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LWP-95-115

January 25, 1996

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

Reference: Quad Cities Nuclear Power Station
Docket Number 50-265, DPR-30, Unit 2

Subject: Licensee Event Report (LER) 265/95-006 Supplemental
Information.

As stated in LER 265\95\006, supplemental information is being provided and is enclosed as Attachment 1. This information constitutes revision 01 to the original LER documentation.

Attachment 2 is a reproduction of the original text of LER 265/95-006.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv). The licensee shall report any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.

The report is also submitted in accordance with Title 10, Part 50.73 (a)(2)(ii). The licensee shall report any event or condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear plant being in a condition that was outside the design basis of the plant.

The following commitment is being made by this letter:

The responsibility for maintenance of the Electrical Load Monitoring System (ELMS) will be turned over to site design engineering by December 31, 1996. Site Engineering will perform a self assessment to be completed by July 31, 1997.

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If there are any questions or comments concerning this letter, please refer them to Nick Chrissotimos, Regulatory Assurance Administrator at 309-654-2241, ext. 3100.

Respectfully,

COMMONWEALTH EDISON


L. W. Pearce
Station Manager

LWP/NC/plm

Enclosure

cc: J. Schrage
C. Miller
INPO Records Center
NRC Region III



Quad Cities Station - Modification Design Department

January 25, 1996

In reply refer to

CHRON #0312703

TO: L. W. Pearce
Station Manager

SUBJECT: Supplemental LER 265/95-006

Reference: 1) PIR 265-200-95-154

License Event Report 265/95-006 committed to a supplemental LER to report the cause of the Motor Control Center 29-2 Main Feeder Breaker trip and any additional corrective actions as a result of the level 2 investigation for PIF numbers 95-2534, 2545, 2546.

The cause of the event was a lack of understanding of the electrical design basis resulting in an insufficient review following a similar event at Dresden Nuclear Power Station. In June of 1994, based on a trip of Motor Control Center 39-2 at Dresden, the Quad Cities safety related 480 volt MCC loading was reviewed to determine if the potential problem existed at Quad Cities. This review identified MCC 18-2 as the only safety related MCC which had the possibility of tripping during a design basis accident. The review identified maximum current levels of 287 and 299 amps for MCCs 28-2 and 29-2 which were greater than each breaker's trip setting lower end tolerance of 270 amps. The review did not take into account the 10% tolerance of the 300 amp breaker setting. This review was also deficient in that it only considered normal bus loading and accident loading. It has been determined that the worst-case loading for many of the MCCs occurs when surveillances are being performed. Thus the failure mode which led to this event was an inadequate review of breaker settings after the 1994 Dresden event.

There were three root causes identified by the level 2 investigation. A lack of understanding of the electrical design basis resulted in ineffective electrical load management of the Auxiliary Power System. There was a lack of accountability to assure all aspects of the design were addressed. And finally, Quad Cities Engineering personnel had an ineffective questioning attitude concerning the Dresden event.

L.W. Pearce
CHRON #0312703
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The following Additional Corrective Action resulted from the level 2 investigation:

1. The responsibility for maintenance of the Electrical Load Monitoring System (ELMS) will be turned over to site design engineering by December 31, 1996. Site Engineering will perform a self assessment to be completed by July 31, 1997. (NTS# 2651809500604)

If further information is desired, the level 2 investigation is available in the Quad Cities Regulatory Assurance Department.


Sharon Eldridge 1/25/96
Modification Design Supervisor

cc: M. Perchiazzi, Downers Grove
Site Chron File



LWP-95-096

November 2, 1995

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

Reference: Quad Cities Nuclear Power Station
Docket Number 50-265, DPR-30, Unit 2

Enclosed is Licensee Event Report (LER) 95-006, Revision 00, for Quad Cities Nuclear Power Station.

This report is submitted in accordance with the requirements of the Code of Federal Regulations, Title 10, Part 50.73(a)(2)(iv). The licensee shall report any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.

The report is also submitted in accordance with Title 10, Part 50.73 (a)(2)(ii). The licensee shall report any event or condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear plant being in a condition that was outside the design basis of the plant.

The following commitments are being made by this letter:

1. Raise the trip settings for the affected MCCs and evaluate maximum expected loading. Loading will be administratively controlled to prevent exceeding cable ampacities. Engineering is evaluating the need for modifications to replace the feed cables for overloaded MCCs with larger cables. If needed, modifications for Unit 1 will be performed during Q1R14 and Unit 2 during Q2R14. (NTS #2651809500601 Engineering for Unit 1), (NTS# 2651809500602 Engineering for Unit 2).
2. The level 2 investigation for PIFs 95-2534, 95-2545 and 95-2546 is being performed. Further corrective actions and root cause will be determined by the investigation and forwarded as a supplemental report. The level 2 investigation is expected to be complete by 11/17/95.

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If there are any questions or comments concerning this letter, please refer them to Nick Chrissotimos, Regulatory Assurance Administrator at 309-654-2241, ext. 3100.

Respectfully,

COMMONWEALTH EDISON

D. B. Clark for

L. W. Pearce
Station Manager

LWP/NC/plm

Enclosure

cc: J. Schrage
C. Miller
INPO Records Center
NRC Region III

LICENSEE EVENT REPORT (LER)

Form Rev. 2.0

Facility Name (1) Quad Cities Unit Two										Docket Number (2) 0 5 0 0 0 2 6 5					Page (3) 1 of 0 6																													
Title (4) Motor Control Center 29-2 Main Feed Breaker Tripped Due To Inadequate Trip Setting.																																												
Event Date (5)			LER Number (6)				Report Date (7)			Other Facilities Involved (8)																																		
Month	Day	Year	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)																																		
1	0	0	4	9	5	9	5	--	0	0	6	--	0	0	1	1	0	2	9	5	0	5	0	0	0	2	5	4																
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																																									
POWER LEVEL (10)			20.402(b)		20.405(a)(1)(i)		20.405(a)(1)(ii)		20.405(a)(1)(iii)		20.405(a)(1)(iv)		20.405(a)(1)(v)		20.405(c)		50.36(c)(1)		50.36(c)(2)		50.73(a)(2)(i)		50.73(a)(2)(ii)		50.73(a)(2)(iii)		X 50.73(a)(2)(iv)		50.73(a)(2)(v)		50.73(a)(2)(vii)		50.73(a)(2)(viii)(A)		50.73(a)(2)(viii)(B)		50.73(a)(2)(x)		73.71(b)		73.71(c)		Other (Specify in Abstract below and in Text)	
0			8		7																																							
LICENSEE CONTACT FOR THIS LER (12)																																												
NAME Nick Chrissotimos, Regulatory Assurance, Ext. 3100										TELEPHONE NUMBER																																		
										AREA CODE 3 0 9 6 5 4 - 2 2 4 1																																		
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																												
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS																																			
SUPPLEMENTAL REPORT EXPECTED (14)										Expected Submission Date (15)		Month	Day	Year																														
X YES (If yes, complete EXPECTED SUBMISSION DATE)										NO		1	2	3	1	9	5																											
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																																												

ABSTRACT:

On 10/4/95, the feed breaker for Motor Control Center (MCC) 29-2 at switchgear 29 tripped from current overload. Equipment loads being supplied included the 2B Reactor protection system (RPS) [JC] motor generator (MG) set, Unit 2 125 volt and 250 volt battery chargers [EJ], Unit 2 Diesel Generator Cooling Water Pump(DG CWP) [LB] cooler fans A and B, 2C and 2D Residual Heat Removal [BO] Service Water (RHRSW) Room Coolers, 2B Reactor Feed Pump (RFP) [SJ] Vent Fan and 2A Recirculation [AD] MG Set Vent Fan.

A 24 hour shutdown Limiting Condition for Operation (LCO) was entered for the Unit 2 Emergency Diesel Generator (EDG) [EK] and the B loop of containment cooling. The running loads at the time of the trip exceeded the long time delay setting of the breaker, thereby causing the trip. This has been identified as an Engineering Design issue.

The immediate corrective actions were to administratively limit the MCC loading to restore the MCC and exit the LCO. Long term corrective actions will include evaluating the need for modifications to pull larger cables to the Safety Related MCCs.

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TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2511 Mwt rated core thermal power.

EVENT IDENTIFICATION: Motor Control Center 29-2 Main Feed Breaker tripped due to inadequate trip setting.

A. CONDITIONS PRIOR TO EVENT:

Unit: Two
Reactor Mode: 4

Event Date: October 4, 1995
Mode Name: Run

Event Time: 0153
Power Level: 87

This report was initiated by Licensee Event Report 265\95-006.

B. DESCRIPTION OF EVENTS:

At 0153 hours on October 4, 1995, MCC 29-2 feed breaker at bus 29 tripped on overload. QCOS 2300-1, High Pressure Coolant Injection (HPCI) [BJ] Monthly surveillance was also in progress on Unit Two. At 01:52:44 hours, the HPCI low flow alarm cleared on control room panel 902-3, indicating that HPCI flow was above 600 gpm. At 01:53:18 hours, the first alarm occurred (Recirculation System MG Set Vent Fan Auto-Trip) which was the initial indication of the loss of MCC 29-2.

The trip of MCC 29-2 caused a loss of the following running equipment:

2B RPS MG Set
Unit 2 DG Cooling Water Pump Room Cooler Fans
2C RHRSW Pump Room Cooler Fans
250 VDC #2 Battery Charger
125 VDC #2 Battery Charger
2A Recirc MG Set Vent Fan
2B Reactor Feed Pump Vent Fan
Turbine Building Emergency Lighting Cabinets #51 and #52

The following equipment not running at the time of the trip also lost power:

2D RHRSW Pump Room Cooler Fans
Unit 2 EDG starting Air compressors
Alternate Feed to Unit 1 EDG CWP cooler fans A and B
Atmosphere Containment Atmosphere Dilution (ACAD) Compressor

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TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

Additional indications of the loss of bus 29-2 included: (1) a half scram and a partial group II isolation; (2) a group III isolation which tripped the Reactor Water Cleanup (RWCU) system; (3) the Standby Gas Treatment System (SBGT) auto started, and (4) Control Room ventilation isolated. These were all caused by the loss of RPS B. A 24 hour LCO was entered for the loss of the Unit 2 DGCWP Room Cooler Fan (Technical Specification 3.9.E) and the 2B loop of Containment Cooling being Inoperable (Technical Specification 3.5.B.3). The loss of the 2B loop of Containment Cooling was due to the loss of the 2C and 2D RHRSW Pump Room Cooler Fans.

At 0156 hours the HPCI pump was manually tripped due to the loss of the 250 volt battery charger. At 0203 hours RPS B was supplied by its alternate supply. The 1/2 250 VDC and the 2A 125 VDC battery chargers were aligned to the Unit 2 250 and 125 volt batteries respectively at 0229 hours.

The HPCI surveillance and the operation of the 2B RFP Vent Fan contributed to this event. The 2C RHRSW room cooler fans and the Unit 2 EDG CWP fans were on due to the HPCI surveillance and the 250 volt battery charger current was approximately 60 amps higher than normal load due to the DC powered HPCI equipment operating. The 2B RFP vent fan was running to maintain availability due to a previous damper problem. Normal loading on the bus would be approximately 120 amps, but was increased to approximately 318 amps due the surveillance and the running of the 2B RFP vent fan.

Operations made an ENS phone call at 0409 due to the Engineered Safety Feature (ESF) actuation per 10CFR50.73.a.2.iv.

Power to MCC 29-2 was restored and the LCO was exited at 1730 hours. Loading at the bus was administratively limited by taking the #2 250 volt and the #2 12 volt battery chargers out of service. A 67 day safe shutdown LCO was then entered due to having the battery chargers out of service and therefore inoperable in accordance with 10CFR50 Appendix R requirements.

Operations made a subsequent ENS call at 2330 hours per 10CFR50.73.a.2.ii on 10/5/95 when it was discovered that design loading for MCCs 19-2, 28-2 and 29-2 had the possibility to trip the MCC feed breakers during a Loss of Coolant Accident (LOCA). Since it was determined that the accident loading on the bus would exceed the trip setting of the breaker, the plant was outside its design basis.

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The feed breaker is a General Electric model AK-25 retrofitted with the General Electric Micro Versa Trip RMS-9 Unit. The breaker and trip device operated as expected during the overload. The current during the time of the trip was calculated at 318 amps. The setting for the breaker was set to trip at 300 amps with a trip range of 270 to 330 amps. The trip device was checked in the field. The breaker was also tripped checked in the Electrical Maintenance shop. Both tests on the breaker were acceptable.

C. CAUSE OF THE EVENT:

This event is being reported in accordance with 10CFR50.73.a.2.iv., which requires the reporting of any event or condition that results in manual or automatic actuation of any Engineered Safety Feature. It is also reported in accordance with 10CFR50.73.a.2.ii, which requires the reporting of any event or condition that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or results in the nuclear power plant being in a condition that is outside the design basis of the plant.

The breaker tripped due to a trip setting that was too low for the given plant conditions. A level 2 investigation is in progress to determine the cause of the event. These results and any further corrective actions will be forwarded in a supplemental report.

D. SAFETY ANALYSIS:

The safety significance of a trip of MCC 29-2 during an accident is minimal. The loss of the battery chargers is not significant from a safety standpoint. The batteries are sized to handle the accident load profile for 4 hours without credit for the battery charger. The DGCWP Room Cooler Vent Fans have an alternate power supply from MCC 19-2. The 2C RHR SW pump is in the same service water vault as the 2B RHR SW pump. The service water room coolers can handle approximately twice the heat load generated by one service water pump. Thus the 2B RHR SW room cooler will provide sufficient cooling for both the 2B and 2C RHR SW pumps long enough for operators to restore power to MCC 29-2. The only pump which would have the likelihood of overheating is the 2D RHR SW pump. Even without the 2D RHR SW pump there would be enough RHR SW pumps for both loops of containment cooling and one loop of shutdown cooling. The loss of the remaining loads during an accident will have no safety impact on their associated systems.

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TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]

E. CORRECTIVE ACTIONS:

Corrective Actions Completed:

1. PIF 95-2534 was written to investigate the cause of the breaker trip. The breaker was tested to ensure proper operation. Each of the individual loads were checked for proper current draw to ensure that individual loads were drawing their expected current. The level 2 investigation for PIF 95-2534 will identify the root cause of the incorrect breaker setting.
2. The #2 125 volt and the #2 250 volt battery chargers on MCC 29-2 were taken OOS. Power was restored to the remaining loads on the MCC. This exited the 24 hour LCOs for the Unit 2 EDG and Unit 2 B loop of containment cooling. Both units entered a 67 day LCO for safe shutdown.
3. PIF 95-2545 and PIF 95-2546 were also written to address overloading on MCCs 19-2, 28-2 and 29-2 during a LOCA. Loading was administratively limited on MCCs 19-2 and 28-2. The loading on MCC 19-2 was reduced by removing the #1 125 VDC battery charger. Loading on MCC 28-2 was reduced by powering the 1/2 250 volt charger from MCC 18-2. The breaker for the 1/2 250 volt charger on MCC 28-2 was turned off and administratively controlled.
4. Engineering has evaluated the loading on each of the Safety Related MCCs. Based on loading limits provided by Engineering, Operations is administratively controlling the MCC loading.

Corrective actions to be completed include the following:

1. Raise the trip settings for the affected MCCs and evaluate maximum expected loading. Loading will be administratively controlled to prevent exceeding cable ampacities. Engineering is evaluating the need for modifications to replace the feed cables for overloaded MCCs with larger cables. If needed, modifications for Unit 1 will be performed during Q1R14 and Unit 2 during Q2R14. (NTS #2651809500601 Engineering for Unit 1), (NTS# 2651809500602 Engineering for Unit 2).
2. The level 2 investigation for PIFs 95-2534, 95-2545 and 95-2546 is being performed. Further corrective actions and root cause will be determined by the investigation and forwarded as a supplemental report. The level 2 investigation is expected to be complete by 11/17/95.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		9 5	- 0 0 6	- 0 0	

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

F. PREVIOUS OCCURRENCE:

In June of 1994 Dresden had a similar trip of MCC 39-2. This was identified by Dresden LER 94-018. Based on this LER, PIF 94-1475 was written at Quad Cities identifying a possible trip for MCC 18-2. The trip setting for MCC 18-2 was increased as a corrective action.

A review of the Nuclear Tracking System database (NTS) did not identify any other LERs involving safety related bus trips due to improperly set breakers.

A Nuclear Plant Reliability Data System (NPRDS) search was performed for MCC feed breakers tripping due to exceeding the trip setting of the breaker. There were no similar cases identified by this search.

G. COMPONENT FAILURE DATA:

There were no component failures associated with this LER.