

(TEMPORARY FORM)

CONTROL NO: 3352

ACKNOWLEDGED

DO NOT REMOVE

FILE

FROM: Metropolitan Edison Company Reading, Pennsylvania 19603 J. G. Miller	DATE OF DOC: 05-21-73	DATE REC'D 05-22-73	LTR X	MEMO	RPT	OTHER
TO: Mr. A. Schwencer	ORIG 1	CC	OTHER	SENT AEC PDR	X	
				SENT LOCAL PDR	X	
CLASS: <u>U</u> PROP INFO	INPUT	NO CYS REC'D 1	DOCKET NO: 50-289			

DESCRIPTION:

Ltr re our 03-07-73 ltr...furnishing info reg a design review of control circuits of all safety related equipment and trans:

ENCLOSURES:

- 1) "MAKE-UP AND PURIFICATION SYSTEM,....."
- 2) "DECAY HEAT REMOVAL PUMP DH-P-1A & DH-P-1B"
- 3) "REACTOR BLDG SPRAY PUMP BS-P-1A & BS-P-1B"
- 4) "A" DECAY HEAT CLOSED COOLING WATER PUMP DC-P-1A & DC-P-1B"

PLANT NAMES: THREE MILE ISLAND, UNIT 1

(1 cy ea encl rec'd)

FOR ACTION/INFORMATION 05-23-73

BUTLER(L)	✓ SCHWENCER(L)	ZIEMANN(L)	YOUNGBLOOD(E)
W/ Copies	W/ 4 Copies	W/ Copies	W/ Copies
CLARK(L)	STOLZ(L)	ROUSE(FM)	REGAN(E)
W/ Copies	W/ Copies	W/ Copies	W/ Copies
GOLLER(L)	VASSILLO(L)	DICKER(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
KNIEL(L)	SCHETEL(L)	KNIGHTON(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

✓ REG FILE	✓ TECH REVIEW	DENTON	F & M	WADE	E
✓ AEC PDR	✓ HENDRIE	GRIMES	SMILEY	BROWN	E
OGC, ROOM P-506A	✓ SCHROEDER	GAMMILL	NUSSBAUMER	G. WILLIAMS	E
✓ MUNTZING/STAFF	✓ MACCARY (L/O)	KASTNER		SHEPPARD	E
✓ CASE (L/O)	✓ KNIGHT	BALLARD	LIC ASST.		
GIAMBUSSO	✓ PAWLICKI	SPANGLER	SERVICE	L	A/T IND
BOYD	✓ SHAO		WILSON	L	BRAITMAN
✓ V. MOORE-L(BWR)	✓ STELLO	ENVIRO	✓ GOULBOURNE	L	SALTZMAN
✓ DEYOUNG-L(PWR)	✓ HOUSTON	MULLER	SMITH	L	
SKOVHOLT-L	NOVAK	DICKER	GEARIN	L	PLANS
P. COLLINS	ROSS	KNIGHTON	DIGGS	L	MCDONALD
	IPPOLITO	YOUNGBLOOD	TEETS	L	DUBE
REG OPR	✓ TEDESCO (L/O)	REGAN	LEE	L	
✓ FILE & REGION(2)	✓ LONG	PROJ LEADER	MAIGRET	L	INFO
MORRIS	✓ LAINAS		SHAFFER F & M		C. MILES
STEELE	✓ BENAROYA	HARLESS			
	VOLLMER				

1585 090

EXTERNAL DISTRIBUTION

✓ 1-LOCAL PDR Harrisburg, Pennsylvania	(1)(2)(9)-NATIONAL LAB'S	1-PDR-SAN/LA/NY
✓ 1-DTIE(ABERNATHY)	1-R. CARROLL- C, GT-3227	1- GERALD LELLOUCHE
✓ 1-NSIC(BUCHANAN)	1- R. CATLIN, E-256-GT	BROOKHAVEN NAT. LAB
1-ASLB-YORE/SAYRE	1- CONSULTANT'S	1-AGMED(WALTER KOESTER,
WOODWARD/H ST.		RM C-427, GT)
CYS ACES (Sent to L/A Goulbourne)	1- GERLAD ULRICKSON....ORNL	1- RD...MULLER...F-309GT
05-23-73		

7911040203A



METROPOLITAN EDISON COMPANY

POST OFFICE BOX 542 READING, PENNSYLVANIA 19603

TELEPHONE 215 - 929-3601

May 21, 1973

Mr. A. Schwencer, Chief
Pressurized Water Reactors
Branch No. 4
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Regulatory

File Cy.

SUBJECT: THREE MILE ISLAND NUCLEAR STATION
UNIT 1
DOCKET NO. 50-289

Dear Mr. Schwencer:

Your letter of March 7, 1973 requested that Met-Ed perform a design review of the control circuits of all safety related equipment at the subject plant to assure that disabling of one component does not, through incorporation in other interlocking or sequencing controls, render other components inoperable. 40 copies of the results of our design reviews are enclosed.

In addition, you requested that our procedures be reviewed to ensure they provide that, whenever part of a redundant system is removed from service, the portion remaining in service is functionally tested immediately after disabling of the affected portion and, if possible, before disabling of the affected portion.

Applicant proposes the following answer to the previous request. A standing order will cover the case where an Engineered Safeguards component is taken out of service. It will state that the operability of equipment redundant to that removed from service will be demonstrated immediately prior to removal. Should an Engineered Safeguards component become disabled, the operability of equipment redundant to that disabled will be demonstrated immediately following the detection of the disabled Engineered Safeguards component.

Very truly yours,

J. G. Miller
Vice President

3352

asb/kg

Enclosures



1585 091

2282

MAKE-UP AND PURIFICATION SYSTEM (H.P. INJECTION)
MAKE-UP PUMPS MU-P-1A, 1B, 1C

MAY 22 1973
3
10:11 AM

Elementary Diagram: SS-208-213, 214, 215, 216, 217

MU-P-1A starts if: 1) the 43/SS2 selector switch on the 1D E.S. bus is in the "A" position, the CS4 switch, tag #CS/MU-P-1A is in the start position, or 2) if the 43/SS2 selector switch is in the "A" position and if there is an E.S. actuation signal present.

MU-P-1B starts if: 1) the 43/SS2 selector switch on the 1D E.S. is in the "B" position and the CS4 control switch, tag #CS/MU-P-1B-D is in the start position, or 2) the 43/SS2 selector switch on the 1E E.S. bus is in the "B" position and the CS4 control switch, tag #CS/MU-P-1B-E is in the start position, or 3) if the 43/SS2 selector switch on either E.S. bus is in the "B" position and if there is an E.S. actuation signal present.

MU-P-1C pump starts if: 1) the 43/SS2 selector switch is in the "C" position and the CS4 control switch, tag #CS/MU-P-1C is in the start position, or 2) the 43/SS2 selector switch is in the "C" position and there is an E.S. actuation signal present.

MU-P-1A is interlocked with make-up pumps lube oil pump MU-F-2A, M.U. pump "A". main oil pump MU-P-3A, M.U. pump Gear lube auxiliary pump "A" MU-P-4A by a CS4 contact in the starting circuit of MU-P-2A and MU-P-3A and a device no. 52 contact in the starting circuit of MU-P-4A.

MU-P-1B is interlocked with M.U. pump lube oil pump MU-P-2B, M.U. pump "B" main oil pump MU-P-3B, M.U. pump Gear lube auxiliary pump "B" MU-P-4B in a manner similar in detail to MU-P-1A.

Regulator

File 07

05-21-73

3002

1585 092

MU-P-1C is interlocked with M.U. pump lube oil pump MU-P-2C, M.U. pump "C" main oil pump MU-P-3C, M.U. pump Gear lube auxiliary pump "C". MU-P-4C in a manner similar in detail to MU-P-1A.

From the Make-Up pump scheme of SS-208-217 the circuit operates as follows: If the MU-P-1A pump (1D bus) is running, the "B" or "C" M.U. pump may be started from the 1E bus. If the "B" pump is running on the 1D bus, the C pump may be started on the 1E bus. If one of the Make-Up pumps is running, one or all of the pumps interlocked with it may start if conditions warrant its' starting, (low oil pressure, PS479A/C, PS480A/C). There is no interlocking relay to prevent the "B" pump from starting if the "A" pump is running, or if the "A" pump is removed from service for maintenance, for instance, except the pump selector switches and control switches for each pump.

DECAY HEAT REMOVAL PUMP DH-P-1A and DH-P-1B

Elementary Diagram: SS-208-211, 212

Pump DH-P-1A may be started if: 1) the CS4 control switch tag #CS/DH-P-1A is moved to the start position, or 2) the control switch CS4 is in the standby position and an E.S. condition is present.

Pump DH-P-1B may be started if: 1) the CS4 control switch tag #CS/DH-P-1B is in the start position, or 2) the control switch CS4 is in standby and an E.S. signal is present.

There are no interlocking contacts in the starting circuits which will prevent DH-P-1B from starting if DH-P-1A is removed from service for maintenance. Therefore, DH-P-1A or 1B will start automatically regardless of the circuit breaker position of the complimentary pump motor.

REACTOR BUILDING EMERGENCY COOLING WATER PUMP RR-P-1A and RR-P-1B

Elementary Diagram: SS-208-209, 210

RR-P-1A may be started if: 1) the control switch CS', tag #CS/RR-P-1A is in the start position, or 2) the control switch CS4 is in the standby position and an E.S. signal is present. The operation of RR-P-1B is similar in detail to RR-P-1A.

There are no interlocking contacts to prevent RR-P-1B from starting if RR-P-1A is running or if 1A is out of service for maintenance purposes. Either RR-P-1A or 1B must be running for valves EFV-4 and EFV-5 (SS-208-424) to open.

1585 094

Regulatory
File 215
05-21-73

3352

REACTOR BUILDING SPRAY PUMP BS-P-1A and BS-P-1B

Elementary Diagram: SS-208-207, 208

The operation of BS-P-1A and BS-P-1B is similar in detail to RR-P-1A, 1B. There are no interlocking contacts to prevent BS-P-1B from operating when BS-P-1A is operating or if 1A is out of service for maintenance, etc.

NUCLEAR SERVICE CLOSED COOLING WATER PUMPS NS-P-1A, 1B, 1C

Elementary Diagram: SS-208-350, 351, 352, 353, 354, 359

NS-P-1A may be started if: 1) the control switch CS3, tag #CS/NS-P-1A is in the start position. This action provides an instantaneous momentary start, or, 2) the control switch CS3 in standby and if pump "C" fails (52/1C) and the auto-start lockout not energized (27/86A), or, 3) the control switch CS3 in standby and pump "B" failed (62/1B-S or 62/1B-P), pump "C" not in auto-start and the auto-start lockout not energized, (27/86A), or 4) with the pump selector switch 43SS/P in the "A" position and the E.S. Diesel sequence #3 signal present.

Pump "A" is equipped with a breaker position contact. (device 33), in parallel with the breaker "B" auxiliary switch, (drawout), so that when the breaker is withdrawn from the operating position, (not fully inserted in its cubicle), the position switch is closed maintaining positive continuity of the circuit.

Thus, NS-P-1A may be started manually, under E.S. condition, if pumps NS-P-1B and/or NS-P-1C fails or if the NS-P-1A breaker is withdrawn.

1585 095

Regulatory File By
05-21-73

3352

NS-P-1B may be started by: 1) moving the control switch CS3, tag #CS/NS-P-1B-P, to the start position and if the circuit breaker on bus 1S is not closed (52aX3), or 2) the control switch CS3 is in standby and pump "A" failed (62/1A), pump 1B not in auto-start (27/86A), and if pump B-1S breaker is not closed (52aX3), or 3) CS3 in standby position, pump "C" failed (62/1C), pump "A" not in auto-start (RX), pump B-1S breaker is not closed, (52aX3), and pump "B" not in auto-start (27/86), or 4) pump is selected for operation from bus 1P (43 SS/P), E.S. Diesel sequence #3 signal present, circuit breaker on bus 1S is not closed.

NS-P-1B may be operated from either bus 1S or 1P. Operation from bus 1S is similar in detail to the above.

NS-P-1B is equipped with a breaker position contact, (device no. 33), in parallel with the breaker auxiliary switch, (drawout), so that when the breaker is withdrawn from the operating position, (not fully inserted in its cubicle), the position switch is closed maintaining positive continuity of the circuit.

Thus, NS-P-1B may be started manually, if pump "A" fails and/or pump "C" fails, under E.S. conditions or if the NS-P-1B breaker is withdrawn.

The operation of pump NS-P-1C is similar in detail to NS-P-1A.

A NUCLEAR SERVICE RIVER WATER PUMP NR-P-1A, 1B, 1C

Elementary Diagram: SS-208-355, 356, 357, 358, 360

The operation of NR-P-1A, 1B, 1C is similar in detail to the above

NS-P-1A, 1B, 1C.

POOR ORIGINAL

1585 096

"A" DECAY HEAT CLOSED COOLING WATER PUMP DC-P-1A, 1B

Elementary Diagram: SS-208-340, 341

DC-P-1A may be started in the following ways: 1) turning the control switch CS3, tag #CS/DC-P-1A to the start position, or 2) with the control switch CS3 in standby position and an E.S. signal present. The operation of DC-P-1B is similar in detail to DC-P-1A. The operation of DC-P-1A is separate from DC-P-1B. There are no interlocking relays to prevent one from operating when the other is operating or when the complementary pump is out of service for maintenance etc.

"A" DECAY HEAT RIVER WATER PUMP DR-P-1A, B

Elementary Diagram: SS-208-342, 343

The operation of these pumps is similar in detail to the operation of pumps DC-P-1A and DC-P-1B. No interlocks prevent the operation of both pumps at once or of one pump when the other is out of service for maintenance, etc.

1585 097

File 05-21-73

3352