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INDIANA & MICHIGAN ELECTRIC COMPANY

DONALD C. COOK NUCLEAR PLANT
P.O. Box 458, Bridgman, Michigan 49106
(616) 465-5901

December 5, 1983

Mr. J.G. Keppler, Regional Administrator
United States Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Operating License DPR-74
Docket No. 50-316
Special Report Nos. SI-07/08

Dear Mr. Keppler:

As defined in Technical Specification Section 6.9.2, the Donald C. Cook Nuclear Plant is submitting two Special Reports in compliance with Appendix A Technical Specifications Section 3.6.2, Emergency Core Cooling System.

Sincerely,


W.G. Smith, Jr.
Plant Manager

/bab

Attachment

cc: John E. Dolan
M.P. Alexich
R.F. Kroeger
H. Brugger
E.R. Swanson, RO:III
R.C. Callen, MPSC
PNSRC
J.F. Stietzel
E.L. Townley
K.R. Baker
R.O. Bruggee, EPRI

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INDIANA AND MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

Operating License: DPR-74
Docket No.: 50-316
Special Report: SI-07

SAFETY INJECTION ACTUATION - NOVEMBER 4, 1983

Conditions Prior to Occurrence

The Reactor was in Mode 4 with the Reactor Coolant System at about 332°F and 900 psig. The unit was in the process of heating up in preparation for Reactor startup. The RCS was still borated to cold shutdown concentration and all control rods and shutdown rods were fully inserted.

Description of Occurrence

C & I Technicians were performing surveillance test procedure 2-THP 4030.STP.180 on the Reactor Trip Breakers. While communicating through headsets, a C & I Technician behind the control room panels instructed a Reactor Operator to block the pressurizer pressure S.I. signal. The operator put the switch to the reset position instead of the block position and a Train B Safety Injection occurred.

Designation of Cause of Occurrence

As stated in the "Description of Occurrence", a surveillance test of the Reactor Trip Breakers was being performed. While intending to block the pressurizer pressure S.I. signal, the operator went to reset instead of block and a Train B Safety Injection occurred due to low pressurizer pressure.

Analysis of Occurrence

The following is a list of major items that were reviewed for their safety implication:

(a) Reactor Coolant System Cooldown Rate

The Reactor Coolant System was at 332°F at the time of the injection and remained at the temperature during the injection.

(b) Thermal Effects of Safety Injection

During this occurrence, the East and West Centrifugal Charging Pumps injected into the Reactor Coolant System through the Boron Injection lines (1½" nozzles) for a period of two minutes. The maximum flow one pump can put through these lines is 470 GPM (T.S. 4.5.2.h). With two pumps operating the maximum total injection into the RCS is 1880 gallons. The injection of 1880 gallons corresponds to a 6.2 minute injection of the design base used in the FIRL Report F-C4542 which calls for two charging pumps each having a flow rate of 150 GPM. This is the seventh inadvertent safety injection into the Reactor Coolant System and conservatively constitutes 3.1/10,000 of allowable cycles. This is conservative from the fact that the design temperature of the primary coolant is 540°F while the primary coolant temperature at the time of this injection was 332°F, which would result in lower temperature gradients than design. Also, the maximum injection flow of 470 GPM required by Tech Spec 4.5.2.h is verified at zero RCS pressure. The pressure at the time of the injection was 900 psig, which would have caused a flow less than 470 GPM. The total accumulated cycles to date are 18.15/10,000.

(C) Effects on the Emergency Core Cooling System Piping

The piping and supports in the ECCS were given a thorough visual inspection to determine if any mechanical damage was experienced during the safety injection. There was no evidence of any mechanical damage or abnormal movements of the piping.

Corrective Actions

The operator involved was verbally reminded of the importance of his job and to slow down and make certain the actions he takes are correct. Also routed a copy of the condition report associated with this incident to all licensed operators.

SAFETY INJECTIONS

(Table 6 from Technical Report F-C4542)

Unit 2

<u>No.</u>	<u>Date</u>	<u>Time</u>	<u>Usage This Cycle</u>	<u>Cumulative Usage</u>	<u>Accompanying Conditions and Comments</u>
1	03-01-78	1	.00015	.00015	
2	08-04-78	1.5	.00018	.00033	
3	01-06-79	14	.00032	.00065	
4	06-28-80	4.0	.000275	.000925	
5	10-20-81	18	.00032	.001245	"B" Train Only
6	03-29-82	2 @ 530 gpm	.00019 (.00026)	.001435 (.001505)	"A" Train Only
7	11-04-83	2 @ 940 gpm	.00019 (.00031)	.001625 (.001815)	"B" Train Both Parts
8	11-04-83	1 @ 470 gpm	.00014 (.00017)	.001765 (.001985)	"A" Train

INDIANA AND MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

Operating License: DPR-74
Docket No.: 50-316
Special Report: SI-08

SAFETY INJECTION ACTUATION - NOVEMBER 4, 1983

Conditions Prior to Occurrence

The Reactor was in Mode 4 with the Reactor Coolant System at about 332°F and 900 p.s.i.g. The unit was in the process of heating up in preparation for reactor startup. The RCS was still boric to cold shutdown concentration and all control rods and shutdown rods were fully inserted. A Train B Safety Injection had occurred ½ hour prior to this actuation.

Description of Occurrence

C & I Technicians were performing surveillance test procedure 2-THP 4030.STP.180 on the Reactor Trip Breakers. Due to a misunderstanding of the procedure, the steamline pressure S.I. signal was not blocked prior to putting the input error inhibit switch to normal and a Train A Safety Injection occurred.

Designation of Cause of Occurrence

As stated in the "Description of Occurrence", a surveillance test of the Reactor Trip Breakers was being performed. The steamline pressure S.I. signal was not blocked as required by a note in the procedure. When the input error inhibit switch was placed in the normal position, a Safety Injection Actuation occurred due to low steamline pressure.

Analysis of Occurrence

The following is a list of major items that were reviewed for their safety implication:

(a) Reactor Coolant System Cooldown Rate

The Reactor Coolant System was 332°F at the time of injection and remained at the temperature during the injection.

(b) Thermal Effects of Safety Injection

During this occurrence, the East Centrifugal Charging Pump injected into the Reactor Coolant System through the Boron Injection lines (1½" nozzles) for about 1 minute. The maximum flow one pump can put through these lines is 470 GPM (T.S. 4.5.2.h). Therefore, the maximum total injection into the RCS is 470 gallons. The injection of 470 gallons corresponds to a 1.6 minute injection of the design base used in the FIRL Report F-C4542 which calls for two charging pumps each having a flow rate of 150 GPM. This is the eighth inadvertent safety injection into the Reactor Coolant System and conservatively constitutes 1.7/10,000 of allowable cycles. This is conservative from the fact that the design temperature of the primary coolant is 540°F while the primary coolant at the time of this injection was 332°F, which would result in lower temperature gradients than design. Also, the maximum injection flow rate of 470 GPM required by Tech Spec 4.5.2.h is verified at zero RCS pressure. The pressure at the time of the injection was 900 psig, which would have caused a flow less than 470 GPM. The total accumulated cycles to date are 19.85/10,000.

(C) Effects on the Emergency Core Cooling System Piping

The piping and supports in the ECCS were given a thorough visual inspection to determine if any mechanical damage was experienced during the safety injection. There was no evidence of any mechanical damage or abnormal movements of the piping.

Corrective Actions

Procedure 2-THP 4030.STP.180 was revised to make the note, which said to block the S.I. signal, to require a signoff for the action which is unique to performing the procedure with the reactor shut-down.

SAFETY INJECTIONS

(Table 6 from Technical Report F-C4542)

Unit 2

<u>No.</u>	<u>Date</u>	<u>Time</u>	<u>Usage This Cycle</u>	<u>Cumulative Usage</u>	<u>Accompanying Conditions and Comments</u>
1	03-01-78	1	.00015	.00015	
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3	01-06-79	14	.00032	.00065	
4	06-28-80	4.0	.000275	.000925	
5	10-20-81	18	.00032	.001245	"B" Train Only
6	03-29-82	2 @ 530 gpm	.00019 (.00026)	.001435 (.001505)	"A" Train Only
7	11-04-83	2 @ 940 gpm	.00019 (.00031)	.001625 (.001815)	"B" Train Both Parts
8	11-04-83	1 @ 470 gpm	.00014 (.00017)	.001765 (.001985)	"A" Train.