

LICENSEE EVENT REPORT (LER)

Facility Name (1) QUAD-CITIES NUCLEAR POWER STATION, UNIT ONE						Docket Number (2) 0 5 0 0 0 2 5 4			Page (3) 1 of 0 6					
Title (4) ANTICIPATED TRANSIENT WITHOUT SCRAM INSTRUMENT SENSING LINES INADEQUATELY SUPPORTED DUE TO COGNITIVE PERSONNEL ERROR AND INADEQUATE DESIGN														
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 2	1 9	8 7	8 7	0 3 10	0 0	0 1	1 2	8 8	Quad Cities Unit Two		0 5 0 0 0 2 6 5 0 5 0 0 0 1 1			
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)											
POWER LEVEL (10) 0 0 0			20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)		
			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)		
			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			Other (Specify in Abstract below and in Text)		
			20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)					
			20.405(a)(1)(iv)			X 50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)					
			20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)					
LICENSEE CONTACT FOR THIS LER (12)														
Name Tom Crippes, Technical Staff Engineer						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)				
[Yes (if yes, complete EXPECTED SUBMISSION DATE)] X NO										Month	Day	Year		
ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)														

On December 19, 1987 Quad Cities Unit One was in the SHUTDOWN mode at 0 percent power and Unit Two was in the RUN mode at 100 percent power. At 1950 hours, it was determined that the Unit One and Two Anticipated Transient Without Scram (ATWS) instrument sensing line supports were inadequate and did not meet Final Safety Analysis Report (FSAR) design criteria. The Unit One ATWS piping supports were modified prior to restart from its refuel outage. Unit Two ATWS piping supports were evaluated to meet operability requirements and continued operation was justified. NRC notification was completed at 2030 hours per 10CFR50.72.

The cause for this condition is cognitive personnel error and inadequate design. The initial hanger support design was deemed inadequate and temporary supports were installed until the design problem was resolved. A new design was not issued and proper supports were not installed.

Unit One ATWS piping supports have been modified and Unit Two ATWS piping supports will be modified after further engineering is completed. Station Technical Staff will walkdown other modifications to ensure proper supports are installed. The new modification program should prevent recurrence. This report is provided per 10CFR50.73 (a)(2)(ii)(B).

1160H 8803090278 880304
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LICENSEE EVEN REPORT (LER)

Facility Name (1) QUAD-CITIES NUCLEAR POWER STATION, UNIT ONE Docket Number (2) 0 5 | 0 | 0 | 0 | 2 | 5 | 4 1 Page (3) of 0 6
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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)
12	19	87	87	0 3 10	0 0	01	12	88	Quad Cities Unit Two	0 5 0 0 0 2 6 5
										0 5 0 0 0 1 1

OPERATING MODE (9) 1
 POWER LEVEL (10) 0 0 0
 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v11)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(v111)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(v111)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)
 Name Tom Crippes, Technical Staff Engineer Ext. 2145 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) X NO

ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)

On December 19, 1987 Quad Cities Unit One was in the SHUTDOWN mode at 0 percent power and Unit Two was in the RUN mode at 100 percent power. At 1950 hours, it was determined that the Unit One and Two Anticipated Transient Without Scram (ATWS) instrument sensing line supports were inadequate and did not meet Final Safety Analysis Report (FSAR) design criteria. The Unit One ATWS piping supports were modified prior to restart from its refuel outage. Unit Two ATWS piping supports were evaluated to meet operability requirements and continued operation was justified. NRC notification was completed at 2030 hours per 10CFR50.72.

The cause for this condition is cognitive personnel error and inadequate design. The initial hanger support design was deemed inadequate and temporary supports were installed until the design problem was resolved. A new design was not issued and proper supports were not installed.

Unit One ATWS piping supports have been modified and Unit Two ATWS piping supports will be modified after further engineering is completed. Station Technical Staff will walkdown other modifications to ensure proper supports are installed. The new modification program should prevent recurrence. This report is provided per 10CFR50.73 (a)(2)(ii)(B).

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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S&L performed an operability assessment study of Unit Two ATWS sensing lines located near the 2202-5&6 rack using a computer piping model made from walkdown sketches which reflected the as-built conditions. Using the computer model, S&L was able to perform a dead weight and seismic response spectrum using Pressure Vessel Research Committee (PVRC) seismic damping and span length criteria. As a result, fault piping stress limits were considered acceptable for these loads. Therefore Unit Two was determined to meet operability requirements on December 19, 1987 and continued Unit Two operation was justified.

On December 22, 1987, Modification M 4-1-87-72 installation was completed and made operational prior to Unit One startup from the refuel outage. Completion of this modification brings the Unit One ATWS piping in compliance with the FSAR design requirements.

Further engineering is required to determine what repairs are needed to ensure the Unit Two ATWS sensing lines are within FSAR design limits. The engineering will be performed at the next available period where Unit Two is shutdown. Modification M 4-2-87-72 will then be completed during the next scheduled Unit Two refuel outage.

This condition has existed since the ATWS Modification M 4-1(2)-79-002 was completed. The Unit One ATWS system has been authorized for operation since August 6, 1984 and Unit Two since February 14, 1984.

C. APPARENT CAUSE OF EVENT:

This report is provided to satisfy the requirements of 10CFR50.73 (a)(2)(ii)(B), which requires the reporting of any event or condition that resulted in the condition of the nuclear power plant being in a condition that was outside the design basis of the plant.

The cause for this event can be attributed to cognitive personnel error and inadequate design. Modification M 4-1(2)-79-002 was initiated to electrically and mechanically install the ATWS recirculation pump trip (RPT) and the alternate rod insertion (ARI) systems. The modification included the installation of Rosemount pressure and level transmitters [PT] and associated piping, valves and tubing; analog trip system [JC] and units; and recirculation motor-generator field breaker trip coils [AD, CL]. The modification also included installation of hangers to support the instrument piping near the 2201(2)-5 and 6 racks. The original design was to support the lines from the ceiling using a simple rod and clamp configuration, taking only dead weight load into consideration as shown on drawings M-953, 954, 956 & 957. However, after further evaluation, it was determined by the Station (in a letter dated August 4, 1981) that the preferred means of restraint would be to use floor and/or wall mounted supports, because of easier installation. Since the original hanger support design was inadequate, temporary supports were installed until the design problem was resolved. However due to a personnel error, the modification test was signed off without having the supports installed. As a result, a new design was not issued and the proper supports were not installed prior to declaring the modifications operational.

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D. SAFETY ANALYSIS OF EVENT:

The ATWS system is designed to act as a backup to the Reactor Protection System (RPS) [JC]. Initiating signals for the ATWS system are reactor low low water level (-59 inches) or reactor high pressure (1250 psig). The ATWS system automatically trips both A and B recirculation motor generator (MG) field breakers (RPT) and initiates the opening of six Alternate Rod Insertion (ARI) [JC] valves to insert control rods [AA]. These actions reduce the reactor power level to mitigate the consequences of this type of transient.

The Reactor Protection System was operable or in its tripped condition for both Units One and Two while the ATWS sensing lines were in this condition and would have shutdown the reactor if required. In addition, the Standby Liquid Control (SBLC) [BR] system was available to shutdown the reactor if necessary. Therefore, the safety consequences of this event are minimized.

E. CORRECTIVE ACTION:

Immediately after it was discovered that the ATWS sensing lines required the installation of supports in order to make the system meet FSAR requirements, Modification M 4-1(2)-87-72 was initiated. The Unit One modification involved the installation of supports per Nuclear Work Requests (NWR) and Engineering Change Notices (ECN) as listed below.

- NWR Q62779 - Preparation work to supports.
- NWR Q62792 - Drill holes and install wedge bolts near 1-2201-5 rack, per ECN #QC-87S-33.
- NWR Q62794 - Install supports near 1-2201-5 racks, per ECN #QC-87S-31.
- NWR Q62795 - Drill holes and install wedge bolts near 1-2201-6 rack per ECN #QC-87S-34.
- NWR Q62796 - Install supports near 1-2201-6 rack per ECN #QC-87S-35.
- NWR Q62797 - Install hanger supports to existing floor stands 2251-75A, B, C & D per ECN #QC-87S-38.
- NWR Q62798 - Install support frame for ATWS sensing lines near 1-2201-6 rack per ECN #QC-87S-32.
- NWR Q62799 - Install ATWS supports per ECN #QC-87S-37.

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The Unit Two modification is still under design and is expected to be installed during the next refueling outage.

Technical Staff personnel will be performing a walkdown of the following modifications that deal with hanger installation as a measure to assure that other systems are not operating without the proper hanger supports installed.

Modification	Description
M 4-1(2)-76-023	Atmospheric Containment Atmosphere Dilution (ACAD)/Continuous Air Monitor (CAM)[IK]
M 4-1-80-003	Installation of seismic supports for Target Rock safety relief valve [SB] air line
M 4-2-80-004	Modification of Moisture Separator Drain Tank drain line hangers 2-3510-H25 and 2-3511-H35
M 4-1(2)-80-012	High Radiation Sample System [IL]
M 4-1(2)-80-022	Installation and upgrade of supports for various safety related motor control centers (MCC) [EF], instrument racks and switchgear [EB]
M 4-1-81-017	Installation of additional supports on the Control Rod Drive (CRD) [AA] insert and withdraw lines
M 4-2-82-001	Modification of the Reactor Water Cleanup (RWCU) [EG] system pipe hanger 2-1202-H7
M 4-1-82-043	Addition of RWCU valve (1-1201-173)
M 4-1-82-046	Suppression Chamber [NH] level sensing lines

This effort by the Technical Staff will be tracked with Nuclear Tracking System (NTS) number 2542008711601.

To prevent recurrence of this event, BWRED now requires a dimensional verification be performed by a certified quality control inspector for all Safety Related modifications involving the installation or modification of Safety Related load carrying members. Resolution of deficiencies will be accomplished before the modification test may be signed off as completed. This is part of the new modification program which was implemented in April 1987.

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F. PREVIOUS EVENTS:

<u>LER NUMBER</u>	<u>TITLE</u>
254/86-022	Containment Atmospheric Monitoring Line does not meet code allowable stress limits.
254/86-024	U-1 and U-2 Residual Heat Removal Service Water Piping Supports exceed code stress allowable limits.
254/86-025	Torus Attached Small Bore Piping does not meet code allowable limits.
254/87-008	1C Residual Heat Removal Service Water Pump piping in excess of allowable stress due to sheared anchor bolts.
254/87-011	Residual Heat Removal Support Embedment Plate in excess of allowable stress due to improper anchor strap spacing.
254/86-033	Control Room Panels - Inadequate Mounting.
265/87-019	Piping Supports Outside With Safety Analysis Report due to Design Error.
254/87-026	Piping Supports Outside Compliance with Safety Analysis Report due to Design/Construction Error.

G. COMPONENT FAILURE DATA:

There was no component failure involved in this event, therefore a Nuclear Plant Reliability Data System (NPRDS) search was not performed.



Commonwealth Edison

DEVIATION REPORT

DVR NO. 4 -1 -87 -116
STA UNIT YEAR NO.

PART 1 TITLE OF DEVIATION

U-1 ATWS SUPPORT HANGER DO NOT MEET DESIGN SPEC.S

OCCURRED

12/19/87 1950
DATE TIME

SYSTEM AFFECTED

PLANT STATUS AT TIME OF EVENT

ATWS (263)

MODE S/D POWER(%) 0

WORK REQUEST NO.

TESTING

YES NO

DESCRIPTION OF EVENT

ENGINEERING HAS DETERMINED THAT THE U-1 ATWS INSTRUMENTATION SUPPORTING HANGERS DO NOT MEET ASME SECTION 3 DESIGN REQUIREMENTS. THE SUPPORTS WILL BE UPGRADED TO MEET CODE REQUIREMENTS PRIOR TO STARTUP.

POTENTIALLY SIGNIFICANT EVENT PER NSD DIRECTIVE A-07

YES NO

10CFR50.72 NRC RED PHONE NOTIFICATION MADE

1 HOUR
 4 HOUR 2030 NO
TIME

D.G. CLARK

12/19/87

PART 2 OPERATING ENGINEER'S COMMENTS

- NON REPORTABLE EVENT
- 30 DAY REPORTABLE/10CFR 50.72(a) 92)(ii)(B)
- 5 DAY REPORT PER 10CFR21
- ANNUAL/SPECIAL REPORT REQUIRED

NOTIFICATION

REGION III

DATE

TIME

NSD

DATE

TIME

CEEO CORPORATE NOTIFICATION MADE IF ABOVE NOTIFICATION IS PER 10CFR21

TELECOPY

CEEO CORPORATE OFFICER

DATE

TIME

A.I.R. #

L.E.R. # 87-030

PRELIMINARY REPORT COMPLETED AND REVIEWED

J. SWALES

OPERATING ENGINEER

12/21/87

DATE

INVESTIGATION REPORT & RESOLUTION ACCEPTED BY STATION REVIEW

RESOLUTION APPROVED AND AUTHORIZED FOR DISTRIBUTION

STATION MANAGER

1/8/88

DATE



Commonwealth Edison

DEVIATION REPORT

DVR NO. 4 - 1 - 87 - 116
STA UNIT YEAR NO.

SUPP. 1

PART 1 TITLE OF DEVIATION OCCURRED
U-2 ATWS SUPPORT HANGERS DO NOT MEET DESIGN REQUIREMENTS 12/10/87 1950
DATE TIME

SYSTEM AFFECTED PLANT STATUS AT TIME OF EVENT TESTING
ATWS (263) MODE RUN POWER (%) 100 WORK REQUEST NO. YES NO

DESCRIPTION OF EVENT
ENGINEERING DETERMINED THAT THE U-2 ATWS INSTRUMENT SUPPORTING HANGERS DO NOT
MEET ASME SEC. 3, DESIGN REQUIREMENTS. THEY ALSO DETERMINED THAT THE ATWS
PIPING DID MEET OPERABILITY REQUIREMENTS.
D/G 1/18/88

POTENTIALLY SIGNIFICANT EVENT PER NSD DIRECTIVE A-07 YES NO

10CFR50.72 NRC RED PHONE NOTIFICATION MADE 50.72 -b-ii 1 HOUR 4 HOUR 2030 NO RESPONSIBILITY D.G. CLARK DATE 12/19/87

PART 2 OPERATING ENGINEER'S COMMENTS
NEW HANGERS WILL BE INSTALLED DURING THE NEXT REFUELING OUTAGE.

NON REPORTABLE EVENT
30 DAY REPORTABLE/10CFR 50.73(a)(2)(ii)(B)
5 DAY REPORT PER 10CFR 21
ANNUAL/SPECIAL REPORT REQUIRED
NOTIFICATION REGION 111 DATE TIME
NSD DATE TIME
CECO CORPORATE NOTIFICATION MADE IF ABOVE NOTIFICATION IS PER 10CFR 21
TELECOPIY CECO CORPORATE OFFICER DATE TIME

PRELIMINARY REPORT COMPLETED AND REVIEWED J. SWALES 12/21/87
OPERATING ENGINEER DATE

INVESTIGATION REPORT & RESOLUTION ACCEPTED BY STATION REVIEW
RESOLUTION APPROVED AND AUTHORIZED FOR DISTRIBUTION
STATION MANAGER DATE 1/13/88



Commonwealth Edison
Quad Cities Nuclear Power Station
22710 206 Avenue North
Cordova, Illinois 61242
Telephone 309/654-2241

RLB-88-013

January 13, 1988

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

Reference: Quad-Cities Nuclear Power Station
Docket Number 50-254, DPR-29, Unit One

Enclosed please find Licensee Event Report (LER) 87-030, 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)(ii)(B), which requires the reporting of any event or condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

Respectfully,

COMMONWEALTH EDISON COMPANY
QUAD-CITIES NUCLEAR POWER STATION

R. A. Rabey for
R. L. Bax
Station Manager

RLB/MSK/clr

Enclosure

cc: I. Johnson
R. Higgins
INPO Records Center
NRC Region III

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