

DB

A Study on Data Base Development for Alarm System Design of Nuclear Power Plant

103- 16

DB
MS ACCESS , DB , 3가
가 MMI 가
가
가

Abstract

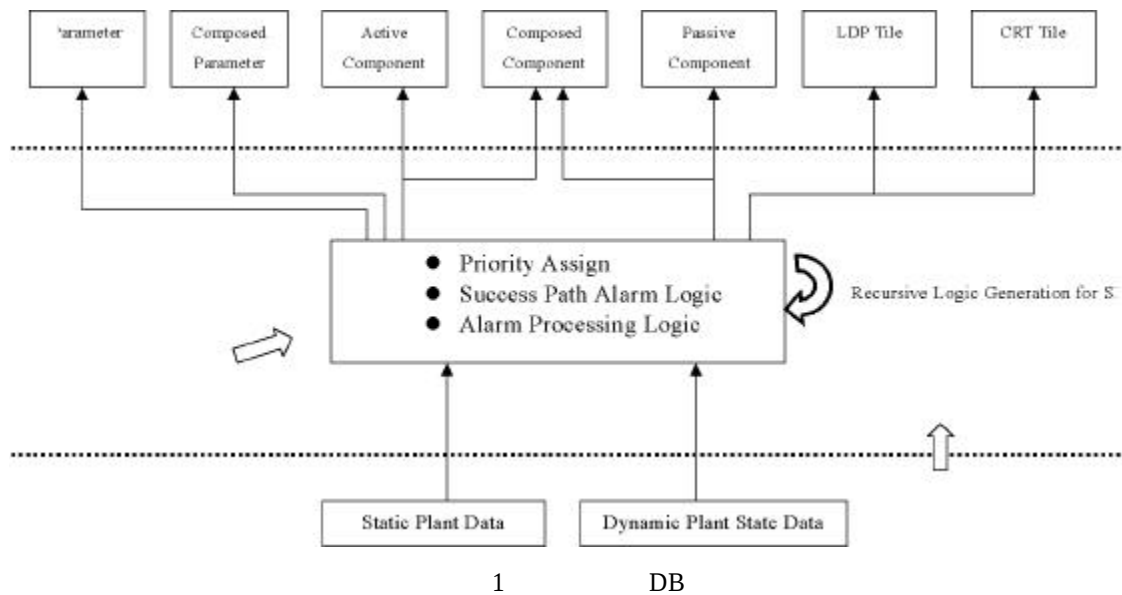
In this paper, We developed alarm DB including logic and detailed design for developing alarm system in KNGR. In here, alarm DB consist of alarm basic form, alarm prioritization form, and alarm processing form. Also This DB provides alarm grouping information for alarm display. Once using this alarm DB, MMI designer efficiently facilitate information for alarm design and save time. MMI designer easily search alarm related information and Logic.

1.

Partial Mockup MMI 가 1
{1}. MMI 3&4
3 MMI
Full Mockup
가 가
가 ,
가 . 가
DB . DB
3 가
DB
, DB

2. DB

DB
Porcess I&C .
DB Process I&C
Process I&C
가
2가
가 3가
가
Trip TBN Trip Trip Rx
Trip



1 DB

가 CRT Mimic

가 Mimic

Tile

Composed (

2 가

HRP COAST Program

가 Mockup 가

-
1. Alarm ID
 2. Alarm Group ID
 3. Alarm Message
 4. Related Component
 5. Related System
 6. Alarm Basis
 7. Alarm Type
 8. Setpoint Value
 9. Setpoint time delay
 10. Setpoint deadband

-
11. Reactor trip or ESFAS Actuation Relationship
 12. CFM/SPM Relationship
 13. Process Control Modulation Parameter
 14. Technical Specification LCO Condition
 15. Alarm Significance
 16. Priority Information
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17. Equipment State Dependency
18. Post-trip Mode Dependency
19. Plant Mode Dependency
20. Cause-Consequence Dependency

가 1 ,

3. DB

DB MS ACCESS ,

ALARM

System: SI

ALARM

Basic Alarm Info | Priority | Alarm - Parameter | Alarm - Component

1. Annunciator(Alarm or Flag) Message: SI LPSI PUMP 01PA DSCH FLOW LO

2. Annunciator(Alarm or Flag) Basis Description:

- 1. 저압 안전 주입펌프 인출구측의 모든 구동 밸브의 오동작
- 1. 저압 안전 주입 모판 격리 밸브의 오동작
- 1. 운전중의 저압 안전주입 펌프의 고장
- 1. 계기의 오동작

3. If Flag, check: ☐

4. Annunciator ID: SI-FL-001

5. Category: Parameter

6. NEW Alarm Message by MMI Designer: SI LPSI PUMP 01PA DSCH FLOW LO

7. Sensor ID: sh306a_a

8. Related Component ID: shs033a

Alarm Setpoint for Normal Operation:

Setpoint: 13247.5 Unit: L/MIN

☐ Hi Limit

☒ Lo Limit

Recetpoint: Time delay (sec):

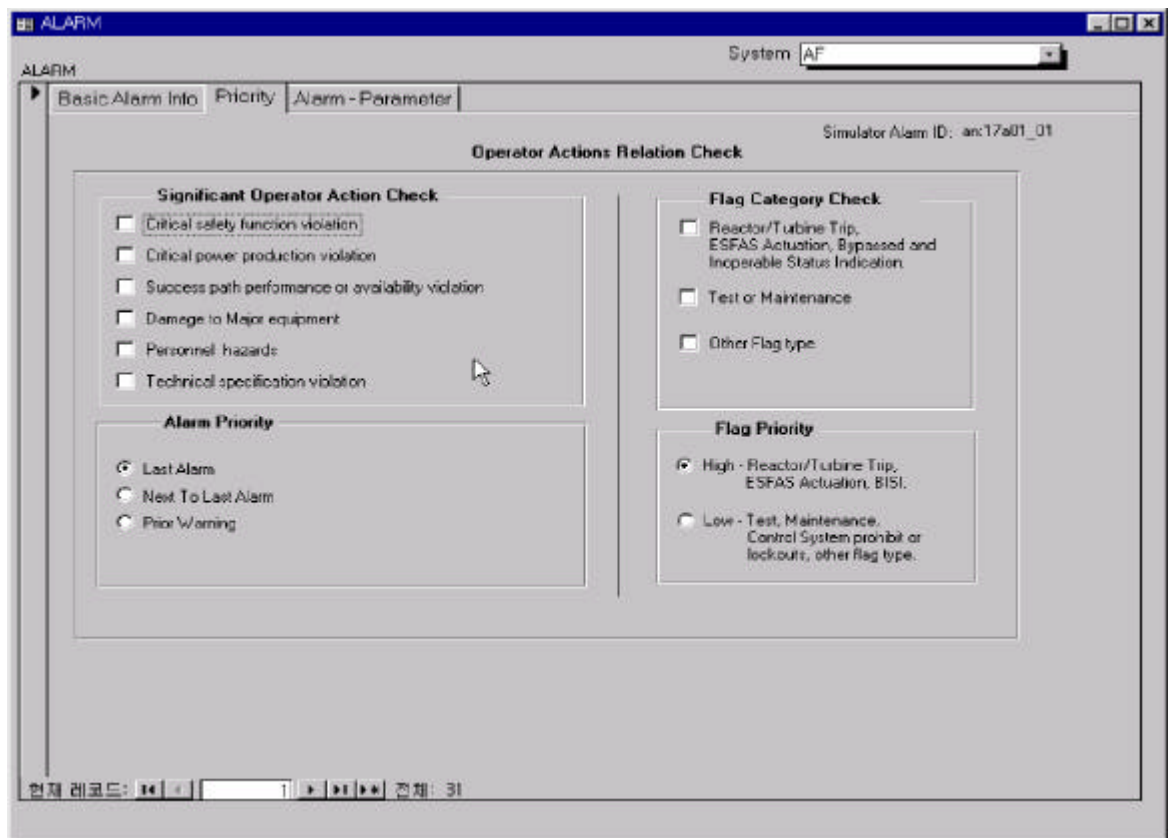
Annunciator Source Type Check:

☒ Process Value

☐ Process Representative Value

현재 레코드: 1 전체: 65

3&4 Table .
 , Relation .
 Simulator Alarm ID Annunciator Message .
 2 .
 MMI 가 . Annunciator Basis Annnciator가
 . Flag
 Flag , Flag
 가
 ,
 가 . Normal setpoint
 Resetpoint Time delay , Annunciator 가
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ALARM

System AF

ALARM

Basic Alarm Info Priority Alarm - Parameter

PARAMETER Alarm Simulator Alarm ID: an17a01_01

1. 각 모드에서 경보 Suppression 유무 판단 및 각 모드의 경보 설정제 입력

1) Suppress this alarm during Reactor Trip Mode ☐
 Change setpoint as: 50 with Time delay 123 (sec)

3) Suppress this alarm during Heatup/Cooldown Mode ☒
 Change setpoint as: 123123

2) Suppress this alarm during Turbine Trip Mode ☐
 Change setpoint as: 123123 with Time delay (sec)

4) Suppress this alarm during Coldshutdown and Refueling Mode ☐
 Change setpoint as: 12312

2. Component: afha010a 가 On(or Open) 일때만 이 경보는 유효하다

3. 경보가 H(LO) 혹은 HI-HI(LO-LO) 경보일 경우 해당 경보의 하위나 상위 경보의 HI나 HI-HI 경보가 기승

현재 레코드: 1 전체: 31

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ALARM

System AF

ALARM

Basic Alarm Info Priority Alarm - Component

COMPONENT Alarm Simulator Alarm ID: an17a01_01

1. 불필요한 경보가 발생 될 수 있는 운전모드 체크

Trip mode dependency

Post Reactor-trip Nuisance Alarm ☐

Post Turbine-trip Nuisance Alarm ☐

Other mode dependency

Heatup/Cooldown Nuisance Alarm ☐

Cold Shutdown/Refueling Nuisance Alarm ☐

2. 경보의 종속된 Dependent global source(PWR, IA Source) ID 기승

SOURCE ID AND NAME

3. Component: afha010a 가 On(or Open) 일때만 이 경보는 유효

현재 레코드: 1 전체: 31

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4. DB Mockup

DB ,
가
Mockop . DB
, Mockup COAST
COAST DB ,
COAST Class .

5.

DB DB
COAST ,
가 .
가
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, 가 DB 가
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1. , “ MMI Mockup ,” ‘98 , 1998.
2. John M.O'Hara, William S. Brown, and Inn S. Kim, "Advanced Alarm Systems in Nuclear Power Plants : Background Review," Brookhaven National Laboratory, 1991.
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4. Bard R.Moum, etc "Alarm System CASH : Lessons Learned Based On Operator's Feedback and Designer's Experiences," HWR-535, 1998
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