

PRECURSOR DESCRIPTION SHEET

LER No.: 369/87-030
Event Description: Emergency power system is unavailable
Date of Event: 9/8/87
Plant: McGuire 1

EVENT DESCRIPTION

Sequence

While a crew was labeling components in the diesel fuel oil system, they incorrectly labeled two valves due to an error in the procedure. This action resulted in the inadvertent closure of the 1B tank valve when the 1A valve was intended to be closed. The 1A fuel tank was then taken out of service for its mandatory 10-y cleaning. The DG day tanks were still available, but held only 1 h of fuel. The EPS was essentially unavailable since only one DG was available and it had only 1 h of fuel. DG 1B would have operated for approximately 1 h before running out of fuel.

Corrective Action

The 1B valve was immediately opened, and repairs were completed on the DG 1A fuel tank.

Plant/Event Data

Systems Involved:

Emergency power

Components and Failure Modes Involved:

Fuel valve to DG 1B was closed by error

DG 1A fuel tank was out for its 10-y cleaning

Component Unavailability Duration: 72 h

Plant Operating Mode: 5 (0%)

Discovery Method: Testing

Reactor Age: 6.1 y

Plant Type: PWR

Comments

Since the day tank valve was labeled incorrectly, it was assumed that an operator would not have discovered that the wrong valve was closed in the event a low-level alarm occurred in the day tank. If the DG had ever run out of fuel, it would be a lengthy process to restart it (>1 h).

MODELING CONSIDERATION AND DECISIONS

Initiators Modeled and Initiator Nonrecovery Estimate

Postulated LOOP

Base case nonrecovery

Event Identifier: 369/87-030

Branches Impacted and Branch Nonrecovery Estimate

EPS 1.0 Assumed nonrecoverable

Plant Models Utilized

PWR plant Class F

CONDITIONAL CORE DAMAGE PROBABILITY CALCULATIONS

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UNAVAILABILITY, DURATION= 72

NON-RECOVERABLE INITIATING EVENT PROBABILITIES

LOOP 1.3E-04

SEQUENCE CONDITIONAL PROBABILITY SUMS

End State/Initiator	Probability
CD	
LOOP	2.4E-05
Total	2.4E-05
CV	
LOOP	5.3E-07
Total	5.3E-07
ATWS	
LOOP	0.0E+00
Total	0.0E+00

SEQUENCE CONDITIONAL PROBABILITIES (PROBABILITY ORDER)

Sequence	End State	Prob	N Rec**
217 loop -rt/loop EMERG.POWER ep.rec	CD	2.2E-05	6.6E-02
216 loop -rt/loop EMERG.POWER -ep.rec afw/emerg.power	CD	1.8E-06	1.1E-01

** non-recovery credit for edited case

SEQUENCE CONDITIONAL PROBABILITIES (SEQUENCE ORDER)

Sequence	End State	Prob	N Rec**
216 loop -rt/loop EMERG.POWER -ep.rec afw/emerg.power	CD	1.8E-06	1.1E-01
217 loop -rt/loop EMERG.POWER ep.rec	CD	2.2E-05	6.6E-02

** 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 compared to a similar period without the existing failures.

SEQUENCE MODEL: c:\asp\newmodel\pwr_bnew.cmp
 BRANCH MODEL: c:\asp\newmodel\mcguire.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	

Event Identifier: 369/87-030

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 > 1.0E+00	8.0E-01 > 1.0E+00	
Branch Model: 1.OF.2			
Train 1 Cond Prob:	5.0E-02 > Unavailable		
Train 2 Cond Prob:	5.7E-02 > Unavailable		
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	4.0E-02	1.0E+00	
porv.or.srv.reseat	3.0E-02	1.1E-02	
porv.or.srv.reseat/emerg.power	3.0E-02	1.0E+00	
ss.releas.term	1.5E-02	3.4E-01	
hpi	1.0E-03	8.4E-01	
hpi(f/b)	1.0E-03	8.4E-01	1.0E-02
hpr/-hpi	1.5E-04	1.0E+00	1.0E-03
porv.open	1.0E-02	1.0E+00	4.0E-04
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			

Minarick
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