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SUBJECT: "Susquehanna Steam Electric Station Unit 1 Display Control Sys (DCS) End-of-Cycle Availability Rept for Fuel Cycle 1." Rept submitted per License Condition 2.C.(31).W/850429 ltr.

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SSES UNIT 1 DISPLAY CONTROL SYSTEM (DCS)
END OF CYCLE AVAILABILITY REPORT
FOR FUEL CYCLE 1

NPE/Computer
04/03/85

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FIGURE - SSES UNIT 1 DCS COMPUTER AVAILABILITY

1.0 PURPOSE

The Susquehanna Steam Electric Station Unit 1 Display Control System (DCS) End of Cycle Availability Report for Fuel Cycle 1 has been prepared by the Nuclear Plant Engineering (NPE) Computer Group to meet the requirements of License Condition 2.C.(31) to Facility Operating License No. NPF-14.

2.0 SCOPE

DCS availability encompasses all DCS hardware and software contained within system #31, the Plant Computer System. Collection of failure data is bounded by the interconnecting chasis (IC) hardware within DCS.

3.0 DEFINITIONS

DCS Loss of Function - complete failure of some aspect of the DCS contained within system #31. If a component failure occurs and the system, through automatic reconfiguration of redundant hardware, can continue to perform its required operations, the failure will not be considered as a loss of function of DCS. Conversely, all other failures require operator action and are considered DCS loss of function.

4.0 CALCULATIONS

$$\text{DCS AVAILABILITY} = \frac{\text{TOTAL TIME} - \text{LOSS OF FUNCTION TIME}}{\text{TOTAL TIME}} \times 100\%$$

Where:

TOTAL TIME - is the total number of minutes in the time period availability is being calculated for.

LOSS OF FUNCTION TIME - is the total number of minutes of DCS loss of function time (ie. DCS system downtime) for the time period availability is being calculated for.

5.0 DATA GATHERING

Data gathering for this report commenced with commercial operation of Unit 1 of the SSES (June 8, 1983) and continued throughout fuel cycle 1 (ending February 9, 1985). Monthly reports were generated from the data collected. This report represents a summary of all the monthly reports.

Data for the reports was collected and forwarded to the NPE Computer Group utilizing existing reporting procedures and practices as follows:

1) Initially, all computer system failures were recorded on the DCS system terminal and restarts were recorded by the historical recording subsystem (HRPD).

2) Following final installation and checkout of the historical recording subsystem (HRPD), all processor failures and restarts were recorded in HRPD and provided the required failure data.

3) The SSES Work Authorization (WA) forms, AD-QA-502-1 and AD-QA-502-2 were used by plant operations to record hardware failures and PM activities requiring work to be done on the system.

4) Software failures, maintenance, and enhancements, which required work to be done on the system, were documented by the NPE Computer Group using the WA forms and the Software Problem Report (SPR) forms (DC125.0-D-1,2, and 3) or the Software Change Request forms (DC125.0-A-1 and 2).

5) Plant staff forwarded summarys of all open and closed system #31 WA's to NPE for cross-checking purposes.

DCS Availability was calculated from information recorded on the manual restart log and the HRPD restart recordings. If the restart resulted from or caused work to be performed on the system, WA's, SPR's, and/or SCR's provide backup information on the work performed. The monthly reports, WA's, SPR's and SCR's are being maintained by the Susquehanna Records Management System (SRMS).

6.0 RESULTS

Availability for the SSES Unit 1 DCS Computer System for the period June 8, 1983 through February 9, 1985, Commercial Operation through the end of the first fuel cycle, was 99.91%. This result was based on total loss of function time which included system downtime resulting from the performance of the system (both hardware and software), scheduled downtime, and failures of external devices. A breakdown of the DCS Availability per month is included in the attached figure . The figure also shows a trend of the cycle to date availability and notes whenever availability was less than 99.80%.

For details of DCS Availability including the causes and durations of system downtime, refer to the monthly reports as referenced in section 7.0.

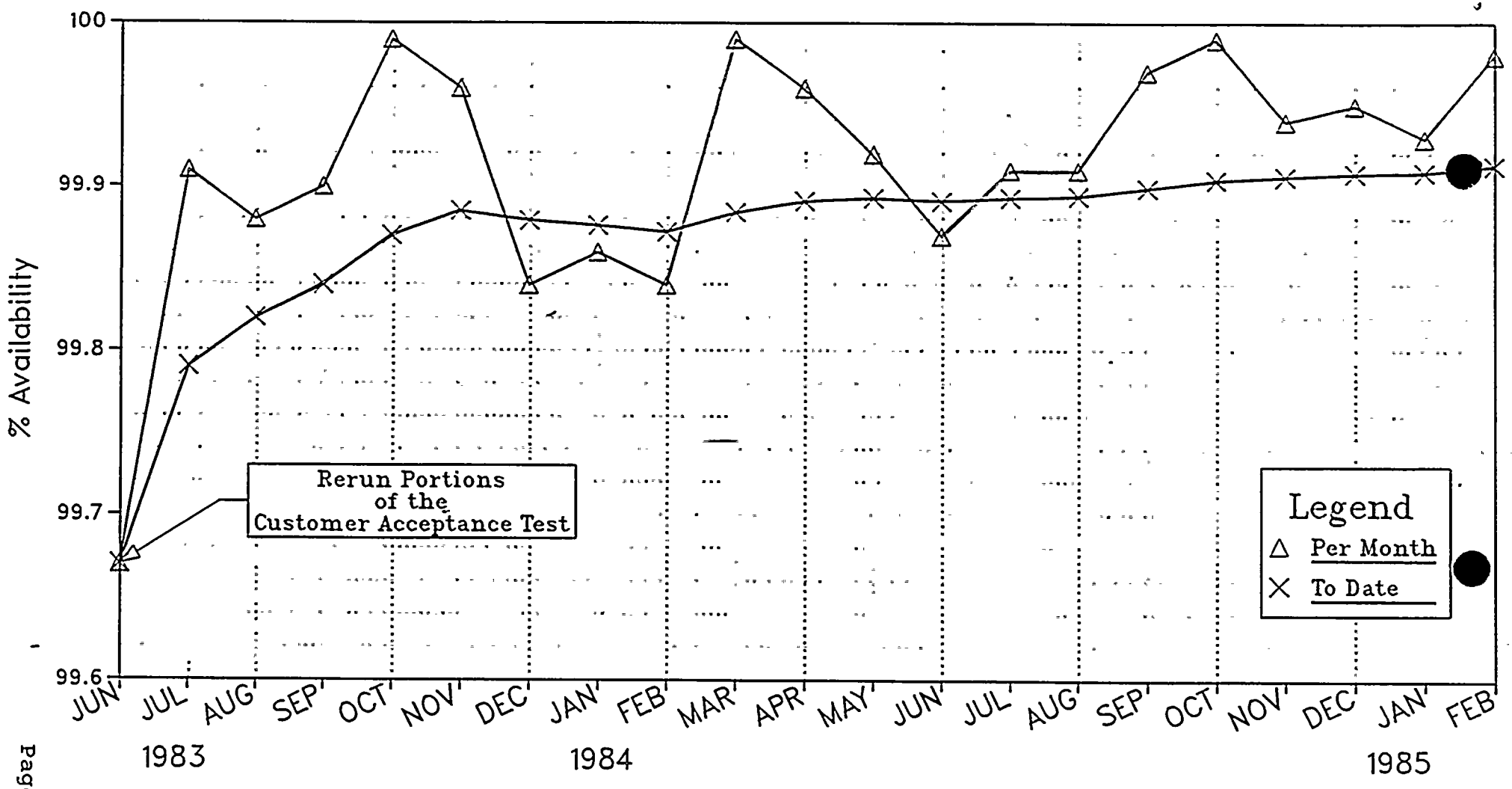
7.0 REFERENCES

1) Licensing Condition 2.C.(31) to the Facility Operating License No. NPF-14

2) DCS SYSTEM AVAILABILITY Monthly Reports:
(PP&L Memos, JOB: ER100450 FILE: 266-4)

CO-0618	7/12/83
CO-0654	8/24/83
CO-0665	9/12/83
CO-0685	10/17/83
CO-0697	11/04/83
CO-0712	12/08/83
CO-0732	1/18/84
CO-0743	2/06/84
CO-0762	3/12/84
CO-0736	4/04/84
CO-0826	5/21/84
CO-0849	6/18/84
CO-0866	7/12/84
CO-0894	8/20/84
CO-0917	10/10/84
CO-0927	10/11/84
CO-0948	11/05/84
CO-0991	12/19/84
CO-1007	1/14/85
CO-1023	2/12/85
CO-1055	3/22/85

SSES UNIT 1 DCS COMPUTER AVAILABILITY



Commercial Operation thru End of First Fuel Cycle
(June 8, 1983 thru February 9, 1985)

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

Norman W. Curtis
Vice President-Engineering & Construction-Nuclear
215/770-7501

APR 29 1985

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSE CONDITION 2.C.(31) TO FACILITY
OPERATING LICENSE NO. NPF-14
ER 100450 FILE 841-1
PLA-2452 Docket No. 50-387

Dear Mr. Schwencer:

In accordance with License Condition 2.C.(31) to Facility Operating License No. NPF-14, attached is a copy of Pennsylvania Power & Light Company's report on the Susquehanna SES Unit 1 Display Control System End of Cycle Availability Report for Fuel Cycle 1.

This report completes our action for this license condition.

Very truly yours,

N. W. Curtis
Vice President-Engineering & Construction-Nuclear

cc: M. J. Campagnone USNRC
R. H. Jacobs USNRC

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