PDR

Consumers Power Company

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COPY

August 7, 1979

Director, Nuclear Reactor Regulation
Att Mr Dennis L Ziemann, Chief
Operating Reactors Branch No 2
US Nuclear Regulatory Commission
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 -
BIG ROCK POINT PLANT - ADDITIONAL
INFORMATION RELATED TO IE BULLETIN
79-08: EVENTS RELEVANT TO BWRS
IDENTIFIED DURING THREE MILE ISLAND
INCIDENT

Consumers Power Company was requested by NRC letter dated July 20, 1979 to provide additional information supplementing our May 4, 1979 response to the subject Bulletin. The requested additional information is forwarded as an attachment to this letter.

The additional questions related to item Numbers 2 and 7 of the subject Bulletin were most readily answered by a complete revision of our previous responses to these items. The changes from the original responses are indicated by vertical lines in the margin.

David A Bixel (Signed)

David A Bixel
Nuclear Licensing Administrator

CC JGKeppler, USNRC

AUG 8 1979 7908240165

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QUESTIONS RELATED TO ITEM 2 OF IE BULLETIN 79-08

1. Your response is incomplete in that it does not address whether your review included procedures for containment isolation. In addition you state that certain lines (in isolation Category E) do not require isolation. However, Item No 2 of IEB 79-08 explicitly requires that all nonessential lines be isolated. Further, the response does not state explicity that containment isolation is initiated prior to or concurrent with all automatic initiations of safety injection. Confirm that you have reviewed containment isolation initiation design and procedures to assure that all automatic initiations of safety injection will result in isolation of those lines not required for safety features or cooling capability including those designed to transfer potentially radioactive gases and liquids out of the primary containment.

2. Prepare and implement all changes necessary to initiate containment isolation of all lines discussed above and describe how they comply with the requirements of the Bulletin. In addition, provide a schedule for implémentation of the necessary changes.

Response (Totally Revised Response Included)

The Big Rock Point Plant design provides containment isolation (excluding emergency core cooling, post incident spray and makeup systems). The isolation occurs upon reactor vessel low water level or containment building high pressure. The low reactor water level set point used for this purpose is the same as that used to initiate emergency core cooling.

Containment isolation is provided through the reactor protection system and occurs simultaneously with the low reactor water level signal used for emergency core cooling. Big Rock Point's only "safety injection" systems are low-pressure systems. Safety injection through the primary or redundant core spray systems, therefore, does not occur until a low-pressure interlock in each system is also reached and reactor pressure decays to a point lower than the core spray injection pressure. Thus, containment isolation will occur prior to all initiations of the emergency core cooling systems.

Isolation capability is also provided manually via a control console operated hand switch. The isolation valves will remain closed and cannot be opened as long as either the low reactor water level or containment building high-pressure signals remain in effect. If both signals are absent and the manual hand switch has not been placed in the "isolate" position, pneumatically operated valves would return to the open position; the main steam isolation valve, which is d-c motor operated, requires operator action to open. If isolation is manually initiated via the hand switch, the valves remain in a closed position. Containment isolation capability is periodically tested in accordance with the plant Technical Specifications to assure continued operability. Lines containing isolation valves are divided into four categories. See Drawing M-539 (attached).

(NOTE: The attached revision of Drawing M-539 contains minor changes from that transmitted by Consumers Power Company letter dated May 4, 1979.)

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Type A - Lines which are or may be open to the interior of the containment shell have two valves in series, at least one of which closes automatically to prevent outward flow. Except for check valves, both valves can be closed by manual initiation from either the control room or another place that would be tenable after an accident (Items 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 15 and 17 on Drawing M-539).

Type B - Lines which are open to the reactor or any portion of the reactor recirculating loop are treated in the manner described in "A" above, with the added requirement that the two valves are on opposite sides of the containment shell (Items 9, 10, 11, 12 and 16 on Drawing M-539).

Type D - Lines that are normally closed have only a single valve. A lock, interlock or operating procedures and/or checklists protect this valve from being opened during reactor operation or conditions other than cold shutdown (Item 30 on Drawing M-539).

Type E - Certain lines enter and leave the containment building without any openings to the containment interior; others leave and return without any openings to the atmosphere (instrument taps, etc). Such lines do not require isolation valves, provided the lines are not in danger of. being broken as a result of reactor system rupture. These lines are routinely checked to insure leak tightness and are described as follows:

Drawing M-539 Item	Essential	Isolation Capability	Reason
18,19, 21,22, 27,28 & 29	No	Yes	Piping closed to containment interior - piping wall forms containment boundary.
20	Yes	Yes	Piping closed to atmosphere. Vacuum relief sensor tap.
23,24 & 25	Yes	No	ECCS long-term cooling piping.
26	No.	Yes	Shell side of emergency condenser forms containment boundary.

Normally open lines which carry fluids out of the containment building are closed automatically on the isolation signal, and/or power failure, or upon manual trip from the control console hand switch.

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Normally open lines which carry fluids into the containment building are each equipped with a check valve to prevent backflow upon loss of inward propellant force. In addition, operating personnel can secure these lines by manually operated gate valves or by air-operated control valves. The latter close on air or power failure, with exception of the supply line to the control rod drive hydraulic system. Control valves in this line fail open to insure continuous water supply and backup isolation is provided by integral spring seated valves on the control rod drive pumps.

The two 24-inch ventilation openings (supply and exhaust) are closed within six secondars after any scram signal. Manual opening of these valves is permitted (by interlocks) only after the reactor protection system can be reset and high radiation levels ($\geq$ 10 mR/hr) are not present within the containment building

Containment isolation is addressed in Off-Normal Procedure ONP 2.31. Review of this procedure indicates that steps are addressed to insure isolation of all lines whose isolation does not degrade needed safety features or cooling capability. However, one procedural step, ONP 2.31.3(f), which was worded as follows, "If scram caused by hi-enclosure pressure or low reactor water level, check all automatic isolation valves closed and close nonautomatic isolation valves not necessary to control scram incident" has been changed to include the following statement: "Place hand Switch S-5 in the 'ISOLATE' position to preclude valve opening upon loss of trip signal." This action will prevent the pneumatically operated valves (Items 4, 5, 14 and 16) from automatically opening if the sensors (low reactor water level and high containment building pressure) return to normal during the scram incident.

The procecural change which we feel is necessary has been implemented.

QUESTION RELATED TO ITEM 4 OF IE BULLETIN 79-08

1. Your response is incomplete. Describe the types of vessel level indication for both automatic and manual initiation of safety systems. In addition, describe other instrumentation which the operator might have to determine changes in reactor coolant inventory; eg, radioactivity levels, high containment and equipment area temperatures, containment sump pump operation, etc.

Response

1. Auto Initiation: Emergency Core Cooling Switches (Not Indicators)

LS RE09 A-D	Primary core sprays initiation on low reactor level.
LS RE09 E-H	Backup core spray initiation on reactor low level.
LT 3180-3183	Reactor depressurizing system initiation on low reactor level.

Manual Initiation Indicators

LI 3380-3383	Reactor level narrow range just above top of fuel, uncompensated.
PI 1A-05	Reactor pressure indicator - wide range digital readout.

The instrumentation for manual initiation of emergency core cooling listed above is in the main control room and is qualified for the LOCA environment.

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2. The following instrumentation (although not proven to be LOCA qualified, except as marked *) <u>may</u> give information to help determine changes in reactor coolant inventory prior to, during and after an incident.

<u>Main Control Room Indicators</u>

A. 2 drum level indicators +30" to -30" from drum C/L (RE 19 A, RE 19 B).
B. 1 steam drum level indicator +40" to - 40" from drum C/L (LI IA-19).
C. 1 drum level recorder +25" to -25" from drum C/L (LR ID-12).
D. 1 drum pressure recorder 0-2000 psig (PR IA-09).
E. 1 drum pressure indicator 0-2000 psig (PI IA-49).
F. 1 reactor water level indicator 16' to 30' above bottom of vessel, uncompensated (LI IA-89).
G. 4 drum level indicators -30" to +30" from drum C/L, uncompensated (LI 3384-3387).
H. Reactor recirc pump inlet seal pressures (1A70 A & B).
I. Bypass valve pressure deviation alarms +5 psi above controller settings or 25 psi above reactor pressure at full power.
J. Reactor vessel temps recorder - using steam tables, operator could approximate vessel pressure.
*K. Operations recorder - 4 recorder pens showing reactor high pressure has reached scram point of 1385 psig - 4 recorder pens showing reactor water level at less than 2' 9" above core.

L. Station annunciators - reactor pressure at 1360 psig.
 - reactor pressure at 1385 psig.
 - reactor water level at 2' 9" above core.
 - drum level at -4" of drum center line.
 - drum level at -8" of drum center line.
M. Running time meters for: Containment clean sump Pumps 1 & 2.
 Containment dirty sump Pumps 1 & 2.
 Radwaste sump pump outside containment.
 Turbine building sump Pumps 1 & 2 outside containment.
N. Area radiation monitor alarms - control room indicators and alarms. Also recorded for trends. Twenty-one area monitors throughout plant.
O. Stack gas monitor - gross activity and Xenon 138. Indication of possible primary system leakage.
*P. Increasing water level in containment (LI 3400) wide range level indication.
*Q. High water level in containment at four discrete levels indicated by a light for each level (LS 3562 - 3565).
R. Containment high-pressure alarm and indicator (PI 367).
S. Containment vacuum indicators and alarms (PIS 187, PIS 173).
T. High dew point and high temperature alarm and recorder for 5 locations in containment.

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Indicators and Alarms in Containment Building for Primary System Pressure, Level, Temperatures and Enclosure Environment

A. 4 drum level indicators +30" to -30" from drum C/L (LS RE 06A, B and LS RE 20A, B).
B. 4 reactor pressure indicators 100 to 1700 psig (RE 07 A-D).
C. 2 steam drum level indicators uncompensated (LI-ID-59 and LI-IA-77).
D. 2 steam drum pressure indicators 0 to 2000 psig (PT-IA-07).
E. 1 reactor water level - Baily indicator 16' to 30' above bottom of the vessel uncompensated.
F. 1 reactor water temp indicator to clean-up system.
G. 1 (0-2000 psig) reactor pressure gauge (PI 423).
H. 1 constant air monitor - gross radiation air activity in containment building - remote recorder outside containment.
I. 1 constant air monitor - monitors exhaust duct from recirculation pump room - monitors gross radiation activity and iodine from steam leaks in primary system (most primary system piping is located in the recirculation pump room).
J. Pipeway hi temp alarm at local panel @ 125°F - could indicate steam leak in primary system.
K. Pipeway steam leak alarm - detects high dew point in pipeway in enclosure. Possible indication of steam leak. Requires checking dew point recorder on local panel.
L. Multipoint selector for air temperatures indication at 20 points in ventilation system in containment.

Indication in Auxiliary Building of Possible Primary System Troubles

A. Radwaste receiver tank high level alarms common alarm for collections both inside and outside of containment.
B. Containment clean and dirty sump high level alarms (LS 3524 and LS 3540).

QUESTIONS RELATED TO ITEM 5 OF IE BULLETIN 79-08

1. Your responses to Items 5a and 5b do not address operating procedures or training instructions. Amend your response to address this matter.

2. Your response to Items 5a and 5b is incomplete. Your review of operating procedures and training instructions should assure that operators are provided additional information and instructions to (1) not override automatic actions of engineered features unless continued operation of engineered safety features will result in unsafe plant conditions and (2) to not rely upon vessel level indication alone for manual actions but to also examine other plant parameter indications in evaluating plant conditions. Amend your response accordingly.

3. Provide a schedule for any actions on Item 5 that have not yet been completed.

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Response

The operations group and plant management will be provided special sessions dealing with safety-related systems operation at the Big Rock Point Plant. Special emphasis will be placed on the items covered by this Bulletin. These sessions will be completed prior to plant start-up. The classroom presentation outline attached will be used for these sessions.

A review has been made of the emergency procedures relating to engineered safeguards systems. The procedures are considered adequate for operator and management guidance under emergency conditions. These procedures are reviewed by walk-through demonstrations by all licensed personnel at least every two years.

The training sessions to be performed for all operations and plant management personnel in response to this item will be completed prior to start-up from the current outage.

QUESTIONS RELATED TO ITEM 6 OF IE BULLETIN 79-08

1. It is not clear from your response that safety-related valve positioning requirements were reviewed to ensure proper operation of engineered safety features. Please supplement your response to provide a commitment to conduct this review and a schedule for completion.

2. Your response did not clearly indicate that all accessible safety-related valves had been inspected to verify proper position. Nor was a schedule for performing the position verification for all safety-related valves provided. Please supplement your response to provide this information.

Response

1. The master checklist used for plant start-up requires that valve checklists be performed before start-up from cold shutdown. These checklists are signed by the operator who completed them. The checklists are then reviewed by the Control Operator who signs for his review. A second level review of each check sheet is performed and signed by a Shift Supervisor. The Operations Supervisor's implementation of these requirements is considered adequate to ensure proper position of safety-related valves prior to start-up.

2. The valve checklist includes all valves, automatic and manual, including safety-related valves. These valves are all visually and manually checked to assure they are in the proper position for power operation. The valve checklists are performed before each start-up from cold shutdown unless the system involved has remained in service during the shutdown period. Big Rock Point was shut down when IE Bulletin 79-08 was issued and has remained shut down since. Valve checklists will be performed verifying the proper position of all safety-related valves prior to start-up from this outage.

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QUESTION RELATED TO ITEM 7 OF IE BULLETIN 79-08

1. Your response had no discussion regarding how you assure against inadvertent transfer when resetting engineered safety features. Amend your response to provide this information.

Response (Totally Revised Response Included)

System	Commodity	(a) High Radiation Interlock	(b) Isolate on Signal
1. Ventilation Supply Valve (1)	Air	Yes	Yes
2. Ventilation Exhaust Valve (1)	Air	Yes	Yes
3. Clean Sump Pump Discharge Valves (2)	Water	No	Yes
4. Dirty Sump Pump Discharge Valves (2)	Water	No	Yes
5. Resin Sluice Valves (3)	Water & Resins	No	Yes
6. Reactor and Fuel Pit Drain (2)	Water	No	Yes

Continued operability of these features is verified by test at least annually in accordance with Technical Specifications requirements. A procedural change instituted in Off-Normal Procedure 2.31 to place the isolate switch to the manual closure position (see Response 2) upon receipt of an isolation scram will prevent inadvertent transfer should the isolation signals clear. The operator has available to him redundant instrumentation indicating containment building pressure and water level which can be used to verify conditions inside containment prior to manual reopening of the above valves.

(NOTE: Reset of the reactor protection system must be accomplished before the ventilation supply and exhaust valves can be reopened.)

Consumers Power Company letter dated July 12, 1979 provided additional information related to this item. The July 12 letter incorrectly stated that failure of a radiation detector associated with the high radiation interlock listed above would result in reopening of the ventilation valves. Contrary to this statement, failure of a detector due to adverse environmental conditions would not cause a closed valve to reopen and would be likely to cause closure of a valve which was open at the time of the failure.

QUESTION RELATED TO ITEM 8 OF IE BULLETIN 79-08

1. We understand from your response that operability is verified for redundant safety-related systems prior to removal of any safety-related system from service. Since you may be relying on prior operability verification within the current Technical Specification surveillance interval, operability should be further verified by at least a visual check of the system status to the extent practicable, prior to removing the redundant equipment from service. Please supplement your response to provide a commitment that you will revise your maintenance and test procedures to adopt this position.

2. It is not clear from your response that all involved reactor operational personnel in the oncoming shift are explicitly notified about the status of systems removed from or returned to service. Please indicate how this information is transferred at shift turnover.

Response

1. Maintenance and test procedures will be revised prior to plant start-up to include the requirement that when reliance is placed on prior operability verification of the safety system within the most recent surveillance interval, operability will be verified by at least a visual check of the system status to the extent practicable, prior to removing the redundant equipment from service.

2. At change of shift the oncoming licensed operators review the logs, status board and outstanding tagging orders. A verbal description of what has transpired is given to the oncoming operator by the outgoing operator. The oncoming operator then signs the logbook as having reviewed the logs before the shift change is complete.

   Auxiliary operators exchange system information verbally on change of shift.

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CLASSROOM PRESENTATION

1.0 TITLE:
Response to IE Bulletin No 79-08

2.0 PURPOSE:
Review and understand actions taken at TMI-2 Power Plant and the possible impact on BRPP procedures, check sheets, and personnel actions during emergency or off normal actions at BRPP.

3.0 SCOPE:
This procedure will cover questions, statements and comments described in NRC IE Bulletin No 79-08.

4.0 REFERENCE DOCUMENTS:
Plant Volume 3A and 3B
IE Bulletin 79-05
IE Bulletin 79-05A
IE Bulletin 79-08

5.0 DEFINITIONS:
None.

6.0 PROCEDURE:

6.1 Review of IE Bulletin No 79-05, 79-05A through itemizing of chronology of events for first sixteen hours of TMI-2 accident. (See Attachment "A.")

6.2 Recommendations for BRPP in respect to the TMI-2 incident.

a. Operations personnel should make no attempt to override automatic action of engineered safety features unl continued operation of such safety features could result unsafe plant conditions (eg, vessel or containment integrity).
b. Operations personnel should not get "locked in" on a single parameter to the extent that backup parameters or instrumentation is ignored. A total overview of plant conditions is required during emergency operations to take the proper emergency actions, make the correct decisions.
c. Special care must be exercised when performing systems check sheets, surveillance tests, etc, that when completed, the system or equipment can be declared operable. Review of completed check sheets and/or tests must be accomplished as per facility procedures.
d. If safety-related systems are required to function at specific set points (such as core spray, RDS, reactor high-pressure scram, etc), the operator should always be prepared to manually initiate the required action if it has not automatically occurred. Valid automatic "scram" signals should always be followed by a manually initiated "scram" by the operator.

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e. During power operation if tests, examinations, or inspections are necessary on safety-related systems, a procedure is used backup systems are tested prior to the test, examination, or inspection and all valves, equipment, sensors are returned to their proper position prior to the item being declared operable.
f. Review the station procedures and set points so that inadvertent releases of solid, liquid, or gaseous radioactive wastes are prohibited.
g. Review the plant procedures so that the following is adhered to:
   1. Verification by test or inspection of the operability of redundant safety-related systems prior to the removal of any safety-related system from service.
   2. Verification by tests and/or examinations of the operability of safety-related systems when they are returned to service following tests, maintenance, or examinations prior to being declared "operable."
   3. Explicit notification of involved reactor operating personnel via status board, logbooks, and/or special operating memorandum whenever a safety-related system is removed from or returned to service.
h. A thorough review by all involved plant personnel of the prompt reporting requirements to the NRC, using Administrative Procedures and Tech Specs for the review.

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BECHTEL CORPORATION
JOB 3159
BIG ROCK POINT PLANT
CONSUMERS POWER COMPANY
REACTOR BUILDING ISOLATION VALVE SUMMARY

BY: L. MELMAN
DATE: 4-8-62
REV. A
SHEET NO. 1 OF 3
DWG NO. M-539

ITEM	LINE	CLASS	PENT NO. REFER DWG. C-102	REFER P&ID	VALVE LOC.	CONTROL TYPE	ACTUATED BY	TYPE OF VALVE	MARK NO.	ELECT. SCHEME	VOLTAGE	VALVE ON AIR FAILURE	VALVE ON POWER FAILURE	INDICATION ON MAIN CONTROL PANEL	REMARKS
1	VENTILATION SUPPLY	A	H-7	M-125	OUTSIDE	REM. MAN. / AUTO.	HS-9001 / ALL SCRAMS / HI SPH RADIATION / HI SPH VACUUM	AIR CYL. OPER. B. FLY	CV-4096 / CV-4097	E-114	125V. D-C	CLOSES	CLOSES	OPEN & CLOSE	TWO VALVES IN SERIES AUTO & REM. MAN. OPEN ON LO. SPH. PRESS.
2	VENTILATION EXHAUST	A	H-8	M-125	OUTSIDE	REM. MAN. / AUTO.	S-9001 / ALL SCRAMS / HI SPH RADIATION / HI SPH VACUUM	AIR CYL. OPER. B. FLY	CV-4094 / CV-4095	E-114	125V. D-C	CLOSES	CLOSES	OPEN & CLOSE	TWO VALVES IN SERIES
3	VENTILATION PROBE (DPC-9071)	A	H-97	M-125	OUTSIDE	REM. MAN. / AUTO.	HS-9001 / HI SPH RADIATION / ALL SCRAMS / HI SPH VACUUM	EGI SOLEN.	SV-9155 / SV-9156	E-114	125V. D-C	CLOSES	CLOSES	NO	TWO VALVES IN SERIES
4	CLEAN SUMP PUMP DISCHARGE	A	H-21	M-108	OUTSIDE	AUTO.	HI. SPH. PRESS & LO. R.W.L.	AIR OPER.	CV-4102	E-115	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	BOTH VALVES REM. MAN. & AUTO
					INSIDE	REM. MAN.	HS-7003	AIR OPER.	CV-4031	E-115	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	
5	DIRTY SUMP PUMP DISCHAR	A	H-15	M-108	OUTSIDE	AUTO.	HI. SPH. PRESS & LO. R.W.L.	AIR OPER.	CV-4103	E-115	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	BOTH VALVES REM. MAN & AUTO
					INSIDE	REM. MAN.	HS-7019	AIR OPER.	CV-4025	E-115	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	
6	INSTRUMENT AIR	A	H-20	M-132	OUTSIDE	MAN.	—	GATE	MK-80	—	—	—	—	NO	
					INSIDE	AUTO.	LOSS OF INST. AIR	CHECK	MK-263	—	—	—	—	NO	
7	SERVICE AIR	A	H-25	M-133	OUTSIDE	MAN.	—	GATE	MK-86	—	—	—	—	NO	
					INSIDE	AUTO.	LOSS OF SERV. AIR	CHECK	MK-263	—	—	—	—	NO	
8	DEMINERALIZED WTR.	A	H-18	M-120	INSIDE	AUTO.	LO. DEMIN. WTR. PRESS.	CHECK	MK-253F	—	—	—	—	NO	
					OUTSIDE	REM. MAN.	HS-7025	AIR OPER.	CV-4105	E-112	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	

PENETRATION CLASS

A) PENETRATIONS OPEN TO THE INTERIOR OF THE ENCLOSURE.
B) PENETRATIONS OPEN TO THE REACTOR OR ANY PORTION OF THE NUCLEAR STEAM [illegible]

D) PENETRATIONS THAT ARE NORMALLY CLOSED.
E) PENETRATIONS FOR LINES WHICH ENTER THE CONTAINMENT VESSEL BUT ARE [illegible]CALLY CONNECTED TO EITHER THE INTERIOR OR TO THE PRIMARY SYSTEM AND THOSE WHICH LEAVE [illegible]TAINMENT BUT ARE NOT PHYSICALLY OPEN TO THE EXTERIOR. IN THESE CASES THE LINES THEMSELVES [illegible] THE BOUNDARIES OF THE CONTAINMENT.

LEGEND

VALVE REQUIREMENTS

CLASSES A AND B ABOVE REQUIRE TWO VALVES IN SERIES, AT LEAST ONE OF WHICH MUST CLOSE AUTOMATICALLY IN EVENT OF AN INCIDENT. BOTH CAN BE CLOSED MANUALLY, (CHECK VALVES DO NOT HAVE TO BE CLOSED MANUALLY) EITHER FROM THE CONTROL ROOM OR FROM ANOTHER PLACE THAT WOULD BE TENABLE AFTER AN INCIDENT. TO MINIMIZE RELEASE IN THE EVENT OF A LINE RUPTURE, VALVES IN CLASS B LINES MUST BE ON OPPOSITE SIDES OF THE CONTAINMENT SHELL.

CLASS D PENETRATIONS REQUIRE ONLY A SINGLE VALVE; HOWEVER LOCKS OR INTERLOCKS, OR OPERATING PROCEDURES MUST INSURE AGAINST VALVE BEING OPENED DURING REACTOR OPERATION OR OTHERWISE POTENTIALLY HAZARDOUS SITUATIONS.

CLASS E PENETRATIONS DO NOT REQUIRE ISOLATION VALVES, PROVIDED THAT THE SYSTEMS ARE NOT SUBJECT TO DAMAGE BY A REACTOR SYSTEM RUPTURE AND ARE OTHERWISE NOT EXPECTED TO LEAK AFTER AN INCIDENT. THE HEATING SYSTEM AND SERVICE WATER SYSTEMS ARE NORMALLY PRESSURIZED AND LEAKS WILL BE KEPT TO A MINIMUM AS A PART OF NORMAL MAINTENANCE PROCEDURE. THE CORE SPRAY SYSTEM WILL BE ALL WELDED CONSTRUCTION AND WILL BE PERIODICALLY TESTED.

Rev	Date		Drwn	Chk	Appv
A	11-16-76	CORRECTED PENE NO ITEM 3 Dwg CHG	DRH	NPA	LWH

0740B40539 sh1 Rev A

POOR ORIGINAL

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BECHTEL CORPORATION
JOB 3159
BIG ROCK POINT PLANT
CONSUMERS POWER COMPANY
REACTOR BUILDING ISOLATION VALVE SUMMARY

BY: L. MELMAN
DATE: 6-3-67
REV. D
SHEET NO. 2 OF 3
DWG NO. M-539

ITEM	LINE	CLASS	PENT NO. REFER DWG. C-102	REFER P&ID	VALVE LOC.	CONTROL TYPE	ACTUATED BY	TYPE OF VALVE	MARK NO.	ELECT. SCHEME	VOLTAGE	VALVE ON AIR FAILURE	VALVE ON POWER FAILURE	INDICATION ON MAIN CONTROL PANEL	REMARKS
9	MAIN STEAM	B	H-10	M-121	INSIDE	AUTO / REM. MAN.	HI. SPH. PRESS. & LO. R.W.L. RMC 5500	M.O. GATE	MO-7050	E-112	125V. D-C	—	CLOSES	OPEN & CLOSE	
		B		M-106	OUTSIDE	AUTO. / REM. MAN.	LO. COND. VAC. GEN. TRIP	HYD. OPER.	—	E-107	125V. D-C	LO. HYD. OIL PRESS CLOSES	CLOSES	OPEN & CLOSE	MAIN TURB. STOP ① (IN PARALLEL)
		B		M-106	OUTSIDE	AUTO. / REM. MAN.	LO. COND. VAC. RMC-5500	HYD. OPER.	CV-4014	E-107	115V. A-C	—	CLOSES	OPEN & CLOSE	TURB. BYPASS ② (IN PARALLEL)
		B		M-106	OUTSIDE	AUTO. / REM. MAN.	LO. COND. VAC. HS-7036	AIR OPER.	CV-4106	E-107	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	BYPASS WARM-UP (IN PARALLEL)
		B		M-106	OUTSIDE	AUTO. / REM. MAN.	HI. AIR EJECT PRESS HS-7036	AIR OPER.	CV-4104	E-110	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	STEAM TO SEALS & AIR EJECTOR (IN PARALLEL)
10	MAIN STEAM DRAIN	B	H-37	M-121	INSIDE	REM. MAN.	RMC-5520	M.O. GATE	MO-7065	E-112	125V. D-C	—	—	OPEN & CLOSE	
				M-106	OUTSIDE	REM. MAN. / AUTO.	HS-7036 LO. COND. VAC.	AIR OPER.	CV-4107	E-107	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	
11	REACTOR FEED	B	H-11	M-121	INSIDE	AUTO.	LO. FEED PRESS	CHECK	MK-207	—	—	—	—	NO	IN PARALLEL
				M-106	OUTSIDE	REM. MAN.	RMC-1010	AIR OPER.	CV-4000	E-115*	—	LOCKS	—	OPEN & CLOSE	
				M-108	OUTSIDE	REM. MAN.	RMC-5502	AIR OPER.	CV-4012	E-115*	—	CLOSES	—	OPEN & CLOSE	* INDICATING LIGHTS ONLY
12	CONTROL ROD HYDRAULIC SYST.	B	H-35	M-106	INSIDE	AUTO.	DRIVE PUMP FAIL	CHECK	MK-210	—	—	—	—	—	IN PARALLEL ④
				M-106	INSIDE	AUTO.	DRIVE PUMP FAIL	CHECK	MK-210	—	—	—	—	—	
				M-106	OUTSIDE	AUTO. / REM. MAN.	OPENS ON COND. PUMP FAIL HS-7027	AIR OPER.	CV-4090	E-110	115V. A-C	OPENS ③	OPENS	OPEN & CLOSE	IN PARALLEL
				M-106	OUTSIDE	AUTO.	CLOSES ON COND. PUMP FAIL	AIR OPER.	CV-4016	E-110	115V. A-C	OPENS ③	OPENS	OPEN & CLOSE	
13	POST INCIDENT & FIRE SUPPLY	A	H-36	M-123	INSIDE	AUTO.	FIRE SYSTEM FAIL	CHECK	MK-245	—	—	—	—	—	
				M-123	OUTSIDE	MAN.	—	GATE	MK-42	—	—	—	—	—	
14	RESIN SLUICE	A	H-23	M-107	INSIDE	REM. MAN.	HS-7025	AIR CYL. OPER	CV-4091	E-112	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	ALL VALVES INTERLOCK ON P.S. 825
				M-107	INSIDE	AUTO.	HI. SPH. PRESS.	AIR CYL. OPER	CV-4092	E-112	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	
				M-107	INSIDE	AUTO.	LO. R.W.L.	AIR CYL. OPER	CV-4093	E-112	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	

NOTE ①: TURBINE CONTROL VALVS (THROTTLE) ALSO CLOSES ON LO. SYST. PRESS.
NOTE ②: ALSO CLOSES ON LO. SYSTEM PRESSURE.
NOTE ③: FAILS OPEN TO INSURE WATER SUPPLY TO CONTROL ROD SYSTEM AND AVOID MAL-OPERATION.
NOTE ④: SUPPLEMENTED BY INTEGRAL PUMP DISCHARGE CHECKS.

Rev	Date					
A	11-11-76	DWN # CHG.	DRH	[illegible]	[illegible]	
B	6-2-79	REVISED VALVE LOCATION ON ITEM 13 TO REFLECT AS-BUILT STATUS.	CW	[illegible]	[illegible]	RES

DWN CHK APPVD

0740-B40539 Sh.2 Rev.B

POOR ORIGINAL

BECHTEL CORPORATION
JOB 3159
BIG ROCK POINT PLANT
CONSUMERS POWER COMPANY
REACTOR BUILDING ISOLATION VALVE SUMMARY

BY: L. MILMAN DWG.NO. M-539
DATE: 6-8-62
REV. B
SHEET NO. 3 OF 3

ITEM	LINE	CLASS	PENT No. REFER DWG. C-102	REFER P&ID	VALVE LOC.	CONTROL TYPE	ACTUATED BY	TYPE OF VALVE	MARK NO.	ELECT. SCHEME	VOLTAGE	VALVE ON AIR FAILURE	VALVE ON POWER FAILURE	INDICATION ON MAIN CONTROL PANEL	REMARKS
15	TREATED WASTE RETURN	A	H-17	M-108	INSIDE INSIDE	REM. MAN. AUTO.	HS-7011 PUMP FAILURE	AIR OPER. CHECK	CV-4049 MK-237	E-113	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE NO	
16	REACTOR & FUEL PIT DRAIN	B	H-22	M-107	INSIDE OUTSIDE	REM. MAN. AUTO.	HS-7006 HI. SPH. PRESS. LO. R.W.L.	AIR OPER. AIR OPER.	CV-4027 CV-4117	E-112	115V. A-C	CLOSES	CLOSES	OPEN & CLOSE	
17	POST INCIDENT BACK-UP	A	H-27	M 123 M-123	INSIDE OUTSIDE	AUTO MAN.	FIRE SYSTEM FAIL —	CHECK GATE	MK. 249 MK-30	—	—	—	—	—	
18	HEATING STEAM	E	H-14	M-128	NONE REQ'D	—	—	—	—	—	—	—	—	—	
19	HEATING CONDENSATE	E	H-19	M-128	NONE REQ'D	—	—	—	—	—	—	—	—	—	
20	VENTILATING VACUUM BREAKER SENSING LINE	E	H-98	M-128	NONE REQ'D	—	—	—	—	—	—	—	—	—	
21	SERVICE WATER SUPPLY	E	H-13	M-111	NONE REQ'D	—	—	—	—	—	—	—	—	—	
22	SERVICE WATER RETURN	E	H-12	M-111	NONE REQ'D	—	—	—	—	—	—	—	—	—	
23	CORE SPRAY PUMP DISCH.	E	H-113	M-123	NONE REQ'D	—	—	—	—	—	—	—	—	—	
24	CORE SPRAY PUMP RETURN	E	H-28 H-29	M-123	NONE REQ'D	—	—	—	—	—	—	—	—	—	
25	CORE SPRAY PUMP VENT	E	H-112	M-123	NONE REQ'D	—	—	—	—	—	—	—	—	—	
26	EMERG. COND. VENT.	E	H-9	M-107	NONE REQ'D	—	—	—	—	—	—	—	—	—	
27	CONTROL AIR TO CV-4029	E	H-92	M-111	NONE REQ'D	—	—	—	—	—	—	—	—	—	
28	CONTROL AIR TO CV-4040	E	H-93	M-107	NONE REQ'D	—	—	—	—	—	—	—	—	—	
29	CONTROL AIR TO CV-4114	E	H-94	M-107	NONE REQ'D	—	—	—	—	—	—	—	—	—	
30	CHEMICAL RECIRC.	D	H-31	M-106	OUTSIDE	MAN.	—	GATE	MK-20	?	—	—	—	—	TWO VALVES IN PARALLEL.

Rev	Date	Description	Dwn	Chk	
A	11-16-76	Drwn & CHG			
B		REVISED ITEMS 17 & 20 PER FC 425	CJV	RES	

0740-B40539 sh3 Rev B

POOR ORIGINAL

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