

August 12, 1991
ZAD-91-055

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Dear Sir:

Attached is the July 1991 Zion Generating Station Operating Status Report.


T.P. Joyce
Station Manager
Zion Station

TPJ/RH/rw

Enclosure

cc: M. Wallace
A. B. Davis (NRC)
J. Leider
M. S. Turbak
W. Naughton
T. J. Kovach
D. R. Eggett
INPO
Div. of Eng. Health
State of Illinois
Tech Staff File
Director, Office of Inspection
and Enforcement
Master File

9108210194 910731
PDR ADOCK 05000295
R PDR

ZCLERK-5(1)

Handwritten initials/signature

OPERATING DATA REPORT

DOCKET NO. 50-295
 DATE 08/12/91
 COMPLETED BY R. Herron
 TELEPHONE (708) 746-2084
X2967

OPERATING STATUS

1. Unit Name: Zion Unit 1
2. Reporting Period: 0000 910701 to 2400 910731
3. Licensed Thermal Power (MWt): 3250
4. Nameplate Rating (Gross MWe): 1085
5. Design Electrical Rating (Net MWe): 1040
6. Maximum Dependable Capacity (Gross MWe): 1085
7. Maximum Dependable Capacity (Net MWe): 1040
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons: N/A
9. Power Level To Which Restricted, If Any (Net MWe): N/A
10. Reasons For Restrictions, If Any: N/A

Notes

	This Month	Yr-to-Date	Cumulative
11. Hours In Reporting Period	744.0	5,087.0	154,127.0
12. Number Of Hours Reactor Was Critical	744.0	1,867.1	105,041.7
13. Reactor Reserve Shutdown Hours	0.0	0.0	2,621.8
14. Hours Generator On-Line	744.0	1,836.2	101,885.3
15. Unit Reserve Shutdown Hours	0.0	0.0	0.0
16. Gross Thermal Energy Generated (MWH)	2,886,673	5,244,122	295,851,321
17. Gross Electrical Energy Generated (MWH)	728,771	1,749,522	95,545,786
18. Net Electrical Energy Generated (MWH)	695,226	1,658,156	90,811,536
19. Unit Service Factor	100.0	36.1	66.1
20. Unit Availability Factor	100.0	36.1	66.1
21. Unit Capacity Factor (Using MDC Net)	89.9	31.3	56.7
22. Unit Capacity Factor (Using DER Net)	89.9	31.3	56.7
23. Unit Forced Outage Rate	-0-	63.9	16.8
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):			

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 _____
 INITIAL ELECTRICITY _____
 COMMERCIAL OPERATION _____

OPERATING DATA REPORT

DOCKET NO. 50-304
 DATE 08/12/91
 COMPLETED BY R. Herron
 TELEPHONE (708) 746-2084
 x2967

OPERATING STATUS

1. Unit Name: Zion Unit 2
 2. Reporting Period: 0000 910701 to 2400 910731
 3. Licensed Thermal Power (Mwt): 3250
 4. Nameplate Rating (Gross MWe): 1085
 5. Design Electrical Rating (Net MWe): 1040
 6. Maximum Dependable Capacity (Gross MWe): 1085
 7. Maximum Dependable Capacity (Net MWe): 1040
- Notes
8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons: N/A
 9. Power Level To Which Restricted, If Any (Net MWe): N/A
 10. Reasons For Restrictions, If Any: N/A

	This Month	Yr-to-Date	Cumulative
11. Hours In Reporting Period	<u>744.0</u>	<u>5,087.0</u>	<u>147,840.0</u>
12. Number Of Hours Reactor Was Critical	<u>709.9</u>	<u>2,930.3</u>	<u>105,919.3</u>
13. Reactor Reserve Shutdown Hours	<u>0.0</u>	<u>0.0</u>	<u>226.1</u>
14. Hours Generator On-Line	<u>699.6</u>	<u>2,857.8</u>	<u>103,256.8</u>
15. Unit Reserve Shutdown Hours	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
16. Gross Thermal Energy Generated (MWH)	<u>1,952,727</u>	<u>8,640,077</u>	<u>306,532,582</u>
17. Gross Electrical Energy Generated(MWH)	<u>655,936</u>	<u>2,875,289</u>	<u>98,034,359</u>
18. Net Electrical Energy Generated (MWH)	<u>625,463</u>	<u>2,746,499</u>	<u>93,360,195</u>
19. Unit Service Factor	<u>94.0</u>	<u>56.2</u>	<u>69.8</u>
20. Unit Availability Factor	<u>94.0</u>	<u>56.2</u>	<u>69.8</u>
21. Unit Capacity Factor (Using MDC Net)	<u>80.8</u>	<u>51.9</u>	<u>60.7</u>
22. Unit Capacity Factor (Using DER Net)	<u>80.8</u>	<u>51.9</u>	<u>60.7</u>
23. Unit Forced Outage Rate	<u>6.0</u>	<u>43.8</u>	<u>15.4</u>
24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each):			

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 | _____ | _____ |
| INITIAL ELECTRICITY | _____ | _____ |
| COMMERCIAL OPERATION | _____ | _____ |

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-295
 UNIT NAME Zion Unit 1
 DATE 08/12/91
 COMPLETED BY R. Herron
 TELEPHONE (708) 746-2084

REPORT MONTH JULY 1991

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
2	910711	F	2.1	A	5				Unit was on-line the entire month. Power was reduced when Diesel Generator "0" was declared inoperable.

¹
 F: Forced
 S: Scheduled

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

³ Method
 1-Manual
 2-Manual Trip
 3-Auto Trip
 4-Continued
 5-Reduced Load

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

⁵ Exhibit I - Same Source

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-304
 UNIT NAME Zion Unit 2
 DATE 08/12/91
 COMPLETED BY R. Herron
 TELEPHONE (708) 746-2084

REPORT MONTH JULY 1991

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
6	7/28/91	F	44.4	A	1				Unit was taken off-line due to 2B heater drain warm up line failure.

1
 F: Forced
 S: Scheduled

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

3
 Method
 1-Manual
 2-Manual Trip
 3-Auto Trip
 4-Continued
 5-Reduced Load

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

5
 Exhibit I - Same Source

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-295
 UNIT Zion Unit 1
 DATE 08/12/91
 COMPLETED BY R. Herron
 TELEPHONE (708) 746-2084
x2967

MONTH JULY 1991

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	<u>909</u>	17	<u>1010</u>
2	<u>1009</u>	18	<u>1012</u>
3	<u>739</u>	19	<u>1041</u>
4	<u>868</u>	20	<u>1040</u>
5	<u>909</u>	21	<u>725</u>
6	<u>931</u>	22	<u>936</u>
7	<u>1009</u>	23	<u>1043</u>
8	<u>993</u>	24	<u>992</u>
9	<u>954</u>	25	<u>967</u>
10	<u>1040</u>	26	<u>951</u>
11	<u>917</u>	27	<u>987</u>
12	<u>1011</u>	28	<u>501</u>
13	<u>1034</u>	29	<u>862</u>
14	<u>901</u>	30	<u>898</u>
15	<u>918</u>	31	<u>913</u>
16	<u>950</u>		

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.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-304
 UNIT Zion Unit 2
 DATE 08/12/91
 COMPLETED BY R. Herron
 TELEPHONE (708) 746-2084
 x2967

MONTH JULY 1991

DAY AVERAGE DAILY POWER LEVEL
(MWe-Net)

1	<u>1033</u>
2	<u>1049</u>
3	<u>977</u>
4	<u>694</u>
5	<u>921</u>
6	<u>973</u>
7	<u>912</u>
8	<u>897</u>
9	<u>910</u>
10	<u>947</u>
11	<u>1050</u>
12	<u>967</u>
13	<u>878</u>
14	<u>802</u>
15	<u>912</u>
16	<u>936</u>

DAY AVERAGE DAILY POWER LEVEL
(MWe-Net)

17	<u>950</u>
18	<u>985</u>
19	<u>959</u>
20	<u>1039</u>
21	<u>896</u>
22	<u>953</u>
23	<u>1007</u>
24	<u>934</u>
25	<u>914</u>
26	<u>879</u>
27	<u>512</u>
28	<u>95</u>
29	<u>-14</u>
30	<u>275</u>
31	<u>818</u>

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.

JULY 1991

SUMMARY OF OPERATING EXPERIENCE

UNIT 1

Unit 1 began July at 700 MWe power level (6.6% reactor power). On 7/11 at 10:08, load reduction was begun due to "O" diesel generator (D/G) being inoperable. A GSEP event was declared at 10:40 but was terminated at 11:26 after Mechanical Maintenance reported that the repair of "O" D/G would be completed within 72 hours. Unit 1 was returned to full load at 12:12 ending the reporting period at 1092 MWe power level (99.8% reactor power).

UNIT 2

Unit 2 began July at 1060 MWe power level (95% reactor power). On 7/28 shutdown was begun due to 2B heater drain warm-up line failure; the unit was taken off-line at 5:55. After preventive repairs were accomplished, the unit was brought on-line on 7/30 at 14:22 staying at 38% power for chemistry clean-up until 6:15 on 7/31. The unit ended July at 1092 MWe power level (99.8% reactor power).

JUNE 1991

MAJOR SAFETY RELATED MAINTENANCE

<u>Equipment Name</u>	<u>Work Performed</u>
(UNIT 1)	
"0" Diesel Generator	Replaced cracked head and wrinkle belly OOS 10:45 7-9-91 - Returned 4:20 7-11-91
0A CC Pump	Continue Overhaul - OOS 5/19/91
1B Diesel Generator	Repaired fuel oil and air tubing OOS 7/17/91 - Returned 4:22 7-18-91
(UNIT 2)	
2A Diesel Generator	Intercooler SW Vent hose leak repaired 7/16 - 7/17
2B Diesel Generator	Fuel Oil Pressure Switch Calibration 7/24 -7/25
V2 TG/RX	V2 Manual Tripped Main Turbine - Offline @ 0555, 7/29/91. Due to 2B HD Pp Warm-Up Line Leakage Rx to Mode 3 Decision has been made to leave 2B HDR Pp OOS until surveillance outage Sept. 27th. 2A & 2C HDR Pump warm up lines have been inspected. Welds overlayed and cleared for service.

REFUELING INFORMATION REQUEST

Questions:

1. Name of facility.
2. Scheduled date for next refueling shutdown.
3. Scheduled date for restart following refueling.
4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment?

If answer is yes, what, in general, will these be?

If answer is no, has the reload fuel design and core configuration been reviewed by your Plant Safety Review Committee to determine whether any unreviewed safety questions are associated with the core reload (Ref. 10 CFR Section 50.59)?

If no such review has taken place, when is it scheduled?

5. Scheduled date(s) for submitting proposed licensing action and supporting information.
6. Important licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, new operating procedures.
7. The number of fuel assemblies: (a) in the core and (b) in the spent fuel storage pool.
8. The present licensed spent fuel pool storage capacity and the size of any increase in licensed storage capacity that has been requested or is planned, in number of fuel assemblies.
9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity.

Unit 1 - Answers

1. Zion Unit 1
2. Cycle 12 is scheduled to shutdown February 29, 1992 for refueling.
3. Cycle 13 is scheduled to start up June 6, 1992.
4. Yes. Technical Specification changes will be required to include the Westinghouse VANTAGE fuel design being loaded for Z1C13, and effects of the vessel fluency reduction program beginning with Z1C13.

A Tech Spec change is also being submitted that will allow CECO to use a CORE OPERATING LIMITS REPORT (COLR) in place of some existing Tech Spec Limits.
5. License amendments for the Z1C13 reload are expected to be submitted in the Spring of 1991.
6. License considerations associated with the Z1C13 reload include the new VANTAGE fuel design, and the new LOCA analysis with higher core power peaking factors required for the low-low-leakage loading pattern used in Z1C13.
7. The number of fuel assemblies
 - a) in the core is 193, and
 - b) in the spent fuel storage pool from Zion Unit 1 is 708.
8. The present licensed spent fuel pool storage capacity (shared with Zion Unit 2) is 2112 fuel assemblies. Plans are being developed to rerack the Spent Fuel Pool to increase storage capacity to 3044 assemblies.
9. Zion Station will lose full core discharge capability (for both units) in May 1993, at the end of Unit 2 Cycle 13, based on the latest Nuclear Stations Refueling Schedule. Full core discharge capability for a single core will be lost in November, 1994, at the end of Unit 2 Cycle 14.

Unit 2 - Answers

1. Zion Unit 2
2. Cycle 12 is scheduled to Shutdown September 5, 1992 for refueling.
3. Cycle 13 is scheduled to start up December 5, 1992.
4. Yes. Technical Specification changes will be required to include the Westinghouse VANTAGE fuel design being loaded for Z2C13, and effects of the vessel fluency reduction program beginning with Z2C13.

A Tech Spec change is also being submitted that will allow CECO to use a CORE OPERATING LIMITS REPORT (COLR) in place of some existing Tech Spec Limits.

5. License amendments for the Z2C13 reload are expected to be submitted in Spring 1991.
6. License considerations associated with the Z2C13 reload include the new VANTAGE fuel design, and the new LOCA analysis with higher core power peaking factors required for the low-low-leakage loading pattern used in Z2C13.
7. The number of fuel assemblies
 - a) in the core is 193, and
 - b) in the spent fuel storage pool from Zion Unit 2 is 740.
8. The present licensed spent fuel pool storage capacity (shared with Zion Unit 1) is 2112 fuel assemblies. Plans are being developed to rerack the Spent Fuel Pool to increase storage capacity to 3044 assemblies.
9. Zion Station will lose full core discharge capability (for both units) in May 1993, at the end of Unit 2 Cycle 13, based on the latest Nuclear Stations Refueling Schedule. Full core discharge capability for a single core will be lost in November, 1994, at the end of Unit 2 Cycle 14.

This report is submitted in accordance with Zion Station Technical Specification Surveillance Requirement 4.15.1.B.5.

This report addresses one valid failure experienced on the 0 EDG and one invalid failure experienced on the 1B EDG. The criteria to determine valid tests and failures is in accordance with section C.2.e of Reg. Guide 1.108.

Please submit this information to NRC Region III. If there are any questions, contact D. Pederson at extension 2044.

1B EDG failure Report

On July 4, 1991 a local equipment operator noted that the 1B Emergency Diesel Generator (EDG) south starting air compressor receiver pressure was unusually low. The 1B EDG north starting air compressor and receiver was Out of Service (OOS). A minimum of one starting air compressor is required to meet the EDG operability requirements. Subsequent investigation revealed that the 1B south starting air compressor feeder breaker had tripped. Repeated attempts to reclose the breaker failed and the 1B EDG was declared inoperable as a result. Repairs on the 1B north starting air compressor were completed and the EDG was returned to service. Troubleshooting on the 1B south starting air compressor revealed that the motor starter actuator was out of adjustment.

This failure was determined to be invalid per Reg. Guide 1.108, C.2.e. This invalid failure was the first invalid failure in the last 20 valid start demands for the 1B EDG and the testing frequency for the 1B EDG remains at 31 days. Pursuant to Reg. Guide 1.108, position C.3.6.7 as of July 4, 1991 Zion Unit 1 has had five valid failures in the last 100 valid unit demands.

DESCRIPTION OF EVENT

On July 5, 1991 during 1st shift while on normal rounds in accordance with Periodic Test Procedure (PT) PT-0, appendix D, a local operator noticed that the 0 Emergency Diesel Generator (EDG) jacket water level was low and that there was a slight increase in the lube oil level. The operator filled the jacket water tank and made note of this finding. Observation by operations over the next two days identified this situation to be trend. As a result, a work request (Z13821) was written on July 8, 1991 to inspect/evaluate and correct the situation as necessary. Technical Staff personnel were notified at approximately 0730 hours on July 9, 1991.

On 7-4-91, one day prior to the operator initially discovering the low jacket water level, the EDG had been operated in accordance with station Technical Specifications section 3.15 and PT-11 for approximately four hours under load without incident.

At approximately 0830 hours on July 9, 1991 Technical Staff personnel took samples of the EDG lube oil. By 0900 hours on July 9, 1991 Technical Staff had identified that jacket water had entered the EDG crankcase and contaminated/emulsified the engine lube oil. As a result, the EDG was declared inoperable and taken out of service at 1045 hours on July 9, 1991.

All off site power was available and all other EDGs were operable during the course of this event. Both units were put on a 72 hour clock in accordance with station Technical Specification Section 3.15 paragraph 2C and repairs were initiated immediately. Periodic Test Procedure (PT) PT-14, "Inoperable Equipment Surveillance Tests" was initiated.

The cause of lube oil contamination was subsequently identified to be a cracked cylinder liner expansion joint, commonly referred to as a "wrinkle belly," on the number 4 right cylinder. The wrinkle belly is an expansion joint that isolates crankcase lube oil from the jacket water. When the wrinkle belly on the number four right cylinder developed a leak, jacket water was allowed to enter the crankcase thereby contaminating the lube oil.

During the course of these repairs, the fuel oil air driven priming pump was found to be operating improperly. The discovery of this problem occurred while preparing the unit for post maintenance testing. Further investigation revealed that the air driven priming pump motor was binding. The pumps function is to assist starting the EDG by priming the fuel system and maintaining fuel oil pressure until the engine driven fuel oil pump takes over. Investigation by Technical Staff personnel revealed that foreign particulate

prevented the motor's vanes from sliding freely in their tracks thereby binding the motor. The motor was replaced per workrequest Z13821.

All repairs were initiated immediately and completed as of 0152 hours on 7-12-91. Post maintenance testing was completed and the EDG returned to service at 0400 hours on 7-12-91, approximately 65 hours after being declared inoperable. Failure of the priming pump motor had no effect in returning the EDG to service.

This failure was determined to be valid per Reg. Guide 1.108. This valid failure was the fourth valid failure in the last 20 valid start demands for the 0 EDG and the testing frequency for the 0 EDG remained at 7 days. Pursuant to Reg. Guide 1.108, position C.3.6.7 as of July 9, 1991 Zion Unit 2 has had 6 valid failures in the last 100 valid demands.