

April 14, 1992

MEMORANDUM FOR: Charles E. Rossi, Director
 Division of Operational Events Assessment

FROM: Alfred E. Chaffee, Chief
 Events Assessment Branch
 Division of Operational Events Assessment

SUBJECT: OPERATING REACTORS EVENTS MEETING
 APRIL 8, 1992 - MEETING 92-04

On April 8, 1992, we conducted an Operating Reactors Events meeting (92-04) to inform senior managers from the ACRS, EDO, NRR, and regional offices of selected events that occurred since our last briefing on March 25, 1992. Enclosure 1 lists the attendees. Enclosure 2 presents the significant elements of the discussed events. After Mr. Skeen's presentation on the Quad Cities, Unit 2, deluge system actuation, a more recent event at Quad Cities, Unit 1, involving the loss of annunciators and declaration of an alert was mentioned.

Also, a verbal briefing was given by Mr. David Fischer on recently identified discrepancies between entry records and operator logs at the Seabrook and Millstone plants.

Enclosure 3 contains reactor scram statistics for the weeks ending 03/29/92 and 04/05/92. No significant events were identified for input into the NRC performance indicator program. (original signed by Robert L. Dennig for)

Alfred E. Chaffee, Chief
 Events Assessment Branch
 Division of Operational
 Events Assessment

Enclosures: As stated

cc w/enclosures:
 See next page

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 RDennig
 04/14/92

EAB/DOEA
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 04/13/92

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 AChaffee
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RETURN TO REGULATORY CENTRAL FILES

9204300102 920414
 PDR ORG NRRB
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 DP03
 IDR-5-1
 OPERATING
 EXPERIENCE

cc:

T. Murley, NRR (12G18)
F. Miraglia, NRR (12G18)
W. Russell, NRR (12G18)
F. Gillespie, NRR (12G18)
J. Partlow, NRR (12G18)
S. Varga, NRR (14E4)
J. Calvo, NRR (14A4)
G. Lainas, NRR (14H3)
B. Boger, NRR (14A2)
J. Zwolinski, NRR (13H24)
M. Virgilio, NRR (12E4)
D. Crutchfield, NRR (11H21)
W. Travers, NRR (11B19)
J. Richardson, NRR (7D26)
A. Thadani, NRR (8E2)
B. Grimes, NRR (9A2)
F. Congel, NRR (10E2)
J. Roe, NRR (10H5)
M. Pohida, NRR (10E4)
T. Martin, RI
W. Kane, RI
C. Hehl, RI
S. Ebnetter, RII
L. Reyes, RII
B. Davis, RIII
E. Greenman, RIII
R.D. Martin, RIV
B. Beach, RIV
J.B. Martin, RV
R. Zimmerman, RV
P. Boehnert, ACRS (P-315)
E. Jordan, AEOD (MN-3701)
T. Novak, AEOD (MN-3701)
L. Spessard, AEOD (MN-3701)
E. Weiss, AEOD (MN-3206)
S. Rubin, AEOD (MN-4106)
M. Harper, AEOD (MN-9112)
W. Bateman, EDO (17G21)
R. Newlin, GPA (2G5)
E. Beckjord, RES (NLS-007)
A. Bates, SECY (16G15)
G. Rammling, OCM (16H3)

C. Trammell (PD5)
T. Quay (PD5)
L. Olshan (PDIII-2)
R. Barrett (PDIII-2)

bcc: INPO

ATTN: J. Cowan
1100 Circle 75, Suite 1500
Atlanta, GA 30339

ENCLOSURE 1

LIST OF ATTENDEES

OPERATING REACTORS EVENTS FULL BRIEFING (92-04)

APRIL 8, 1992

<u>NAME</u>	<u>OFFICE</u>	<u>NAME</u>	<u>OFFICE</u>
D. FISCHER	NRR	J. KNIGHT	NRR
R. DENNIG	NRR	G. CWALINA	NRR
D. SKEEN	NRR	M. DAVIS	NRR
T. KOSHY	NRR	C. TRAMMELL	NRR
K. BAUMANN	NRR	L. OLSHAN	NRR
C. ROSSI	NRR	V. ORDAZ	NRR
F. MIRAGLIA	NRR	J. GAGLIARDO	NPR
S. LONG	NRR	K. NAIDJ	NRR
S. VARGA	NRR	R. MEYER	EDO
F. ROSA	NRR	P. BOEHNEKT	ACFS

OPERATING REACTORS EVENTS BRIEFING 92-04
EVENTS ASSESSMENT BRANCH
LOCATION: 8 B11, WHITE FLINT
WEDNESDAY, APRIL 8, 1992, 11:00 A.M.

PALO VERDE, UNIT 3

REACTOR TRIP BREAKER FAILURE

QUAD CITIES, UNIT 2

RESERVE AUXILIARY TRANSFORMER
TRIP CAUSES LOSS OF OFFSITE
POWER AND CESSATION OF SHUTDOWN
COOLING

PALO VERDE, UNIT 3
REACTOR TRIP BREAKER FAILURE
MARCH 31, 1992

PROBLEM

ONE OF THE FOUR REACTOR TRIP BREAKERS (RTB) FAILED A SURVEILLANCE TEST CONDUCTED DURING POWER OPERATION.

CAUSE

APPEARS TO BE EXCESSIVE MECHANICAL FRICTION AND MISALIGNMENT IN THE BREAKER TRIP LINKAGES.

SAFETY SIGNIFICANCE

POTENTIAL LOSS OF AUTOMATIC AND MANUAL REACTOR TRIP CAPABILITY.

DISCUSSION

- 0 WHEN RTB WAS TRIPPED FROM CONTROL ROOM FOR MONTHLY SURVEILLANCE, IT REMAINED IN AN INTERMEDIATE POSITION (A & C PHASES ELECTRICALLY CONNECTED BUT B PHASE NOT CONNECTED).
- 0 THE FAILED BREAKER IS WESTINGHOUSE DS206 (ONLY SITE WITH THIS BREAKER FOR REACTOR TRIP).
- 0 ELECTRO-MAGNETIC TRIP (SHUNT & UNDERVOLTAGE) MECHANISM APPEARS TO HAVE FUNCTIONED, TO INITIATE THE BREAKER OPENING, BUT BREAKER WAS STUCK IN AN INTERMEDIATE POSITION.
- 0 UNABLE TO REPEAT PROBLEM EVEN AFTER CYCLING APPROX. 100 TIMES.
- 0 PROBABLY DUE TO: (1) MISALIGNMENT OF THE STATIONARY ARCING CONTACTS (PREVIOUSLY ADDRESSED IN WESTINGHOUSE SERVICE LETTER BASED ON AN EVENT AT BYRON IN SEPTEMBER '91); (2) IMPROPER ASSEMBLY OF INSULATING LINK.

CONTACT: T. KOSHY, NRR/DOEA AIT: NO
REFERENCES: MORNING REPORT DATED 04/02/92, SIGEVENT: TBD
AND PNO-V-92-10 DATED 04/02/92

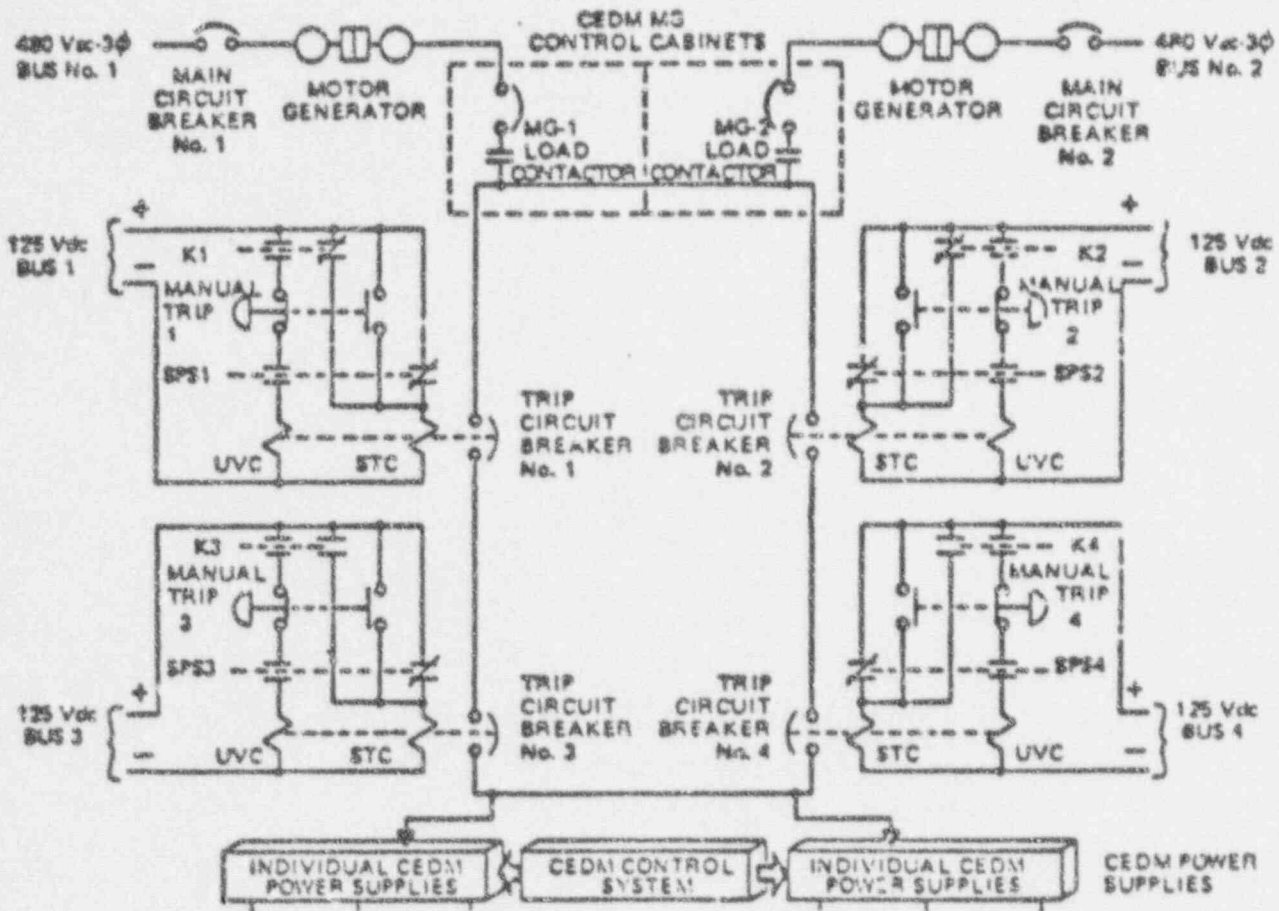
FOLLOWUP

LICENSEE:

- O SPECIAL TEAM INVESTIGATING THE CAUSES AND THE CORRECTIVE ACTION.
- O PLANS TO SEND THE BREAKER FOR MANUFACTURER'S ANALYSIS.

NRC:

- O REGION DISPATCHED A SPECIALIST TEAM TO INSPECT THE CAUSES AND EVALUATE CORRECTIVE ACTION.
- O INFORMATION NOTICE IS PLANNED TO EMPHASIZE THE WESTINGHOUSE SERVICE LETTER.
- O THE TEAM IDENTIFIED THE GE AKR 30 RTB (THE OTHER KIND OF RTB USED) FAILING TO CLOSE IN 15/20 ATTEMPTS.



- NOTES:
1. STC = SHUNT TRIP COIL
 2. UVC = UNDER VOLTAGE COIL

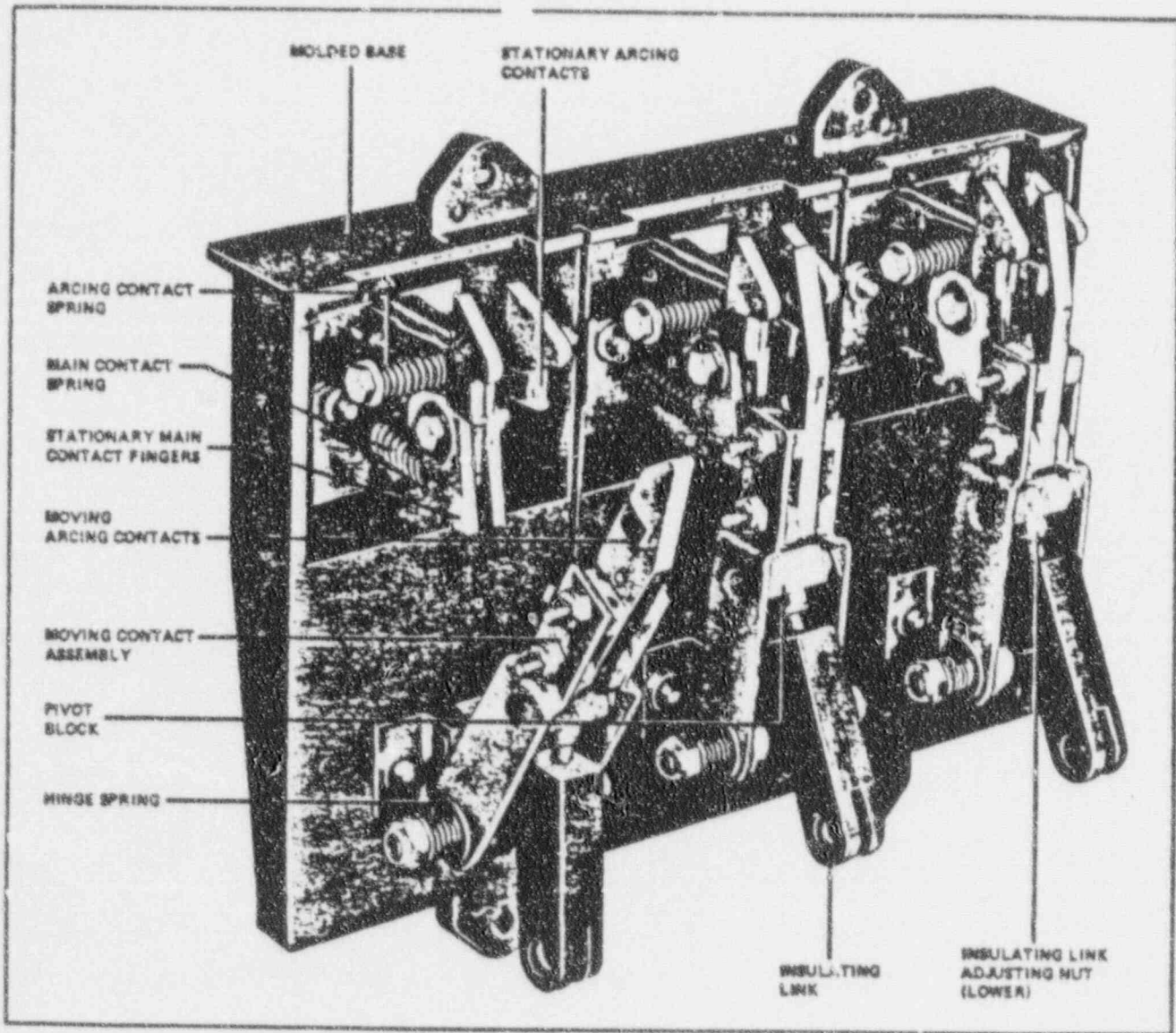


Fig. 37 Type DS-206 Pole Unit Assembly - Front View (384502)

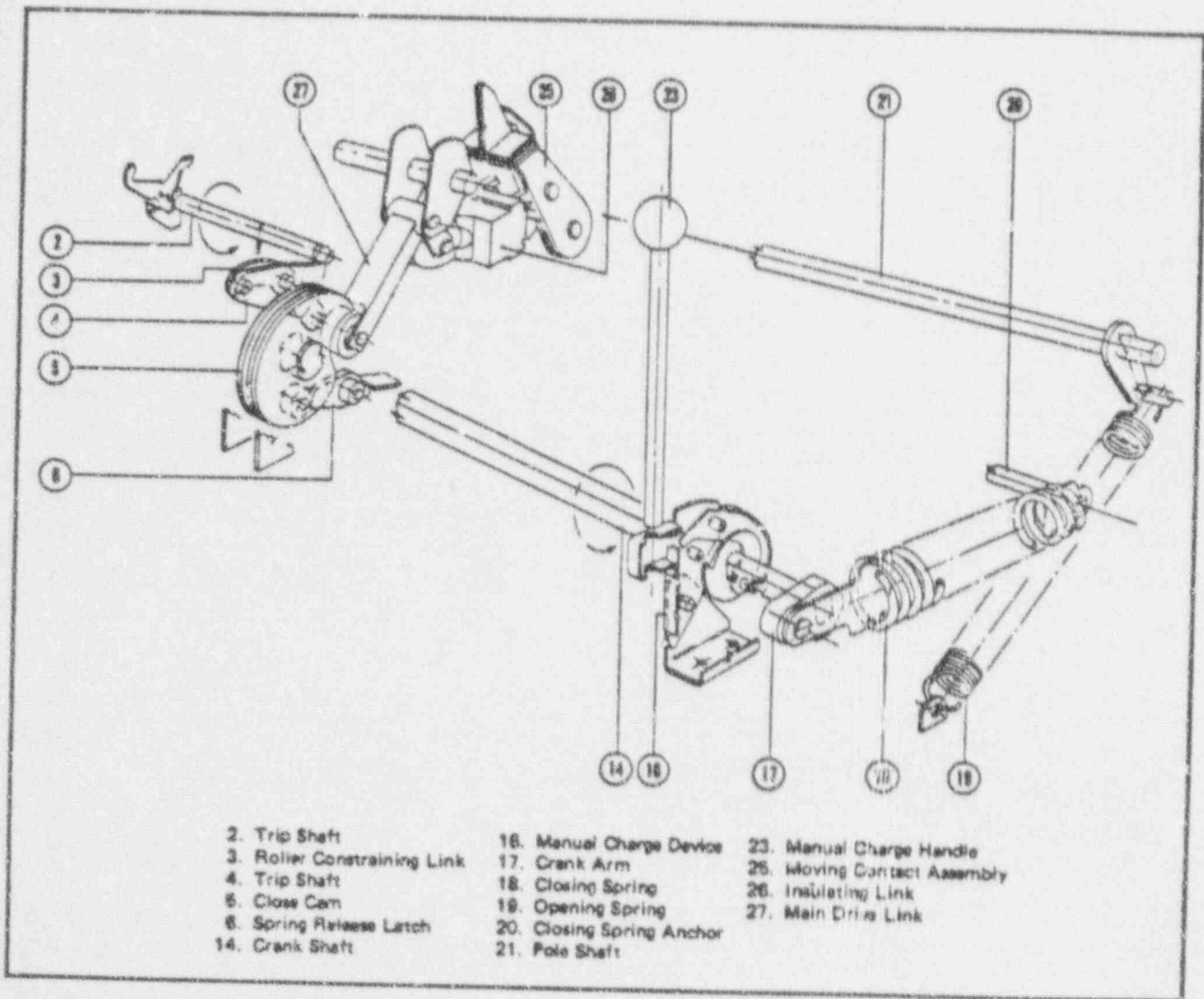


Fig. 20 Principal Parts in a Manually Charged Spring Operated Mechanism.

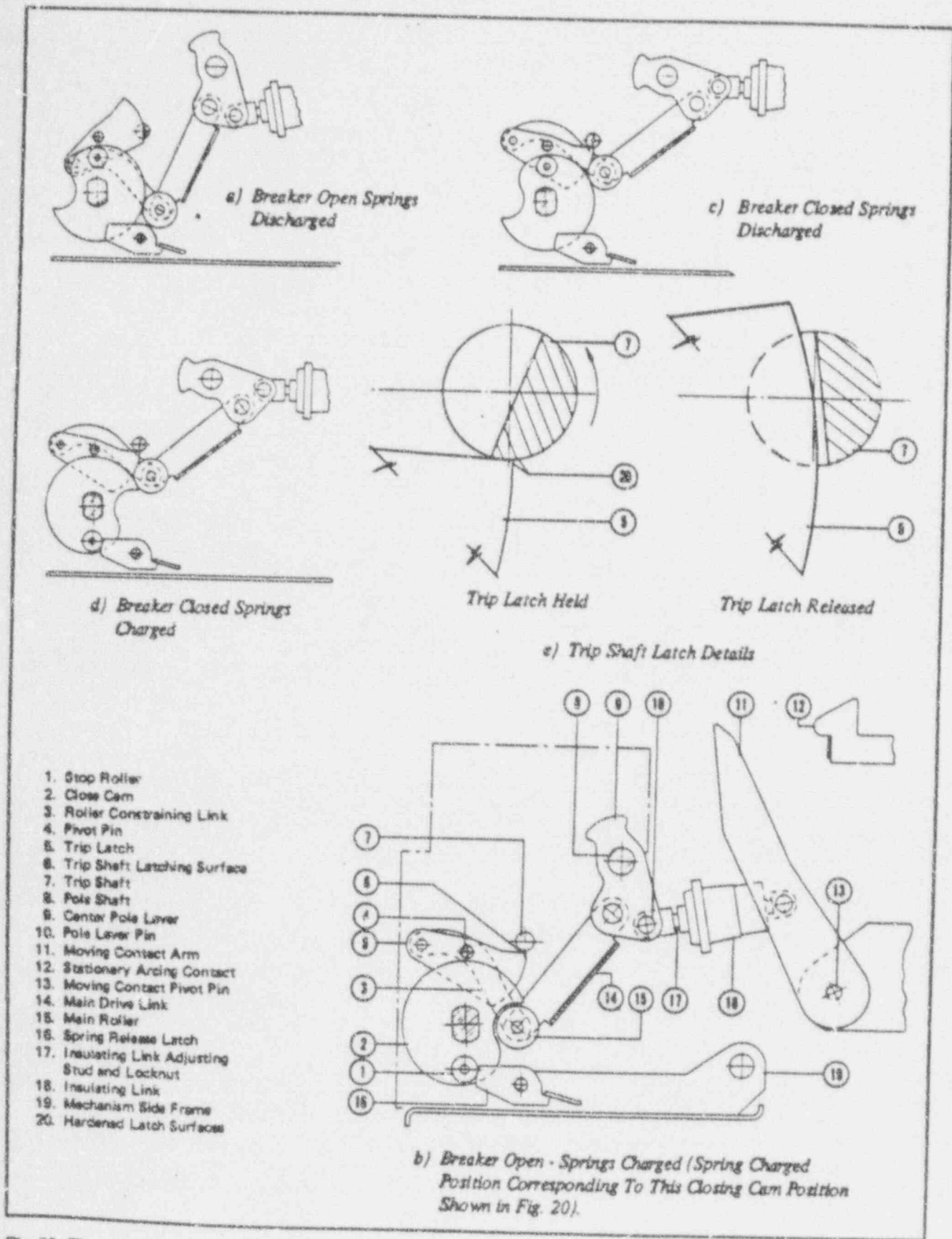


Fig. 22 These Sketches Show the Four Basic Positions of Breaker and Linkage with Enlarged View of Trip Shaft and Latch

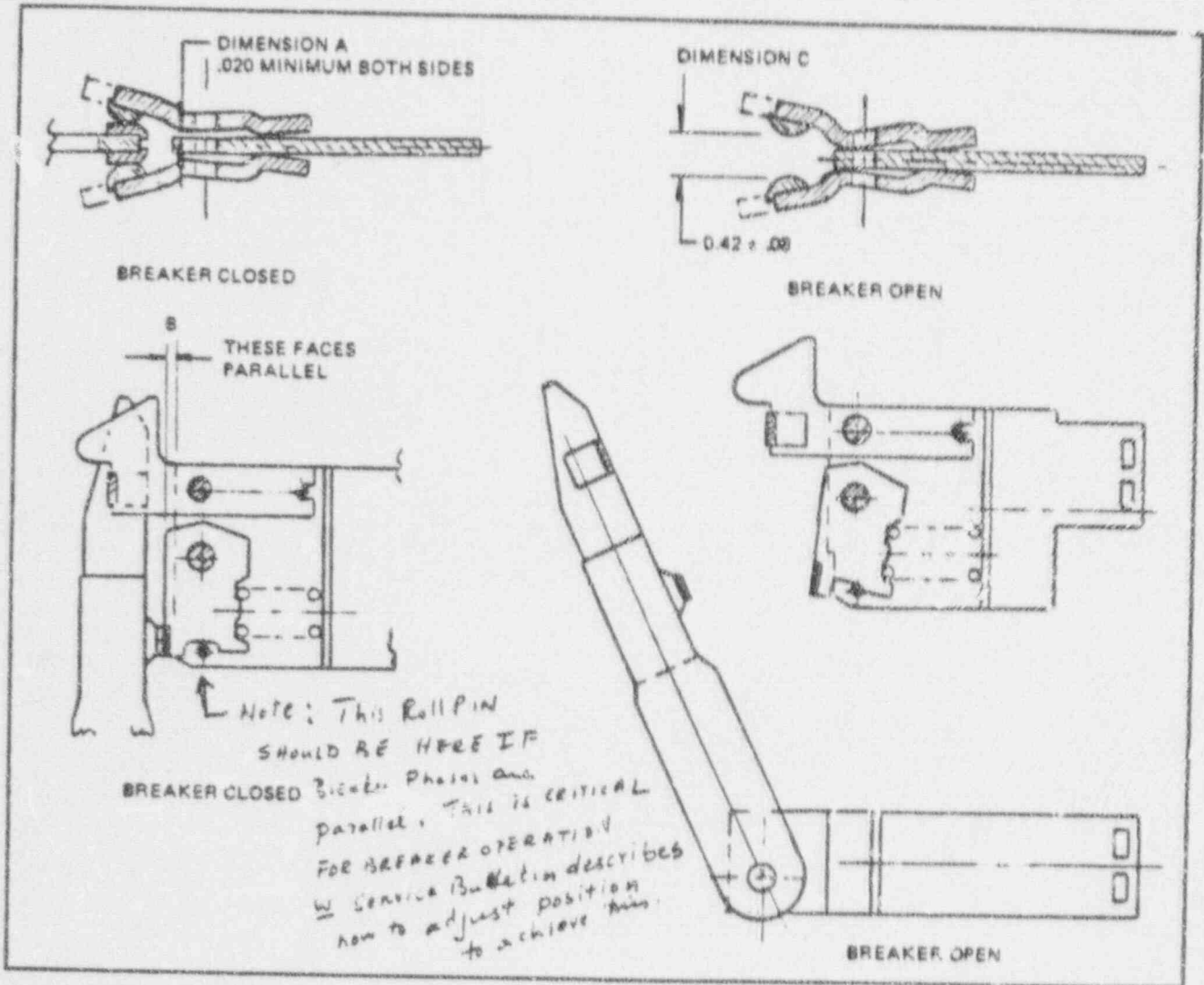


Fig. 84 Contacts and their Adjustment, DS-206 Breaker

QUAD CITIES, UNIT 2
RESERVE AUXILIARY TRANSFORMER TRIP
CAUSES LOSS OF OFFSITE POWER AND
CESSATION OF SHUTDOWN COOLING
APRIL 2, 1992

PROBLEM

A RESERVE AUXILIARY TRANSFORMER (RAT) TRIPPED, CAUSING A LOSS OF OFFSITE POWER FOR 35 MIN. AND A CESSATION OF SHUTDOWN COOLING FOR 2 HRS. & 20 MIN.

CAUSE

THE TRANSFORMER TRIPPED DUE TO INADVERTENT ACTUATION OF THE FIRE PROTECTION DELUGE SYSTEM.

SAFETY SIGNIFICANCE

LOSS OF SHUTDOWN COOLING CONCURRENT WITH LOSS OF OFFSITE POWER.

DISCUSSION

- 0 UNIT 2 WAS IN DAY 93 OF A REFUELING OUTAGE WITH REACTOR COOLANT TEMPERATURE AT 131F.
- 0 THE DRYWELL AND REACTOR WERE AT 50 PSIG ($T_{SAT} = 290F$) DUE TO AN ON-GOING INTEGRATED LEAK RATE TEST (ILRT). REACTOR LEVEL WAS 98 INCHES ABOVE INSTRUMENT ZERO. BOTH RECIRC PUMPS WERE OFF.
- 0 RHR LOOP "A" WAS IN SHUTDOWN COOLING MODE WITH THE HEAT EXCHANGER THROTTLED TO MINIMIZE COOLING IN ORDER TO MAINTAIN A CONSTANT TEMPERATURE DURING THE ILRT.

CONTACT: D. SKEEN, NRR/DOEA
REFERENCES: 10 CFR 50.72 #23151,
MORNING REPORT DATED 04/02/92,
MORNING REPORT DATED 04/06/92,
AND PNO-III-92-16 DATED 04/02/92

AIT: NO
SIGEVENT: TBD

- 0 MAINTENANCE WORKERS WERE CLOSING AN ISOLATION VALVE ON THE FIRE PROTECTION DELUGE SYSTEM WHEN IT INADVERTENTLY ACTUATED. AN AUXILIARY OPERATOR REPORTED SEEING A FLASH ON THE "A" PHASE BUSHING OF RESERVE AUXILIARY TRANSFORMER "RAT-22" DURING THE DELUGE
- 0 RAT-22 TRIPPED, CAUSING THE RHR AND RHRSW PUMPS TO TRIP, AND THE SWING DIESEL GENERATOR (DG-1/2) STARTED AND LOADED ONTO BUS 23-1. DG-2 WAS OUT OF SERVICE FOR MODIFICATION TO ITS AUTO START RELAY. IT WAS AVAILABLE FOR MANUAL START, IF NEEDED.
- 0 480 VAC BUS 29 WAS CHECKED FOR FAULTS, THEN CROSS-TIED TO BUS 28. 4 KV BUS 24-1 WAS CHECKED FOR FAULTS AND CROSS-TIED TO UNIT 1 BUS 14-1.
- 0 TWENTY FOUR MINUTES INTO THE EVENT, THE REACTOR COOLANT TEMPERATURE WAS STILL 131F WITH THE REACTOR IN NATURAL CIRCULATION. NATURAL CIRCULATION WAS MAINTAINED THROUGHOUT THE EVENT WITH REACTOR WATER LEVEL GREATER THAN 50 INCHES ABOVE INSTRUMENT ZERO.
- 0 BUS 24 WAS CHECKED FOR FAULTS AND THEN BACKFED FROM BUS 24-1. BUS 23 WAS CHECKED AND BACKFED FROM BUS 23-1.
- 0 ONE HOUR AND 24 MINUTES INTO THE EVENT, REACTOR COOLANT TEMPERATURE WAS 136F.
- 0 ONE RHRSW PUMP, FED FROM BUS 24, WAS STARTED IN PREPARATION TO START THE "A" RHR LOOP.
- 0 TWO RBCCW PUMPS AND ONE SPENT FUEL POOL PUMP BEING FED FROM DG-1/2 WERE STOPPED TO ASSURE MORE MARGIN ON THE DIESEL GENERATOR WHILE STARTING THE "A" RHR PUMP.

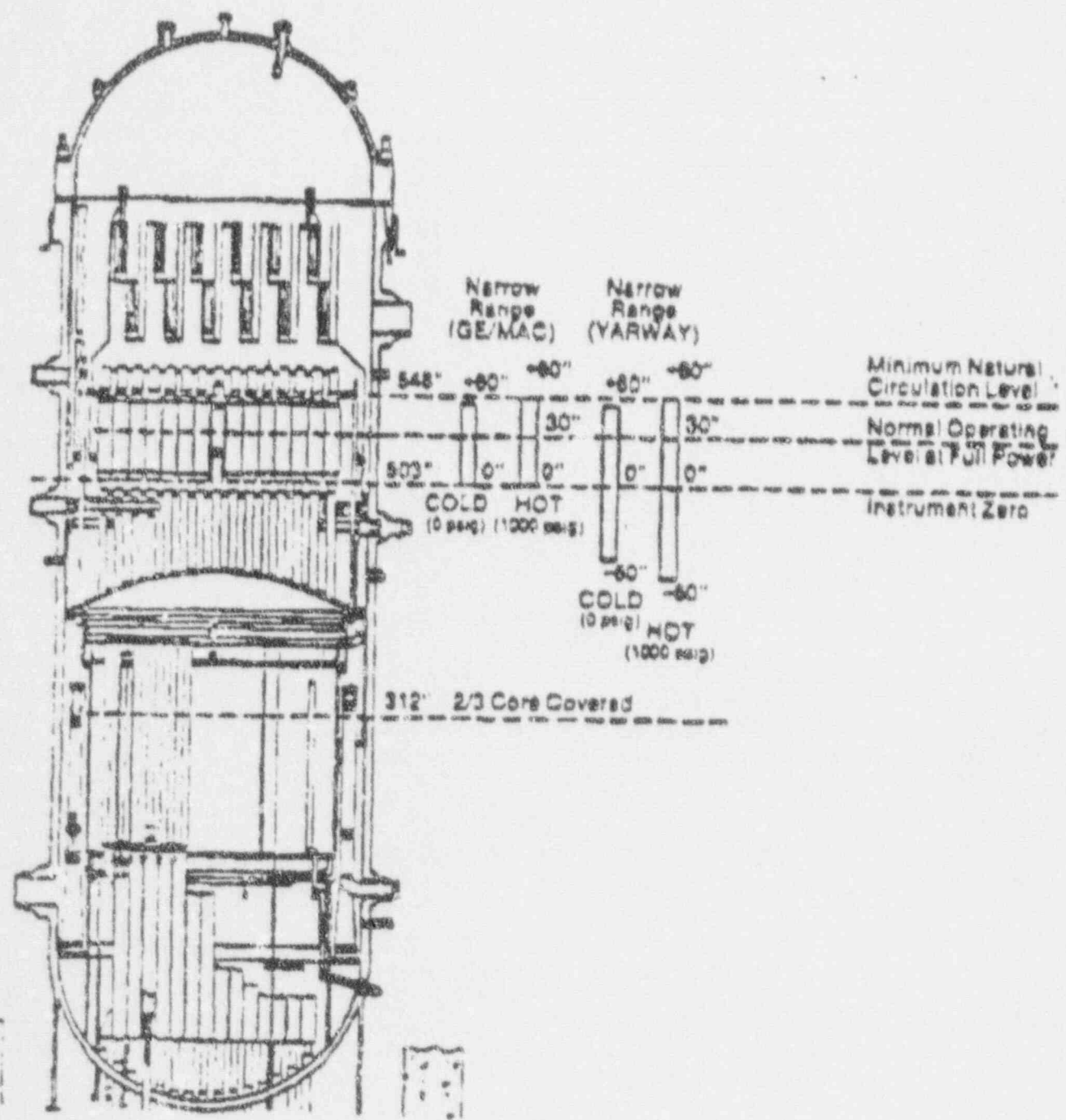
- O THE "A" RHR PUMP WAS STARTED AND SHUTDOWN COOLING WAS RE-ESTABLISHED. THE MAXIMUM REACTOR COOLANT TEMPERATURE WAS 140F.

FOLLOWUP

- O LICENSEE IS TAKING THE FOLLOWING CORRECTIVE ACTIONS:
- INVESTIGATING WHY THE TRANSFORMER TRIPPED WHEN THE DELUGE SYSTEM INITIATED.
 - INVESTIGATING THE CONSEQUENCES OF THIS KIND OF EVENT WHEN SHUTDOWN COOLING IS MORE IMPORTANT.
- O PROMPTED BY STAFF QUESTIONS, LICENSEE IS REVIEWING NORMAL SHUTDOWN COOLING PROCEDURE WHICH INVOLVES INTERMITTENT OPERATION OF AN RHR PUMP AS EARLY AS THREE WEEKS AFTER SHUTDOWN.

Vessel Level Instrument Ranges (Typical)

Figure 2



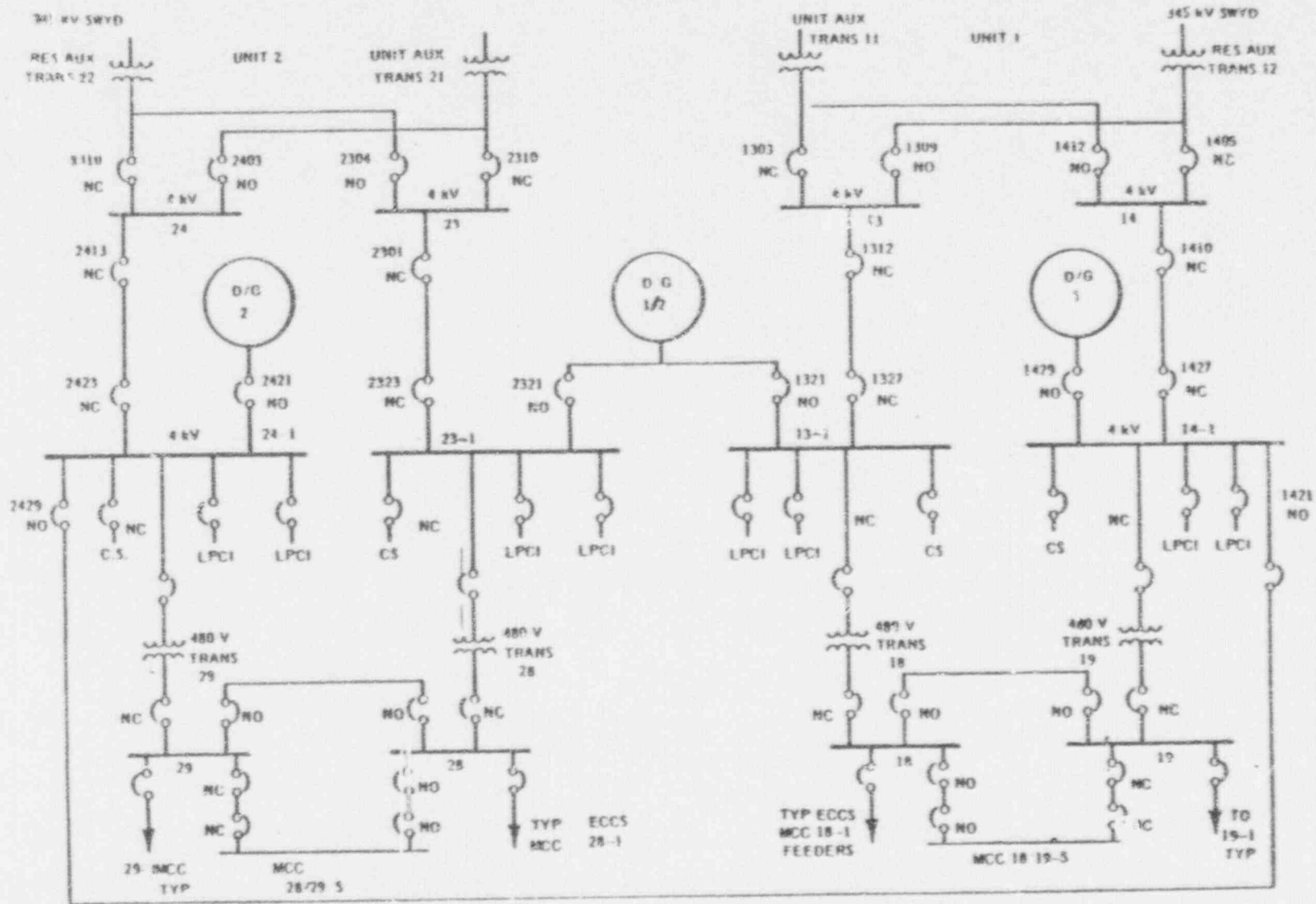


FIGURE 8.2.2. EMERGENCY POWER SYSTEM

REACTOR SCRAM SUMMARY
WEEK ENDING 03/29/92

I. PLANT SPECIFIC DATA (1)

DATE	SITE	UNIT	POWER	SIGNAL	CAUSE	COMPLI- CATIONS	(3) YTD		YTD TOTAL
							ABOVE	BELOW	
							15%	15%	
03/23/92	PALO VERDE	2	100	A	EQUIPMENT	NO	2	0	2
03/26/92	TURKEY POINT	4	30	A	EQUIPMENT	NO	1	0	1
03/27/92	CRYSTAL RIVER	3	99	A	EQUIPMENT	NO	1	0	1
03/28/92	HATCH	1	100	A	PERSONNEL	NO	1	0	1

REACTOR SCRAM SUMMARY
WEEK ENDING 04/05/92

I. PLANT SPECIFIC DATA (1)

DATE	SITE	UNIT	POWER	SIGNAL	CAUSE	COMPLI- CATIONS	(3) YTD		YTD TOTAL
							ABOVE	BELOW	
							15%	15%	
04/05/92	MILLSTONE	3	90	M	EQUIPMENT	NO	1	0	1

II. COMPARISON OF WEEKLY STATISTICS WITH INDUSTRY AVERAGES

SCRAMS FOR WEEK ENDING
03/29/92

SCRAM CAUSE	NUMBER OF SCRAMS	1992 WEEKLY AVERAGE (YTD)	1991 WEEKLY AVERAGE	1990 WEEKLY AVERAGE	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE
POWER GREATER THAN 15%						
EQUIPMENT RELATED	3	2.6*	2.9	3.4	3.1	3.0
PERSONNEL RELATED (2)	1	0.9	0.6	0.5	1.0	1.0
OTHER (4)	0	0.0	0.0	0.0	0.1	0.4
Subtotal	4	3.5*	3.5	3.9	4.2	4.4
POWER LESS THAN 15%						
EQUIPMENT RELATED	0	0.4	0.3	0.4	0.3	0.6
PERSONNEL RELATED (2)	0	0.1	0.2	0.1	0.3	0.4
OTHER (4)	0	0.0	0.5	0.0	0.0	0.2
Subtotal	0	0.5	0.5	0.5	0.6	1.2
TOTAL	0	4.0*	4.0	4.4	4.8	5.6

MANUAL VS AUTO SCRAMS

TYPE	NO. OF SCRAMS	1992 WEEKLY AVERAGE (YTD)	1991 WEEKLY AVERAGE	1990 WEEKLY AVERAGE	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE
MANUAL SCRAMS	0	0.9	0.7	1.2	0.9	1.1
AUTOMATIC SCRAMS	4	3.1	3.3	3.2	3.9	4.5

*Corrected to accommodate rounding-off

II. COMPARISON OF WEEKLY STATISTICS WITH INDUSTRY AVERAGES

SCRAMS FOR WEEK ENDING
04/05/92

SCRAM CAUSE	NUMBER OF SCRAMS	1992 WEEKLY AVERAGE (YTD)	1991 WEEKLY AVERAGE	1990 WEEKLY AVERAGE	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE
POWER GREATER THAN 15%						
EQUIPMENT RELATED	1	2.5*	2.9	3.4	3.1	3.0
PERSONNEL RELATED (2)	0	0.8	0.6	0.5	1.0	1.0
OTHER (4)	0	0.0	0.0	0.0	0.1	0.4
Subtotal	1	3.3*	3.5	3.9	4.2	4.4
POWER LESS THAN 15%						
EQUIPMENT RELATED	0	0.4	0.3	0.4	0.3	0.6
PERSONNEL RELATED (2)	0	0.1	0.2	0.1	0.3	0.4
OTHER (4)	0	0.0	0.5	0.0	0.0	0.2
Subtotal	0	0.5	0.5	0.5	0.6	1.2
TOTAL	1	3.8*	4.0	4.4	4.8	5.6

MANUAL VS AUTO SCRAMS

TYPE	NO. OF SCRAMS	1992 WEEKLY AVERAGE (YTD)	1991 WEEKLY AVERAGE	1990 WEEKLY AVERAGE	1989 WEEKLY AVERAGE	1988 WEEKLY AVERAGE
MANUAL SCRAMS	1	0.9	0.7	1.2	0.9	1.1
AUTOMATIC SCRAMS	0	2.9	3.3	3.2	3.9	4.5

*Corrected to accommodate 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	--(YTD 04/05/92)--	052