NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO 3150-0104
EXPIRES 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Kewaunee Nuclear Power Plant	0 5 0 0 0 3 0 5	1 OF 0 3

TITLE (4): Reactor Trip Due to Main Feedwater Control Valve Control Problem

EVENT DATE (5) MONTH	DAY	YEAR	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	REPORT DATE (7) MONTH	DAY	YEAR	OTHER FACILITIES INVOLVED (8) FACILITY NAMES	DOCKET NUMBER(S)
0 4	2 4	8 6	8 6	– 0 0 7 –	0 0	0 5	2 3	8 6	NA	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 6 3

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

[ ] 20.402(b)	[ ] 20.405(c)	[X] 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, NRC Form 366A)
[ ] 20.405(a)(1)(iii)	[ ] 50.73(a)(2)(i)	[ ] 50.73(a)(2)(viii)(A)	
[ ] 20.405(a)(1)(iv)	[ ] 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	TELEPHONE NUMBER (AREA CODE)
Thomas J. Vukovich, Plant Nuclear Engineer	4 1 4 3 8 8 - 2 5 6 0

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)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE) [X] NO

EXPECTED SUBMISSION DATE (15): NA

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

On April 24, 1986 with the plant at 63% power, Instrumentation and Control personnel in conjunction with the plant operators were performing a surveillance procedure, "Steam Generator Flow Mismatch Instrument Channel Test". At 1630 a reactor/ turbine trip occurred due to a Lo (25.5%) steam generator level coincident with steam flow greater than feedwater flow on 1B steam generator.

The cause of the trip, lo level and flow mismatch, has been attributed to the 1B Main Feedwater Control Valve moving from 40% open to 20% open when the controlling channel for the steam generator level control was switched from the yellow to the blue channel. Operator response was to immediately switched the steam generator level control system to the manual mode and attempt to further open the valve. The feedwater control valve did not immediately respond, resulting in a decreasing steam generator level and subsequent reactor trip.

Immediately after the trip, operators implemented the appropriate Integrated Plant Emergency Operating Procedures and stabilized the plant. A Post-Trip review was performed, the senior resident inpsector was notified at 1740, and the NRC was notified via the emergency notification system at 1816.

Prior to restarting the reactor at 1942 on April 24, 1986, the Auto/Manual Station for 1B S/G Level Control was replaced and the 1B Main Feedwater Control Valve was cycled to verify operability.

IE22 1/1

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	PAGE (3)
Kewaunee Nuclear Power Plant	0 5 0 0 0 3 0 5	8 6	— 0 0 7	— 0 0	0 2 OF 0 3

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Event

On April 24, 1986 with the plant at 63% power, Instrumentation and Control personnel in conjunction with plant operators were performing Surveillance Procedure 06-33 "Steam Generator Flow Mismatch Instrument Channel Test". Three channels of logic testing had been completed and the operators were aligning the Steam Generator (SG) Level Control System (JB) to allow testing of the fourth, yellow channel. When the operator switched the automatic S/G Level Control input from the yellow channel to the blue channel, the 1B Main Feedwater Control Valve (FCV) went from 40% open to 20% open. This sudden reduction in feedwater flow caused a steam flow greater than feedwater flow condition to exist.

The operator immediately placed the S/G Level Controller (HC) in the manual mode and attempted to manually open the valve. The Feedwater Control Valve did not respond to two attempts by the operator to open it. The operator then inserted a large (80%) demand signal and the valve opened. By this time level in 1B S/G had decreased to 25.5%, the Lo level setpoint. A steam flow greater than feedwater flow mismatch in conjunction with the Lo S/G level caused a reactor trip and subsequent turbine trip at 1630, approximately 40 seconds into the transient.

Operators implemented the appropriate Integrated Plant Emergency Operating Procedures and stabilized the plant. A Post-Trip review was performed, the senior resident inspector was notified at 1740, and the NRC was notified in accordance with the requirements of 10CFR 50.72 (b)(2)(IV) at 1816.

Cause of Event

The cause of the trip was attributed to problems with the control of Main Feedwater Control Valve, FW-7B. The valve should have remained 40% open when the controlling channels were switched, instead the valve went to 20% open. When the operator switched the S/G level control from automatic to manual, the valve should then have assumed the demand position called for by the manual controller. Instead the valve remained approximately 20% open. The operator then increased the demand position twice in a attempt to open the valve. The valve failed to respond to these attempts. The operator realizing the situation called for immediate action, increased the demand signal to 80% open. The valve then opened to allow more water to the S/G. This action was too late as a reactor trip occurred.

The procedure used for testing a S/G flow mismatch logic channel requires placing the S/G level control input to a channel that is not being tested. Operations personnel use one of two different methods for doing this. One involves leaving the level controls in automatic and switching between level control input channels. The other method is to place the S/G level control in manual and then switch controlling input channels. Past experience has shown that while switching the level control from automatic to manual, and back, current spikes have been generated in the controller. This causes the Feedwater Control Valve to oscillate increasing the difficulty in maintaining S/G level. In this particular case the operators left the S/G level control in automatic, preferring to switch controlling channels with the option of switching to manual should a problem develop. When the valve started to close the operator immediately switched to manual. At this point the valve should have opened to the demand position of the manual controller which was set at a value equal to the previous automatic demand signal. The valve did not respond to this action. A reactor trip occurred approximately 40 seconds later.

The exact cause of the Main Feedwater Control Valve going from 40% open to 20% open has not been determined.

Analysis of Event

This report is being submitted in accordance with the requirements of 10CFR 50.73 (a)(2)(IV), because of an automatic actuation of the reactor protection system.

When 1B S/G level reached the Lo level setpoint (25.5%), the reactor tripped, due to a steam flow greater than feedwater flow condition. The motor driven auxiliary feedwater pumps started and both steam generators were available for decay heat removal. Operators followed appropriate plant procedures and stabilized the plant. All plant systems responded as required during the course of recovery. There was no impact on the public health or safety.

Corrective Actions

Before restarting the reactor at 1942 on April 24, Instrumentation and Control personnel replaced an Auto/Manaul Station used in tne control instrument loop for FW-7B. The valve was then stroked and it operated properly. The Auto/Manual Station was sent back to Foxboro to be inspected. The maintenance department is continuing their investigation of this event by talking with consultants from various organizations such as Westinghouse Electric Corporation and Copes-Vulcan Incorporated about possible additional corrective actions.

Additional Information

The Auto/Manual Station replaced after this event is a Foxboro Electronic Constrol Auxiliary Unit model 67HSTG2 (Modified). A similar event to this is documented in LER 86-06.

WPSC (414) 433-1234
TELECOPIER (414) 433-1297

NRC-86-69

TELEX 51010 12698 WPSC GRB
EASYLINK 62891993

WISCONSIN PUBLIC SERVICE CORPORATION

600 North Adams • P.O. Box 19002 • Green Bay, WI 54307-9002

May 23, 1986

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

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reportable Occurrence 86-007-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System", the attached Licensee Event Report for reportable occurrence 86-007-00 is being submitted.

Very truly yours,

D. C. Hintz
Manager - Nuclear Power

GWH/jms
Attach.
cc - INPO Records Center
Suite 1500, 1100 Circle 75 Parkway
Atlanta, GA 30339
Mr. Robert Nelson, NRC Resident Inspector
RR #1, Box 999, Kewaunee, WI 54216
Mr. G. E. Lear, PWR Project Directorate-1
US NRC, Washington, DC 20555
Mr. J. G. Keppler, Regional Administrator
Region III, US NRC, 799 Roosevelt Road
Glen Ellyn, IL 60137
Ms. N. A. Nicholson
Region III, US NRC, 799 Roosevelt Road
Glen Ellyn, IL 60137

IE22
1/1