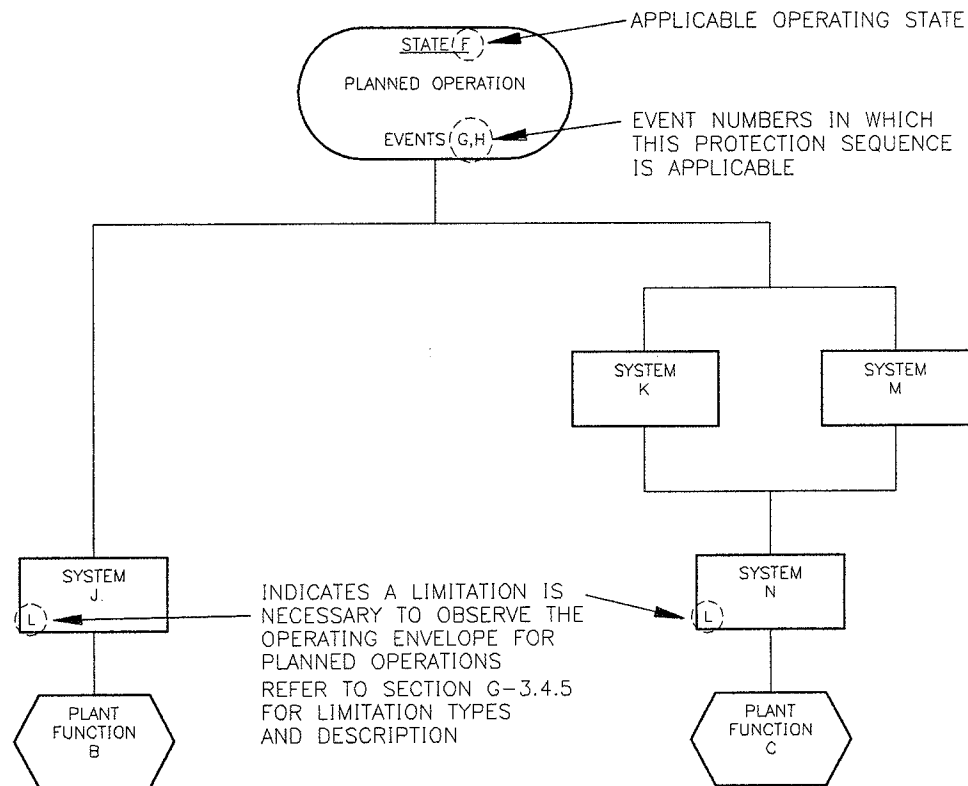


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# **BLOCK DIAGRAM FOR NUCLEAR SAFETY OPERATIONAL ANALYSIS**

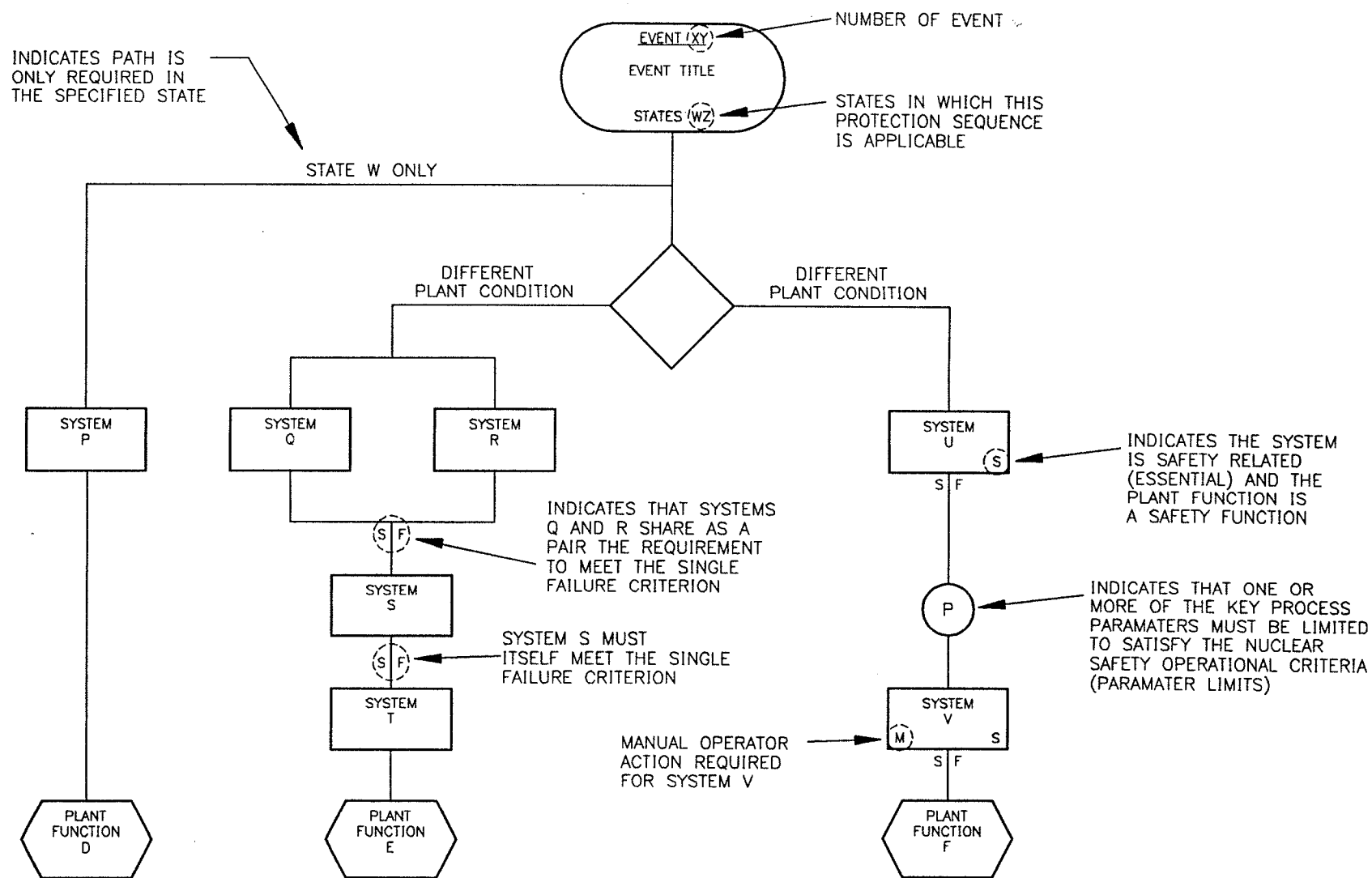
FIGURE G-2-2  
7/22/96



Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**FORMAT FOR  
PROTECTION SEQUENCE DIAGRAMS  
- PLANNED OPERATION**

FIGURE G-4-1  
8/3/00

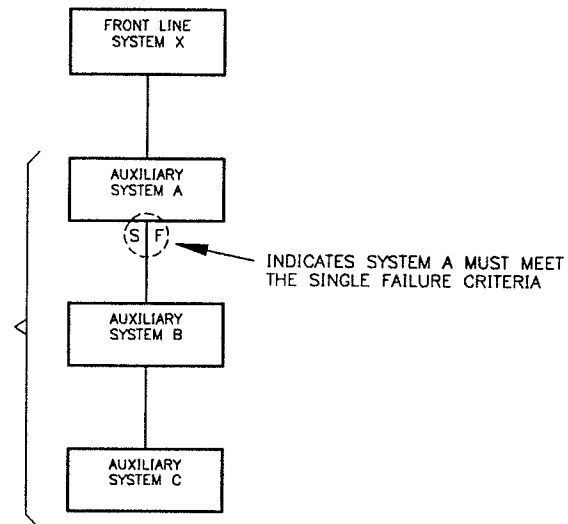


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**FORMAT FOR  
PROTECTION SEQUENCE DIAGRAMS  
— EVENTS**

FIGURE G-4-2  
7/22/96

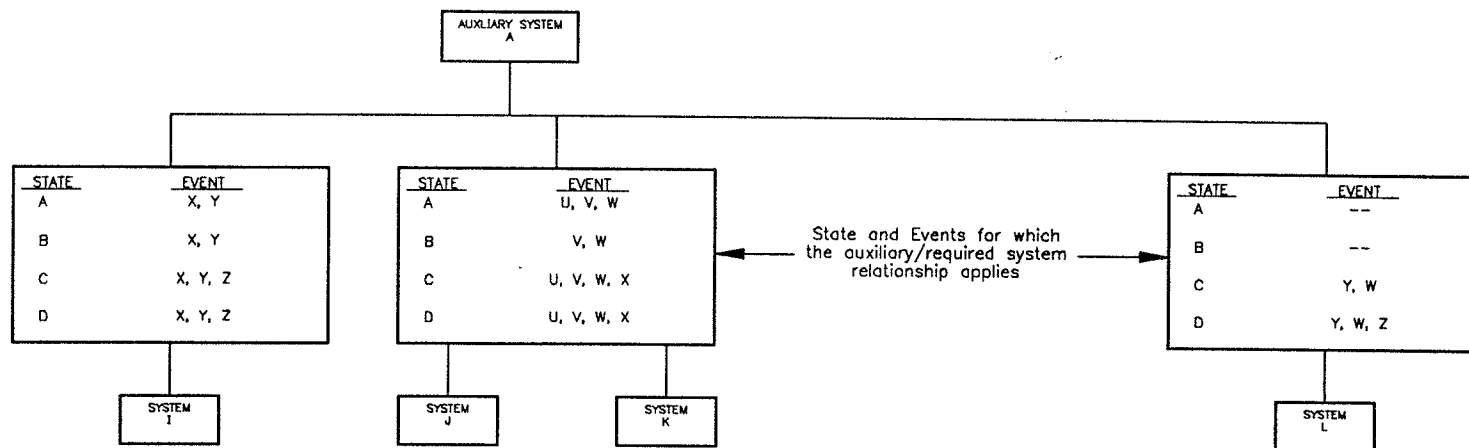
DIAGRAM INDICATES THAT AUXILIARY SYSTEMS A,B AND C ARE REQUIRED FOR THE OPERATION OF FRONT-LINE SYSTEM X. IF SYSTEM X IS SAFETY RELATED (ESSENTIAL), THEN AUXILIARY SYSTEMS A,B, AND C MUST ALSO BE SAFETY RELATED (ESSENTIAL).



Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# FORMAT FOR AUXILIARY SYSTEM DIAGRAMS

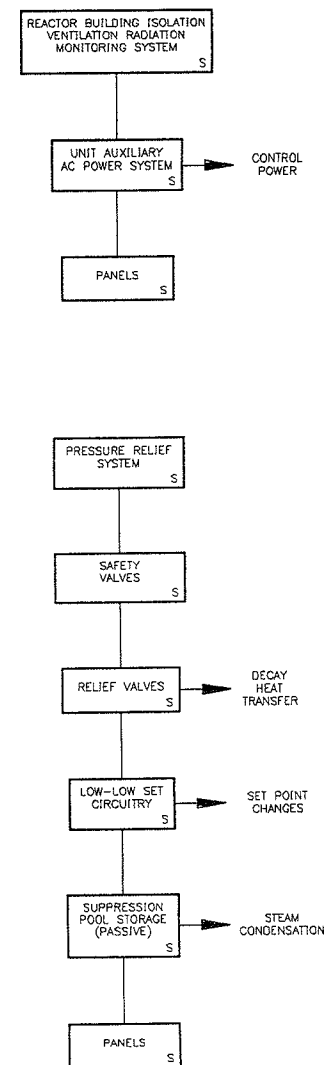
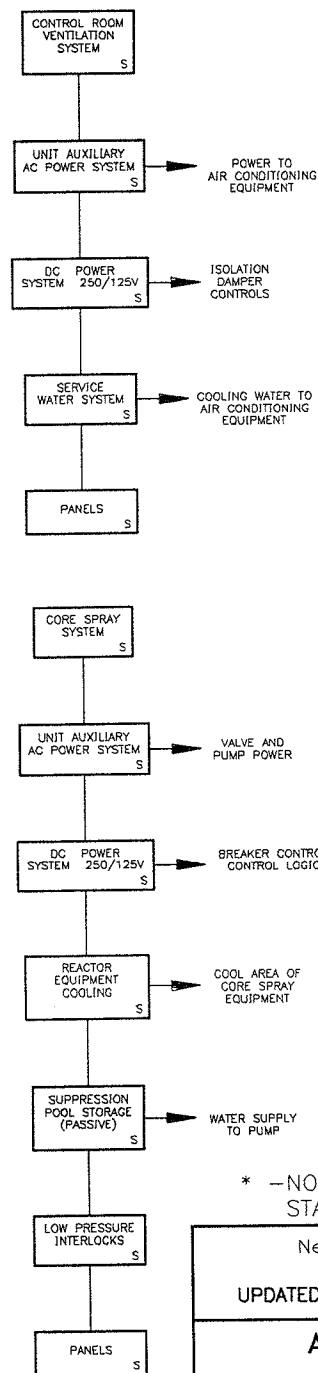
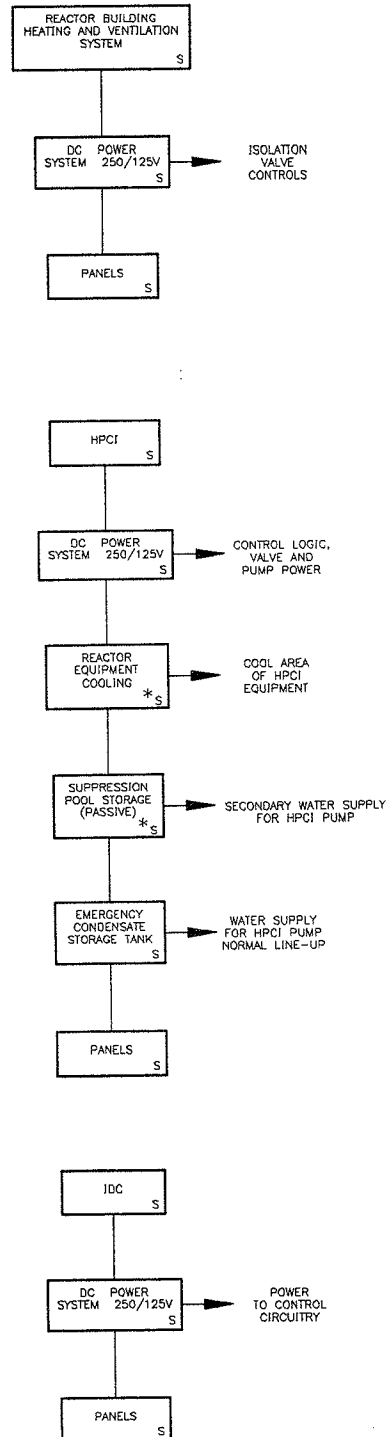
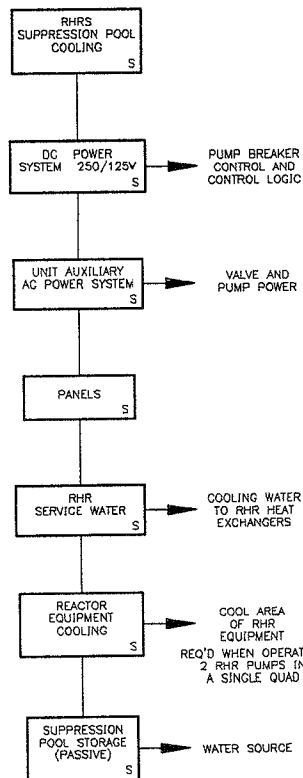
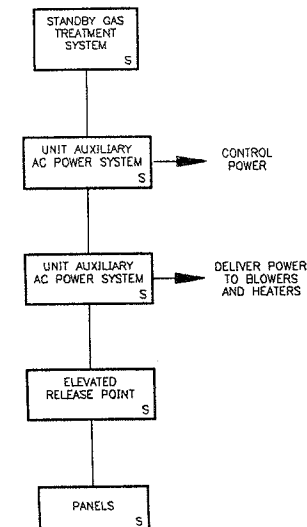
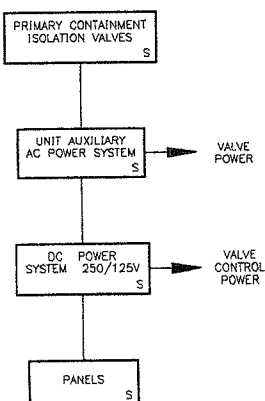
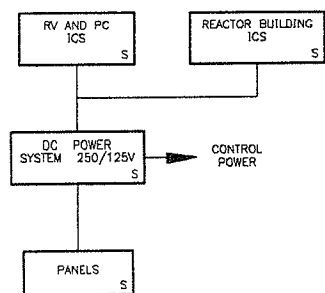
FIGURE G-4-3  
7/22/96



Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# FORMAT FOR COMMONALITY DIAGRAMS

FIGURE G-4-4  
7/22/96

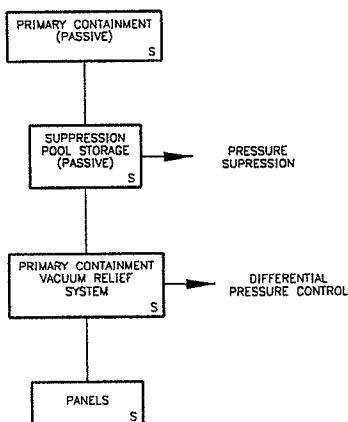
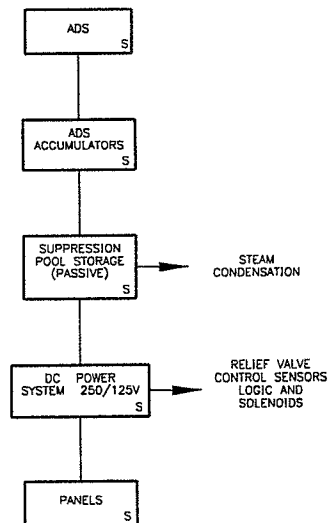
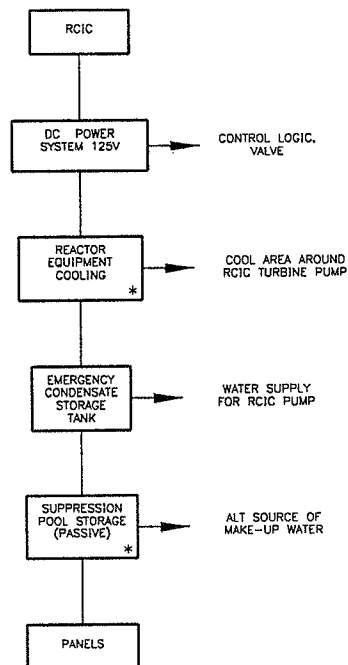
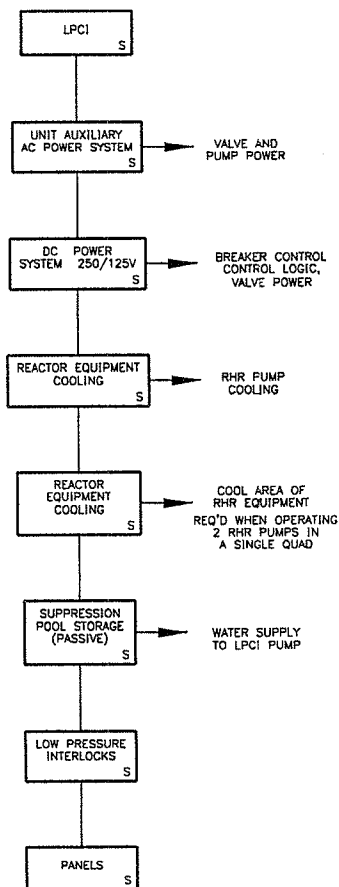


\* -NOT APPLICABLE FOR STATION BLACKOUT

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## AUXILIARY SYSTEMS FOR FRONT-LINE SYSTEMS

FIGURE G-5-1  
8/3/00



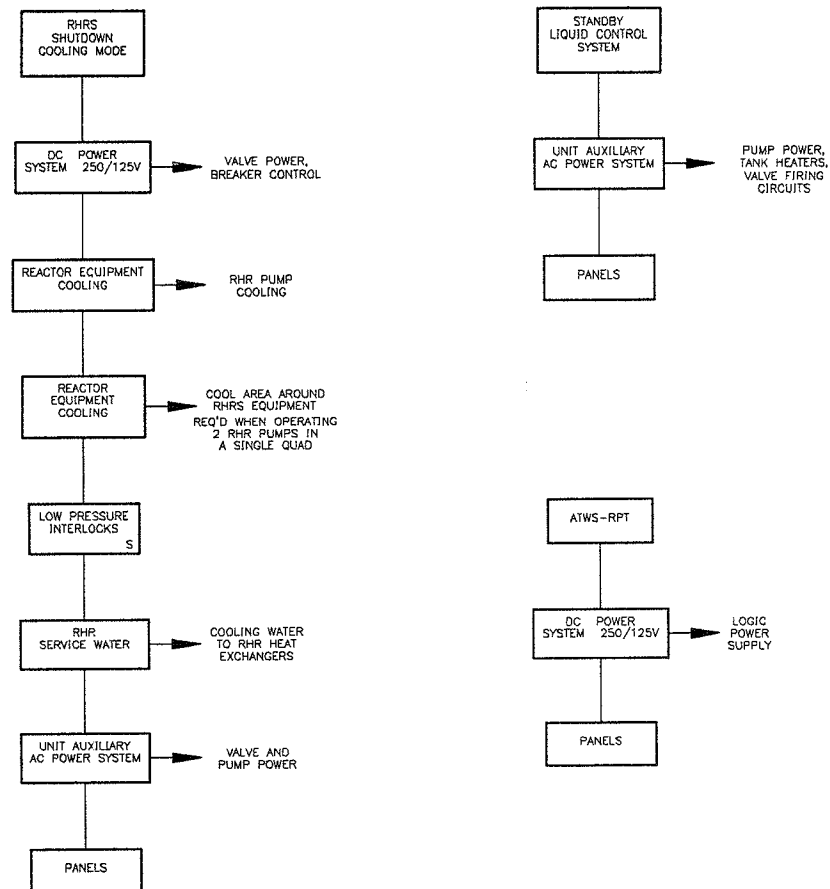
SYSTEMS WITH NO REQUIRED AUXILIARY SYSTEMS	PASSIVE	FAIL-SAFE	SELF-CONTAINED	SAFETY RELATED
FUEL ASSEMBLIES	X			X
CONTROL RODS			X	X
CONTROL ROD DRIVES		X		X
NEUTRON MONITORING		X		X
ROD BLOCK MONITORING		X		X
MAIN STEAM LINE RAD MONITORING		X		X
RPS		X		X
MSIV'S		X		X
FLOW RESTRICTORS	X			X
SAFETY VALVES			X	X
RADWASTE BUILDING	X			X
REACTOR BUILDING	X			X
CONTROL ROD VELOCITY-LIMITER	X			X
CONTROL ROD HOUSING	X			X
DC POWER SYSTEM 250/125V			X	X
SUPPRESSION POOL STORAGE			X	X
PRIMARY CONTAINMENT RELIEF		X		X
SPENT FUEL POOL	X			X
CRD HOUSING SUPPORTS	X			X
CONTROL ROOM PANELS	X			X
LOCAL PANELS AND RACKS	X			X
EMERGENCY COND. STORAGE TANK	X			

\* -NOT APPLICABLE FOR STATION BLACKOUT

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

### AUXILIARY SYSTEMS FOR FRONT-LINE SYSTEMS

FIGURE G-5-2  
5/5/06

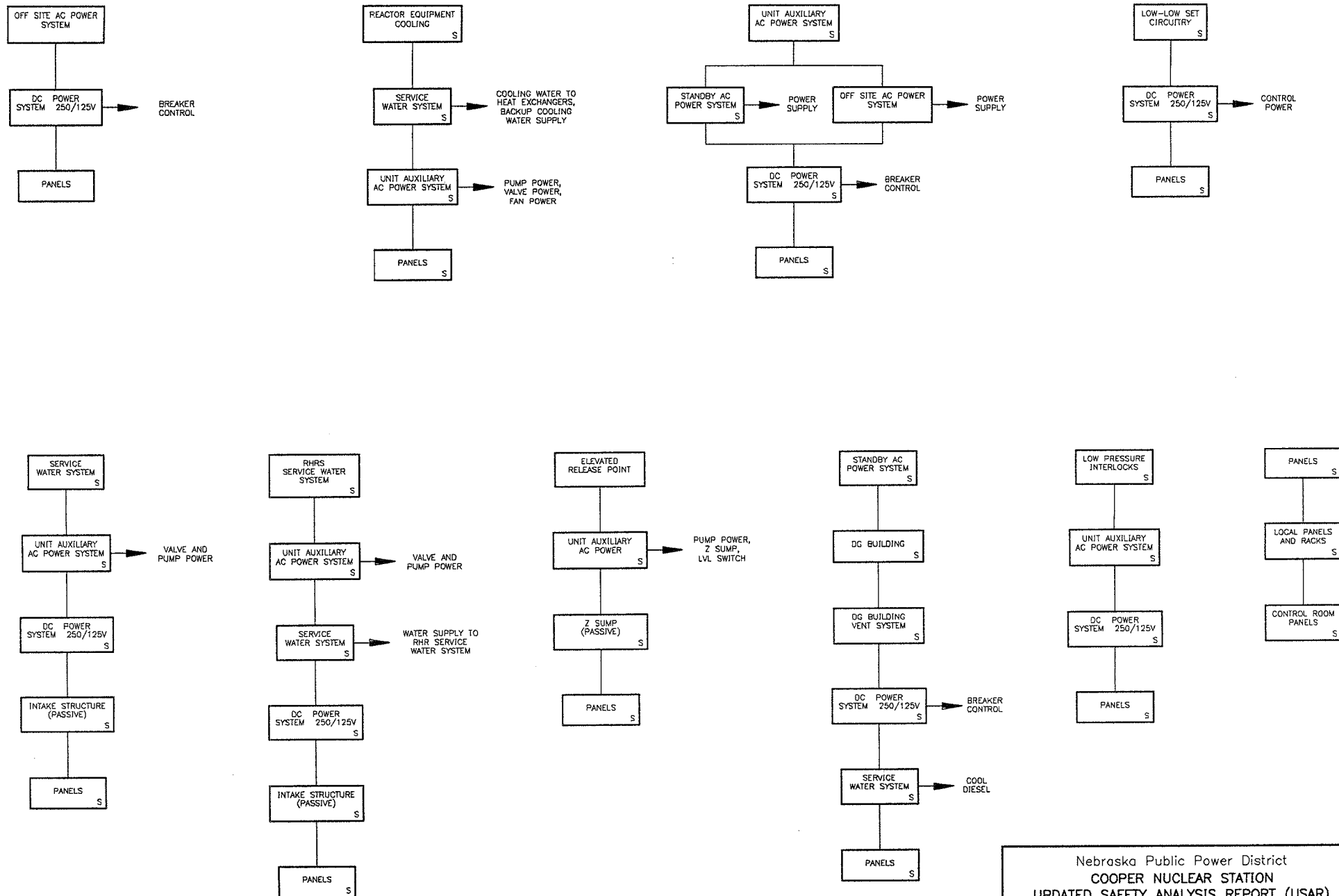


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# AUXILIARY SYSTEMS FOR FRONT-LINE SYSTEMS

FIGURE G-5-3  
8/3/00

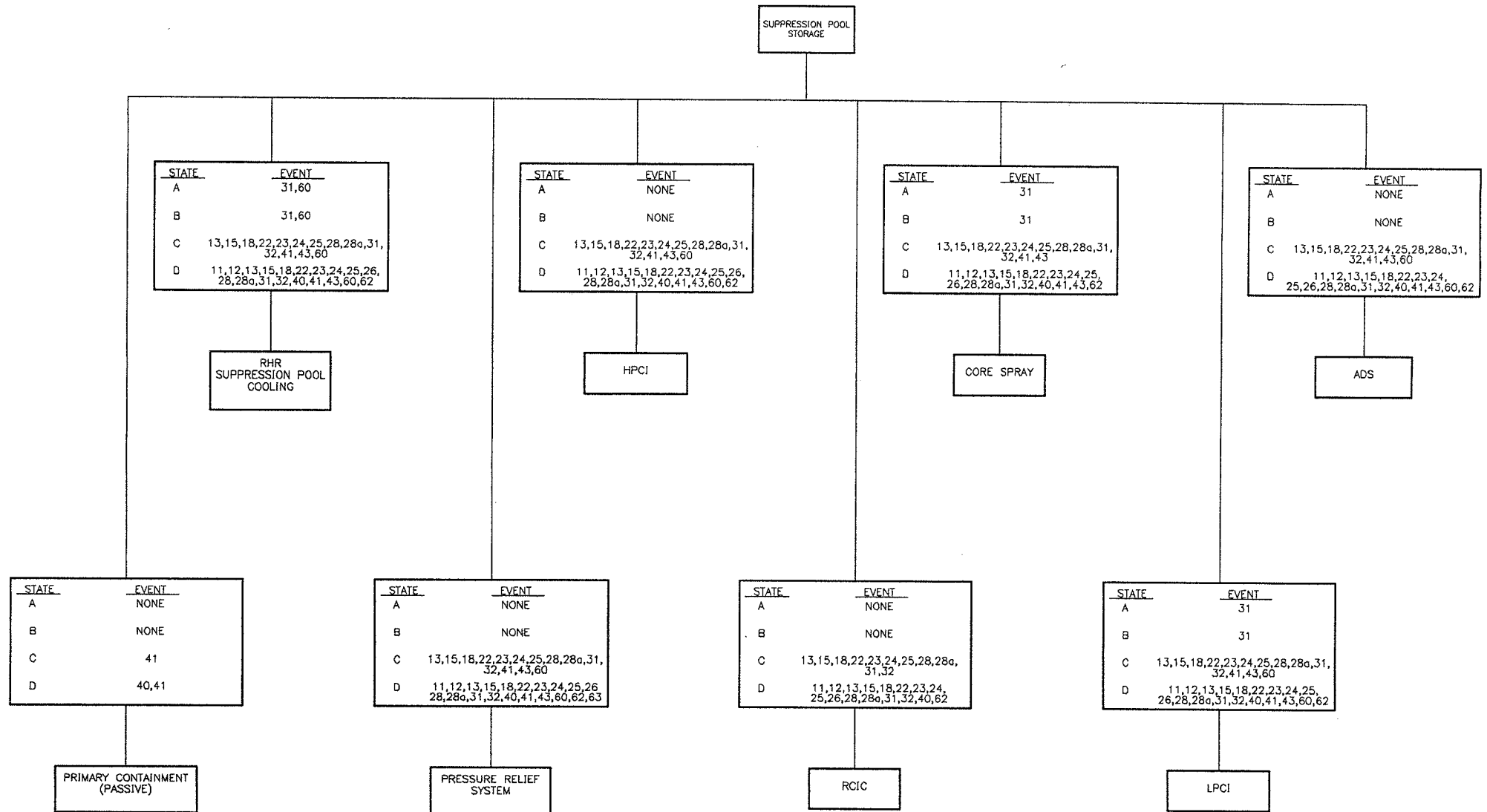




Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# AUXILIARY SYSTEMS FOR OTHER AUXILIARY SYSTEMS

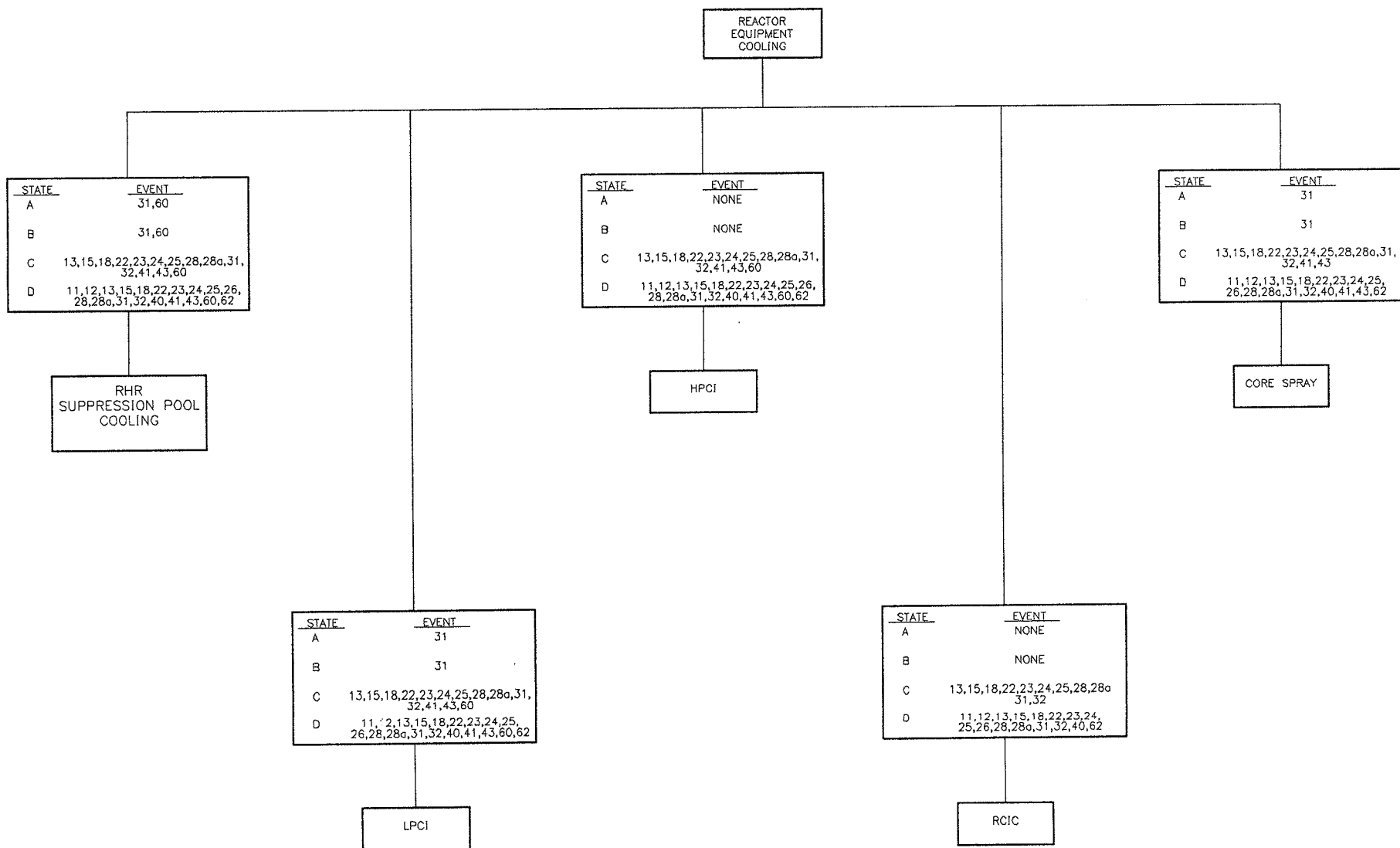
FIGURE G-5-4  
8/3/00



Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## COMMONALITY DIAGRAMS

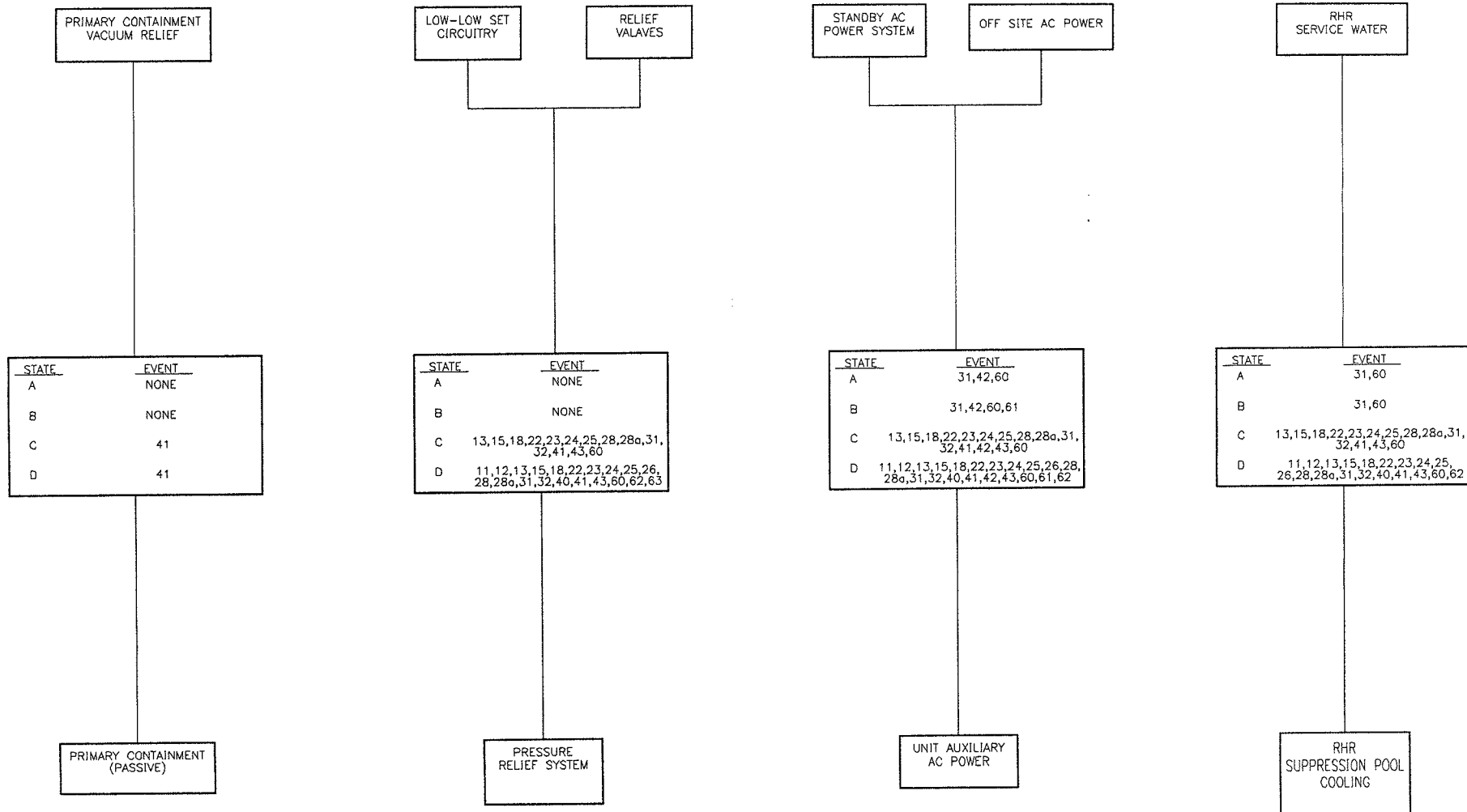
FIGURE G-5-5  
1/31/01



Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## COMMONALITY DIAGRAMS

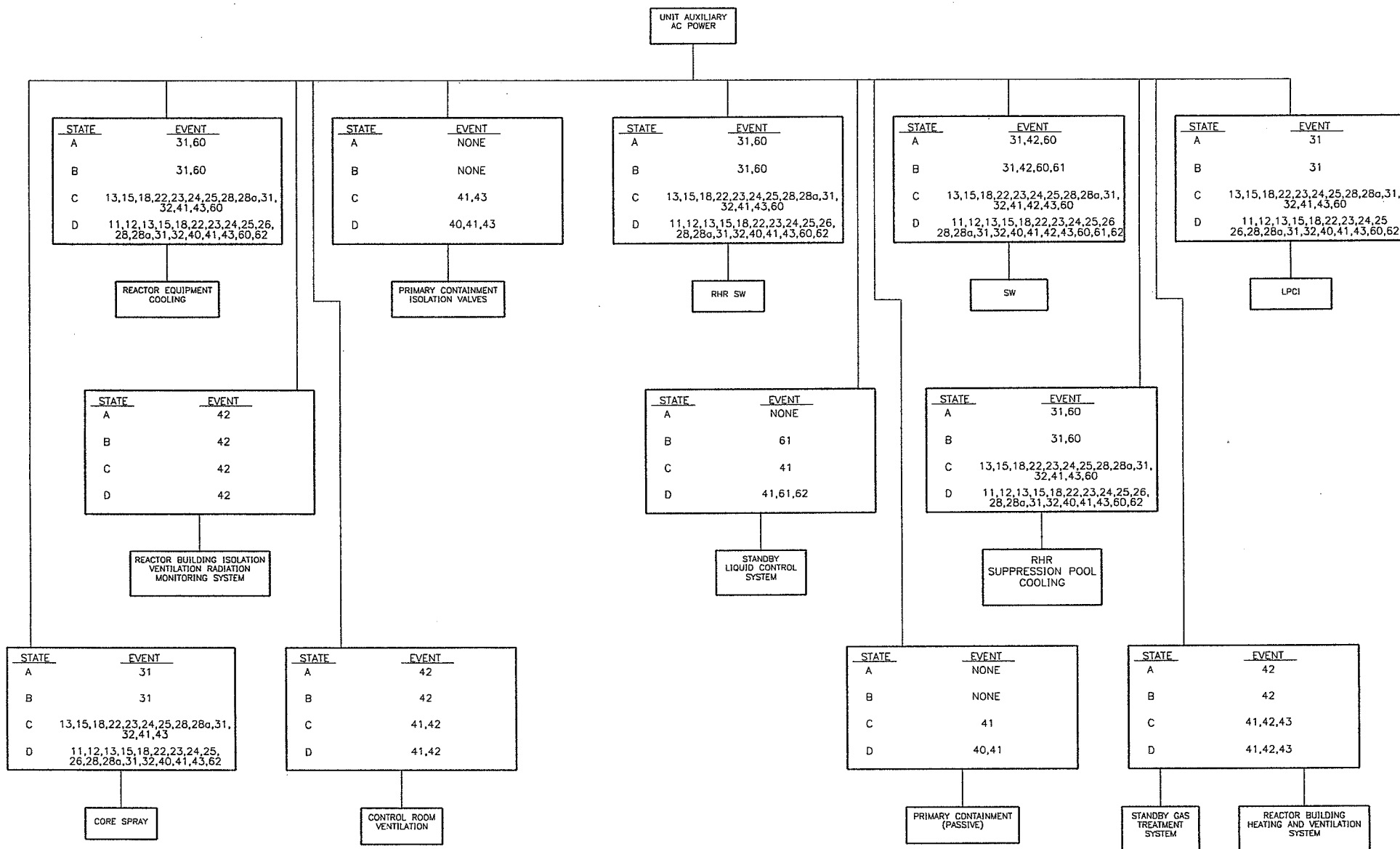
FIGURE G-5-6  
8/3/00



Nebraska Public Power District  
 COOPER NUCLEAR STATION  
 UPDATED SAFETY ANALYSIS REPORT (USAR)

## COMMONALITY DIAGRAMS

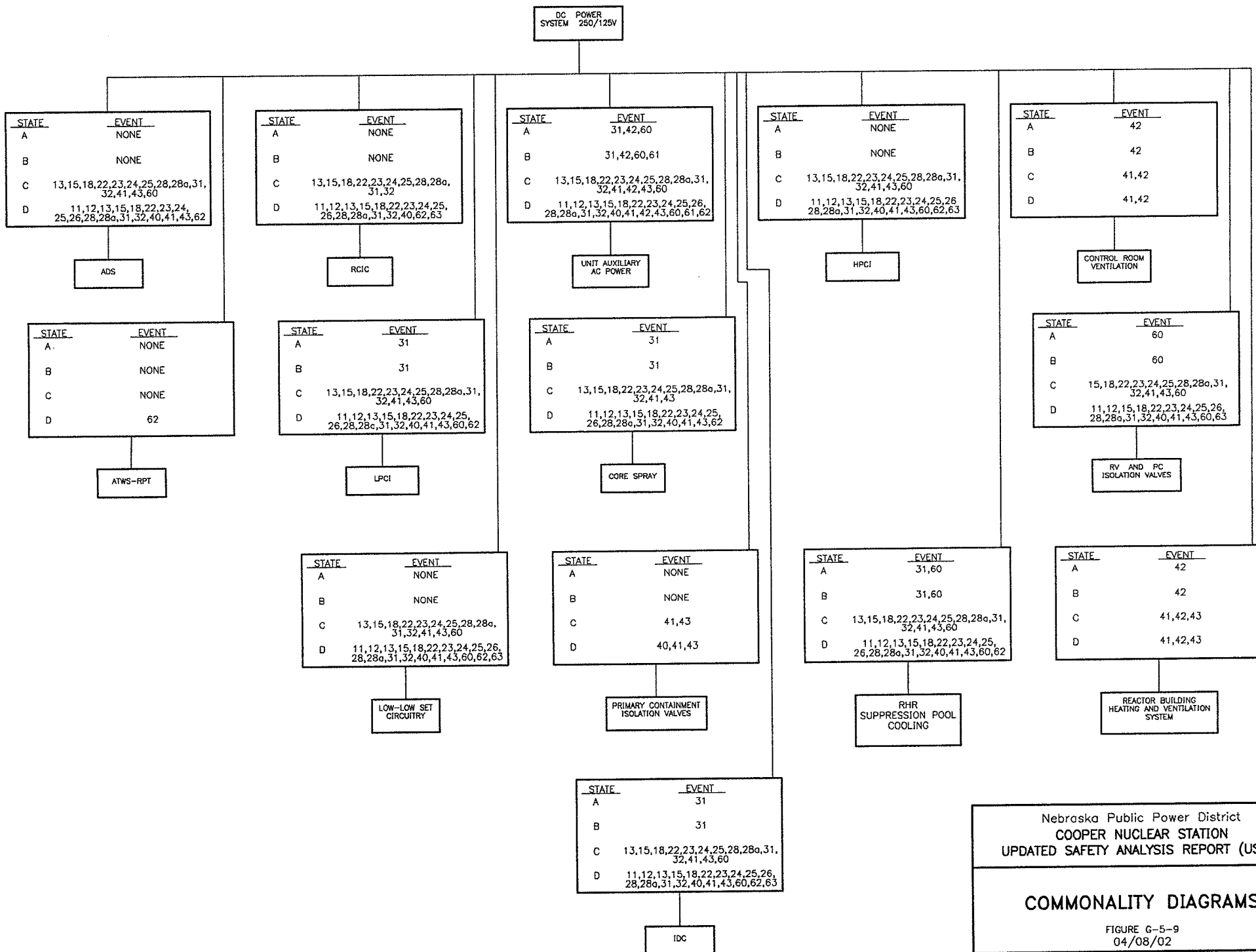
FIGURE G-5-7  
 8/3/00

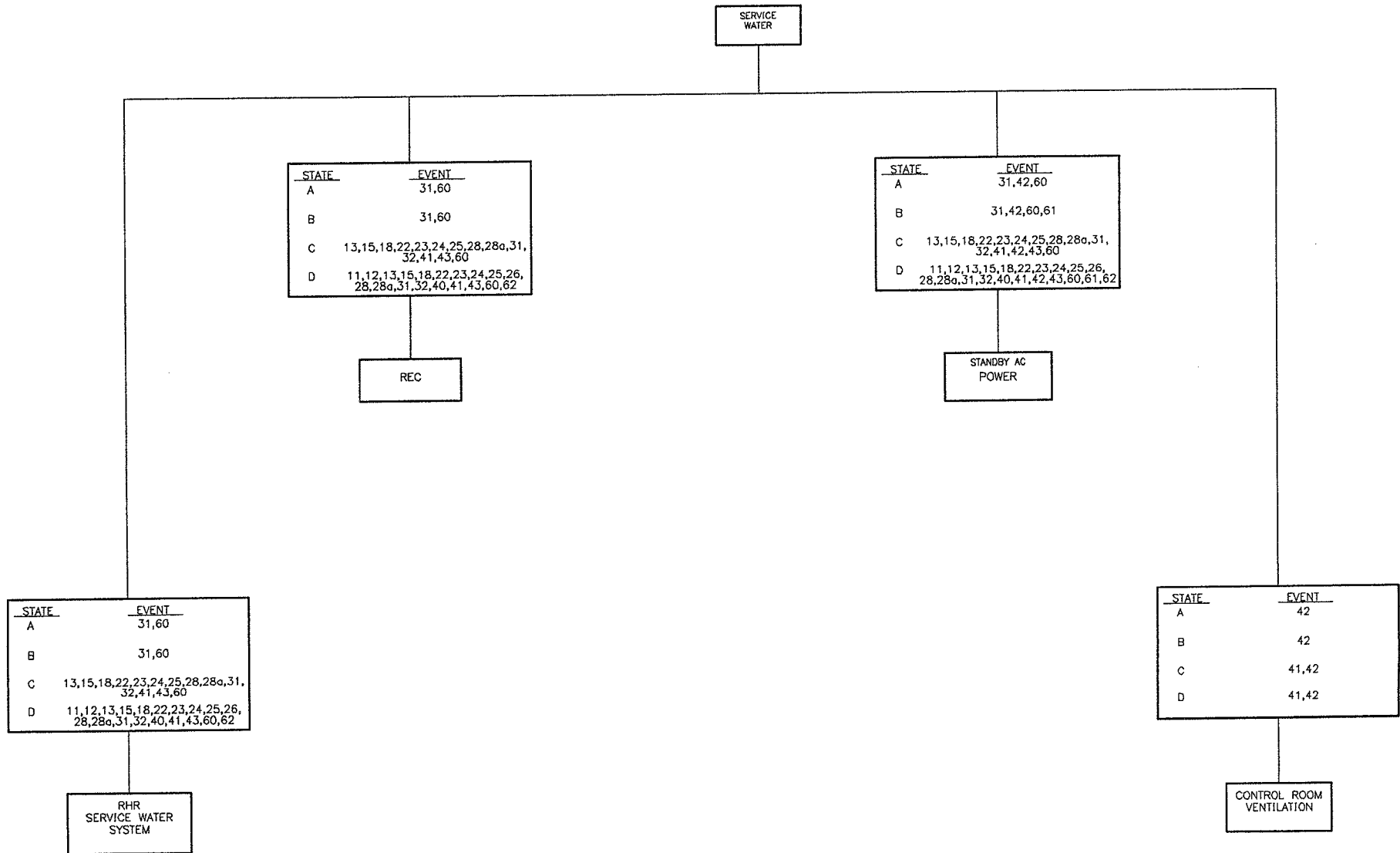


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## COMMONALITY DIAGRAMS

FIGURE G-5-8  
02/05/10



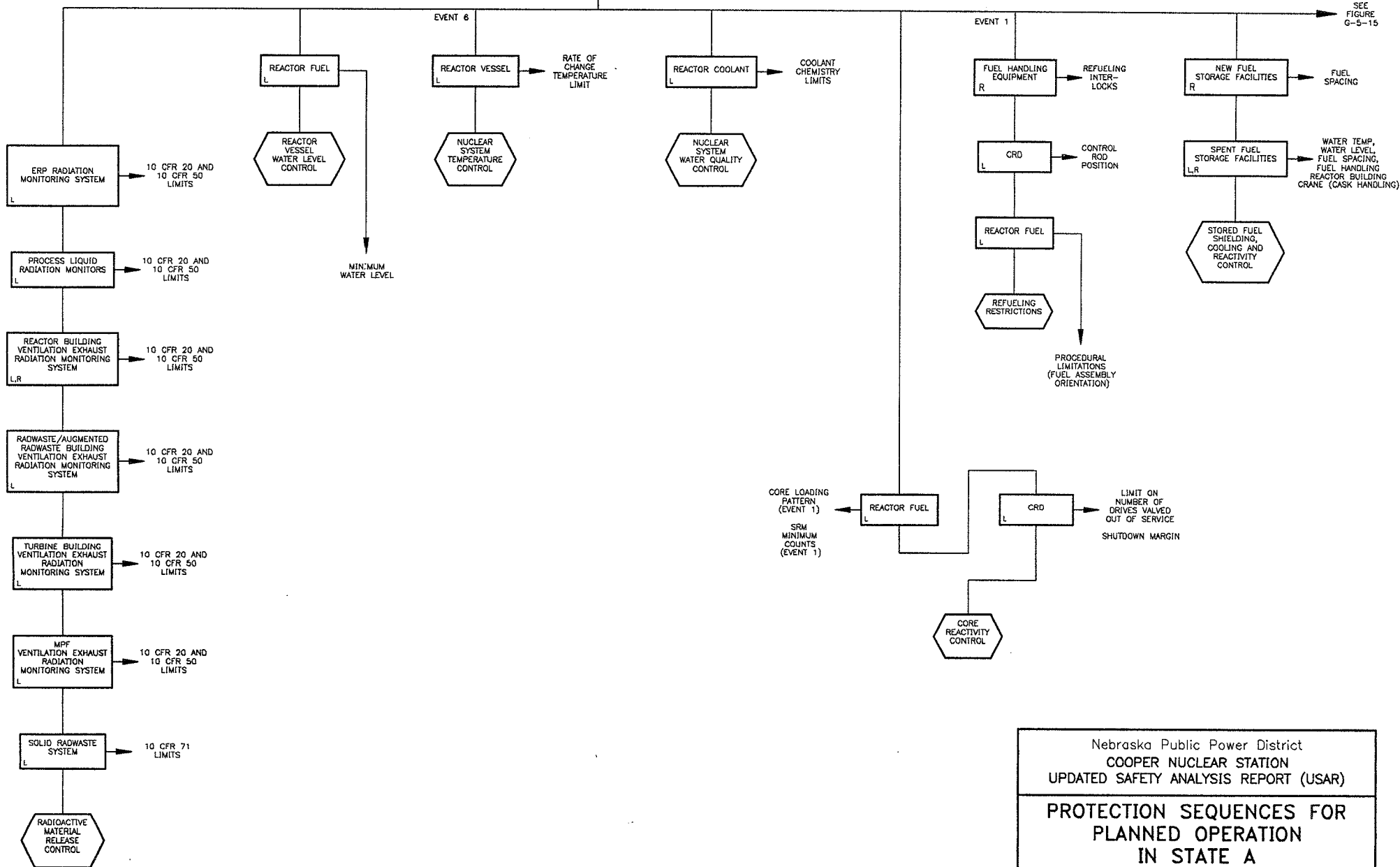


Nebraska Public Power District  
 COOPER NUCLEAR STATION  
 UPDATED SAFETY ANALYSIS REPORT (USAR)

## COMMONALITY DIAGRAMS

FIGURE G-5-10  
 04/08/02

EVENTS 1,2,6  
PLANNED  
OPERATION  
STATE A

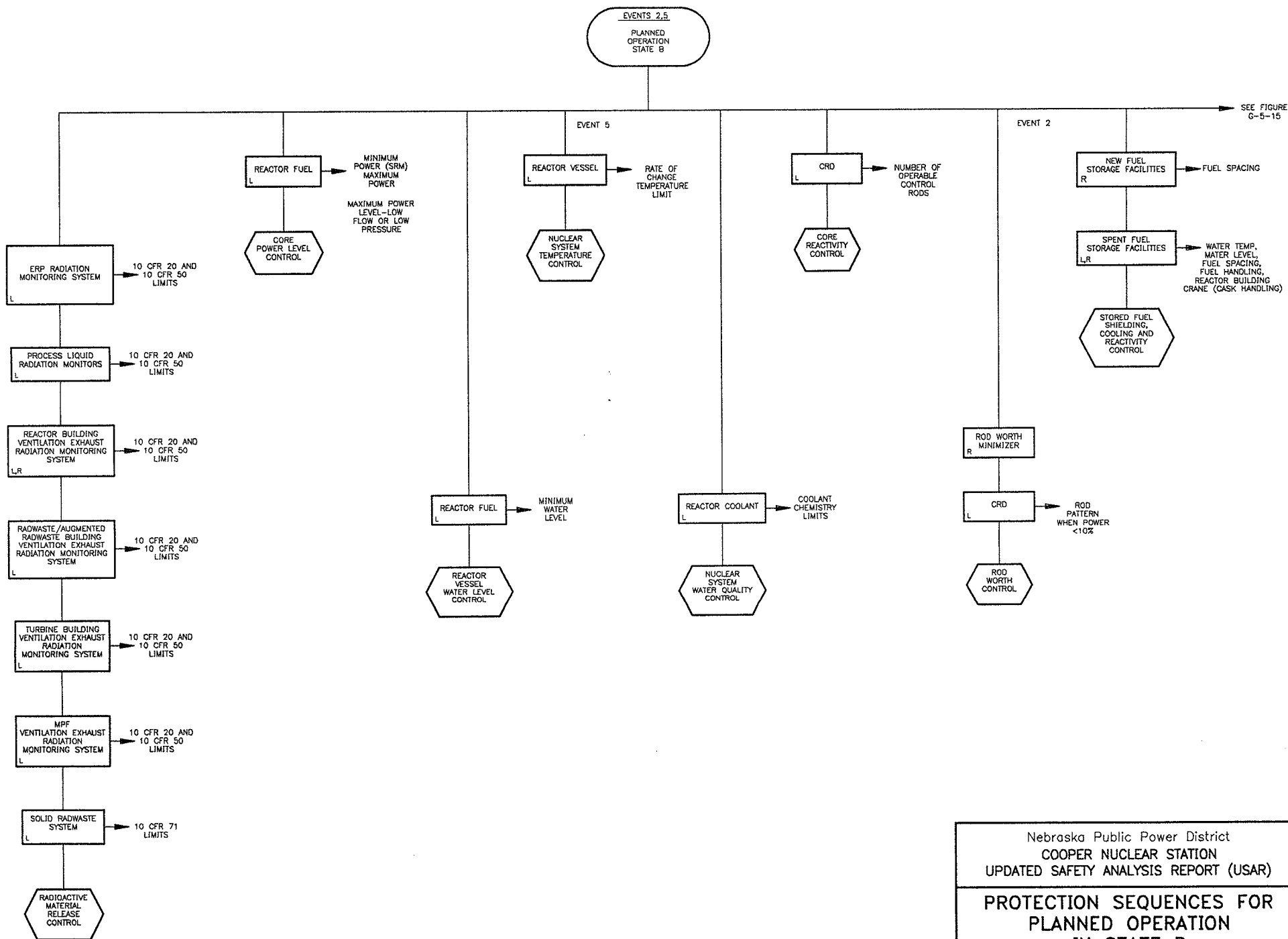


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
PLANNED OPERATION  
IN STATE A

FIGURE G-5-11  
2/19/01



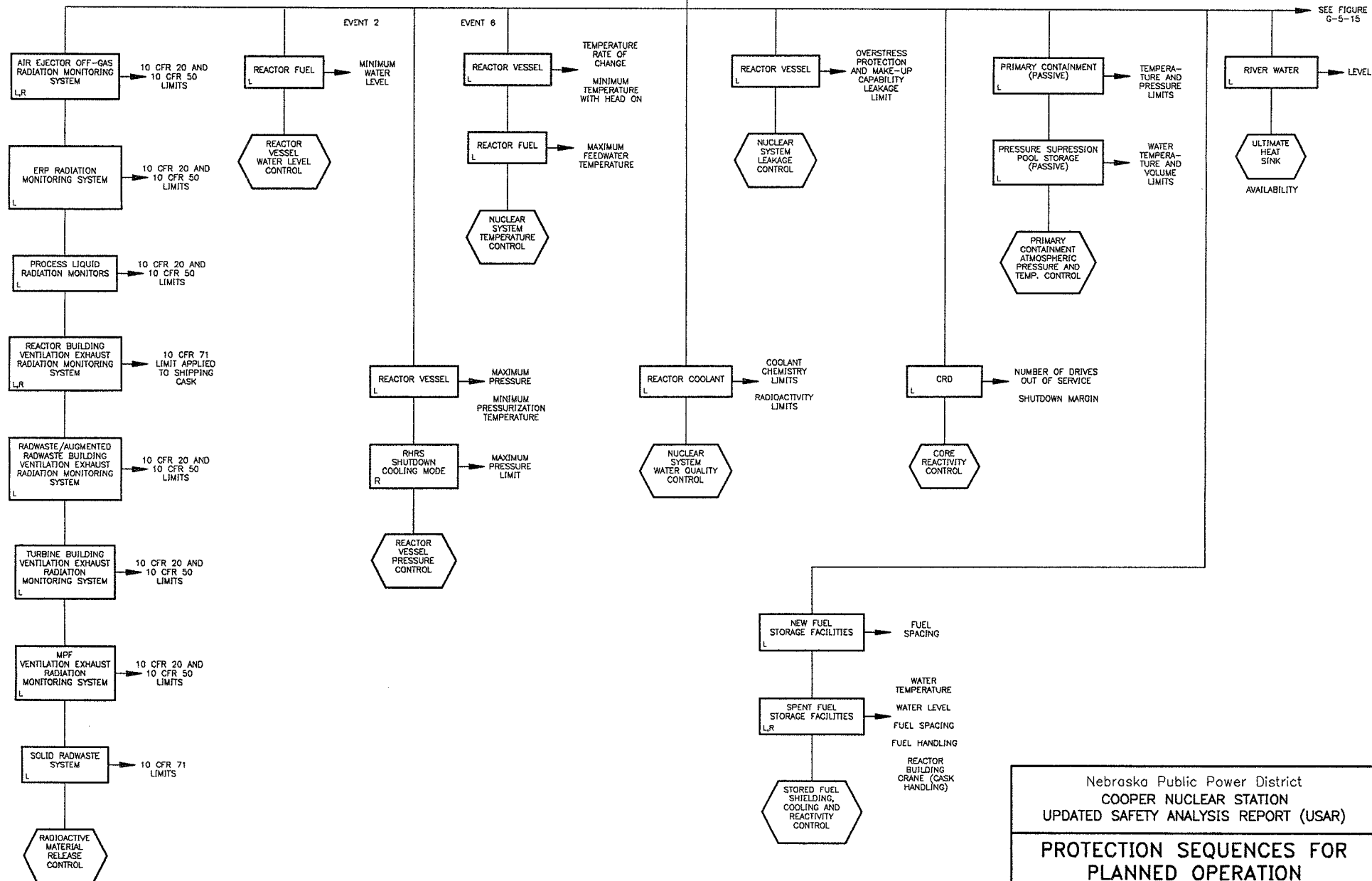


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
PLANNED OPERATION  
IN STATE B**

FIGURE G-5-12  
2/19/01

EVENTS 2,6  
PLANNED  
OPERATION  
STATE C

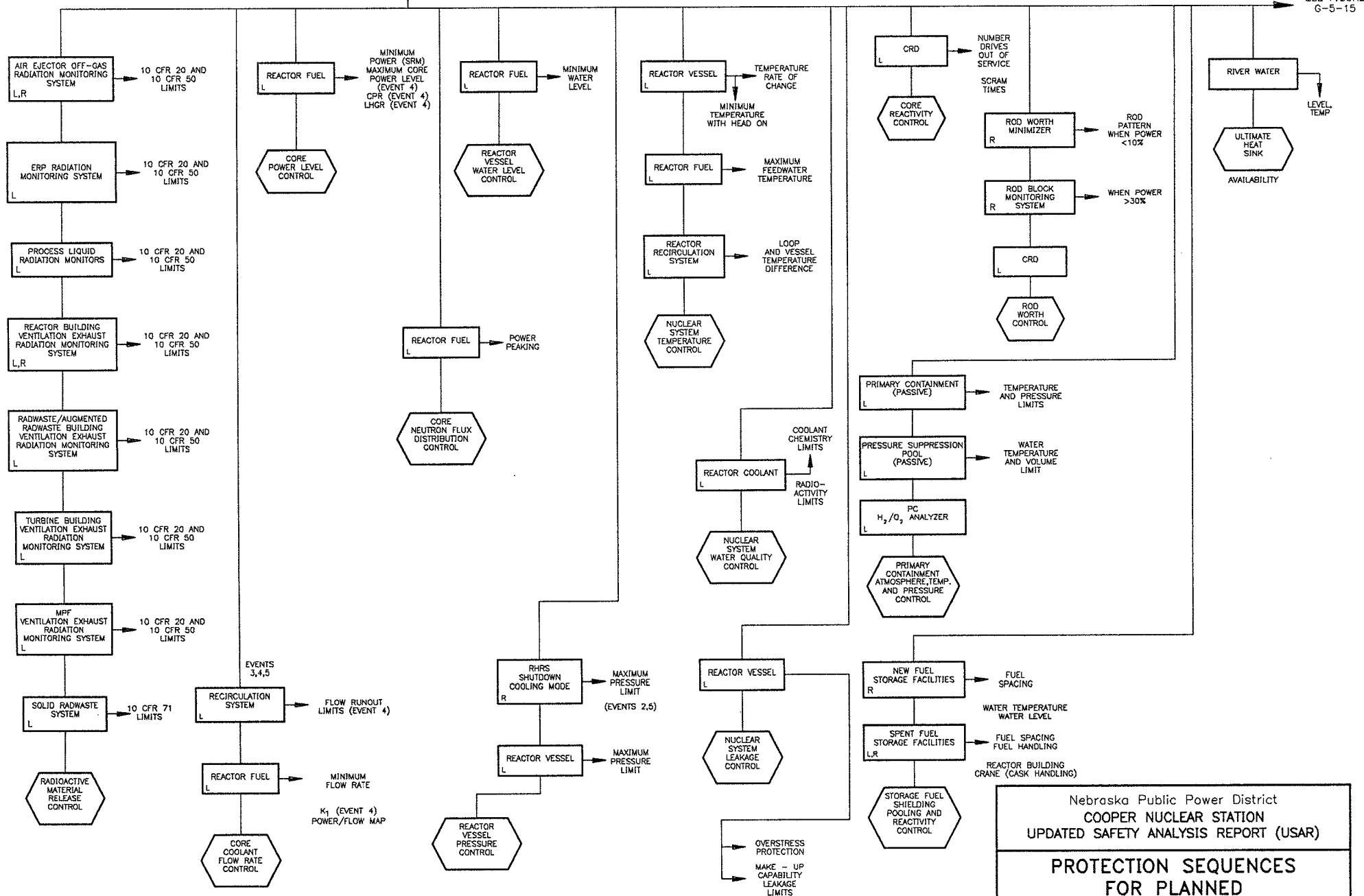


Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

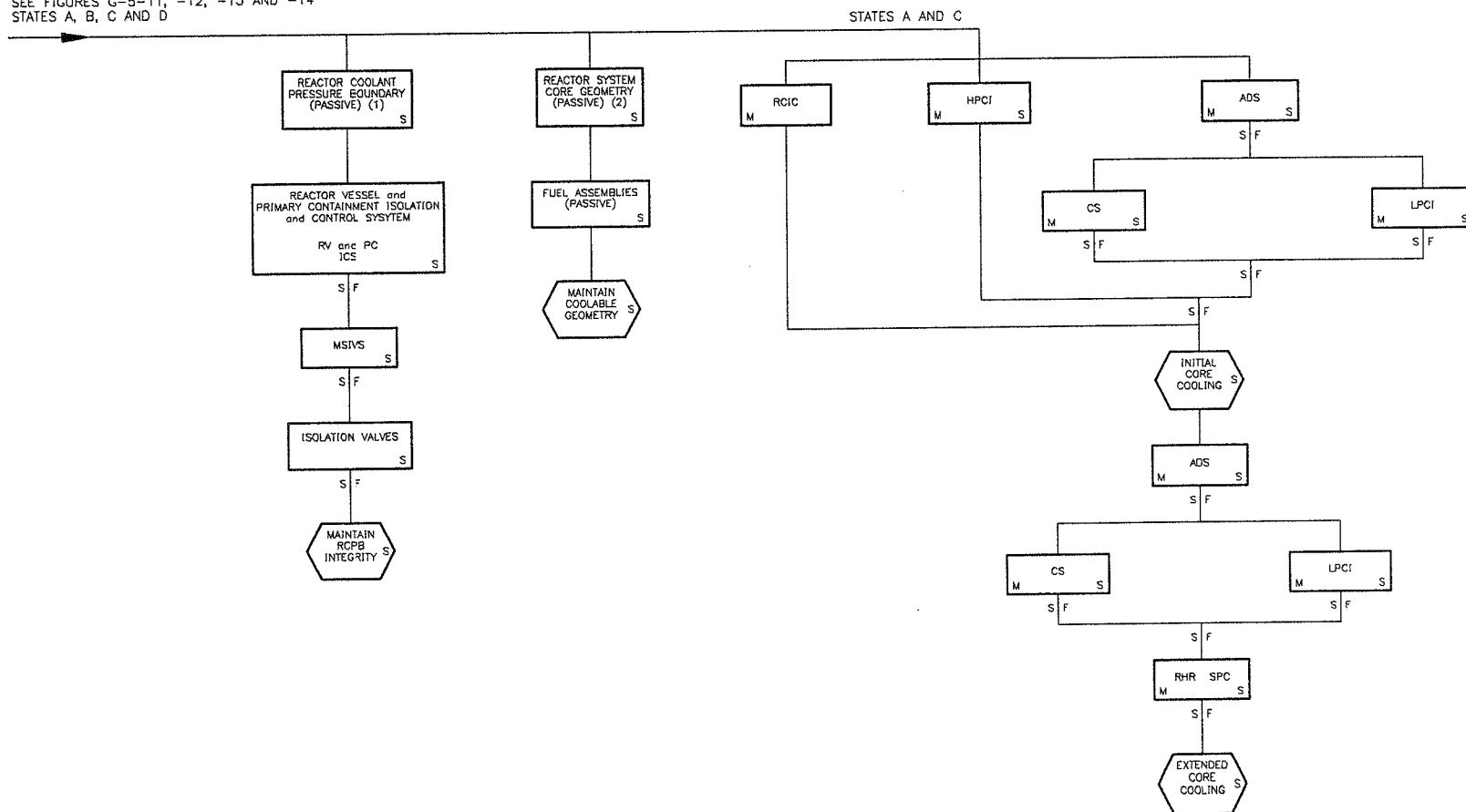
PROTECTION SEQUENCES FOR  
PLANNED OPERATION  
IN STATE C

FIGURE G-5-13  
2/19/01

EVENTS 2,3,4,5

PLANNED  
OPERATION  
STATE D

SEE FIGURES G-5-11, -12, -13 AND -14  
STATES A, B, C AND D



(1) RCPB:

- |                      |                      |
|----------------------|----------------------|
| 1. RPV               | 6. RWCU              |
| 2. MAIN STEAM SYSTEM | 7. CRD SYSTEM        |
| 3. RHR               | 8. SLCS              |
| 4. HPCI              | 9. FEED WATER SYSTEM |
| 5. RCIC              |                      |

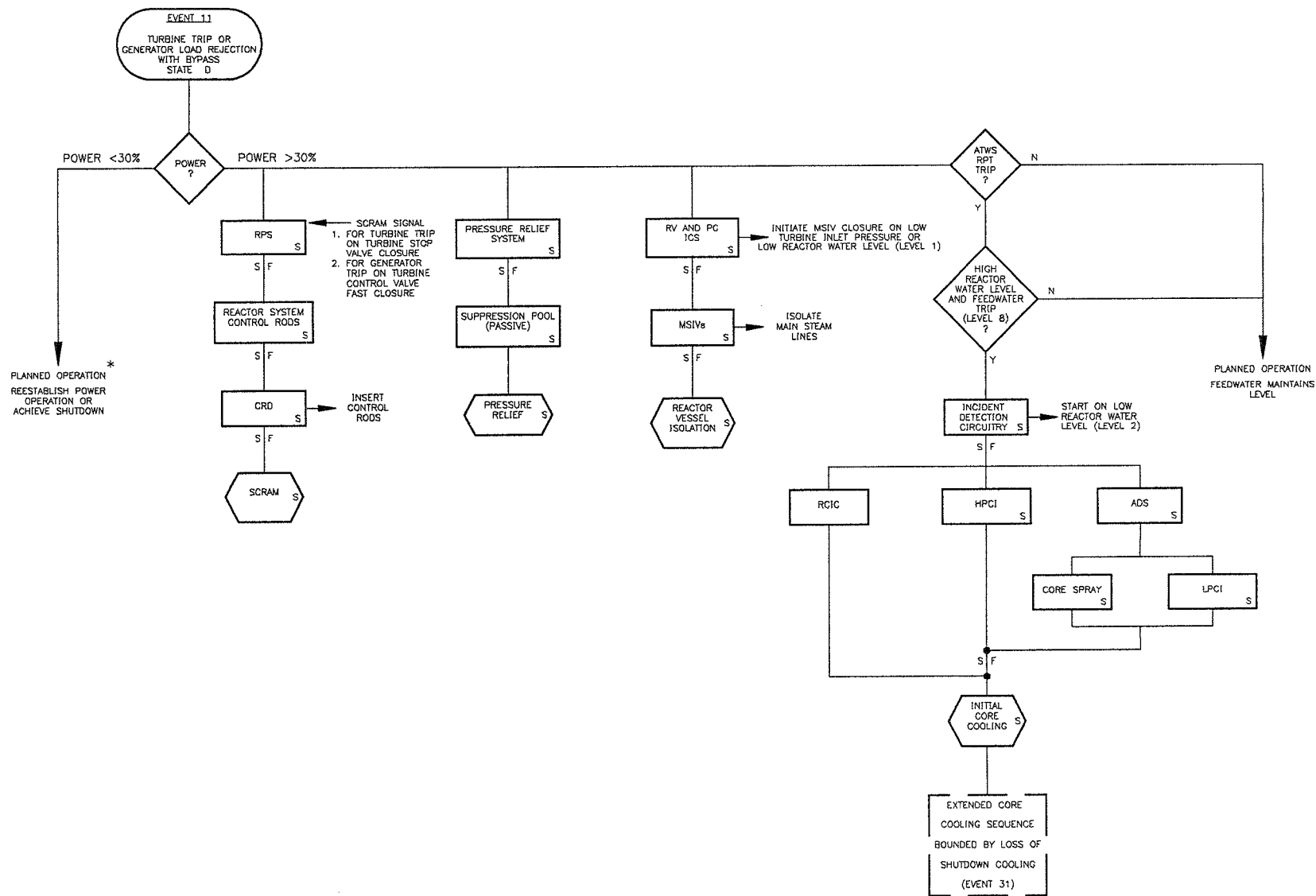
(2) CORE GEOMETRY:

1. RPV
2. CORE SUPPORT STRUCTURES
3. CORE SHROUD
4. SHROUD SUPPORT

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES  
FOR PLANNED OPERATION  
IN STATE A, B, C & D**

FIGURE G-5-15  
8/3/00



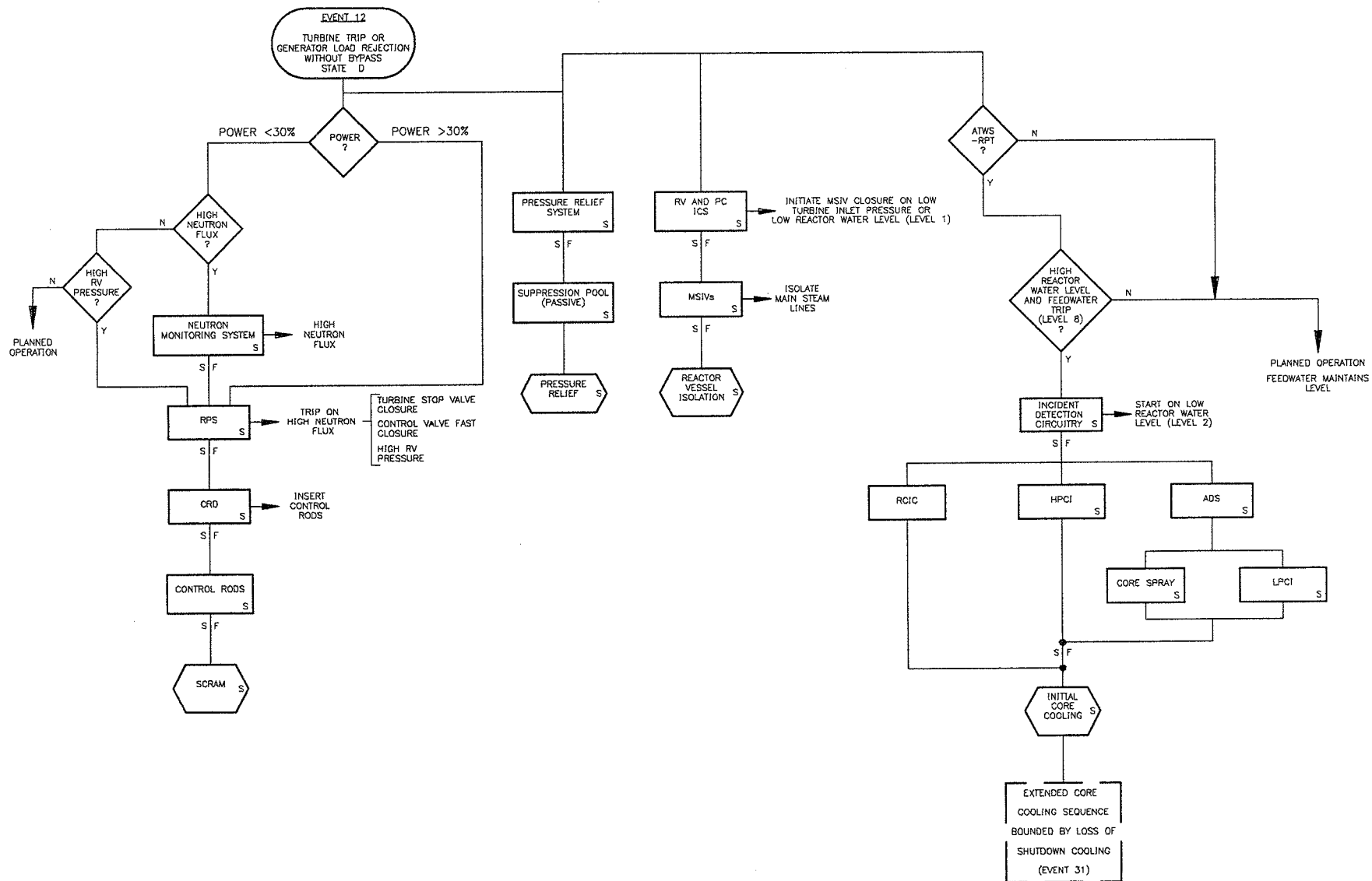
\* BELOW ABOUT 25 PERCENT OF RATED POWER, THE BYPASS SYSTEM WILL TRANSFER STEAM AROUND THE TURBINE AND AVOID REACTOR SCRAM. BETWEEN ABOUT 25 PERCENT AND 30 PERCENT POWER, A HIGH RPV PRESSURE SCRAM WILL RESULT UNLESS OPERATOR ACTION CAN REDUCE POWER TO WITHIN THE BYPASS CAPACITY.

NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
TURBINE TRIP OR GENERATOR  
LOAD REJECTION WITH BYPASS**

FIGURE G-5-16  
8/3/00

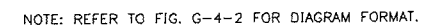


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

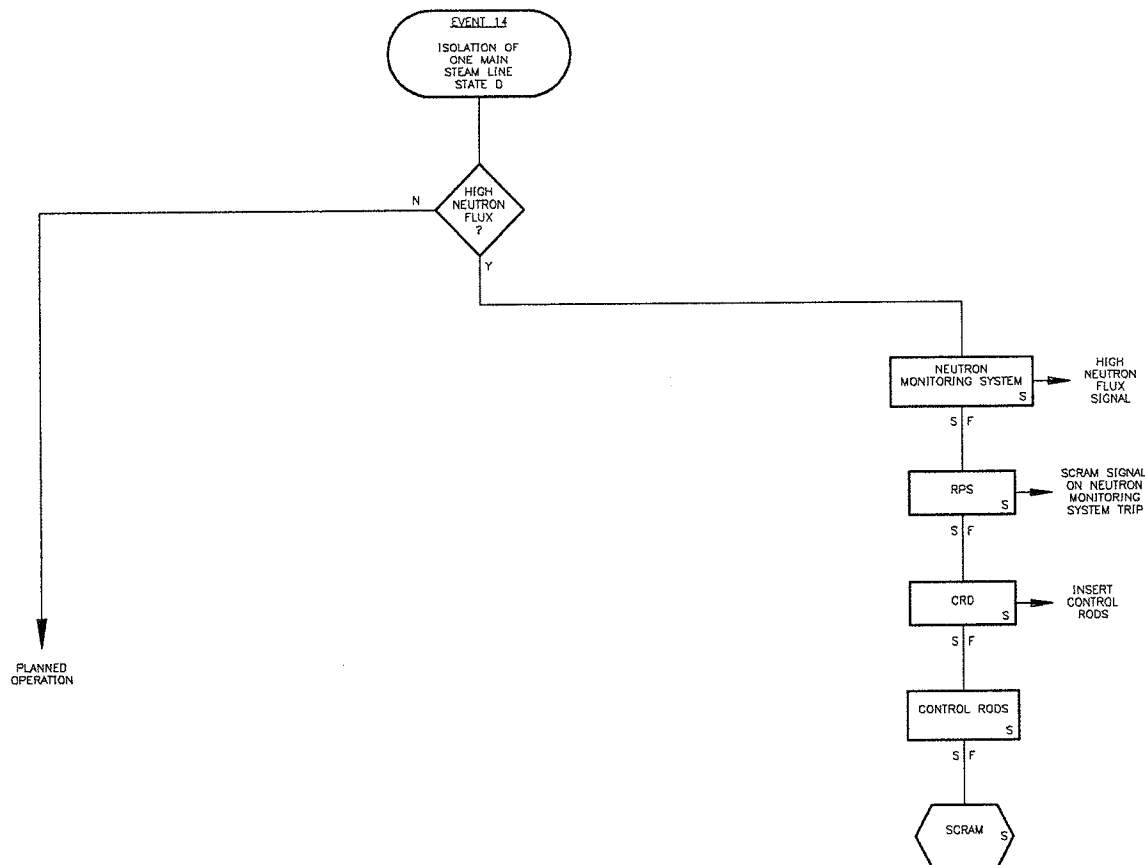
**PROTECTION SEQUENCES FOR  
TURBINE TRIP OR GENERATOR  
LOAD REJECTION W/OUT BYPASS**

FIGURE G-5-17  
8/3/00



## PROTECTION SEQUENCES FOR ISOLATION OF ALL MAIN STEAM LINES

CADD FILE: C0012768



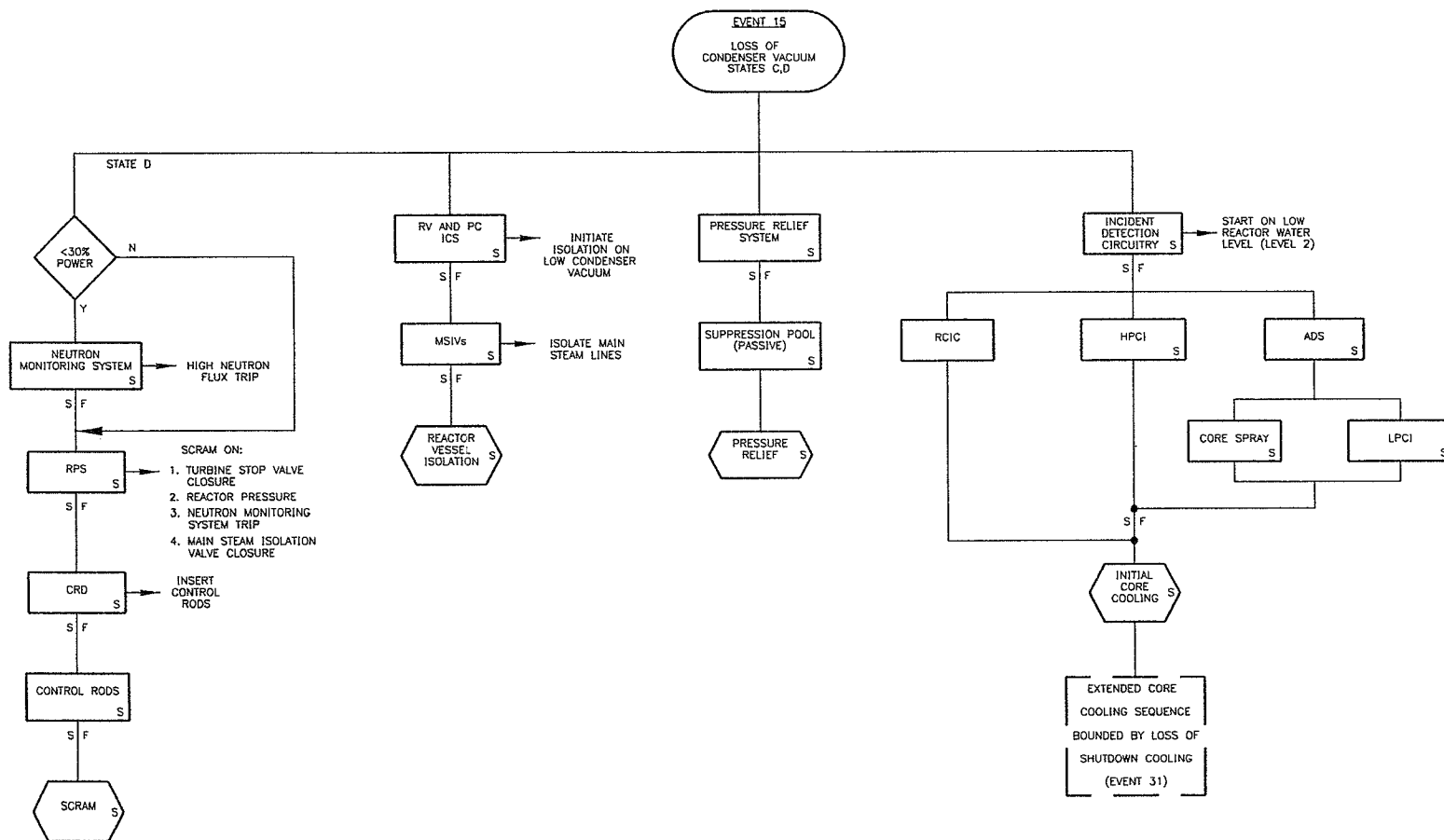
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
ISOLATION OF ONE  
MAIN STEAM LINE

FIGURE G-5-19  
8/3/00



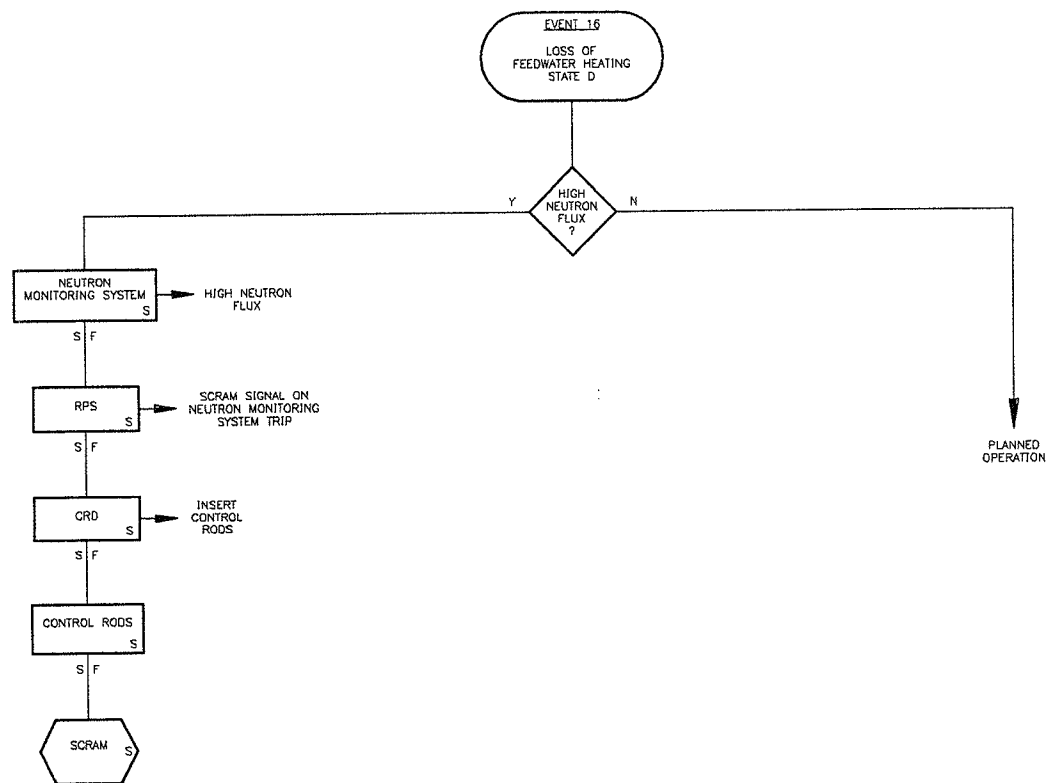


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## PROTECTION SEQUENCES FOR LOSS OF CONDENSER VACUUM

FIGURE G-5-20  
8/28/08

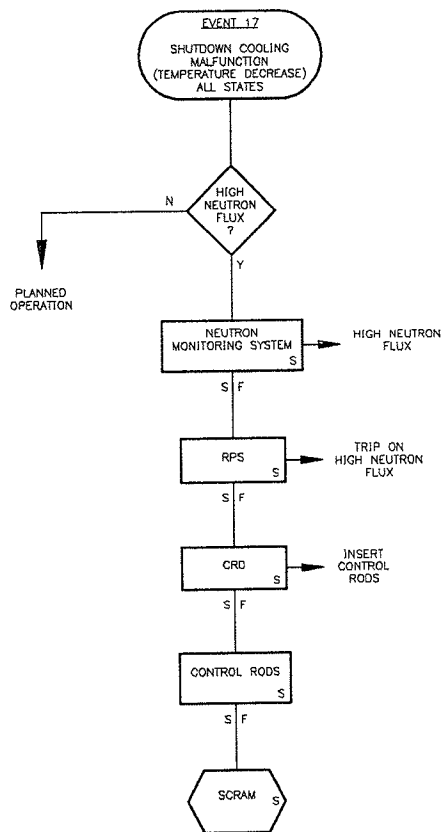


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES  
FOR LOSS OF  
FEEDWATER HEATING

FIGURE G-5-21  
8/3/00

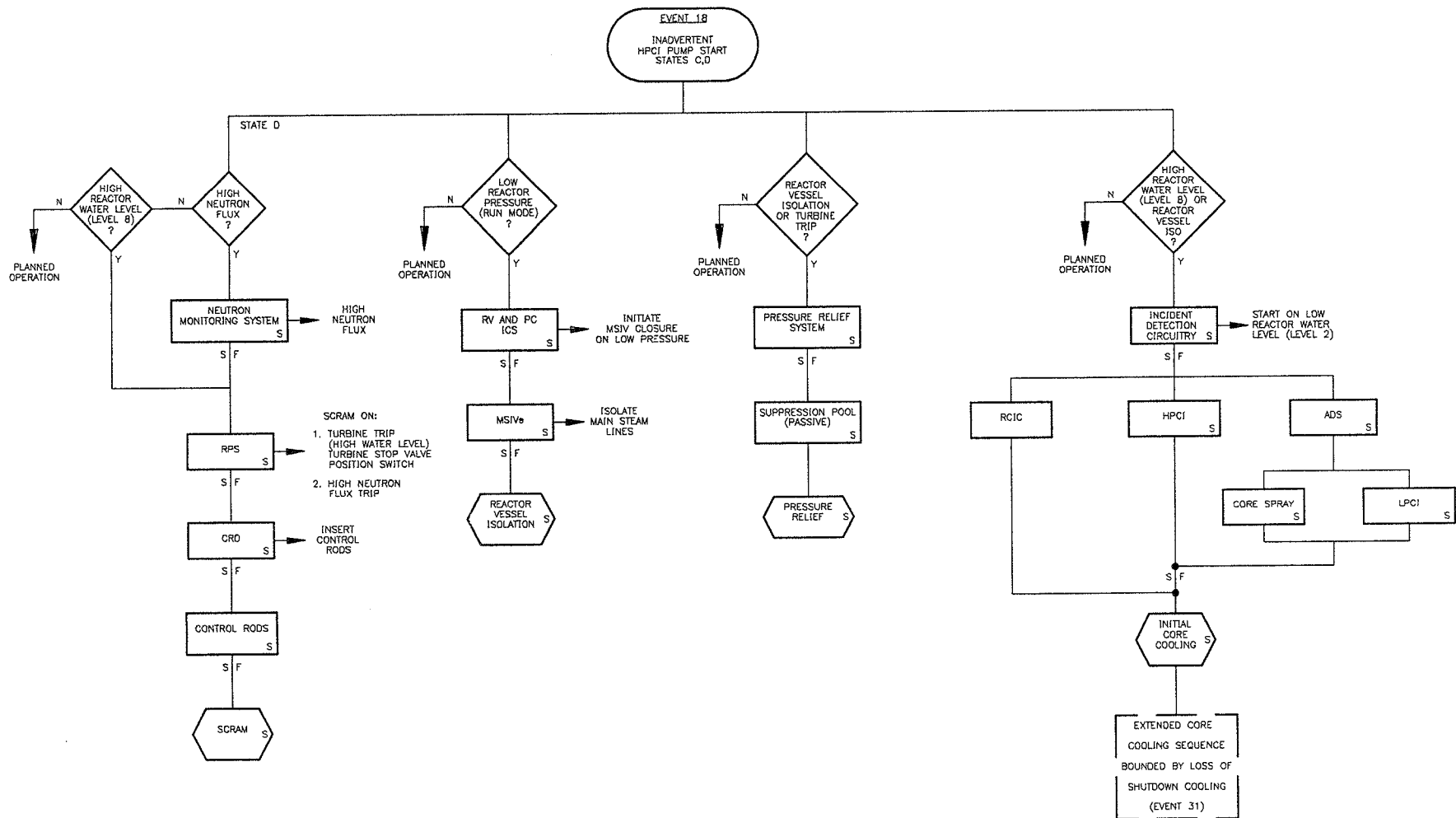


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
SHUTDOWN COOLING (RHRS)  
MALFUNCTION - TEMP DECREASE

FIGURE G-5-22  
8/3/00

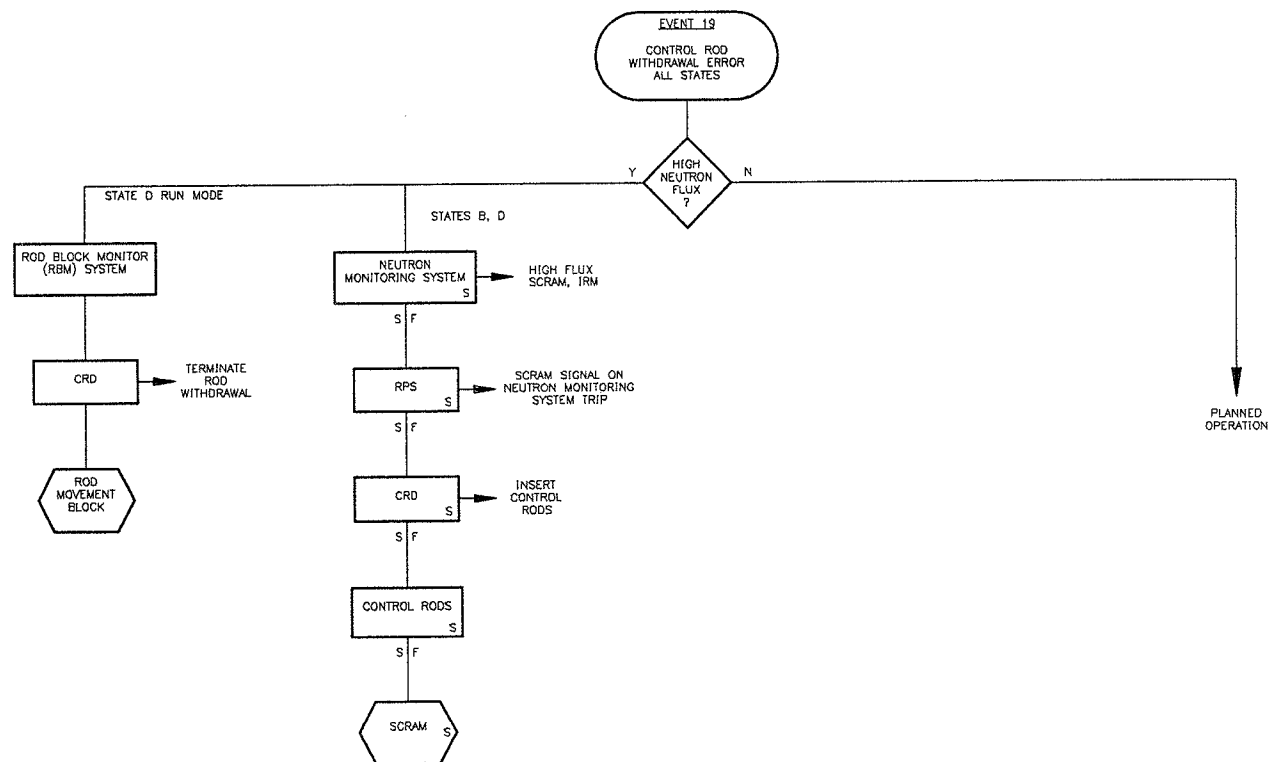


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
INADVERTENT HPCI  
PUMP START**

FIGURE G-5-23  
8/3/00

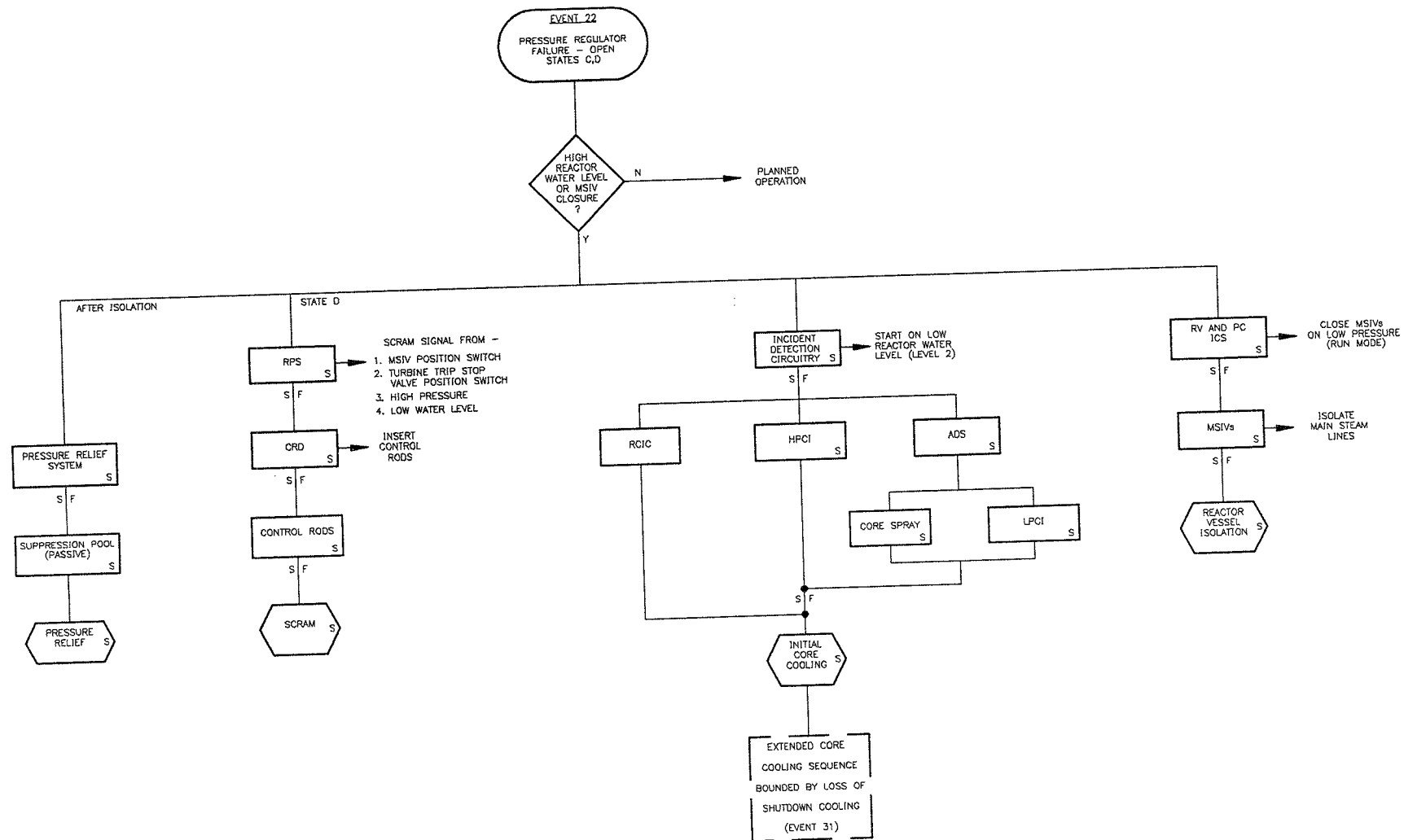


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# PROTECTION SEQUENCES FOR CONTROL ROD WITHDRAWAL ERROR

FIGURE G-5-24  
8/3/00

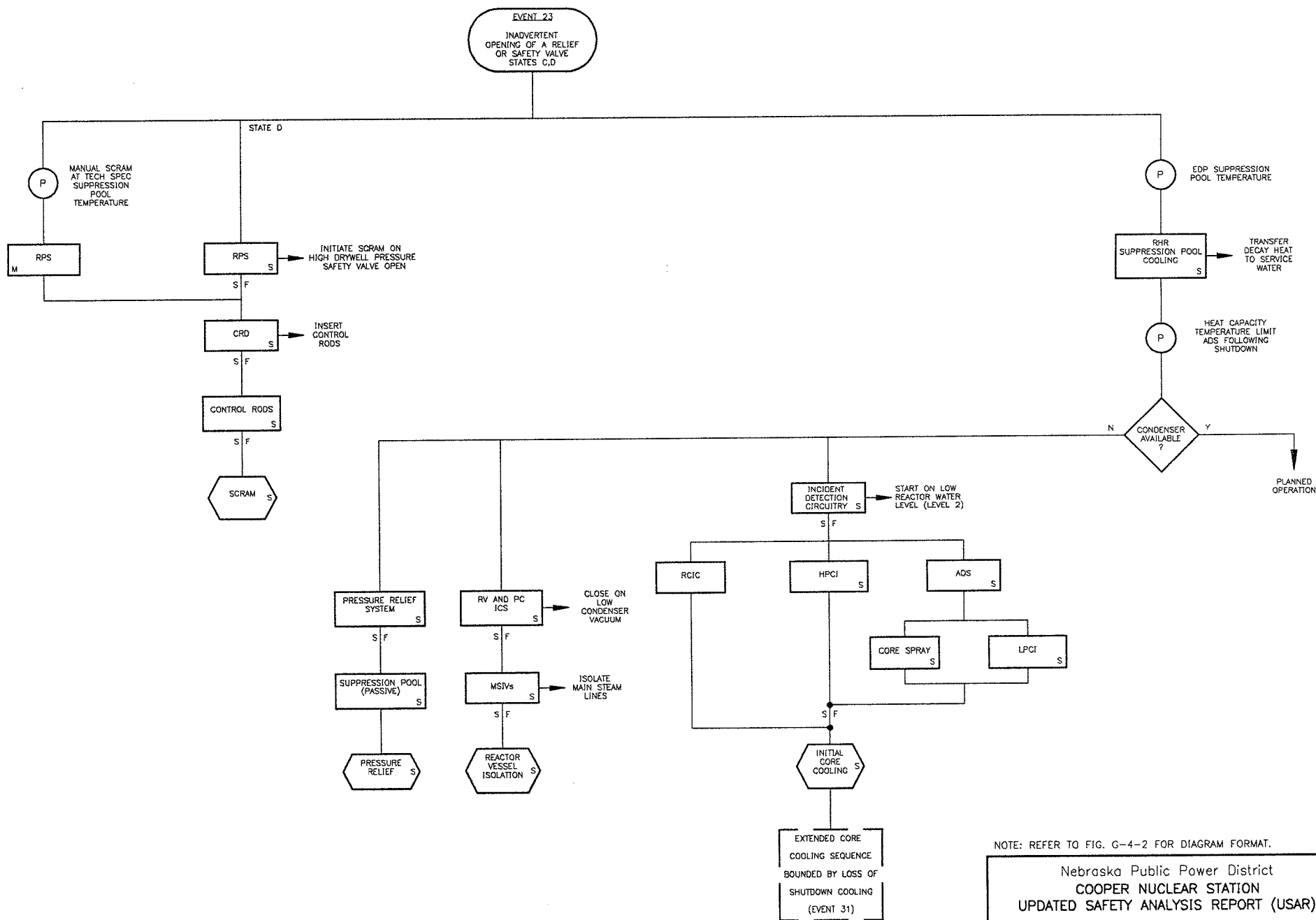


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
PRESSURE REGULATOR  
FAILURE - OPEN**

FIGURE G-5-25  
8/3/00

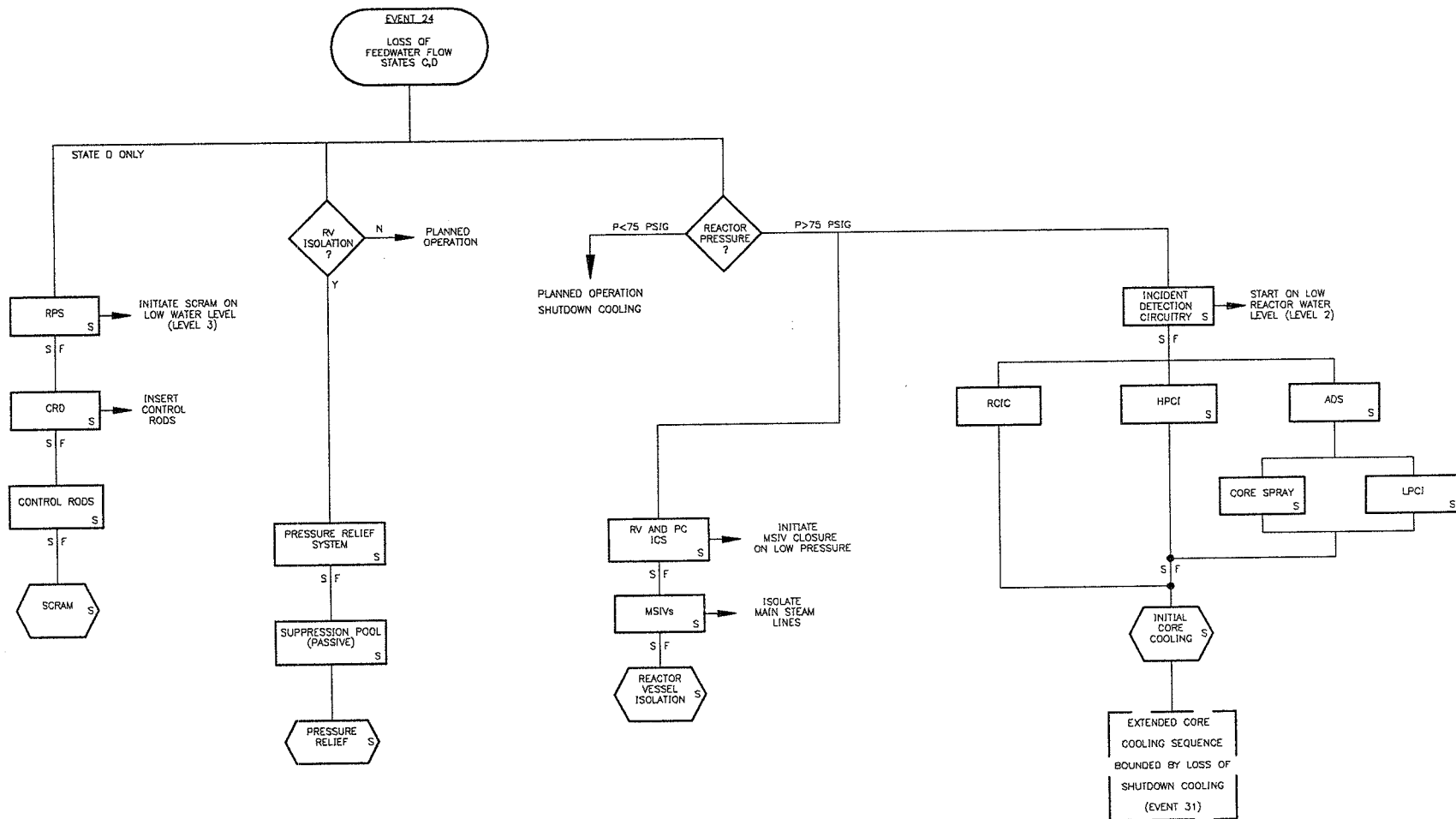


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
INADVERTENT OPENING  
OF A SAFETY OR RELIEF VALVE**

FIGURE G-5-26  
8/3/00



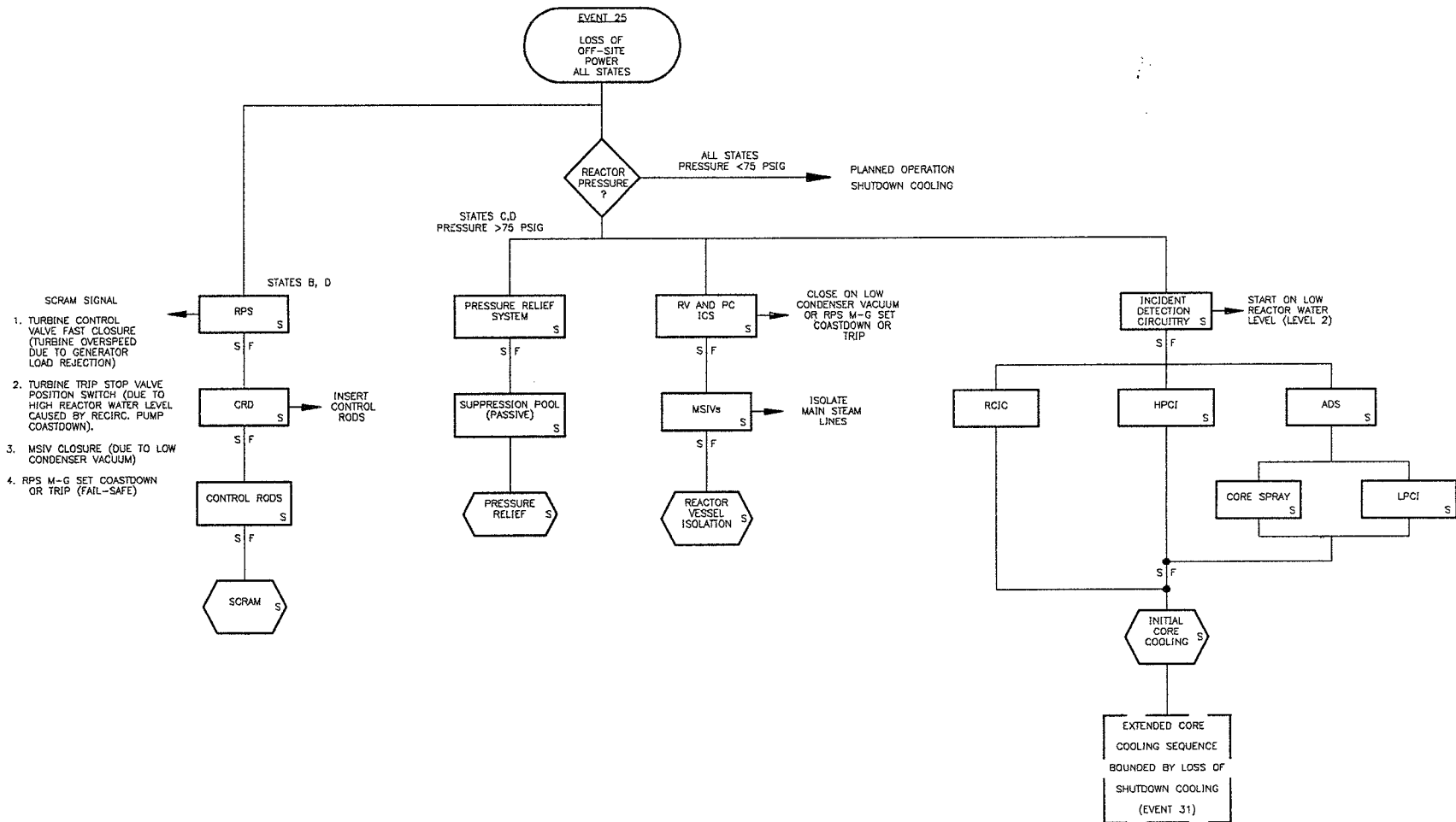
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
LOSS OF FEEDWATER FLOW**

FIGURE G-5-27  
8/3/00



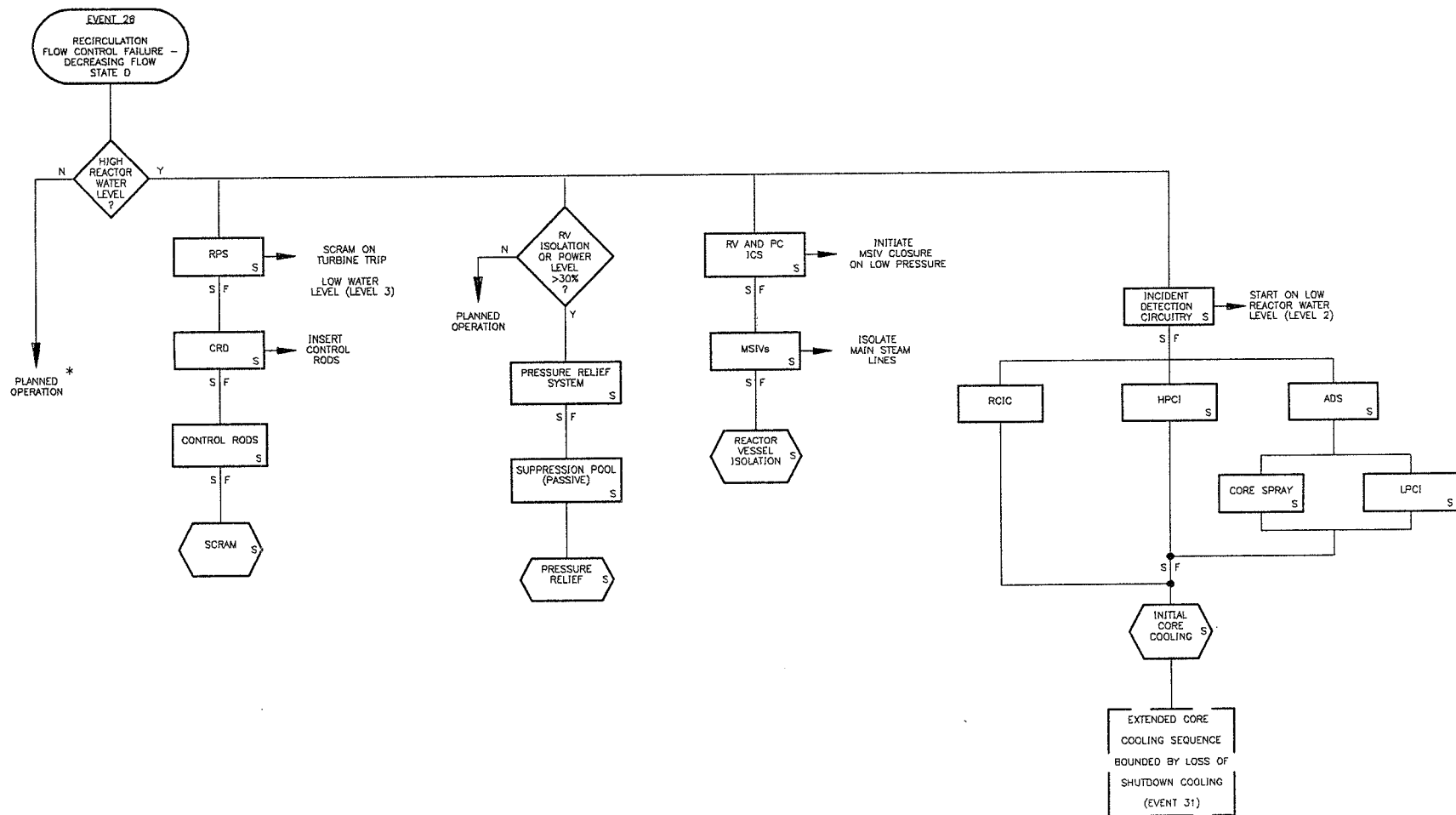


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## PROTECTION SEQUENCES FOR LOSS OF OFF-SITE POWER

FIGURE G-5-28  
8/3/00



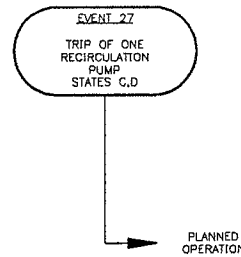
\* BELOW ABOUT 25 PERCENT OF RATED POWER, THE BYPASS SYSTEM WILL TRANSFER STEAM AROUND THE TURBINE AND AVOID REACTOR SCRAM. BETWEEN ABOUT 25 PERCENT AND 30 PERCENT POWER, A HIGH RPV PRESSURE SCRAM WILL RESULT UNLESS OPERATOR ACTION CAN REDUCE POWER TO WITHIN THE BYPASS CAPACITY.

NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
RECIRCULATION FLOW  
CONTROLLER FAILURE -  
DECREASING FLOW**

FIGURE G-5-29  
8/3/00

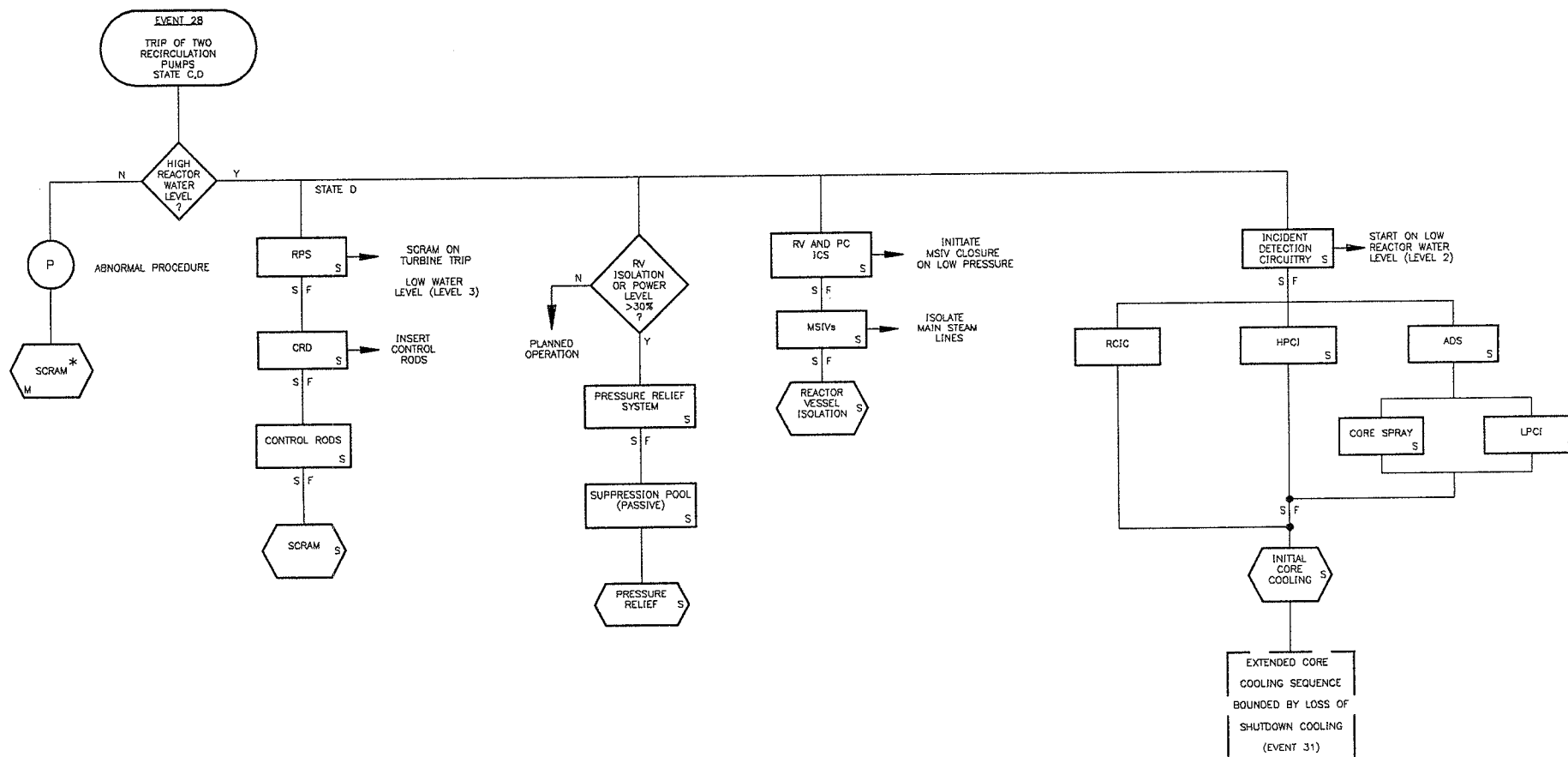


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
TRIP OF ONE  
RECIRCULATION PUMP

FIGURE G-5-30  
8/3/00



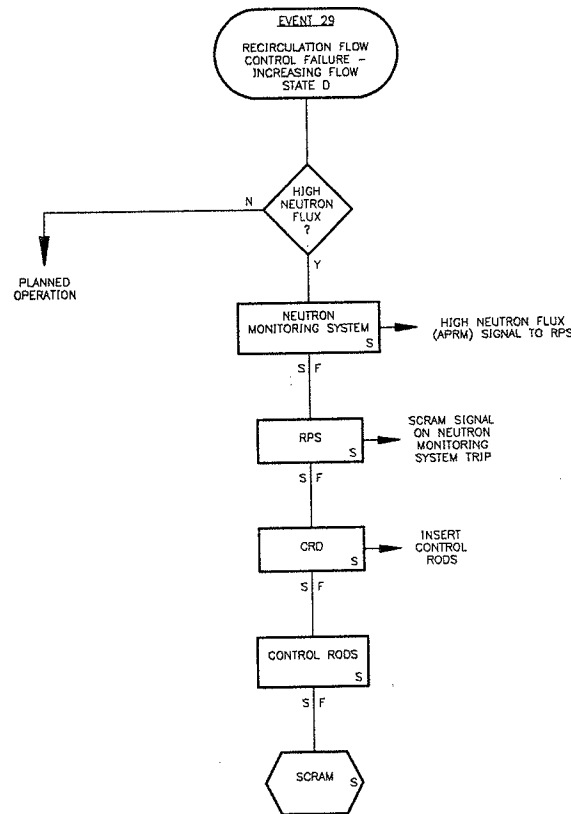
\* THE ANALYSIS ASSUMES BELOW ABOUT 25 PERCENT OF RATED POWER, THE BYPASS SYSTEM WILL TRANSFER STEAM AROUND THE TURBINE AND AVOID REACTOR SCRAM. BETWEEN ABOUT 25 PERCENT AND 30 PERCENT POWER, A HIGH RPV PRESSURE SCRAM WILL RESULT UNLESS OPERATOR ACTION CAN REDUCE POWER TO WITHIN THE BYPASS CAPACITY HOWEVER, THE ABNORMAL PROCEDURE REQUIRES THE OPERATOR TO INITIATE A MANUAL SCRAM.

NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
TRIP OF TWO  
RECIRCULATION PUMPS

FIGURE G-5-31  
8/3/00

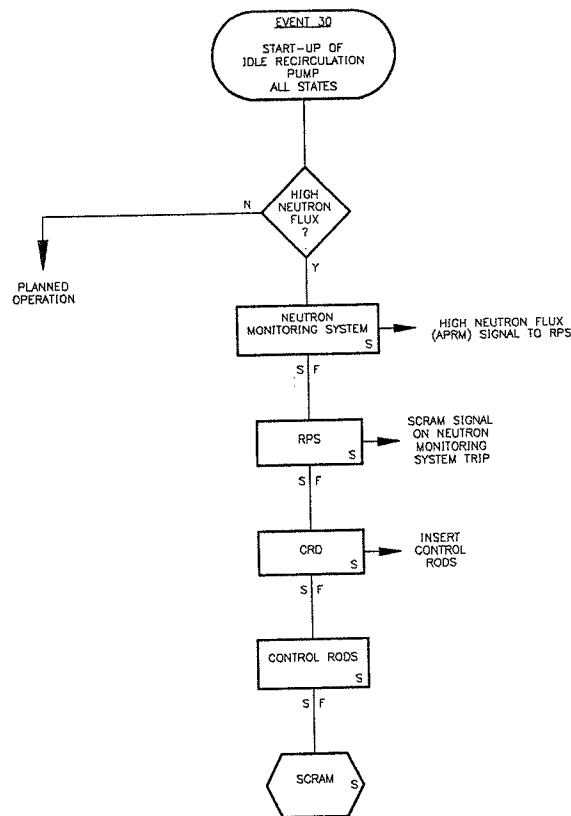


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
RECIRCULATION FLOW  
CONTROLLER FAILURE-  
INCREASING FLOW

FIGURE G-5-32  
8/3/00



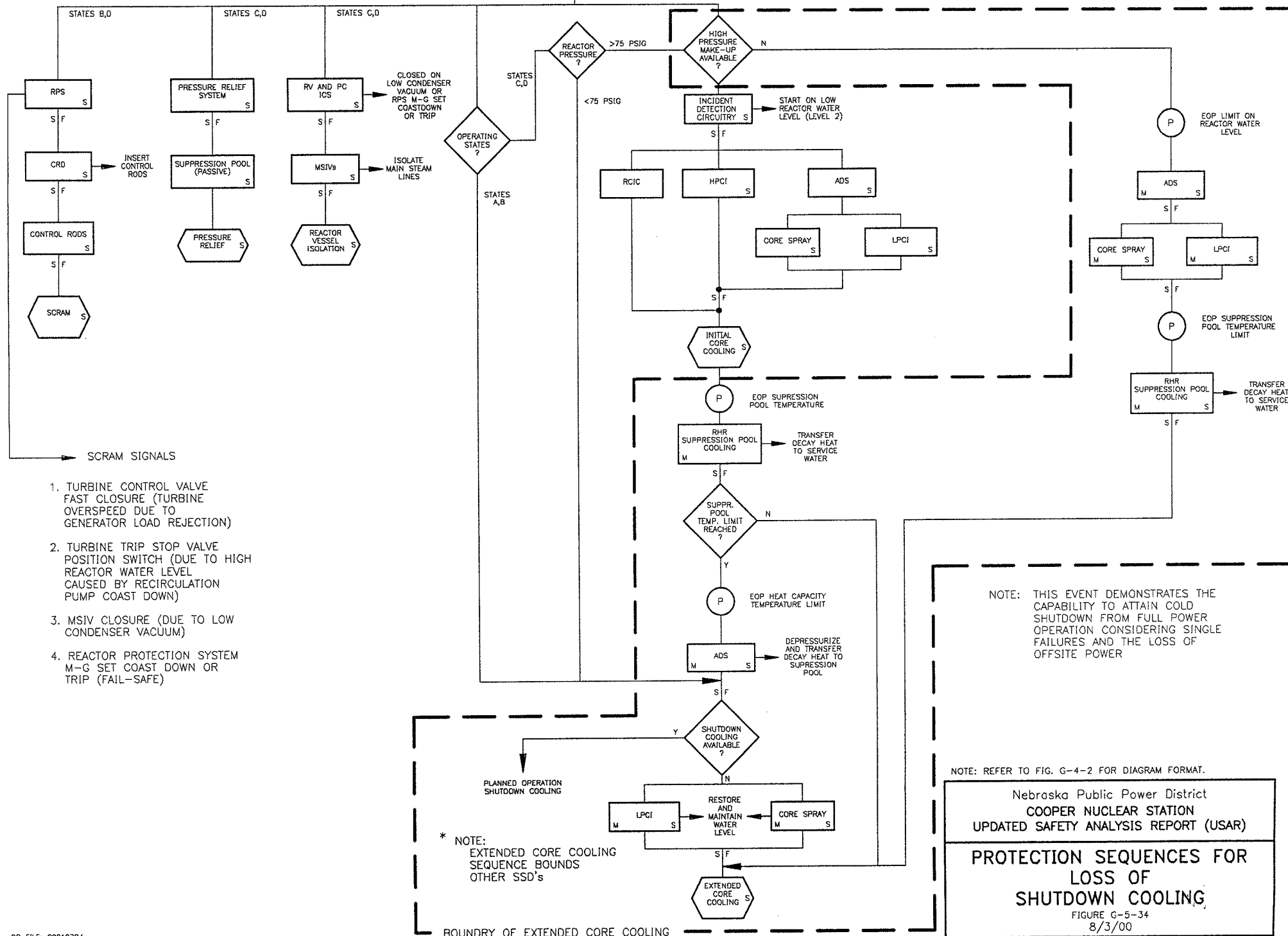
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
START-UP OF IDLE  
RECIRCULATION PUMP

FIGURE G-5-33  
8/3/00

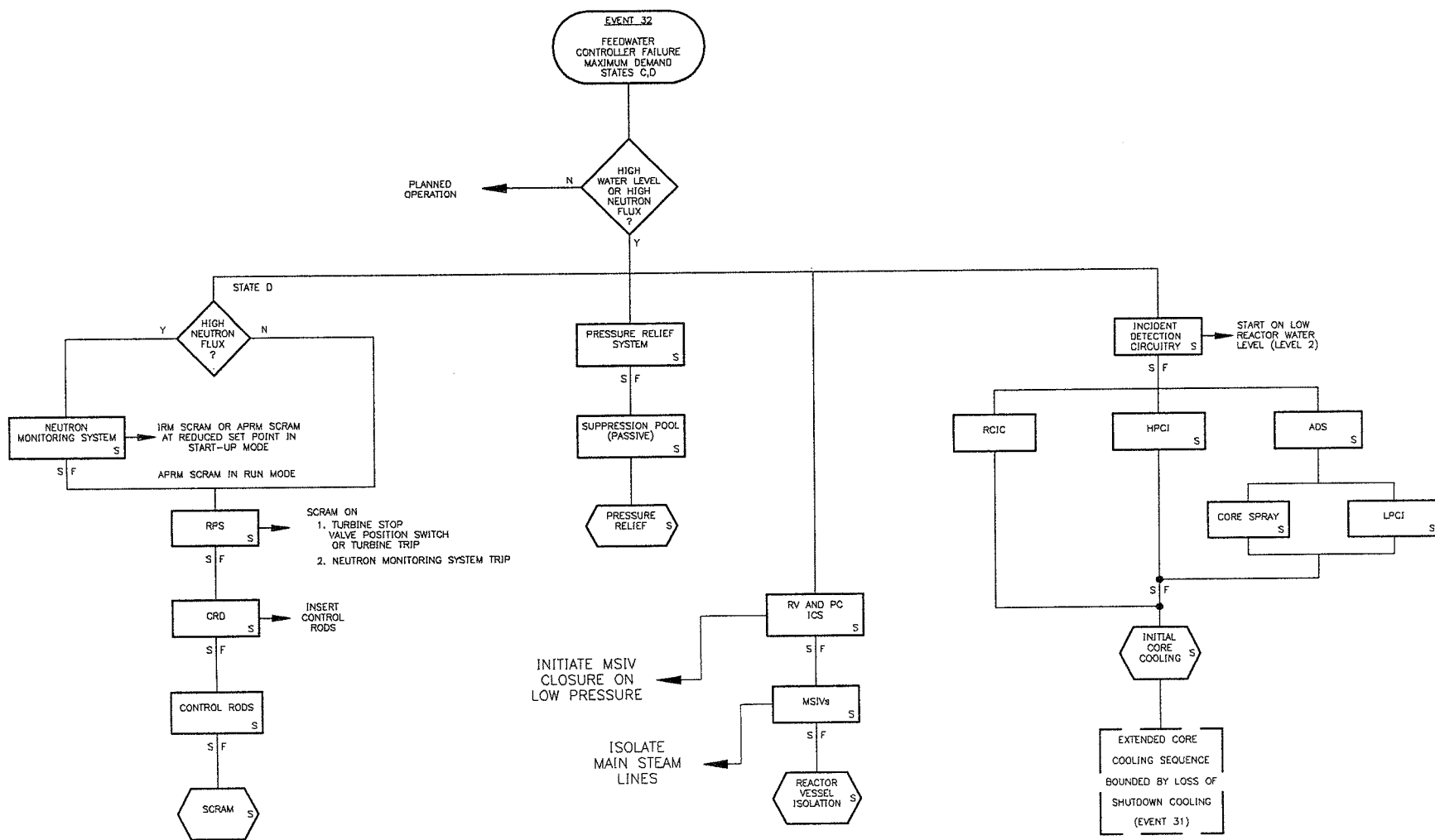
EVENT 31  
LOSS OF  
SHUTDOWN COOLING  
ALL STATES



Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
LOSS OF  
SHUTDOWN COOLING

FIGURE G-5-34  
8/3/00



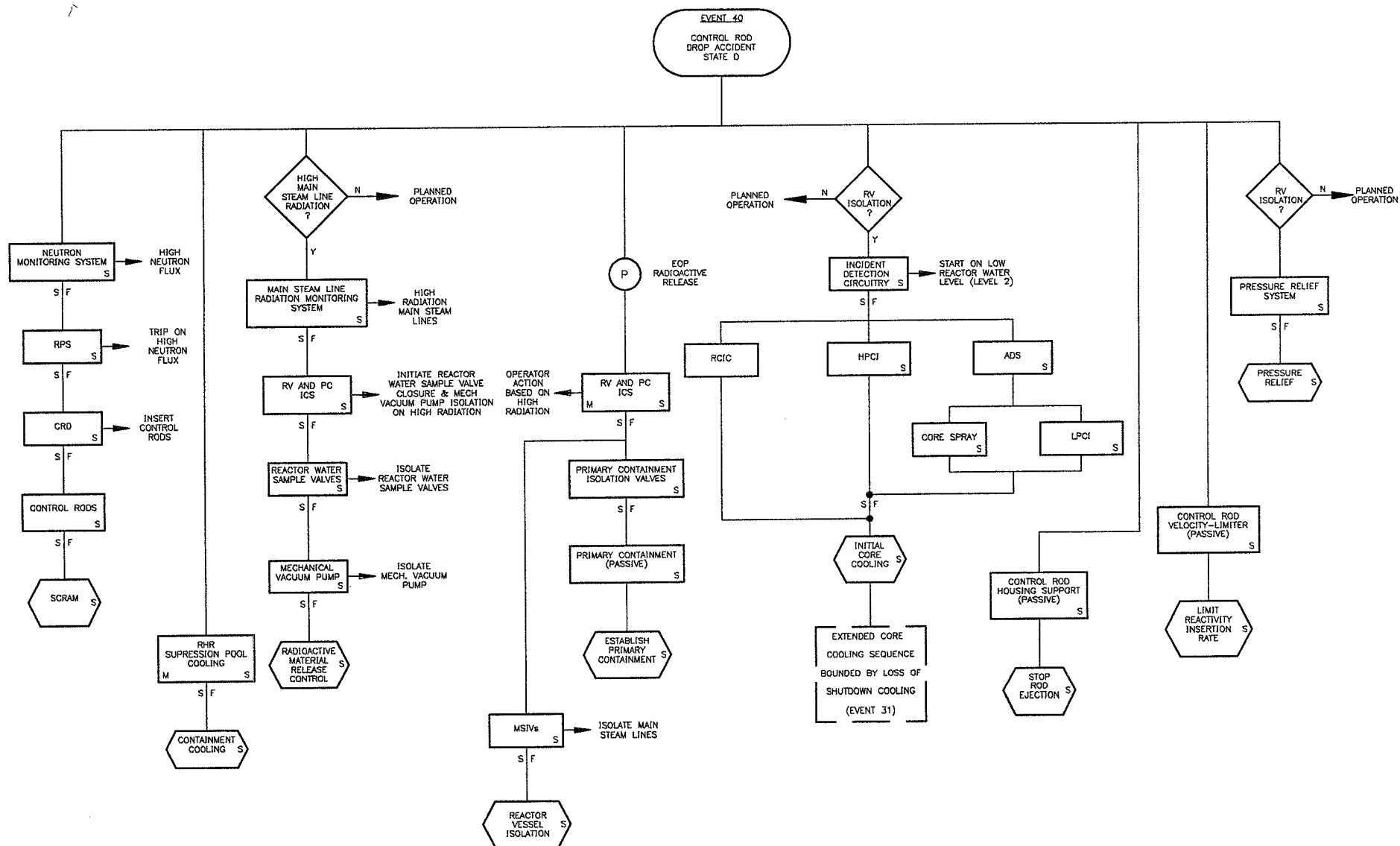
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
FEEDWATER CONTROLLER  
FAILURE-MAXIMUM DEMAND**

FIGURE G-5-35  
8/3/00



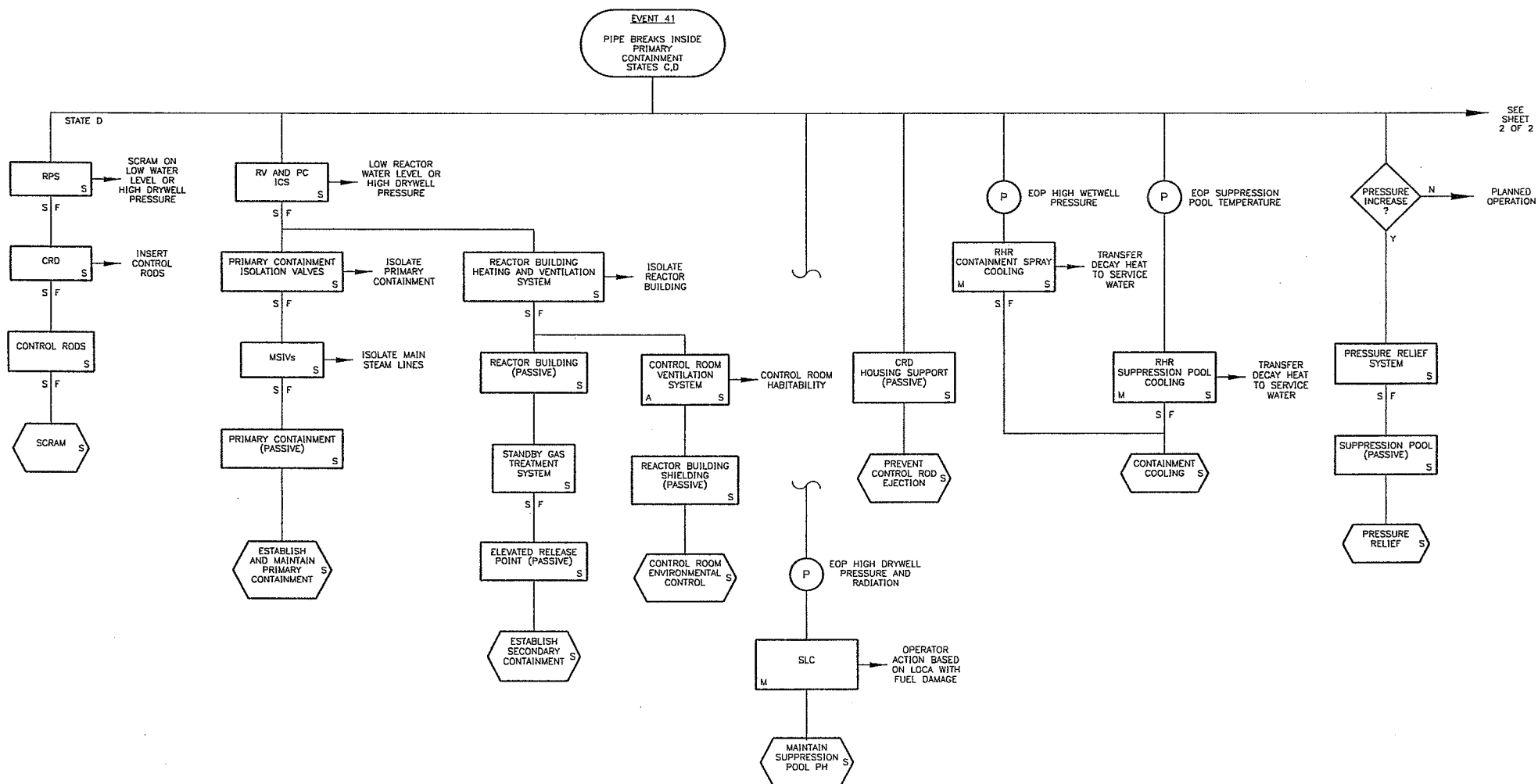


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# PROTECTION SEQUENCES FOR CONTROL ROD DROP ACCIDENT

FIGURE G-5-36  
04/08/02



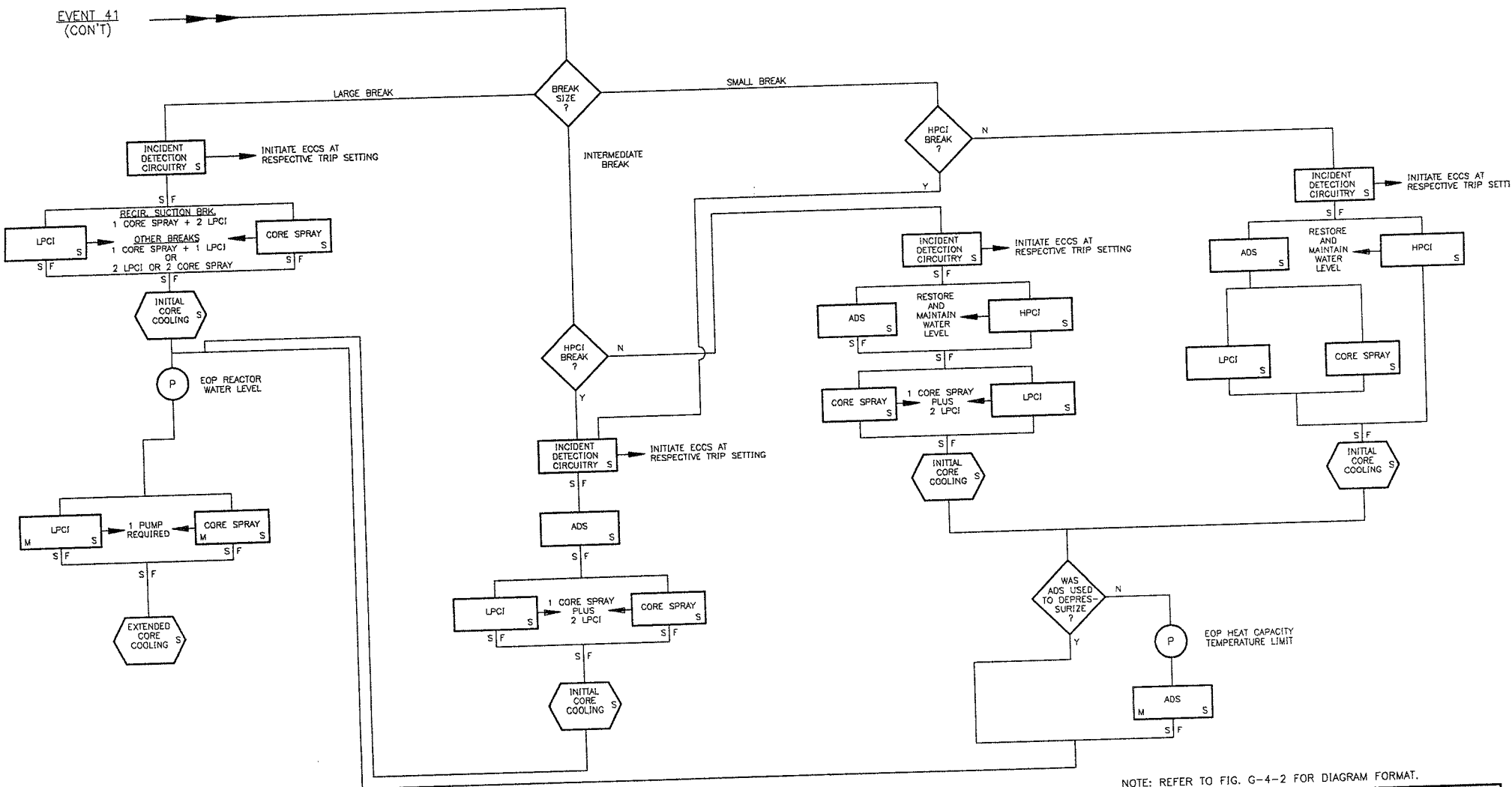
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# PROTECTION SEQUENCES FOR PIPE BREAKS INSIDE PRIMARY CONTAINMENT

SHEET 1  
FIGURE G-5-37  
02/05/10

EVENT 41  
(CON'T)



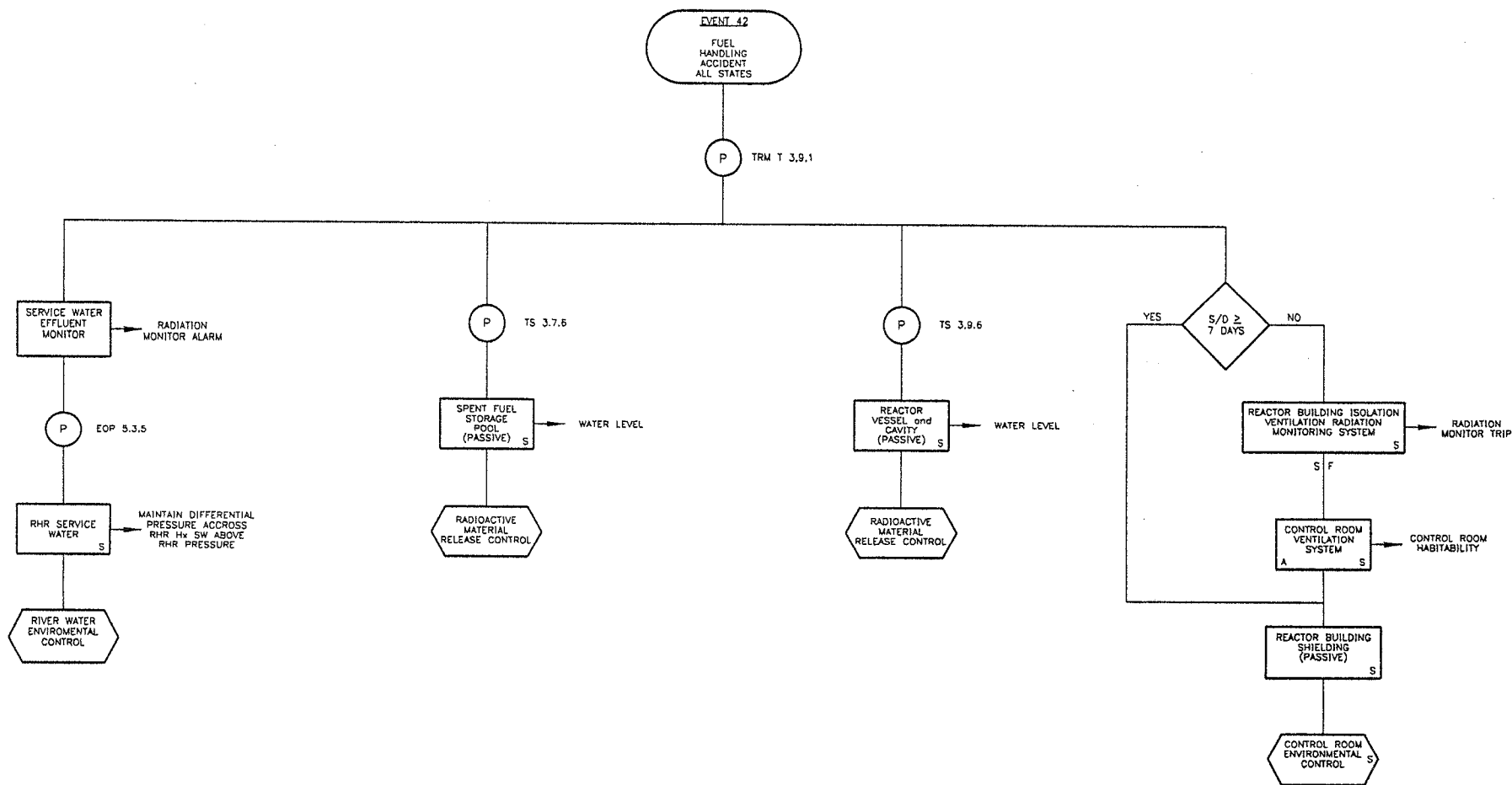
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
PIPE BREAKS INSIDE  
PRIMARY CONTAINMENT

SHEET 2

FIGURE G-5-38  
8/3/00

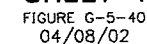


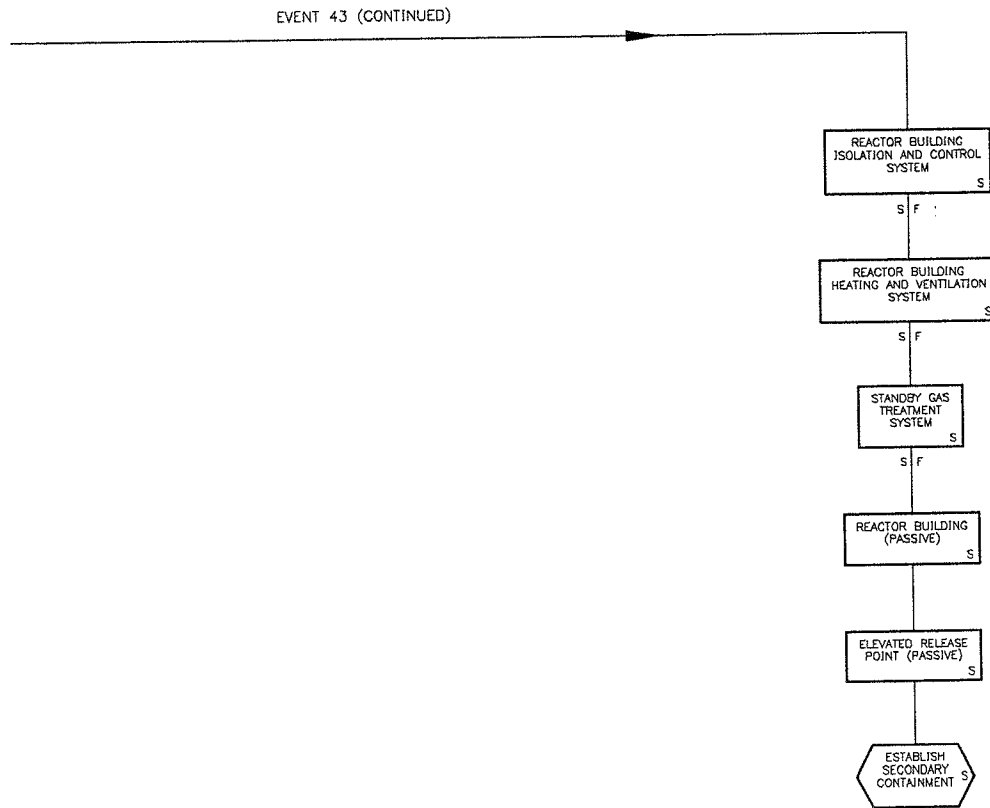
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES FOR  
FUEL HANDLING  
ACCIDENT**

FIGURE G-5-39  
03/09/07



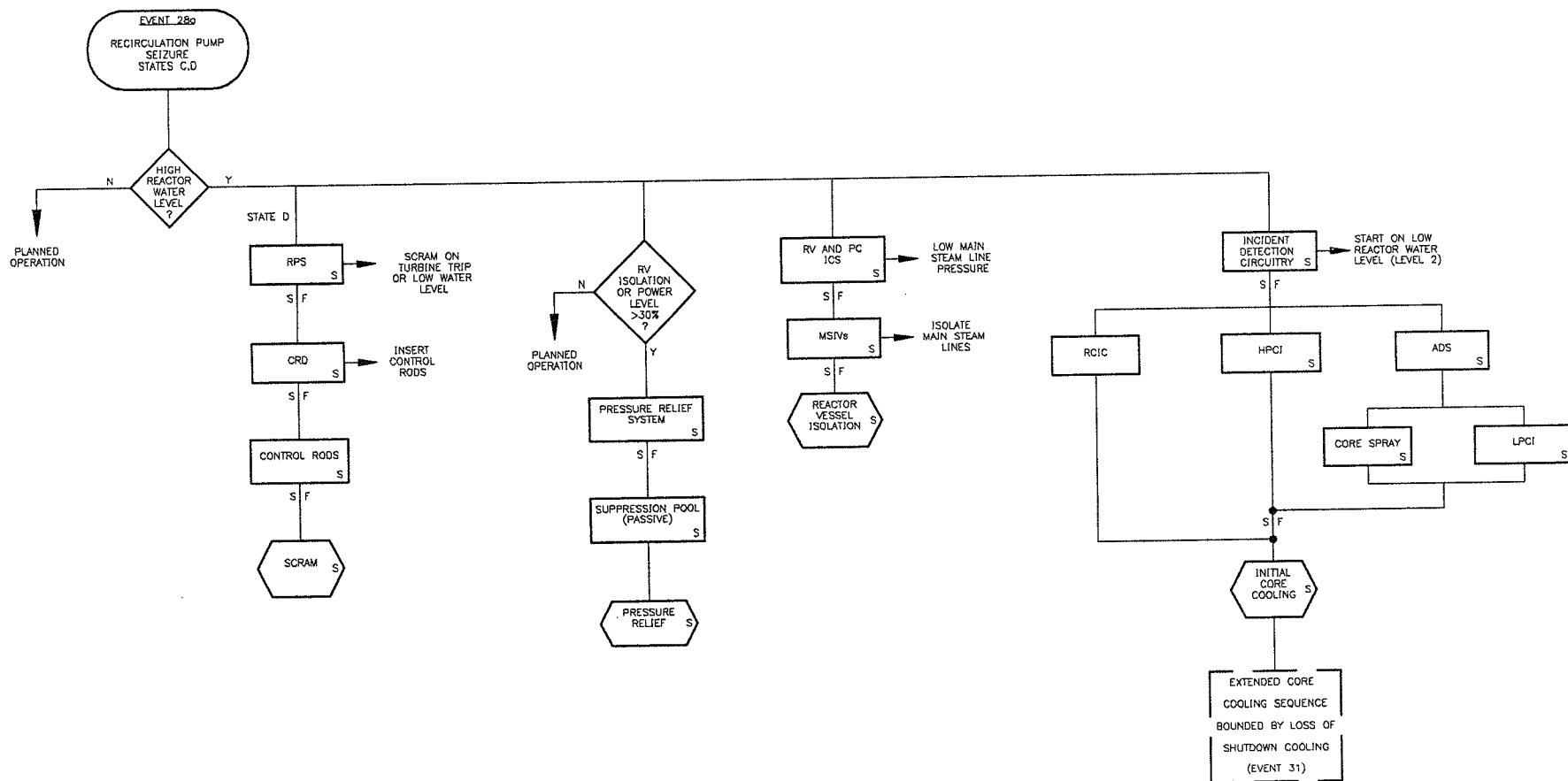


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
PIPE BREAKS OUTSIDE  
PRIMARY CONTAINMENT

SHEET 2  
FIGURE G-5-41  
8/3/00

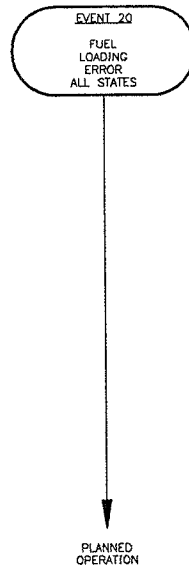


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

# PROTECTION SEQUENCES FOR RECIRCULATION PUMP SEIZURE

FIGURE G-5-42  
8/3/00



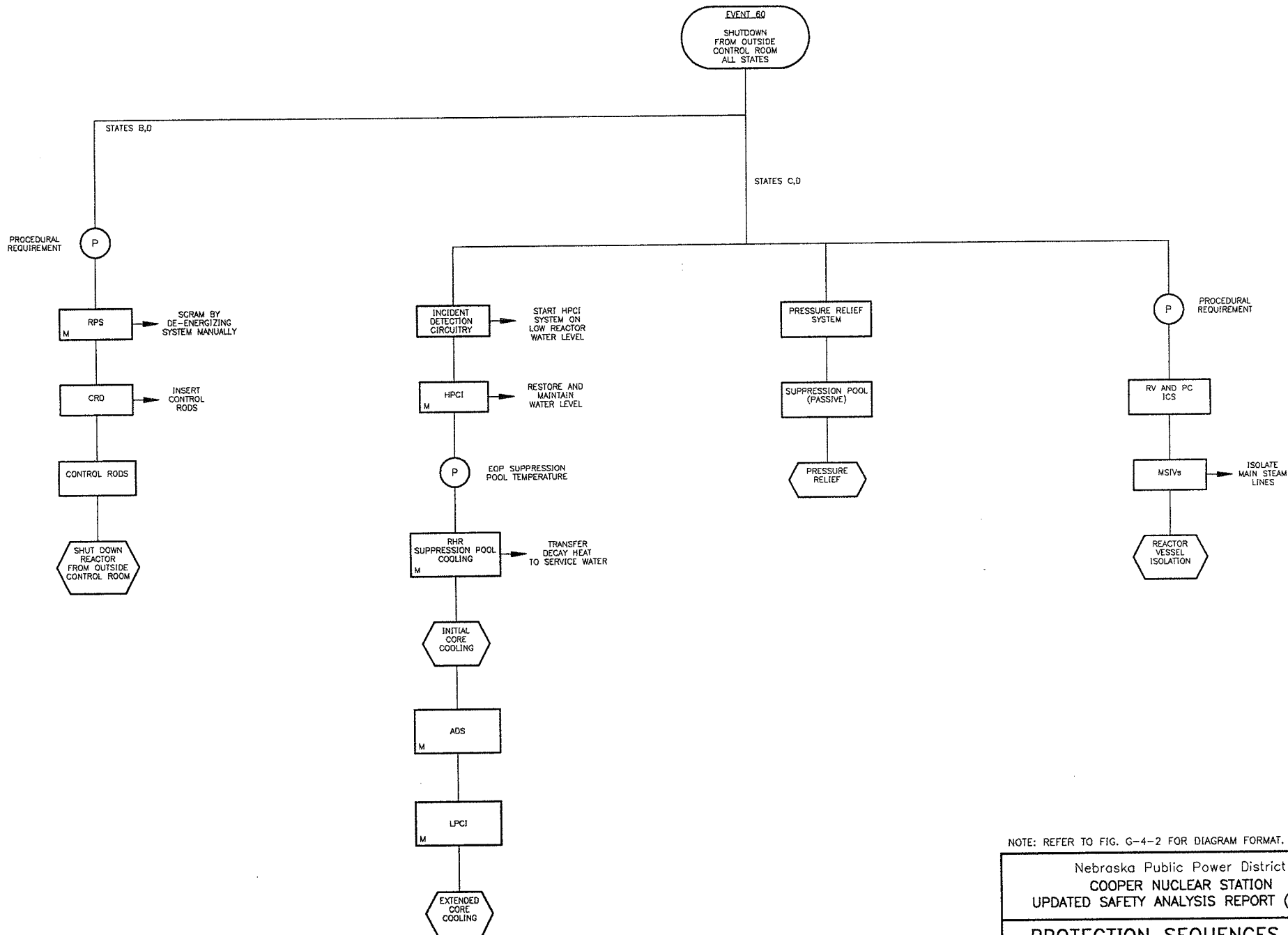
NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
FUEL LOADING  
ERROR

FIGURE G-5-43  
8/3/00



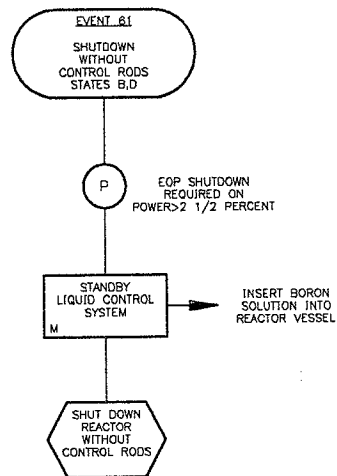


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
SHUTDOWN FROM OUTSIDE  
THE CONTROL ROOM

FIGURE G-5-44  
8/3/00

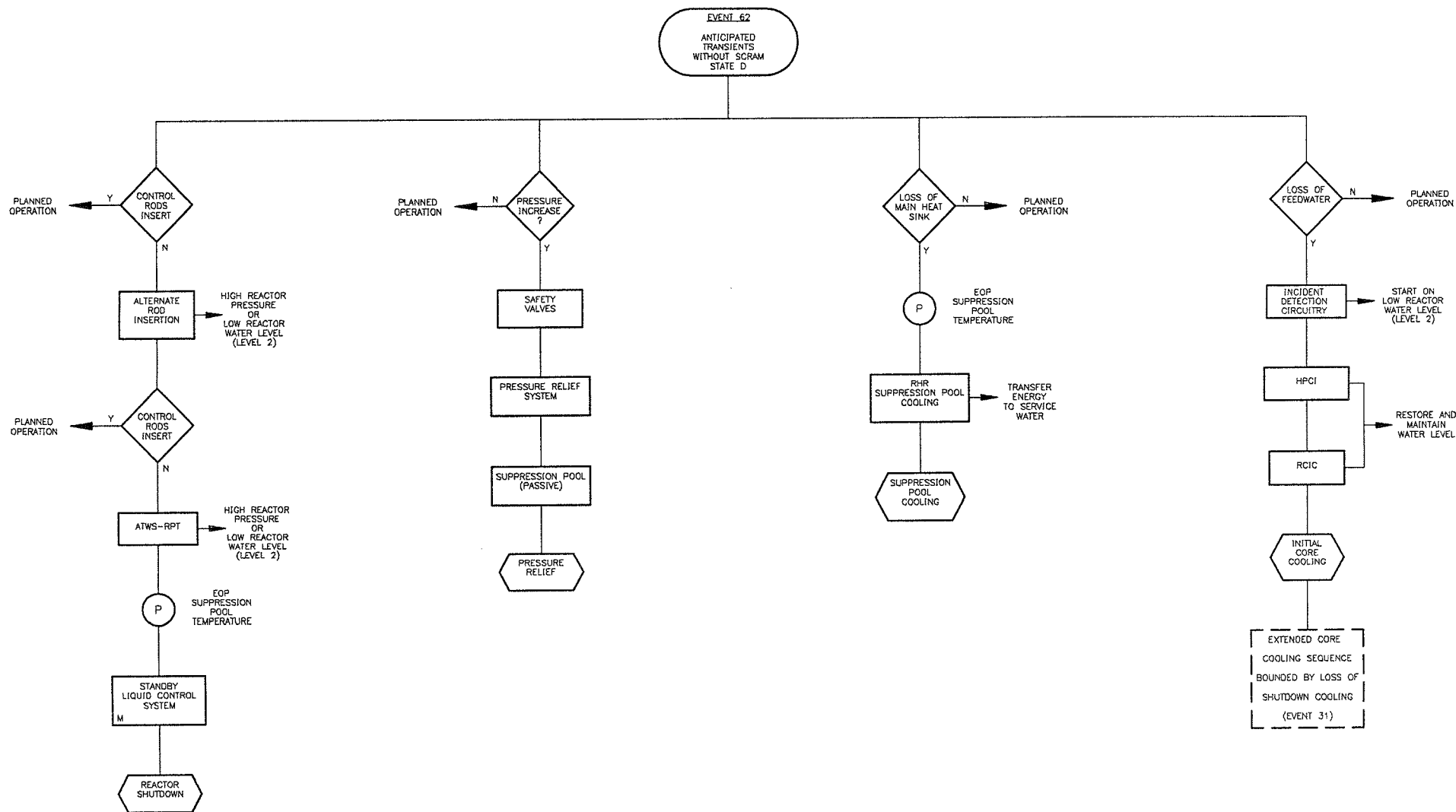


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

PROTECTION SEQUENCES FOR  
SHUTDOWN WITHOUT  
CONTROL RODS

FIGURE G-5-45  
8/3/00

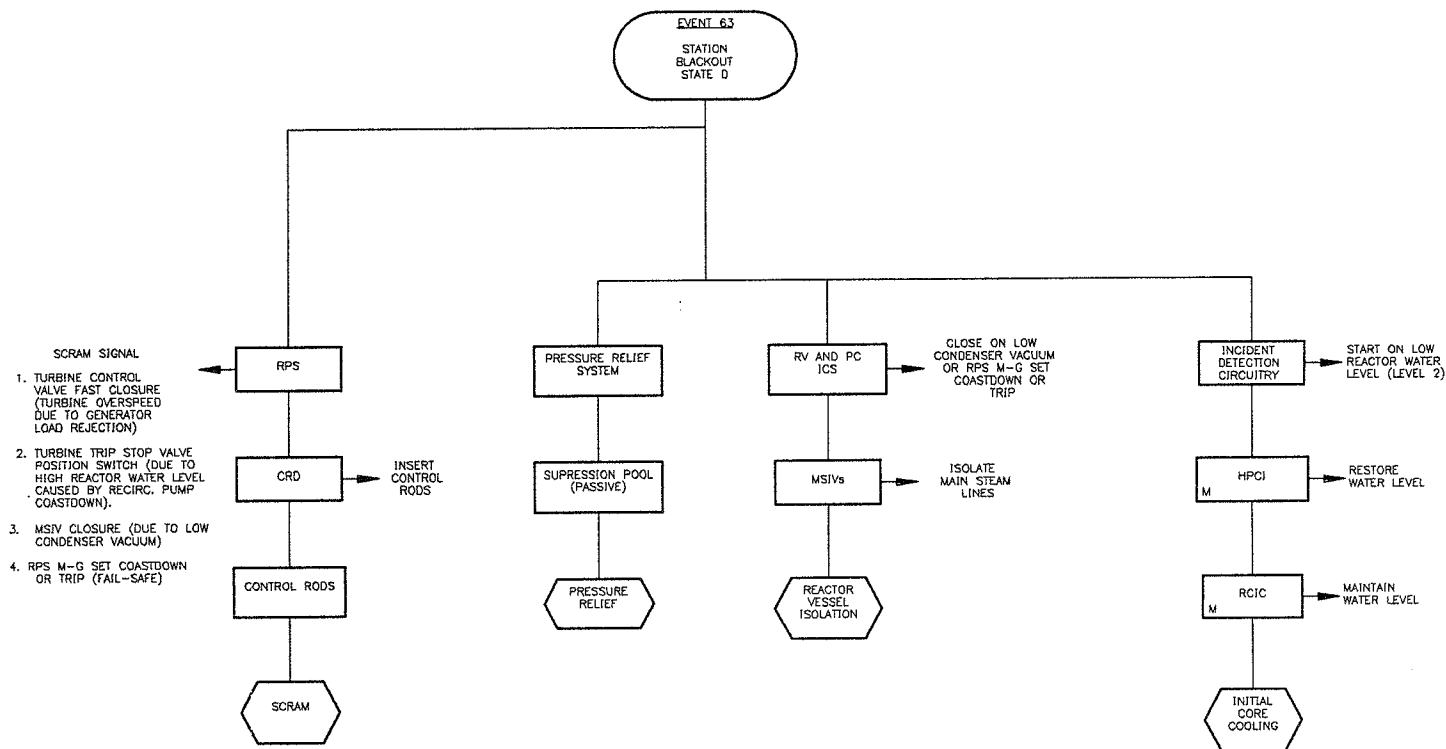


NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

**PROTECTION SEQUENCES  
FOR ANTICIPATED TRANSIENTS  
WITHOUT SCRAM**

FIGURE G-5-46  
8/3/00



NOTE: REFER TO FIG. G-4-2 FOR DIAGRAM FORMAT.

Nebraska Public Power District  
COOPER NUCLEAR STATION  
UPDATED SAFETY ANALYSIS REPORT (USAR)

## PROTECTION SEQUENCES FOR STATION BLACKOUT

FIGURE G-5-47  
8/3/00