

PRECURSOR DESCRIPTION SHEET

LER No.: 287/87-006
Event Description: HPI is unavailable
Date of Event: 9/10/87
Plant: Oconee 3

EVENT DESCRIPTION

Sequence

During plant shutdown for minor repairs (LER 287/87-004), plant personnel opened the breakers to the HPI suction valve motors from the borated water storage tank, thus isolating the water source. The breakers were tagged open by personnel without informing the control room of these actions. The procedures employed in the shutdown process were unclear as to what actions needed to be performed. During the subsequent startup, operators incorrectly believed that the HPI system was available. Three different checks for HPI operability were made, the first two failing to detect its inoperative status. The operators and station personnel failed to adequately communicate with each other during the shutdown and startup processes. The procedures employed contained deficiencies.

Corrective Action

The valves were restored to service and the procedures were revised.

Plant/Event Data

Systems Involved:
HPI

Components and Failure Modes Involved:

Isolation valves are unavailable

Component Unavailability Duration: 26 h

Plant Operating Mode: 4 (0%)

Discovery Method: Operational event

Reactor Age: 13.0 y

Plant Type: PWR

Comments

None.

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MODELING CONSIDERATION AND DECISIONS

<u>Initiators Modeled and Initiator Nonrecovery Estimate</u>	
Postulated LOCA, LOOP, transient	Base case nonrecovery

<u>Branches Impacted and Branch Nonrecovery Estimate</u>		
HPI	1.0	No recovery
HPI (B&F)	1.0	No recovery

Plant Models Utilized
PWR plant Class D

CONDITIONAL CORE DAMAGE PROBABILITY CALCULATIONS

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UNAVAILABILITY, DURATION= 26

NON-RECOVERABLE INITIATING EVENT PROBABILITIES

TRANS	1.2E-02
LOOP	4.7E-05
LOCA	2.7E-05

SEQUENCE CONDITIONAL PROBABILITY SUMS

End State/Initiator	Probability
CD	
TRANS	3.5E-08
LOOP	4.6E-09
LOCA	1.0E-06
Total	1.0E-06
CV	
TRANS	6.3E-05
LOOP	2.4E-07
LOCA	2.6E-05
Total	8.9E-05
ATWS	
TRANS	0.0E+00
LOOP	0.0E+00
LOCA	0.0E+00
Total	0.0E+00

SEQUENCE CONDITIONAL PROBABILITIES (PROBABILITY ORDER)

	Sequence	End State	Prob	N Rec**
307	loca -rt -afw HPI ss.depress	CD	9.9E-07	4.3E-01
109	trans -rt -afw -porv.or.srv.chall ss.releas.term HPI	CV	5.8E-05	3.4E-01
304	loca -rt -afw HPI -ss.depress -lpi/hpi -lpr/hpi	CV	2.6E-05	4.3E-01
101	trans -rt -afw porv.or.srv.chall -porv.or.srv.reseat ss.releas .term HPI	CV	5.1E-06	3.4E-01

** non-recovery credit for edited case

SEQUENCE CONDITIONAL PROBABILITIES (SEQUENCE ORDER)

	Sequence	End State	Prob	N Rec**
101	trans -rt -afw porv.or.srv.chall -porv.or.srv.reseat ss.releas .term HPI	CV	5.1E-06	3.4E-01
109	trans -rt -afw -porv.or.srv.chall ss.releas.term HPI	CV	5.8E-05	3.4E-01
304	loca -rt -afw HPI -ss.depress -lpi/hpi -lpr/hpi	CV	2.6E-05	4.3E-01
307	loca -rt -afw HPI ss.depress	CD	9.9E-07	4.3E-01

** non-recovery credit for edited case

Note: For unavailabilities, conditional probability values are differential values which reflect the added risk due to failures associated with an event. Parenthetical values indicate a reduction in risk

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compared to a similar period without the existing failures.

SEQUENCE MODEL: c:\asp\newmodel\pwr_dnew.cmp
 BRANCH MODEL: c:\asp\newmodel\ocone.new
 PROBABILITY FILE: c:\asp\newmodel\pwr_bnew.pro

No Recovery Limit

BRANCH FREQUENCIES/PROBABILITIES

Branch	System	Non-Recov	Opr Fail
trans	4.8E-04	1.0E+00	
loop	4.6E-06	3.9E-01	
loca	2.4E-06	4.3E-01	
rt	2.8E-04	1.2E-01	
rt/loop	0.0E+00	1.0E+00	
emerg.power	2.9E-03	8.0E-01	
ep.rec	1.0E+00	1.7E-01	
afw	3.8E-04	2.6E-01	
afw/emerg.power	5.0E-02	3.4E-01	
mfw	2.0E-01	3.4E-01	
porv.or.srv.chall	8.0E-02	1.0E+00	
porv.or.srv.reseat	1.0E-02	1.1E-02	
porv.or.srv.reseat/emerg.power	1.0E-02	1.0E+00	
ss.releas.term	1.5E-02	3.4E-01	
HPI	3.0E-04 > 1.0E+00	8.4E-01 > 1.0E+00	
Branch Model: 1.OF.3			
Train 1 Cond Prob:	1.0E-02 > Unavailable		
Train 2 Cond Prob:	1.0E-01 > Unavailable		
Train 3 Cond Prob:	3.0E-01 > Unavailable		
HPI(F/B)	3.0E-04 > 1.0E+00	8.4E-01 > 1.0E+00	1.0E-02
Branch Model: 1.OF.3+opr			
Train 1 Cond Prob:	1.0E-02 > Unavailable		
Train 2 Cond Prob:	1.0E-01 > Unavailable		
Train 3 Cond Prob:	3.0E-01 > Unavailable		
hpr/-hpi	1.5E-04	1.0E+00	1.0E-03
ss.depress	3.6E-02	1.0E+00	
cond/mfw	1.0E+00	3.4E-01	1.0E-02
lpi/hpi	1.5E-04	3.4E-01	
lpr/-hpi.hpr	6.7E-01	1.0E+00	
lpr/hpi	1.5E-04	1.0E+00	

* branch model file
 ** forced

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