Indiana Michigan Power Company 500 Circle Drive Buchanan, MI 49107 1395



June 7, 2004

AEP:NRC:2573-20 10 CFR 50.73

Docket No. 50-316

U. S. Nuclear Regulatory Commission ATTN: Document Control Desk Mail Stop O-P1-17 Washington, DC 20555-0001

## Donald C. Cook Nuclear Plant Unit 2 LICENSEE EVENT REPORT 316/2004-002-00, UNPLANNED AUTOMATIC REACTOR PROTECTION SYSTEM ACTUATION DUE TO FEEDWATER TRANSIENT DURING A POWER REDUCTION

In accordance with 10 CFR 50.73, "Licensee Event Report System," the following report is submitted:

Licensee Event Report (LER) 316/2004-002-00: "Unplanned Automatic Reactor Protection System Actuation Due to Feedwater Transient During a Power Reduction."

Attachment 1 identifies the commitment contained in this submittal.

Should you have any questions regarding this correspondence, please contact Mr. Toby K. Woods, Compliance Supervisor, at (269) 466-2798.

Sincerely,

Joseph N. Jensen Site Vice President

HLE/jen

Attachments

1E22

# AEP:NRC:2573-20

U. S. Nuclear Regulatory Commission Page 2

c: J. L. Caldwell – NRC Region III K. D. Curry – AEP Ft. Wayne J. T. King – MPSC J. G. Lamb – NRC Washington DC MDEQ – WHMD/HWRPS NRC Resident Inspector Records Center - INPO

## ATTACHMENT 1 TO AEP:NRC:2573-20

### **REGULATORY COMMITMENTS**

The following table identifies those actions committed to by Indiana Michigan Power Company (I&M) in this document. Any other actions discussed in this submittal represent intended or planned actions by I&M. They are described to the Nuclear Regulatory Commission (NRC) for the NRC's information and are not regulatory commitments.

Commitment	Date
Revise the procedure for "Conduct of	July 7, 2004
Operations: Standards" to include that a	
control room announcement is made notifying	
all team members when a controller is being	
operated in manual. (CR 04100009-011)	

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Donald C. Cook Nucle	ear Plant Unit 2	05000-316	2004	 	UMBER 002 -	NUMBER 00	Page 2 o
. TEXT (If more space is required.	use additional copies of N			LL.	1	I	.l
Conditions Prior to Eve	<u>nt</u>						
Unit 1 = 100% Power							
Unit 2 ~ 48% Power							
Description of Event							
At approximately 1930 on power to address Main Tu	a April 8, 2004, a plan urbine Control Fluid s	ned power reduction con system [TG] equipment is	mmence ssues.	d fron	n approxi	mately 82 p	ercent
Power reduction had prog was being removed from [SC] (2-RU-3) for the EMI removed from service. C	pressed to approximate service per plant proof FP be operated in material oncurrently, the feed	Itely 50 percent and the cedure. The procedure canual to lower the speed water differential pressure of the speed by the speed water differential pressure of the speed water differential pressure of the speed s	East Mai lirected to of the m re (DP) co	n Fee hat th ain fe ontro	edwater p e turbine edwater ( [PDC] (2	ump (EMFP speed contr oump being 2-RU-5) was	roller
operated in manual to ma program, by controlling th	e West Main Feedwa	ocedurally specified ban ater pump's speed.	d, of plus	; 20 p	sid to mir	ius 10 psid	of
During the removal from s operator within the specifi modulating excessively be FRV modulation was atte Unit Supervisor (Senior R manual, feedwater flow be This condition was not ree resulting in a turbine [TRE	service of the EMFP, ied DP band. All four etween the nearly ful mpted to be controlle leactor Operator). Wi eing provided by the ctified in time causing B] trip and subsequer	the main feedwater DP feedwater regulating va I open or full open positi of by placing the FRVs in the number 24 Stear FRV exceeded the stear of the water level in number at automatic RPS [JG] ad	was not i lves (FR) on and th n manual m Gener n flow fro per 24 S/0 ctuation a	manu Vs) [F ie nea conti ator ( om the G to r at 221	ally contr CV] were arly full cl rol per the S/G) [SG] e associa ise to the 5.	olled by the observed t osed positio direction o FRV was ta ted number turbine trip	licensed o be n. The f the aken to 24 S/G. setpoint,
Following the automatic F the auxiliary feedwater sy condensate [SD] leak dev secondary plant equipme operators to respond to th turbine stop valve limit sw were manually opened in Condenser hotwell area e condensate booster pump stopped by securing hotw event walkdown of the pip with the leak in the conder	RPS actuation, all pla rstem [BA], except the reloped in the Low Pr nt problems did not s ne event. The main g vitches [ZIS] failing to accordance with the experienced a leak in p emergency leakoff rell and condensate p ping, a pipe support [ enser.	nt systems responded a e main generator output ressure Turbine "C" Con ignificantly complicate th enerator output breakers indicate the closed posi reactor trip response pro- the south side of the Lo line penetration into the pumps [P] in accordance SPT] with pre-existing da	s expecte breakers denser [( ne plant r s failed to tion. The ocedure. w Pressumain con with plan amage w	ed, in [BRI CONE espon oper main The ure Tu idens nt pro as ide	cluding th () failed to ) hotwell nse or the n due to o a generato Low Press Irbine "C" er. The co cedures. entified ar	e automatic o open and area. The e ability of the me of the m or output bre sure Turbin Condenser ondensate le During the p nd repaired	e start of a ain eakers e "C" at the eak was post- along
At 0147 on April 9, 2004, the NRC Operations Cent	Indiana Michigan Po	wer Company (I&M) ma	de a four	-hour	notification	on (EN # 40	660) to

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NRC FORM 366A U.S. NUCLEAR REGULATORY COMMISSION (7-2001) LICENSEE EVENT REPORT (LER) TEXT CONTINUATION													
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			2004		002		00						

17. TEXT (If more space is required, use additional copies of NRC Form (366A)

#### Cause of Event

The cause of the Unit 2 automatic RPS actuation was inadequate manual control of feedwater to the steam generators and inadequate communications within the control room stemming from incorrect assumptions, operator overconfidence, and an inadequate brief.

### Analysis of Event

An assessment of this event was performed and it was determined that this event was bounded by the existing accident analysis associated with unplanned reactor trips (i.e., transient) with the main condenser (i.e., ultimate heat sink) available. The contribution to Core Damage Frequency (CDF) from all transients is very small. Transients contribute less than 1 percent of the total CDF in the current Probalistic Risk Assessment (PRA) model. The current transient initiating event frequencies include operator errors. The change in risk with respect to core damage and large early release frequency due to high steam generator water level, and subsequent plant trip, have been qualitatively assessed and judged no different than any other unplanned reactor trip with the main condenser available. This assessment is based on the following considerations:

- The automatic plant trip, due to high steam generator water level, functioned properly. Automatic post-trip features functioned as designed with the exception of the main generator output breakers failing to open and
- the condensate booster pump to condenser recirculation return line penetration leakage. Operators took procedurally directed actions and responded to the transient in an appropriate and timely manner, resulting in a safe and stable plant configuration.

Although the main generator output breakers failed to open, which resulted in the main generator motoring for approximately nine minutes, there was no affect on either the generator [GEN] or any mitigation capability of the plant. The condensate booster pump recirculation return line penetration leakage did not result in a loss of condenser vacuum [SH] (i.e., loss of the ultimate heat sink) nor did it result in loss or degradation of the condensate storage tank [KA] or associated functions. The condenser leak did not result in internal flooding. The D. C. Cook Nuclear Plant PRA internal flooding analysis ascertained that a condenser leak would not result in a risk significant internal flooding scenario. The Condenser Pit Sump annunciator [LA] was received in the Control Room approximately one hour after the plant trip. The operators were able to reduce the leak rate approximately 20 minutes later by isolating condensate booster pumps. Although the initial leak rate exceeded the Condenser Pit Sump pump capacity, the sump pumps were able to pump out the Condenser Pit [WK] once the leak rate was reduced. Even though a majority of the leakage was confined to the Condenser Pit Sump other equipment was sprayed with condensate from the leak. The leakage did not result in degradation of any equipment relied upon for accident mitigation or safe shutdown of the plant.

- The inadvertent cause of the automatic RPS actuation, high steam generator water level, does not contribute to the increased likelihood of any initiators, other than transients that result in or from a reactor trip.
- Neither the high steam generator water level, nor the subsequent unit trip, degraded any system used to mitigate core damage, assure containment integrity, or maintain defense-in-depth and safety margins.

Accordingly, I&M has concluded that there was no impact on the health and safety of the public as a result of this event.

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NRC FORM 366A U.S. NUCLEAR REGULATORY CON	MISSION					
(7-2001) LICENSE	EE EVENT REPORT (	LER)				
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Donald C. Cook Nuclear Plant Unit 2	05000-316	2004	0	02	- 00	Page 4 of 5
17. TEXT (If more space is required, use additional copies of NRC	C Form (366A)		L1		<u> </u>	l
Corrective Actions						
Equipment Corrective Actions Taken:						
Equipment Corrective Actions Taken.						
<ul> <li>Repaired Low Pressure Turbine "C" Conden pipe supports. (Work Request 03239043 and</li> </ul>	ser leak and condens d 04100002)	ate boost	er pum	p eme	rgency leako	ff line
<ul> <li>Replaced the failed main turbine stop valve poperation. (Work Request 04100008)</li> </ul>	position indicator and	associate	ed cabli	ng. Ve	rified proper	
Root Cause Immediate Corrective Actions Taker	<u>n:</u>			<b>3</b> •		
<ul> <li>The feed pump turbine shutdown procedure MFP being left in service to assume addition (Condition Report 04100009)</li> </ul>	was revised, effective al flow demand, rema	April 11, ins in aut	2004, omatic	to requ	uire that cont	rol of the
The procedure, "Conduct of Operations: Star Reactor Operator to notify the Unit Supervise control band, for controllers that are being operators."	ndards," was revised, or when a manually co perated in manual. (Co	effective ontrolled j ondition F	April 16 parame Report (	6, 2004 Iter gos 041000	4, to require t es outside of 009)	he the
<ul> <li>Personnel action in accordance with appropriate approximation of the second seco</li></ul>	riate performance mai lance regarding perso , and disseminated to	nagemen nnel actic Operatio	t policie ons as a ns Dep	es was a resul artmer	taken for the It of unaccept Int personnel.	e control able
<ul> <li>On May 2, 2004 The Plant Manager briefed oversight in the control room. This brief spe (Condition Report 04100009)</li> </ul>	all management perso cifically emphasized c	onnel ass ommunic	igned to ation st	o perfo tandaro	orm managen ds.	nent
<ul> <li>Implemented use of the Human Performance course of simulator evaluations. Use of com (Condition Report 04100009)</li> </ul>	e Scorecard for the ev piled performance sc	aluation ( ores will b	of indivi De used	idual p I to trac	erformance i ck crew perfo	n the ormance.
Root Cause Corrective Actions to Prevent Recur	rrence:					
<ul> <li>Revise the procedure, "Conduct of Operation made notifying all team members when a co (Condition Report 04100009, Corrective Act)</li> </ul>	ns: Standards," to incl ontroller is being opera ion 011 – due July 7, 3	ude that a ited in ma 2004)	a contro inual.	ol room	announcem	ent is

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	·		2004		002 [	00	
EXT (If more space is required, use additional copies of Previous Similar Events	NRC Form (366A)						
	_						
A review of LERs issued by Indiana Michigar	n Power Compan	y from 199	99 to the	e pre	sent, for b	oth units, id	entified
	o operations per						
<ul> <li>LER 316-2004-001 - Automatic Read Trip Bypass Breaker</li> </ul>	ctor Trip Due to F	RPS Actua	tion, WI	nile N	lanipulatir	ng Train A F	Reactor
The Dypass Dieaker							
I&M has reviewed the above docketed LER a	and has determin	ed that the	e events	s ass se nr	ociated wi	ith the identi time to this	ified event
actions to prevent recurrence were not fully i	mplemented at th	ne time of	this eve	nt. T	hus the co	prrective act	ions
associated with the event could not have pre	evented this even	<b>t.</b>					•
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