system (Units 1 and 2), and the standby gas treatment system. Effluent system flow rate and sampler flow rate are measured on all of the systems allowing the vent monitor microprocessor to calculate release rates based on measured flow rates. Precautions, limitations, and setpoints applicable to the operation of the SSES gaseous effluent monitors are provided in the applicable plant Procedures. Setpoints are conservatively established for each ventilation effluent monitor so that the instantaneous dose rates corresponding to 10 CFR 20 annual dose limits in unrestricted areas will not be exceeded. Conservatism is to be incorporated into the determination of each setpoint to account for:

JAN 20 1984

1. All exposure pathways of significance at the critical receptor locations;

2. Dose contributions to critical receptors from multiple release points; and

3. Dose contributions from major radioisotopes expected to be present in gaseous effluents.

The general methodology for establishing plant ventilation gaseous effluent monitor setpoints is based upon vent release rates (μCi/sec) derived from site-specific meteorological dispersion conditions, vent flow rates, and expected radioisotopic mixtures in the gaseous effluents. The vent release rate can then be converted to cpm depending upon the particular monitor's method of operation, sampling rate, and detection efficiency. It is not practical to apply alarm/trip setpoints to integrating radiation monitors sensitive to radioiodines, radioactive materials in particulate form, or radionuclides other than noble gases. Therefore, only the noble gas activity monitors in the five ventilation systems at the SSES will have established setpoints.

The calculated alarm and trip action setpoints for each noble gas ventilation effluent monitor and flow measurement device must satisfy the following equation for whole body dose:

$$Q'_{iv} \leq \frac{500}{(K_i)(\chi/Q)_v} \qquad (4)$$

and by the following equation for skin dose:

$$Q'_{iv} \leq \frac{3000}{(L_i + 1.1\ M_i)(\chi/Q)_v} \qquad (5)$$

JAN 20 1984

where:

K_i = the whole body dose factor due to gamma emissions for each identified noble gas radionuclide (i) (mrem/yr per $\mu Ci/m^3$) from Table 2.

Q'_{iv} = the release rate of radionuclide (i) from vent (v) which results in an annual dose rate of 500 mrem to the whole body or 3000 mrem to the skin of the critical receptor ($\mu Ci/sec$).

$(\chi/Q)_v$ = the highest calculated annual average relative concentration for estimating the dose to the critical offsite receptor in an unrestricted area from vent release point (v) (sec/m^3).

500 = the 10 CFR 20 annual whole body dose limit (mrem/yr) to an individual in an unrestricted area.

L_i = the skin dose factor due to beta emissions for each identified noble gas radionuclide (i) (mrem/yr per $\mu Ci/m^3$) from Table 2.

M_i = the air dose factor due to gamma emissions for each identified noble gas radionuclide (i) (mrad/yr per $\mu Ci/m^3$) from Table 2 (conversion constant of 1.1 converts air dose-mrad to skin dose-mrem).

3000 = the 10 CFR 20 annual skin dose limit (mrem/yr) to an individual in an unrestricted area.

Xenon-135 should be the principal noble gas radionuclide released from the reactor building vents and the standby gas treatment system vent while Xenon-133 should be the principal noble gas radionuclide released from the turbine building vent due to the offgas holdup system. It is appropriate that these noble gas radionuclides be used as the reference isotopes for establishing the particular monitor setpoints. The whole body dose will be the most limiting and the release rate limit is calculated by substituting the appropriate values in Equation 4. After the release rate limit is determined for each vent, the corresponding vent concentration limits can be calculated based on normal vent flow rates:

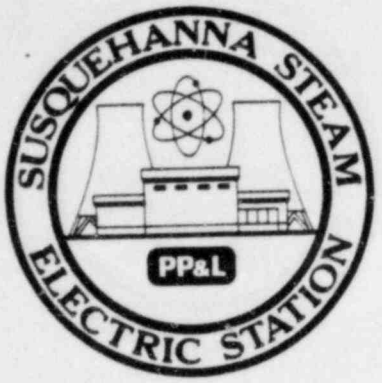
$$\text{Setpoint } \frac{\mu Ci}{cc} = \frac{Q'_{iv}\ (\mu Ci/sec)}{\text{Flow rate } (cc/sec)} \qquad (6)$$

JAN 20 1984

Sample calculations for determining release limits for the whole body dose and the skin dose are given in Section A.1.2 of Appendix A. Also, typical values for flow rates and calibration factor are given for determining the setpoint of the Unit 1 turbine building vent gaseous effluent monitor.

Vent flow rates and sample flow rates are monitored and recorded for each of the five SSES release points. The measured flow rates are used to calculate vent concentrations and release rates. Flow channel setpoints are set at 10% and 90% of the calibrated sensor ranges to provide indication of possibly abnormal flow rates.

JAN 20 1984



AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-388
UNIT Two
DATE May 9, 1984
COMPLETED BY L.A. Kuczynski
TELEPHONE (717)542-3759

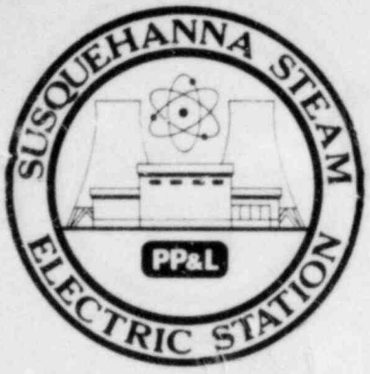
MONTH April, 1984

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	0	17	0
2	0	18	0
3	0	19	0
4	0	20	0
5	0	21	0
6	0	22	0
7	0	23	0
8	0	24	0
9	0	25	0
10	0	26	0
11	0	27	0
12	0	28	0
13	0	29	0
14	0	30	0
15	0	31	
16	0		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

(9/77)



OPERATING DATA REPORT

DOCKET NO. 50-388
DATE May 9, 1984
COMPLETED BY L.A. Kuczynski
TELEPHONE (717)542-3759

OPERATING STATUS

Unit 2

1. Unit Name: Susquehanna Steam Electric Station
2. Reporting Period: April, 1984
3. Licensed Thermal Power (MWt): 3,293
4. Nameplate Rating (Gross MWe): 1,152
5. Design Electrical Rating (Net MWe): 1,065
*6. Maximum Dependable Capacity (Gross MWe): -
*7. Maximum Dependable Capacity (Net MWe): -
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

None

Notes

* To be determined. Fuel load completed April 13, 1984.

9. Power Level To Which Restricted, If Any (Net MWe): 0
10. Reasons For Restrictions, If Any: License restriction to 5% full power (164.6 MWt). Turbine generator will not be synchronized at or below 5% power.

	This Month	Yr.-to-Date	Cumulative
11. Hours In Reporting Period	0	0	0
12. Number Of Hours Reactor Was Critical	0	0	0
13. Reactor Reserve Shutdown Hours	0	0	0
14. Hours Generator On-Line	0	0	0
15. Unit Reserve Shutdown Hours	0	0	0
16. Gross Thermal Energy Generated (MWH)	0	0	0
17. Gross Electrical Energy Generated (MWH)	0	0	0
18. Net Electrical Energy Generated (MWH)	0	0	0
19. Unit Service Factor	N/A	N/A	N/A
20. Unit Availability Factor	N/A	N/A	N/A
21. Unit Capacity Factor (Using MDC Net)	N/A	N/A	N/A
22. Unit Capacity Factor (Using DER Net)	N/A	N/A	N/A
23. Unit Forced Outage Rate	N/A	N/A	N/A

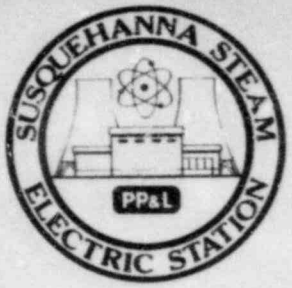
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):

Maintenance Outage, 10/27/84, 7 weeks

25. If Shut Down At End Of Report Period, Estimated Date of Startup: _____

26. Units In Test Status (Prior to Commercial Operation):

	Forecast	Achieved
INITIAL CRITICALITY	05/09/84	05/08/84
INITIAL ELECTRICITY	06/07/84	_____
COMMERCIAL OPERATION	12/31/84	_____



UNIT SHUTDOWNS AND POWER REDUCTIONS

REPORT MONTH April, 1984

DOCKET NO. 50-388
UNIT NAME Two
DATE May 9, 1984
COMPLETED BY L.A. Kuczynski
TELEPHONE (717)542-3759

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
None									

1
F: Forced
S: Scheduled

2
Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Other (Explain)

4
Exhibit G - Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I - Same Source

(9/77)

UNIT 2
SUSQUEHANNA STEAM ELECTRIC STATION

Docket Number 50-388 Date May 9, 1984

Completed by L.A. Kuczynski Telephone (717)542-3759

Challenges to Main Steam Safety Relief Valves

None.

Changes to the Offsite Dose Calculation Manual

None.

Major Changes to Radioactive Waste Treatment Systems

None.

PP&L Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101 • 215 / 770-5151

Bruce D. Kenyon
Vice President-Nuclear Operations
215/770-7502

MAY 11 1984

Director, Data Automation &
Management Information Division
Attention: Mr. M. R. Beebe
Management Information Branch
Office of Resource Management
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
MONTHLY OPERATING REPORT
ER 100450 FILE 841 Docket Nos. 50-387
PLA-2195 50-388

Dear Mr. Beebe:

The April 1984 monthly operating reports for Susquehanna SES Units 1 and 2 are attached.

Very truly yours,

B. D. Kenyon
Vice President-Nuclear Operations

Attachment

cc: Dr. Thomas E. Murley
Regional Administrator-Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attn: Document Control Desk (12 copies)

Mr. R. H. Jacobs - NRC
Mr. R. L. Perch - NRC

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Atlanta, Georgia 30339

Mr. Thomas E. Pollog
Department of Environmental
Resources
Bureau of Radiation Protection
P.O. Box 2063
Harrisburg, PA 17120

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1/1