February 12, 1996

MEMORANDUM TO: Dennis M. Crutchfield, Director
Division of Reactor Program Management

FROM: Alfred E. Chaffee, Chief [Original signed by]
Events Assessment and
Generic Communications Branch
Division of Reactor Program Management

SUBJECT: OPERATING REACTORS EVENTS BRIEFING
FEBRUARY 7, 1996 - BRIEFING 96-02

On February 7, 1996, we conducted an Operating Reactors Events Briefing (96-02) to inform senior managers from offices of the Chairman, ACRS, AEOD, RES, WCFO, NRR and regional offices of selected events that occurred since our last briefing on January 31, 1996. Attachment 1 lists the attendees. Attachment 2 presents the significant elements of the discussed events.

Attachment 3 contains reactor scram statistics for week ending February 4, 1996. No significant events were identified for input into the NRC Performance Indicator Program.

Attachments: As stated (3)

cc w/atts:
See next page

CONTACT: Kathy Gray, NRR
(301) 415-1166

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OFFICE	PECB	E	PECB	E	PECB		C/PECB	N
NAME	KGray:vsb		TKoshy		EGoodwin		ACHaffee	
DATE	2/08/96		2/8/96		2/9/96		2/12/96	

OFFICIAL RECORD COPY

IDAR-5-1- OPERATING EXPERIENCE
Orm-6-Incident

DFO3

1/1

9602200119 960212
PDR ORG NRRA
PDR

cc:

W. Russell, NRR (O-12G18)
F. Miraglia, NRR (O-12G18)
F. Gillespie, NRR (O-12G18)
R. Zimmerman, NRR (O-12G18)
A. Thadani, NRR (O-12G18)
S. Varga, NRR (O-14E4)
J. Zwolinski, NRR (O-14H3)
J. Roe, NRR (O-13E4)
E. Adensam, NRR (O-13E4)
B. Sheron, NRR (O-7D26)
G. Lainas, NRR (O-7D26)
G. Holahan, NRR (O-8E2)
M. Virgilio, NRR (O-8E2)
S. Rosenberg, NRR (O-10E4)
R. L. Spessard, NRR (O-9A2)
B. Boger, NRR (O-10H5)
M. Markley, ACRS (T-2E26)
E. Jordan, AEOD (T-4D18)
C. Rossi, AEOD (T-4A9)
F. Congel, AEOD (T-4D28)
K. Brockman, AEOD (T-4A23)
S. Rubin, AEOD (T-4D28)
M. Harper, AEOD (T-4A9)
V. McCree, EDO (O-17G21)
J. Gilliland, PA (O-2G4)
D. Morrison, RES (T-10F12)
W. Hill, SECY (O-16G15)
T. Martin, Region I
R. Cooper, Region I
S. Ebneter, Region II
E. Merschoff, Region II
S. Vias, Region II
H. Miller, Region III
W. Axelson, Region III
L. Callan, Region IV
J. Dyer, Region IV
K. Perkins, Region IV/WCFO
S. Newton, INPO
J. Zimmer, DOE
J. Stone (O-13E16)
K. Thomas (O-13E16)
W. Bateman (O-13E16)

LIST OF ATTENDEES

OPERATING REACTORS EVENTS FULL BRIEFING (96-02)

FEBRUARY 7, 1996

NAME	OFFICE	NAME	OFFICE
A. CHAFFEE	NRR	S. LEE	NRR
D. SKEEN	NRR	D. JACKSON	NRR
T. KOSHY	NRR	K. THOMAS	NRR
K. GRAY	NRR	G. WEST	NRR
E. BENNER	NRR	W. LYON	NRR
N. HUNEMULLER	NRR	M. MARKLEY	ACRS
E. GOODWIN	NRR	J. ROSENTHAL	AEOD
D. O'NEAL	NRR	H. SCOTT	RES
B. GRIMES	NRR	K. PERKINS	RIV/WCFO
R. JONES	NRR	D. LEW	CHRMAN/TA

TELEPHONE ATTENDANCE
(AT ROLL CALL)

Regions
Region I
Region II
Region III
Region IV

Resident Inspectors
F. Ringwald, Wolf Creek

Misc.

ATTACHMENT 1

OPERATING REACTORS EVENTS BRIEFING 96-02

LOCATION: O-10 B11, WHITE FLINT
WEDNESDAY, FEBRUARY 7, 1996, 11:00 A.M.

WOLF CREEK, UNIT 1

PLANT TRIP WITH MULTIPLE COMPLICATIONS (AIT)

PRESENTED BY:

EVENTS ASSESSMENT AND GENERIC COMMUNICATIONS BRANCH
DIVISION OF REACTOR PROGRAM MANAGEMENT, NRR

ATTACHMENT 2

WOLF CREEK, UNIT 1
PLANT TRIP WITH MULTIPLE COMPLICATIONS
JANUARY 30, 1996

PROBLEMS

MANUAL REACTOR TRIP FROM ICE BUILD UP CAUSING LOW LEVEL FOR CIRCULATING WATER PUMPS AND CAVITATION AT LOW FLOW SERVICE WATER PUMP. INITIALLY, FIVE CONTROL RODS FAILED TO INSERT COMPLETELY. ONE TRAIN OF EMERGENCY SERVICE WATER TRIPPED DUE TO ICING. STEAM DRIVEN EMERGENCY FEEDWATER PUMP DEVELOPED LEAK.

CAUSE

- CAUSE OF CONTROL ROD FAILURE TO INSERT IS UNKNOWN.

- ICE BUILD UP AT NORMAL AND EMERGENCY SERVICE WATER INTAKE STRUCTURE.

SAFETY SIGNIFICANCE

- REDUCTION OF SHUTDOWN MARGIN.

- POTENTIAL LOSS OF ULTIMATE HEAT SINK.

BACKGROUND

- CIRCULATING AND NON-ESSENTIAL SERVICE WATER SYSTEMS SHARE SAME PUMP HOUSE.

CONTACT: THOMAS KOSHY, NRR/DRPM/PECB
REFERENCE: 10 CFR 50.72 #29904
PN 4-96-005

AIT: YES
SIGEVENT: TBD

- TWO TRAINS OF EMERGENCY SERVICE WATER (ESW) SHARE ONE PUMP HOUSE. WHEN SERVICE WATER UNAVAILABLE, ESW PROVIDES COOLING FOR EMERGENCY DIESEL GENERATORS AND OTHER SAFEGUARD HEAT LOADS.

DISCUSSION

- DUE TO DECREASING WATER LEVEL IN SERVICE WATER PUMP BAY, "A" TRAIN OF EMERGENCY SERVICE WATER WAS STARTED AT 3:11 A.M. AND TRAIN "B" ESW WAS STARTED AT 3:23 A.M..

- AT 04:37 PLANT WAS TRIPPED FROM 80% POWER DUE TO DECREASING FORE BAY LEVEL.

- FIVE RODS FAILED TO FULLY INSERT.

- ROD "F6" 18 STEPS OUT; "H2" & "H8" 12 STEPS OUT; "K10" & "K6" 6 STEPS OUT.

- 20 MINUTES AFTER TRIP, ROD BOTTOM LIGHT APPEARED FOR RODS F6, H8, AND K10. 58 MINUTES LATER ROD H2 BOTTOMED; 80 MINUTES LATER ROD K6 BOTTOM LIGHT APPEARED.

- TRAIN "A" ESW WAS TRIPPED AT 8:47 A.M. DUE TO ICING.

- TURBINE DRIVEN EMERGENCY FEEDWATER PUMP WAS TRIPPED AT 8:50 A.M., JANUARY 30, 1996, DUE TO A LEAK FROM INBOARD PACKING. MAINTENANCE WAS PERFORMED; THE PUMP WAS CONSIDERED FUNCTIONAL IN THE EVENING OF JANUARY 30, 1996. PUMP TESTING NOT DONE DUE TO PLANT CONDITIONS.

- THE LICENSEE DECLARED AN UNUSUAL EVENT (UE) AT 9:46 A.M.. (TECHNICAL SUPPORT CENTER WAS NOT ACTIVATED AT THAT TIME).

- ESW BAY DECREASED TO 1085.8 FEET. IF BAY LEVEL DECREASES TO 1083 FEET AN ALERT WILL BE DECLARED. IF LEVEL DECREASES TO 1070 FEET A SITE AREA EMERGENCY WILL BE DECLARED.

- DIESEL FIRE PUMP CAN BE LINED UP TO FEED STEAM GENERATORS. FOUR DC ACTUATED SECONDARY RELIEF VALVES AVAILABLE. BACK UP NITROGEN SUPPLY AVAILABLE FOR LONG TERM. "B" SERVICE WATER PUMP CAN COOL EDG.

- TWO SKID MOUNTED DIESEL GENERATORS WERE BROUGHT ON SITE (ONE 480V AND ONE 4160V).

- ESW "A" RECOVERED AT 4:43 P.M.

- EXITED UE AT 6:58 P.M. WHEN "A" ESW PUMP WAS DECLARED OPERABLE. HOWEVER, AT 8:25 P.M., "A" ESW PUMP WAS ONCE AGAIN MANUALLY TRIPPED DUE TO ICE. LICENSEE DID NOT DECLARE A UE WHEN THE PUMP WAS LOST.

- UE WAS DECLARED AGAIN AT 10:00 A.M. ON JANUARY 31, 1996, WHEN DIVERS FOUND WEDGE OF TIGHTLY PACKED ICE ON "A" ESW PUMP TRASH RACKS.

- AT 10:00 A.M. ON FEBRUARY 2, 1996, AFTER ICE WAS CLEARED, "A" ESW PUMP WAS DECLARED OPERABLE.

OTHER COMPLICATIONS

- AT 5:45 P.M. REACTOR COOLANT PUMP "A" WAS TRIPPED DUE TO OIL SPRAYING.

- PRIMARY ACTIVITY INCREASED TO 2.6 M CURIES/GRAM AND IT DECREASED DURING THE COOLDOWN.

- CONOSEAL LEAKAGE ESTIMATED TO BE 60 DROPS PER MIN.

ROD TESTING RESULTS

- FULL FLOW COLD DROP TESTS CONDUCTED HAD THE FOLLOWING RESULTS. ALL STUCK RODS AND A FEW OTHER DISPLAYED PROBLEMS AT VARYING LEVELS.

  H2 PAUSED AT 96 STEPS, STOPPED AT 90, INSERTED TO 30 STEPS IN 2 HRS. WITH AGITATION FROM ROD CONTROL SYSTEM. (BELIEVED TO BE HAFNIUM ROD)

  F6 STOPPED AT 18 SLOWLY INSERTED TO 6 STEPS IN 2 HRS. AND REQUIRED AGITATION TO FULLY INSERT

  K6 STOPPED AT 30 STEPS, SLOWLY INSERTED TO 18 IN 74 MINS.

  K10 STOPPED AT 12 STEPS, FULLY INSERTED IN 22 MINS.

  B8 PAUSED AT 12 STEP, STOPPED AT 6 AND TOOK 9 MINS. TO FULLY INSERT.

  H14 STOPPED AT 12, FULLY INSERTED IN 10 MINS.

  P8 STOPPED AT 12, FULLY INSERTED IN 17 MINS.

  F10 FULLY INSERTED WHEN POWER WAS REMOVED.

- NUMBER OF RODS DID NOT EXHIBIT THE EXPECTED NUMBER OF RECOILS.

- A LATER TEST OF ROD "H8" CAUSED THE ROD TO BE STUCK AT 18 STEPS AND WAS DRIVEN TO BOTTOM BY THE ROD CONTROL SYSTEM IN 10 MINUTES.

NRC ACTIONS

- REGION AND THE HEADQUARTERS ENTERED THE MONITORING MODE.

- AN AIT STARTED ON FEBRUARY 6, 1996.

- AN INFORMATION NOTICE, PRIMARILY DEVELOPED ON SOUTH TEXAS UNIT CONCERNS, WILL SHARE THE ROD PROBLEMS EXPERIENCED AT WOLF CREEK. A FURTHER FOLLOW UP NOTICE IS PLANNED.

- A MANAGEMENT CALL WAS CONDUCTED WITH THE REGULATORY RESPONSE GROUP ON FEBRUARY 6, 1996.

- AN INFORMATION NOTICE IS ANTICIPATED FOR ADDRESSING THE COMMON-MODE FAILURE FROM FRAZIL ICE. (RECENTLY ADDRESSED IN INFORMATION NOTICE 92-49).

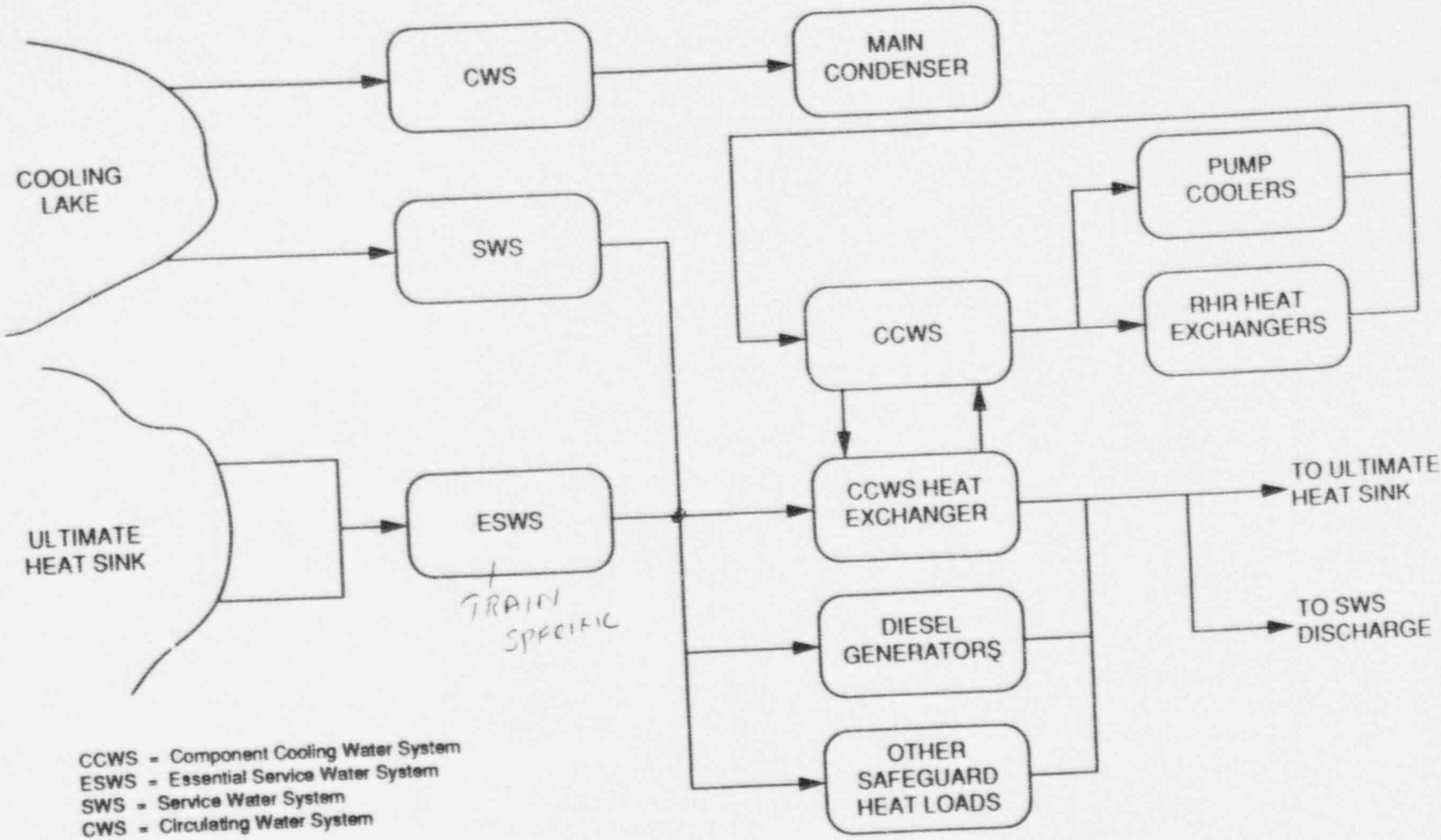
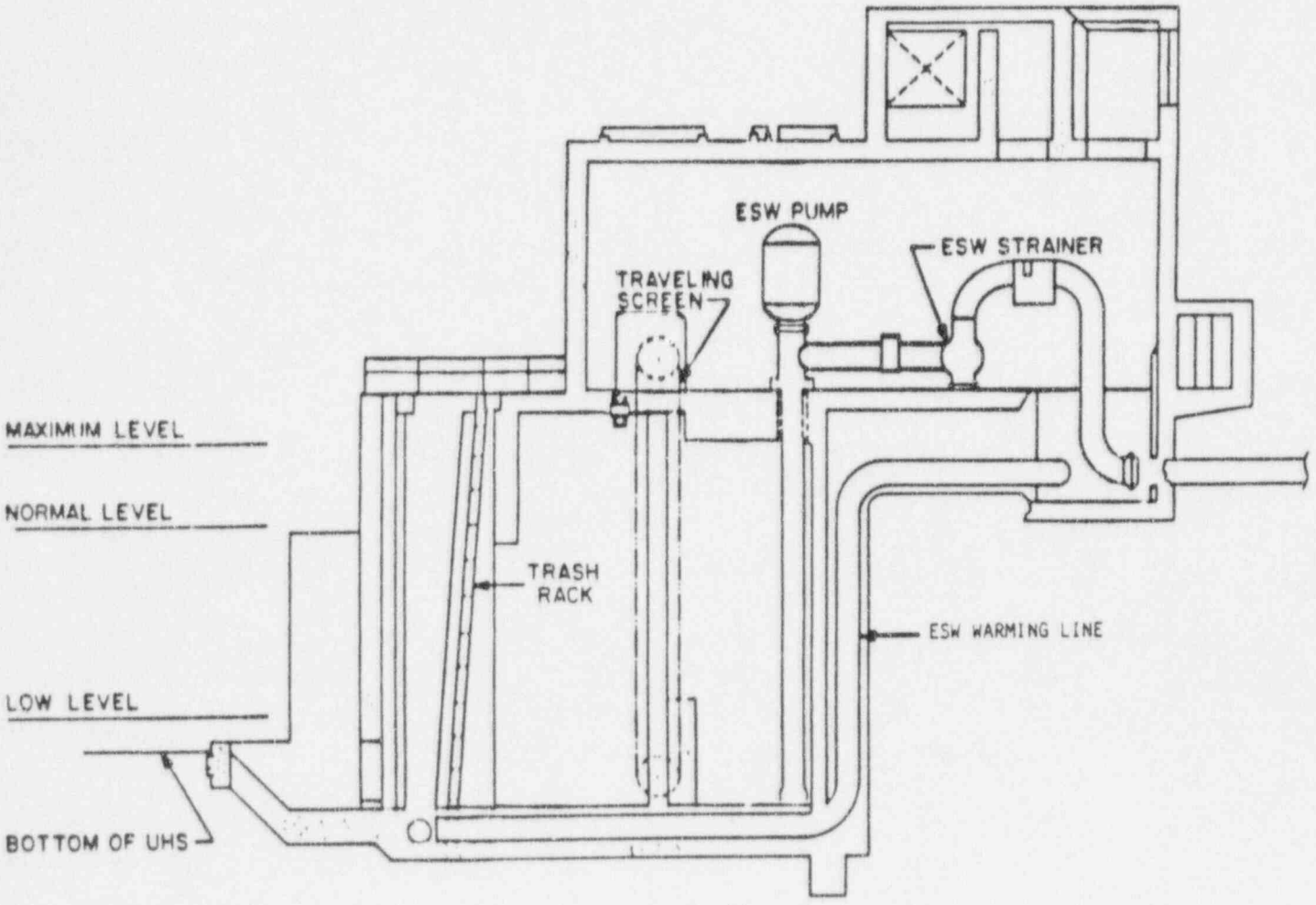
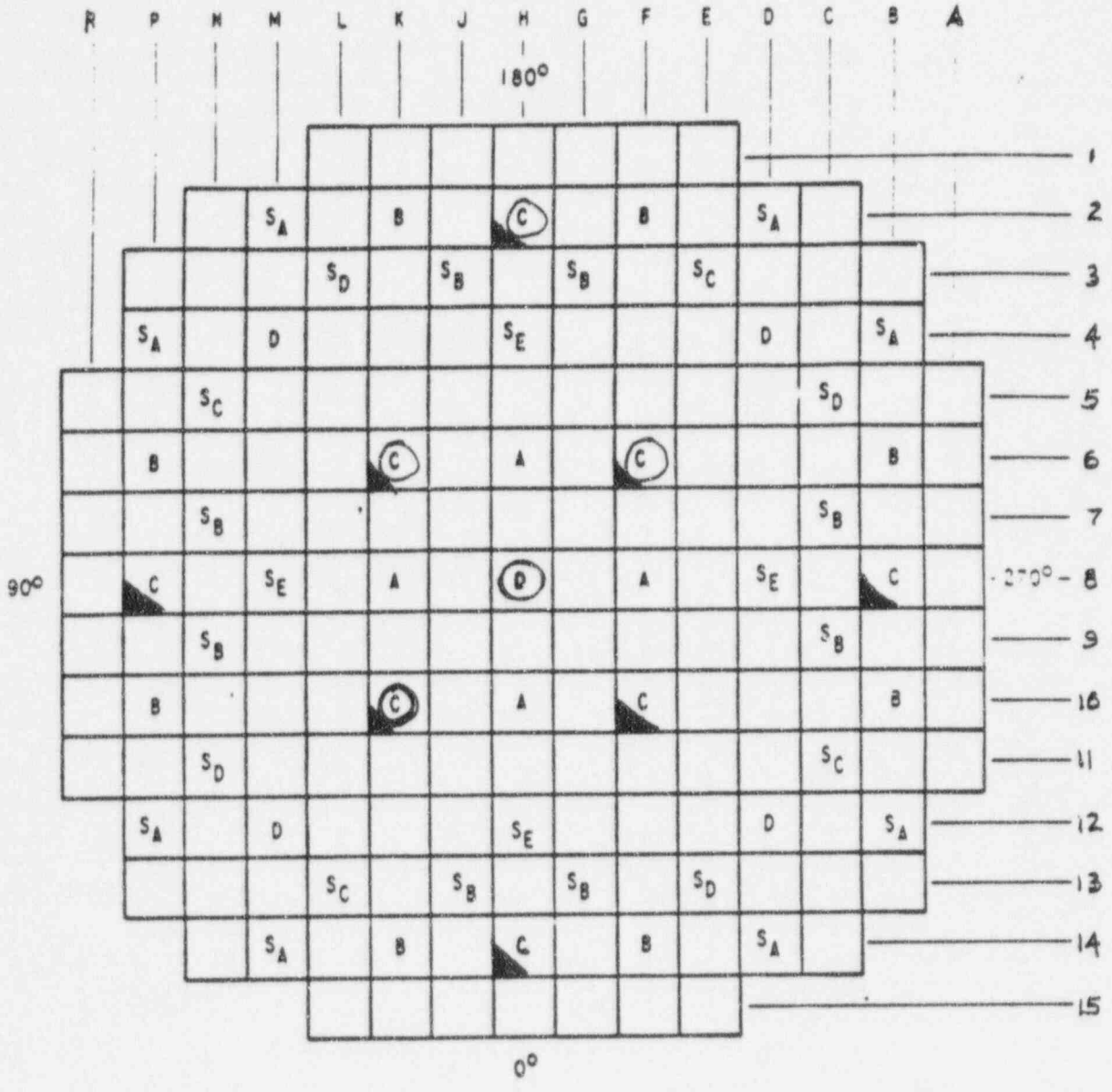


Figure 1-1. Cooling Water Systems Functional Diagram for Wolf Creek



Essential Service Water Pumphouse (WCGS-EF-2)

WOLF CREEK



CONTROL BANK	NUMBER OF RODS
A	4
B	8
C	8
D	5
TOTAL	25

SHUTDOWN BANK	NUMBER OF RODS
S_A	8
S_B	8
S_C	4
S_D	4
S_E	4
TOTAL	28

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⊗ PROBLEM RODS AT FIRST Rx TRIP

STUCK DURING DROP TEST

WOLF CREEK
UPDATED SAFETY ANALYSIS REPORT

FIGURE 4.3-36

ROD CLUSTER CONTROL ASSEMBLY PATTERN

SECURITY FENCE
BAFFLE DIKE
COOLING LAKE
UHS DAM
ULTIMATE HEAT SINK
ESW PUMPHOUSE
ESW DISCHARGE STRUCTURE

REACTOR SCRAM

Reporting Period: 01/29/96 to 02/04/96

DATE	PLANT & UNIT	POWER	TYPE	CAUSE	COMPLICATIONS	YTD ABOVE 15%	YTD BELOW 15%	YTD TOTAL
01/30/96	WOLF CREEK 1	80	SM	Other	YES	1	0	1
02/03/96	MCGUIRE 1	100	SM	Maintenance Error	NO	1	0	1
02/04/96	LASALLE 2	55	SM	Design or Installati	NO	1	0	1

DESCRIPTION OF COMPLICATION(S) 01/29/96 TO 02/04/96

SITE	UNIT	COMPLICATIONS
WOLF CREEK	1	SEVERAL CONTROL RODS DID NOT INSERT FULLY, REQUIRING OPERATORS TO BORATE.

Note: Year To Date (YTD) Totals Include Events Within The Calendar Year Indicated By The End Date Of The Specified Reporting Period

ATTACHMENT 3

COMPARISON OF WEEKLY SCRAM STATISTICS WITH INDUSTRY AVERAGES

PERIOD ENDING
02/04/96

SCRAM CAUSE	NUMBER OF SCRAMS	1996 WEEKLY AVERAGE (YTD)	1995 WEEKLY AVERAGE	1994 WEEKLY AVERAGE	1993 WEEKLY AVERAGE	1992 WEEKLY AVERAGE
POWER GREATER THAN OR EQUAL TO 15%						
EQUIPMENT FAILURE	0	1.20	1.81	1.52	1.83	2.62
DESIGN/INSTALLATION ERROR	1	0.20	0.12	0.08	0.04	-
OPERATING ERROR	0	0.00	0.15	0.21	0.27	0.31
MAINTENANCE ERROR	1	0.60	0.38	0.54	0.52	0.50
EXTERNAL	0	0.00	0.21	0.17	0.13	-
OTHER	1	0.20	0.08	-	0.02	-
Subtotal	3	2.20	2.75	2.52	2.81	3.43
POWER LESS THAN 15%						
EQUIPMENT FAILURE	0	0.00	0.10	0.27	0.38	0.42
DESIGN/INSTALLATION ERROR	0	0.00	-	0.02	-	-
OPERATING ERROR	0	0.00	0.13	0.08	0.13	0.15
MAINTENANCE ERROR	0	0.00	0.08	-	0.02	0.08
EXTERNAL	0	0.00	-	-	0.04	-
OTHER	0	0.00	-	-	-	-
Subtotal	0	0.00	0.31	0.37	0.57	0.65
TOTAL	3	2.20	3.06	2.89	3.38	4.08

SCRAM TYPE	NO. OF SCRAMS	1996 WEEKLY AVERAGE (YTD)	1995 WEEKLY AVERAGE	1994 WEEKLY AVERAGE	1993 WEEKLY AVERAGE	1992 WEEKLY AVERAGE
TOTAL AUTOMATIC SCRAMS	0	0.80	1.92	2.19	2.44	3.06
TOTAL MANUAL SCRAMS	3	1.40	1.13	0.69	0.94	1.02

TOTALS MAY DIFFER BECAUSE OF ROUNDING OFF

NOTES

1. PLANT SPECIFIC DATA BASED ON INITIAL REVIEW OF 50.72 REPORTS FOR THE WEEK OF INTEREST. PERIOD IS MIDNIGHT SUNDAY THROUGH MIDNIGHT SUNDAY. SCRAMS ARE DEFINED AS REACTOR PROTECTIVE ACTUATIONS WHICH RESULT IN ROD MOTION, AND EXCLUDE PLANNED TESTS OR SCRAMS AS PART OF PLANNED SHUTDOWN IN ACCORDANCE WITH A PLANT PROCEDURE. THERE ARE 111 REACTORS HOLDING AN OPERATING LICENSE.

2. PERSONNEL RELATED PROBLEMS INCLUDE HUMAN ERROR, PROCEDURAL DEFICIENCIES, AND MANUAL STEAM GENERATOR LEVEL CONTROL PROBLEMS.

3. COMPLICATIONS: RECOVERY COMPLICATED BY EQUIPMENT FAILURES OR PERSONNEL ERRORS UNRELATED TO CAUSE OF SCRAM.

4. "OTHER" INCLUDES AUTOMATIC SCRAMS ATTRIBUTED TO ENVIRONMENTAL CAUSES (LIGHTNING), SYSTEM DESIGN, OR UNKNOWN CAUSE.

OEAB SCRAM DATA

Manual and Automatic Scrams for 1987	435
Manual and Automatic Scrams for 1988	291
Manual and Automatic Scrams for 1989	252
Manual and Automatic Scrams for 1990	226
Manual and Automatic Scrams for 1991	206
Manual and Automatic Scrams for 1992	212
Manual and Automatic Scrams for 1993	175
Manual and Automatic Scrams for 1994	150
Manual and Automatic Scrams for 1995	159
Manual and Automatic Scrams for 1996 --(YTD 02/04/96)--	11