Success Path System

A Study on the Monitoring of the Success Path Performance for maintaining Critical Safety Function in Nuclear Power Plant

Abstract

In this paper, We analyzed and suggested the period and the criteria of the evaluation about the performance of the success path system for maintaining critical safety function for CFM/SPM design. Each system of the success path peculiarly needs to have different evaluation period for checking the performance of the success path according to the original function of the success path system, also, we reviewed the needs of evaluation about the performance of the success path in the course of both emergency operation and normal operation. We practically reviewed and analyzed the start time of performance evaluation and evaluation criteria based on the YGN 3&4 RAT, EOP and FRP. Also, we reviewed the evaluation criteria of the performance for success path system through the experience of the plant operation.

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1.
Success Path System(
                                                 . Success Path System
                                   )
       가
                                                                          (CFM)
               (SPM)
       가
                                                  가
2.
                         Success Path(SP)
                 (Success Path System)
                            가가
    가
                            가
   Critical Function Monitoring Alarm:
                                (Safety Function Status Check(SFSC) - Resource
    Assessment Tree(RAT)
                                  Acceptance Criteria
   SPM Alarm:
           가
```

(Success Path Availability Alarm):

(Success Path Performance Alarm):

가

가

Table 1. Rx Trip		가	
Rx Trip	Rx Trip 01(Rx Trip	Rx Trip FRP(
SFSC	02()	ORP())
SFSC	SP	SP	SP
SFSC	SP 가	SP 가	SP 가
SFSC	SP	SP	SP
Table 1 SP			가
1) SFSC			
Acceptance Criteria	가	SP	
SP	가	•	
2) SFSC	SP	Acceptance Criteria	가
SP		, SP	
가	가		
3)	SP		,
			SP
가		가 가	. SP
CPD 4	SFSC 가	,	SP
CFM フ		SP	
,	SP 가		

3. SP 7

Table 2. (1,2,3,4) Overhaul SP 7

		Test	Overhaul Test
가	0	X	Х
	SP 가?	SP 가 ?	SP フト?

1)		Overhaul			, Rxtrip			
- 1					_		가	
가		가		,	Test		(
) 가)	Test		Bypass(
2)		Overh	aul		Test	, BISI	SFSC	
						,	가	
3)		٠	CVCS.		ater & Spray			가
		Rx Trip		SP			S	PM
		SFSC					SP	
		SP						
	가	•						
		가						
					가 ,		SP	
				•				
4. SP		가						
		フ	ŀ					
가								
1) SP		가	:		1,2,3,4	(5,6	
ESF			가)				
2) SP			:				SP	
			5	Shut d	own Flow Path	1		
가								

Table 3. SP

	SP	SP
Rx Trip	Resource Assessment Tree(RAT) SP SP (Unavailable) (ESFAS 7t)	CEA Insertion, SIS, Emergency DG, AAC DG, Forced Circulation, Natural Circulation, SG Heat Sink, One Through Cooling, Shutdown Cooling, CNMT Isolation, CNMT Spray, CNMT Fan Cooling High/Low, H2 Recombiner/Purge, UAT, SUT
Rx Trip	Rx Trip	CVCS, UAT, SUT, Battery Charger, PZR Heater & Spray
3)	:	SP

SP 가 가 SP 가 Bad Performance Unavailable 가 가 SP가 가 A Train 가 Train 가 (Unavailable) , B Train 가 Performance A Train 가 A Train Unavailable , B Train Train 가 Unavailable В 가 Unavailable Train , B Train 가 가 B Train Poor(or Bad) Performance (Train 가)

가?

2) Success Path Performance

1) SPM Performance Check

ESFAS

SFSC

		SPM	FRG	EOP	(EOP	
)			가?	
	CFM/SPM					
				,		
				, 가		
						Alarm
C	oalescing					
5.						
						가
	•	SP	가	Performa	nce Check Cri	teria(PCC)
		가		•		
	1) EOP					
	2) EOP					
	Line-	up				
	3) EOP					
~ 1	21					
SI	P 가					
				٦١	CFM/SPM	
				,	CI WI/SF WI	가
						* 1
	•					
<	>					
1.	Functional Require	ement CFM	I/SPM for K	NGR MMI, 2001		
2.	Design Report CFI	M/SPM for	KNGR MM	II, 2001		
	Emergency Operat					
4.	Functional Recove	ry Procedu	re for YGN	3&4		
5.	3&4					

6. Resource Assessment Tree for YGN 3&4