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ROOT,L.D. Iowa Electric Light & Power Co.
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DENTON,H. Office of Nuclear Reactor Regulation

SUBJECT: Responds to IE Bulletin 80-06, "Engineered Safety Features (ESF) Reset Controls." Test procedures are being developed to test engineered safety feature equipment. Forwards oversize drawings. Seven drawings illegible.

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	HANAUER,S.	20	1	1	I&E	12	2	2
	MOORE,V.	22	1	1	NRC PDR	02	1	1
	OELD	14	1	0	OR ASSESS BR	19	1	0
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ROTE 2

GP

Iowa Electric Light and Power Company

June 17, 1980
LDR-80-159

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
NUCLEAR GENERATION

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

This letter and its enclosure is the response to both Mr. Thomas Ippolito's letter dated March 28, 1980 concerning electrical aspects of Engineered Safety Features (ESF), and IE Bulletin No. 80-06 concerning ESF Reset Controls. Responses to both concerns are included to provide uniformity. Attachments 1, 2 and 3 pertain to the bulletin and 3 and 4 pertain to Mr. Ippolito's letter. Attachment 6 is the List of Drawings. As agreed to in a telephone conversation with Mr. T. Kevern on June 16, 1980, only two sets of drawings are enclosed with this submittal.

Three signed and 37 additional copies of this letter and enclosures are transmitted herewith. This submittal consisting of the foregoing letter and enclosures hereto is true and accurate to the best of my knowledge and belief.

Very truly yours,

Larry D. Root

Larry D. Root
Assistant Vice President
Nuclear Generation

A001
1/40
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DRWGS TO ~~FOR~~ RETURN
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Glen Ellyn, IL 60137

Office of Inspection and Enforcement
Division of Reactor Operations Inspection
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Washington, D.C. 20555

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D. Arnold w/o
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K. Meyer w/o
D. Mineck w/o
J. VanSickle w/o
T. Kevern (NRC) w/o
File: A-101a,
A-107a, BN8006

Subscribed and Sworn to Before Me on this 17th day of June, 1980.

Jean R. Smith

Notary Public In and For the State of Iowa

NOTARIAL SEAL
JEAN R. SMITH
My Commission Expires
September 30, 1981

8006260255 Q

ATTACHMENT 1

RESPONSE TO NRC BULLETIN 80-06
ENGINEERED SAFETY FEATURES RESET CONTROLS

ITEM 1

Review the drawings for all systems serving safety-related functions at the schematic level to determine whether or not, upon the reset of an engineered safety features (ESF) actuation signal, all associated safety-related equipment remains in its emergency mode.

Interpretation

For the purpose of this review, "reset" of actuation signals is defined as a return of the primary trip parameter to a valve below the trip setpoint or a deliberate operator action to return the engineered safety feature actuation system (ESFAS) trip logic to its untripped state following return of the primary trip parameter to a value below the trip setpoint. Any subsequent resets (e.g., from multiplying lockout relays) are not considered ESFAS resets. Also, this review does not address the subject of ganged operation of more than one ESF device as a result of these subsequent resets.

Response

Schematic diagrams for all ESF components were reviewed to determine whether or not, upon reset of ESFAS signals, all associated ESF equipment remains in its emergency mode. The actuation signals which were investigated are listed in Attachment 2.

Attachment 2 lists, in tabular form, all ESF equipment with its associated ESFAS signals, ESFAS trip condition, condition after the ESFAS reset, and applicable electrical schematic drawings. The column headed "function/position after NSS/ES reset" identifies the ESF devices which change state upon an ESFAS reset with the code letter B. Proposed modifications for these devices are listed under the "remarks" column and are described under Item 3.

ITEM 2

Verify the actual installed instrumentation and controls at the facility are consistent with the schematics reviewed in Item 1 by conducting a test to demonstrate that all equipment remains in its emergency mode upon removal of the actuating signal and/or manual resetting of the various isolating or actuation signals. Provide a schedule for the performance of the testing in your response to this bulletin.

Response

Test procedures are being developed at this time to test each piece of ESF equipment listed in Attachment 2. The tests are expected to demonstrate that all equipment responds to both actuation and reset operation as determined by the results of the schematic review described in Item 1. Equipment which can be tested during normal plant operation will be scheduled for a test as soon as the test procedures are completed. All other equipment is scheduled to be tested during the 1981 refueling outage.

ITEM 3

If any safety-related equipment does not remain in its emergency mode upon reset of an ESF signal, describe the proposed system modification, design change, or other corrective action planned to resolve the problem.

Response

The ESF devices which change their function/position upon ESFAS reset were identified in Item 1. System modification schemes have been developed for each of these ESF devices and have been broken down into the following categories:

Modification 1 (see Attachment 3, Figure 1)

Existing Condition: The ESFAS signal contact K* (in series with a hand switch contact) opens, deenergizing the solenoid coil. Because the hand switch contact remains closed unless manually opened, reset of the ESFAS signal recloses the K* contact and reenergizes the solenoid coil.

Proposed Modification: Introduce a seal-in circuit consisting of a new relay and a contact from the existing hand switch. Connect a contact from this new relay in series with the ESFAS signal contact and the hand switch contact. Opening the ESFAS signal contact will deactivate the seal-in circuit and will prevent the solenoid coil from reenergizing upon ESFAS reset. The seal-in circuit can be reactivated by turning the hand switch to the "close/reset" position.

Modification 2 (see Attachment 3, Figure 2)

Existing Condition: The ESFAS signal contact K* opens, deenergizing the solenoid coil. Reset of the ESFAS signal closes this contact, reenergizing the solenoid coil. There is no other control (manual or automatic) for this circuit.

Proposed Modification: Introduce a seal-in circuit consisting of a new relay and a new "normal/reset" hand switch. Normally, the seal-in circuit remains activated through the ESFAS signal contact. When the ESFAS signal contact opens, it will deactivate the seal-in circuit and will prevent the solenoid coil from reenergizing upon ESFAS reset. The seal-in circuit can be reactivated by turning the new hand switch to the "reset" position.

Modification 3 (see Attachment 3, Figure 3)

Existing Condition: The ESFAS signal contact K* (in parallel with a hand switch contact) closes, energizing the solenoid coil. Because the hand switch contact remains open unless manually operated, reset of the ESFAS signal deenergizes the solenoid coil.

Proposed Modification: Replace the existing maintained-position hand switch with a three-position, spring-return-to-auto hand switch and introduce a seal-in circuit. When the ESFAS signal contact closes, it activates the seal-in circuit and prevents the solenoid coil from deenergizing upon ESFAS reset. The seal-in circuit can be deactivated by turning the hand switch to the "close/reset" position.

Modification 4 (see Attachment 3, Figure 4)

Existing Condition: This circuit uses two separate motor starter coils for opening and closing a motor-operated valve. A normally closed ESFAS signal contact K* is wired in series with a maintained hand switch contact and the opening coil. A normally open ESFAS signal contact K* is wired in parallel with a maintained hand switch contact and then in series with the closing coil. Upon receipt of an ESFAS signal, both contacts change state, thus energizing the closing coil. If the valve was initially open, the hand switch contacts remain in their original position, and reset of the ESFAS signal will energize the opening coil and reopen the valve.

Proposed Modification: Replace the existing maintained position switch with spring-return-to-normal switch and introduce a seal-in circuit using auxiliary contacts from the opening and closing coils. The seal-in circuit is deactivated when the limit switch contact opens at the end of the travel of the valve, preventing the opening coil from energizing upon ESFAS reset. A manual action of the hand switch is required to energize the opening coil.

Modification 5 (see Attachment 3, Figure 5)

Existing Condition: The ESFAS signal contact K* (in series with a closed-in-auto contact from the hand switch) closes, energizing the starter coil. When the ESFAS signal contact opens upon ESFAS reset, the starter coil deenergizes.

Proposed Modification: Introduce a seal-in circuit using spare contacts from existing auxiliary relay and existing hand switch. When the ESFAS signal contact closes, it activates the seal-in circuit and prevents the starter coil from deenergizing upon ESFAS reset. The seal-in circuit can be deactivated by turning the hand switch momentarily to the "stop" position.

ITEM 4

Provide a schedule for implementation of corrective actions planned.

Response

Control circuits for the ESF devices, which are identified as changing their function/position upon ESFAS reset from the schematic review (Item 1) and/or from the proposed testing (Item 2), will be rectified using one of the applicable modifications from Item 3.

These corrections are scheduled to be completed during the 1981 refueling outage. Preliminary engineering work for these modifications is continuing, and is scheduled to be completed by December 31, 1980.

ATTACHMENT 2

LEGEND

Automatic Signal From Nuclear Safety System or Engineering Safeguard

Signal	Description
A	Reactor vessel low water level - All isolation valves close except reactor main steam line isolation valves, main steam line drains valves, reactor sample valves, reactor building cooling water inlet and outlet valves, well water inlet and outlet valves, and well water backflush inlet and outlet valves. (A reactor scram also occurs at this level.)
B	Reactor vessel low-low water level - This is the second of the three isolation low water level signals. The reactor main steam isolation valves, main steam line drain valves, and reactor water sample line are closed at this level. (The HPCI and RCIC systems are initiated at this level.)
C	High radiation - main steam line
D	Line break - Main steam line (steam line high steam flow or high space temperature in steam tunnel)
E	When the RCIC/HPCI turbine steam supply valve is open, indicated valves are closed and interlocked to prevent reopening.
F	High drywell pressure (close drywell atmospheric control and secondary containment isolation valves)
G	Reactor vessel low-low-low water level or high drywell pressure isolates the reactor building cooling water inlet and outlet valves, well water inlet and outlet valves, and well water backflush inlet and outlet valves (RHR and core spray systems are started). This is the lowest of the three isolation low water level signals.
H	Line break in recirculation loop - Close corresponding RHR/LPCI loop valves and open valves in opposite loop.
J	Line break in reactor water cleanup system - High differential flow. Isolation is effective 30 minutes after pump is started.
K	Line break in RCIC system steam line to turbine.
L	Line break in HPCI system steam to turbine.
N	High temperature at outlet of reactor water cleanup system nonregenerative heat exchanger
P	Low main steam line pressure at inlet to turbine for RUN mode only. Reactor water level above high level trip and low main steam line pressure for other modes.
Q	HPCI high turbine exhaust diaphragm pressure
R	RCIC high turbine exhaust diaphragm pressure
S	Drywell pressure or low level inside RV shroud below low level trip point.
T	Low reactor pressure permissive to open core spray and RHR/LPCI valves
U	Reactor vessel pressure exceeding pressure of shutdown cooling range
V	Steam supply valve or turbine stop valve closed
W	High differential temperature between inlet and outlet of reactor water cleanup system equipment room ventilation or high ambient temperature in reactor water cleanup system equipment room
X	MSIV closure when condenser vacuum decays to 10 inHg vacuum
Y	Standby liquid control system actuated
Z	High radiation, reactor building, and/or fuel pool ventilation exhaust
ZZ	High radiation, control building

Function/Position

O = Open
C = Close
E = Energize
D = Deenergize
R = Running
NR = Not running
B = Return to state the equipment was in before actuation

ATTACHMENT 2

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Drywell Equip Drain Sump Heat Exchange Outlet Valve	MO-4841A	G	C	C	E-111, Sh 17	E21-6(2)	
Drywell Equip Drain Sump Heat Exch Inlet Valve	MO-4841B	G	C	C	E-111, Sh 18	E21-6(2)	
Standby Gas Treatment System	SV-5801A	A,F,Z	D	D	E-113, Sh 11 E-113, Sh 12	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System	SV-5801B	A,F,Z	D	D	E-113, Sh 11 E-113, Sh 12	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System	SV-5825A	A,F,Z	D	D	E-113, Sh 11 E-113, Sh 12	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System	SV-5825B	A,F,Z	D	D	E-113, Sh 11 E-113, Sh 12	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System Electric Heater A	EC-5805A	A,F,Z	R	R	E-113, Sh 14, Sh 13 E-113, Sh 11	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System Electric Heater B	EC-5805B	A,F,Z	R	R	E-113, Sh 14, Sh 13 E-113, Sh 11	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System Exhaust Fan A	1V-EF-15A	F,A,Z	R	R	E-113, Sh 16 E-113, Sh 11	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
Standby Gas Treatment System Exhaust Fan B	1V-EF-15B	F,A,Z	R	R	E-113, Sh 16 E-113, Sh 11	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
Control Bldg Cable Spreading Room Air Conditioning Unit	1V-AC-32	ZZ	NR	NR	E-113, Sh 19		
Control Bldg Standby Filter Unit A	SV-7301A	ZZ	E	E	E-113, Sh 35		
Control Bldg Standby Filter Unit A	SV-7318A	ZZ	E	E	E-113, Sh 35		
Aux Cont Control Bldg Standby Filter Unit Electric Heater	EC-7304A	ZZ	R	R	E-113, Sh 37 E-113, Sh 39		
Aux Cont Control Bldg Standby Filter Unit Electric Heater	EC-7304B	ZZ	R	R	E-113, Sh 37 E-113, Sh 39		
Control Bldg Standby Filter Unit Supply Fan	1V-SF-30A	ZZ	R	R	E-113, Sh 38		

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Control Bldg Standby Filter Unit Supply Fan	1V-SF-30B	ZZ	R	R	E-113, Sh 38		
Battery Room Exhaust Fan A	1V-EF-30A	ZZ	See remark	See remark	E-113, Sh 40		Normal operation: 2 fans running and 1 fan off. Isolation operation: 1 fan running and 2 fans off
Battery Room Exhaust Fan B	1V-EF-30B	ZZ	See remark	See remark	E-113, Sh 40		
Battery Room Exhaust Fan C	1V-EF-30C	ZZ	See remark	See remark	E-113, Sh 40		
Isolation Dampers	SV-7610A	F,Z,A	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7612A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7630A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7631A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7632A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7633A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7634A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7636A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7602A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7605A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7639A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7641A	F,A,Z	D	D	E-113, Sh 64	A71-3(14), A71-3(7) A71-3(6), A71-3(5)	
	SV-7610B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Isolation Dampers	SV-7612B	F,Z,A	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7630B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7631B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7632B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7633B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7634B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7636B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7602B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7605B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7639B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
	SV-7641B	F,A,Z	D	D	E-113, Sh 64	A71-3(15), A71-3(7) A71-3(6), A71-3(5)	
Control Bldg A.C. Isolation Damper A	SV-6110A	ZZ	D	D	E-113, Sh 82		
	SV-6109A	ZZ	D	D	E-113, Sh 82		
	SV-6107A	ZZ	D	D	E-113, Sh 82		
Control Bldg A.C. Isolation Damper B	SV-6110B	ZZ	D	D	E-113, Sh 83		
	SV-6109B	ZZ	D	D	E-113, Sh 83		
	SV-6107B	ZZ	D	D	E-113, Sh 83		
Reac Recirc Pump Disch Bypass Vlv	MO-4629	H	C	B	E-120, Sh 6	B31-16(6), E11-7(6) E11-7(9), E11-7(4) E11-7(7)	See proposed system modification #4

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Reac Recirc Pump Disch Bypass Vlv	MO-4630	H	C	B	E-120, Sh 6	B31-16(6), E11-7(6) E11-7(9), E11-7(4) E11-7(7)	See proposed system modification #4
Reac Recirc Pump Disch Valve	MO-4627	H	C	C	E-120, Sh 6	B31-16(6), E11-7(6) E11-7(9), E11-7(4) E11-7(7)	
Reac Recirc Pump Disch Valve	MO-4628	H	C	C	E-120, Sh 6	B31-16(6), B31-7(6) E31-7(9), B31-7(4) B31-7(7)	
Auto Depressurization Valve	SV-4400	G	E	B	E-121, Sh 2	B21-18(2)	See proposed system modification #3
Auto Depressurization Valve	SV-4402	G	E	B	E-121, Sh 2	B21-18(2)	See proposed system modification #3
Auto Depressurization Valve	SV-4405	G	E	B	E-121, Sh 2	B21-18(2)	See proposed system modification #3
Auto Depressurization Valve	SV-4406	G	E	B	E-121, Sh 2	B21-18(2)	See proposed system modification #3
Core Spray Pump	1P-211A	G	R	R	E-121, Sh 3	E21-6(2)	
Core Spray Pump	1P-211B	G	R	R	E-121, Sh 3	E21-6(2)	
Core Spray System I Inboard Vlv	MO-2117	G,T	O	O	E-121, Sh 5	E21-6(4), E21-6(2)	
Core Spray System II Inboard Valve	MO-2137	G,T	O	O	E-121, Sh 5	E21-6(4), E21-6(2)	
Core Spray System I Test Bypass	MO-2112	G	C	C	E-121, Sh 7	E21-6(4), E21-6(2)	
Core Spray System II Test Bypass	MO-2132	G	C	C	E-121, Sh 7	E21-6(4), E21-6(2)	
Core Spray System I Outbrd Valve	MO-2115	G,T	O	O	E-121, Sh 8	E21-6(4), E21-6(2)	
Core Spray System II Outbrd Valve	MO-2135	G,T	O	O	E-121, Sh 8	E21-6(4), E21-6(2)	
HPCI Gland Seal Cond Vac Pump	1P-233	B,F	R	B	E-121, Sh 11	E41-6(6), E41-6(3)	See proposed system modification #5
HPCI Aux Oil Pump	1P-218	B,F	R	R	E-121, Sh 13	E41-6(6), E41-6(3)	
HPCI Turbine Steam Supply Line Valve (inboard)	MO-2238	B,F	O	O	E-121, Sh 14	E41-6(7), E41-6(3)	
HPCI Turbine Steam Supply Line Valve (inboard)	MO-2238	L,Q	C	C	E-121, Sh 14	E41-6(7), E41-6(4)	

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
HPCI Turbine Steam Supply Line Valve (outboard)	MO-2239	B,F	O	O	E-121, Sh 15	E41-6(7), E41-6(3)	
HPCI Turbine Steam Supply Line Valve (outboard)	MO-2239	L,Q	C	C	E-121, Sh 15	E41-6(7), E41-6(4)	
HPCI Steam Vlv Supply to Turbine	MO-2202	B,F	O	O	E-121, Sh 16	E41-6(7), E41-6(3)	
HPCI Lube Oil Cool Water Vlv	MO-2247	B,F	O	O	E-121, Sh 16	E41-6(7), E41-6(3)	
HPCI Pump Discharge Valve	MO-2311	B,F	O	O	E-12I, Sh 16	E41-6(7), E41-6(3)	
HPCI Suction from Cond Storage Tk Vlv	MO-2300	B,F	O	O	E-121, Sh 17	E41-6(7), E41-6(3)	
HPCI Flow Discharge Valve	MO-2312	B,F	O	O	E-121, Sh 18	E41-6(7), E41-6(3)	
HPCI Flow Discharge Valve	MO-2312	V	C	C	E-121, Sh 18	E41-6(7), E41-6(3)	
HPCI Test Bypass to Cond Storage Tk Vlv	MO-2315	B,F	C	C	E-121, Sh 19	E41-6(7), E41-6(3)	
HPCI Redundant Shutoff to Cond Storage Tk Vlv	MO-2316	B,F	C	C	E-121, Sh 20	E41-6(7), E41-6(3)	
HPCI Min Flow Bypass to Sup Chamber Vlv	MO-2318	V	C	C	E-121, Sh 21	E41-6(7), E41-6(3)	
HPCI Suction from Sup Chamber Valve	MO-2322	L,Q	C	C	E-121, Sh 22	E41-6(7), E41-6(3) E41-6(4)	
HPCI Pump Suction from Sup Chamber Vlv	MO-2321	L,Q	C	C	E-121, Sh 23	E41-6(7), E41-6(3) E41-6(4)	
HPCI & RCIC Turbine Exhaust Vlv Brkr Vlv A	MO-2290A	F,L	C	C	E-121, Sh 23A	E41-6(8), E41-6(4)	
HPCI & RCIC Turbine Exhaust Vlv Brkr Vlv B	MO-2290B	F,L	C	C	E-121, Sh 23A	E41-6(8), E41-6(3)	
Steam Line Drain Isolation Valve (outboard)	SV-2212	E	D	B	E-121, Sh 26	E41-6(8), E41-6(3)	See proposed system modification #1
Cond Pump Disch Iso Valve (outbd)	SV-2235	E	D	B	E-121, Sh 26	E41-6(8), E41-6(3)	See proposed system modification #1

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Steam Line Drain Iso Valve (inbd)	SV-2211	E	D	B	E-121, Sh 26	E41-6(8), E41-6(3)	See proposed system modification #1
Condensate Pump Disch Iso Valve (inbd)	SV-2234	E	D	B	E-121, Sh 26	E41-6(8), E41-6(3)	See proposed system modification #1
RCIC Barometric Cond Vacuum Pump	1P-227	B	R	R	E-121, Sh 27	E51-9(5), E51-9(2)	
RCIC Steam Supply Line Iso Vlv Inbd	MO-2400	B	O	O	E-121, Sh 29	E51-9(6), E51-9(2)	
RCIC Steam Sup Line Iso Vlv Inbd	MO-2400	K,R	C	C	E-121, Sh 29	E51-9(6), E51-9(3)	
RCIC Steam Sup Line Iso Vlv Outbd	MO-2401	B	O	O	E-121, Sh 30	E51-9(6), E51-9(2)	
RCIC Steam Sup Line Iso Vlv Outbd	MO-2401	K,R	C	C	E-121, Sh 30	E51-9(6), E51-9(2)	
RCIC Pump Suct Cond Storage Tk	MO-2500	B	O	O	E-121, Sh 31	E51-9(6), E51-9(3) E51-9(2)	
Steam to RCIC Turbine Vlv	MO-2404	B	O	O	E-121, Sh 32	E51-9(6), E51-9(2)	
Turb Cool Wtr Supply Vlv	MO-2426	B	O	O	E-121, Sh 32	E51-9(6), E51-9(2)	
Pump Discharge Vlv	MO-2511	B	O	O	E-121, Sh 32	E51-9(6), E51-9(2)	
RCIC Min Flow Bypass To Suppress Chamber Vlv	MO-2510	V	C	C	E-121, Sh 34	E51-9(6), E51-9(3) E51-9(2)	
RCIC Test Bypass Cond Storage Tk Vlv	MO-2515	B	C	C	E-121, Sh 35	E51-9(6), E51-9(3) E51-9(2)	
Steam Line Drain Iso Vlv	SV-2410	E	D	B	E-121, Sh 39	E51-9(7), E51-9(3)	See proposed system modification #1
Condensate Pump Disch Iso Vlv	SV-2435	E	D	B	E-121, Sh 39	E51-9(7), E51-9(3)	See proposed system modification #1
Steam Line Drain Iso Vlv	SV-2411	E	D	B	E-121, Sh 39	E51-9(7), E51-9(3)	See proposed system modification #1
Condensate Pump Disch Iso Vlv	SV-2436	E	D	B	E-121, Sh 39	E51-9(7), E51-9(3)	See proposed system modification #1
RCIC Pump Discharge Vlv	MO-2512	B	O	O	E-121, Sh 40	E51-9(6), E51-9(2)	
RCIC Pump Discharge Vlv	MO-2512	V	C	C	E-121, Sh 40	E51-9(6), E51-9(3)	
RHR Pump	1P-229A	G	R	R	E-121, Sh 41	E11-7(17), E11-7(5) E11-7(4)	
RHR Pump	1P-229B	G	R	R	E-121, Sh 41	E11-7(17), E11-7(5) E11-7(4)	

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
RHR Pump	1P-229G	G	R	R	E-121, Sh 41	E11-7(17), E11-7(5) E11-7(4)	
RHR Pump	1P-229D	G	R	R	E-121, Sh 41	E11-7(17), E11-7(5) E11-7(4)	
RHR Service Water Pump	1P-22A	G	NR	NR	E-121, Sh 42	E11-7(17), E11-7(5) E11-7(4)	
RHR Service Water Pump	1P-22B	G	NR	NR	E-121, Sh 42	E11-7(17), E11-7(6) E11-7(7)	
RHR Service Water Pump	1P-22C	G	NR	NR	E-121, Sh 42	E11-7(17), E11-7(5), E11-7(4)	
RHR Service Water Pump	1P-22D	G	NR	NR	E-121, Sh 42	E11-7(17), E11-7(6) E11-7(7)	
RHR Loop A Cont Cool Vlv	MO-2000	G,S	C	C	E-121, Sh 48	E11-7(13), E11-7(5) E11-7(4)	Manual override available
RHR Loop B Cont Cool Vlv	MO-1902	G,S	C	C	E-121, Sh 48	E11-7(15), E11-7(5) E11-7(4)	Manual override available
RHR Loop A Test Iso Vlv	MO-2005	G,S	C	C	E-121, Sh 49	E11-7(13), E11-7(5) E11-7(4)	Manual override available
RHR Loop B Test Iso Vlv	MO-1932	G,S	C	C	E-121, Sh 49	E11-7(15), E11-7(7) E11-7(8)	Manual override available
RHR Loop A Drain to Recir Vlv	MO-2036	G	C	C	E-121, Sh 50	E11-7(13), E11-7(4)	
RHR Loop B Drain to Recir Vlv	MO-1967	G	C	C	E-121, Sh 50	E11-7(15), E11-7(7)	
RHR Loop A Drain to Torus Valve	MO-2016	G	C	C	E-121, Sh 50	E11-7(13), E11-7(4)	
RHR Loop B Drain to Torus Valve	MO-1970	G	C	C	E-121, Sh 50	E11-7(15), E11-7(7)	
RHR Loop A Ht Exch Bypass Vlv	MO-2030	G	O	O	E-121, Sh 51	E11-7(13), E11-7(5), E11-7(4)	
RHR Loop B Ht Exch Bypass Vlv	MO-1940	G	O	O	E-121, Sh 51	E11-7(15), E11-7(8), E11-7(7)	

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTIGN/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
RHR Loop A Disch to LPCI Vlv (inbd)	MO-2003	A,F,H	C	C	E-121, Sh 52	E11-7(14), E11-7(6) E11-7(4)	
RHR Loop B Disch to LPCI Vlv (inbd)	MO-1905	A,F,H	C	C	E-121, Sh 52	E11-7(16), E11-7(9) E11-7(7)	
RHR Loop A Disch to LPCI Vlv (outbd)	MO-2004	G,T	O	O	E-121, Sh 53	E11-7(14), E11-7(6) E11-7(5)	
RHR Loop A Disch to LPCI Vlv (outbd)	MO-2004	H	C	C	E-121, Sh 53	E11-7(14), E11-7(6) E11-7(5)	
RHR Loop B Disch to LPCI Vlv (outbd)	MO-1904	G,T	O	O	E-121, Sh 53	E11-7(16), E11-7(9) E11-7(8)	
RHR Loop B Disch to LPCI Vlv (outbd)	MO-1904	H	C	C	E-121, Sh 53	E11-7(16), E11-7(9) E11-7(8)	
Air to Steam Pressure Reduc Vlv	SV-2033	G	D	B	E-121, Sh 58	E11-7(14), E11-7(5) E11-7(4)	See proposed system modification #2
Air to Steam Pressure Reduc Vlv	SV-2034	G	D	B	E-121, Sh 58	E11-7(14), E11-7(5) E11-7(4)	See proposed system modification #2
Air to Cond Disch to Sup Pool or RCIC	SV-2037	G	D	B	E-121, Sh 58	E11-7(14), E11-7(5) E11-7(4)	See proposed system modification #2
Air to Steam Press Reduc Vlv	SV-1963	G	D	B	E-121, Sh 58	E11-7(16), E11-7(8) E11-7(7)	See proposed system modification #2
Air to Steam Press Reduc Vlv	SV-1964	G	D	B	E-121, Sh 58	E11-7(16), E11-7(8) E11-7(7)	See proposed system modification #2
Air to Cond Disch to Sup Pool or RCIC	SV-1966	G	D	B	E-121, Sh 58	E11-7(16), E11-7(8) E11-7(7)	See proposed system modification #2
RHR Loop A Test to Torus Vlv	MO-2007	G,S	C	C	E-121, Sh 59	E11-7(13), E11-7(5) E11-7(4)	Manual override available
RHR Loop B Test to Torus Vlv	MO-1934	G,S	C	C	E-121, Sh 59	E11-7(15), E11-7(8) E11-7(7)	Manual override available
RHR Loop A Test to Torus Vlv	MO-2006	G,S	C	C	E-121, Sh 59A	E11-7(13), E11-7(5) E11-7(4)	Manual override available
RHR Loop B Test to Torus Vlv	MO-1933	G,S	C	C	E-121, Sh 59A	E11-7(15), E11-7(8) E11-7(7)	Manual override available

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
RHR Loop A Cont Cool Reg Vlv	MO-2001	G,S	C	C	E-121, Sh 60	E11-7(13), E11-7(5) E11-7(4)	Manual override available
RHR Loop B Cont Cool Reg Vlv	MO-1903	G,S	C	C	E-121, Sh 60	E11-7(15), E11-7(8) E11-7(7)	Manual override available
RHR Shutdown Cool Iso Vlv (inbd)	MO-1908	A,F,U	C	C	E-122, Sh 2	A71-3(12), A71-3(13) A71-3(7), A71-3(6)	
RHR React Hd Spray Iso Vlv (inbd)	MO-1900	A,F,U	C	C	E-122, Sh 2	A71-3(12), A71-3(13) A71-3(7), A71-3(6)	
Main Steam Line Drain Vlv (inbd)	MO-4423	B,C,D,P,X	C	C	E-122, Sh 2	A71-3(8), A71-3(7) A71-3(6)	
Reac Water Cleanup Sys Iso Vlv (inbd)	MO-2700	A,W,J	C	C	E-122, Sh 3	A71-3(12), A71-3(13) A71-3(6)	
RHR Shutdown cool Iso Vlv (outbd)	MO-1909	A,F,U	C	C	E-122, Sh 4	A71-3(12), A71-3(13) A71-3(7), A71-3(6)	
Main Stm Line Drain Vlv (outbd)	MO-4424	B,C,D,P,X	C	C	E-122, Sh 5	A71-3(8), A71-3(7) A71-3(6)	
React Wtr Cleanup Iso Vlv (outbd)	MO-2701	A,W,J,Y,N	C	C	E-122, Sh 5	A71-3(12), A71-3(13) A71-3(6)	
RHR Reac Head Spray Iso Vlv (outbd)	MO-1901	A,F,U	C	C	E-122, Sh 6	A71-3(12), A71-3(13) A71-3(7), A71-3(6)	
RHR Disch to Radwaste Iso Vlv (inbd)	MO-1936	A,F	C	C	E-122, Sh 7	A71-3(12), A71-3(7) A71-3(6)	
Radwaste Sys Drywell Iso Vlv (inbd)	SV-3704	A,F	D	D	E-122, Sh 9	A71-3(7), A71-3(6)	
Radwaste Sys Drywell Iso Vlv (inbd)	SV-3728	A,F	D	D	E-122, Sh 9	A71-3(7), A71-3(6)	
Radwaste Sys Drywell Iso Vlv (outbd)	SV-3729	A,F	D	D	E-122, Sh 9	A71-3(7), A71-3(6)	
Radwaste Sys Drywell Iso Vlv (outbd)	SV-3705	A,F	D	D	E-122, Sh 9	A71-3(7), A71-3(6)	
Reactor Wtr Sample Vlv (inbd)	SV-4639	B,C,D,P,X	D	D	E-122, Sh 10	A71-3(9), A71-3(7) A71-3(6)	
Reactor Wtr Sample Vlv (outbd)	SV-4640	B,D,C,P,X	D	D	E-122, Sh 10	A71-3(9), A71-3(7) A71-3(6)	

ATTACHMENT 2 (Continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Main Stm Line Vlvs (inbd)	SV-4412	B,X,C,D,P	D	D	E-122, Sh 11	A71-3(10) A71-3(5) A71-3(6)	
Main Stm Line Vlvs (inbd)	SV-4415	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(10), A71-3(5) A71-3(6)	
Main Stm Line Vlvs (inbd)	SV-4418	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(10), A71-3(5) A71-3(6)	
Main Stm Line Vlvs (inbd)	SV-4420	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(10), A71-3(5) A71-3(6)	
Main Stm Line Vlvs (outbd)	SV-4413	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(11), A71-3(5) A71-3(6)	
Main Stm Line Vlvs (outbd)	SV-4416	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(11), A71-3(5) A71-3(6)	
Main Stm Line Vlvs (outbd)	SV-4419	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(11), A71-3(5) A71-3(6)	
Main Stm Line Vlvs (outbd)	SV-4421	B,C,D,P,X	D	D	E-122, Sh 11	A71-3(11), A71-3(5) A71-3(6)	
Atmos Control Vlv (inbd)	SV-4300	A F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4309	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4310	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4302	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4307	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4308	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4312	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-4313	A,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (inbd)	SV-1804A	A,B,F,Z	D	D	E-122, Sh 12	A71-3(14), A71-3(5)	Manual override available
Atmos Control Vlv (outbd)	SV-4301	A,F,Z	D	D	E-122, Sh 13	A71-3(15), A71-3(7) A71-3(6)	Manual override available

ATTACHMENT 2 (Continued)

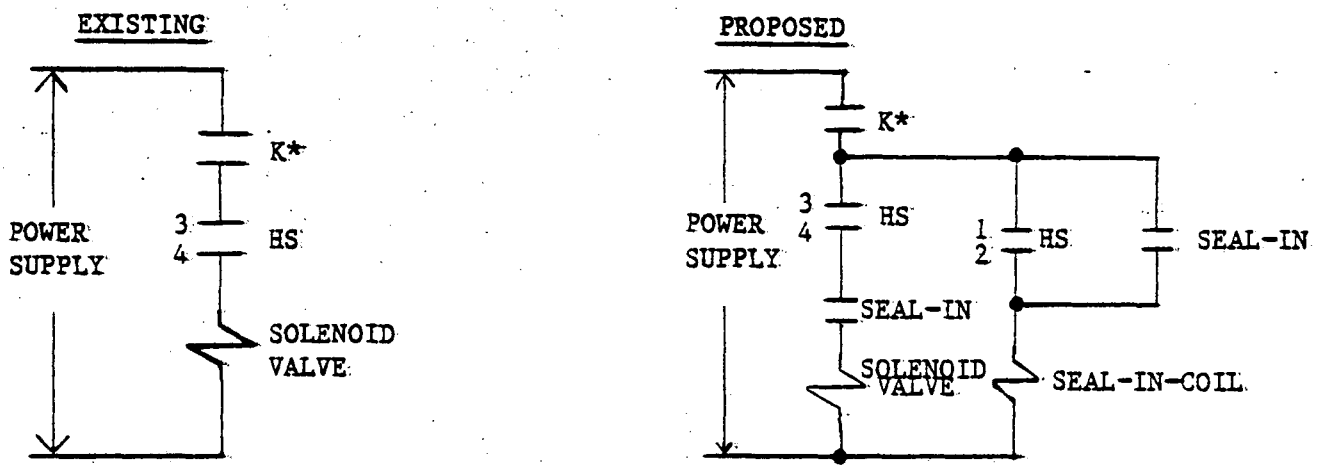
EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Atmos Control Vlv (outbd)	SV-4303	A,F,Z	D	D	E-122, Sh 13	A71-3(15), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (outbd)	SV-4306	A,Z,F	D	D	E-122, Sh 13	A71-3(15), A71-3(7) A71-3(6)	Manual override available
Atmos Cont Vlv (outbd)	SV-4311	A,F,Z	D	D	E-122, Sh 13	A71-3(15), A71-3(7) A71-3(6)	Manual override available
Atmos Control Vlv (outbd)	SV-1804B	A,B,F,Z	D	D	E-122, Sh 13	A71-3(15), A71-3(6)	Manual override available
RHR Sample Line Vlv (inbd)	SV-2051	A,F	D	D	E-122, Sh 13	A71-3(16), A71-3(7) A71-3(6)	
RHR Sample Line Vlv (inbd)	SV-1972	A,F	D	D	E-122, Sh 13	A71-3(16), A71-3(7) A71-3(6)	
RHR Sample Line Vlv (outbd)	SV-2052	A,F	D	D	E-122, Sh 13	A71-3(16), A71-3(7) A71-3(6)	
RHR Sample Line Vlv (outbd)	SV-1973	A,F	D	D	E-122, Sh 13	A71-3(16), A71-3(7) A71-3(6)	
React Wtr Cleanup Sys Ret Vlv	MO-2740	A,W,J,Y,N	C	C	E-122, Sh 14	A71-3(12), A71-3(13) A71-3(6)	
RHR Disch to Waste Iso Vlv (outbd)	MO-1937	A,F	C	C	E-122, Sh 15	A71-3(12), A71-3(7) A71-3(6)	
Torus Vacuum Breaker Vlv (inbd)	SV-4304	A,F,Z	E	E	E-122, Sh 23 E-113, Sh 11	A71-3(14)	
Torus Vacuum Break Vlv (outbd)	SV-4305	A,F,Z	E	E	E-122, Sh 23 E-113, Sh 11	A71-3(14)	
N_2 Supply Iso Vlv (inbd)	SV-4317C	A,F,Z	D	D	E-122, Sh 24 E-113, Sh 11	A71-3(14)	
N_2 Supply Iso Vlv (inbd)	SV-4378A	A,F,Z	D	D	E-122, Sh 24 E-113, Sh 11	A71-3(14)	
N_2 Supply Iso Vlv (inbd)	SV-4371B	A,F,Z	D	D	E-122, Sh 24 E-113, Sh 11	A71-3(14)	Manual override available
N_2 Supply Iso Vlv (outbd)	SV-4371A	A,F,Z	D	D	E-122, Sh 24 E-113, Sh 11	A71-3(15)	Manual override available
N_2 Supply Iso Vlv (outbd)	SV-4378B	A,F,Z	D	D	E-122, Sh 24 E-113, Sh 11	A71-3(15)	

ATTACHMENT 2 (Continued)

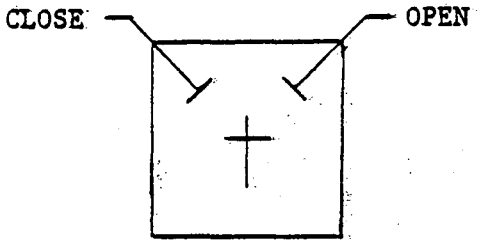
EQUIPMENT DESCRIPTION	EQUIPMENT NO	AUTOMATIC SIGNAL FROM NUCLEAR SAFETY SYSTEM (NSS) OR ENGINEERING SAFEGUARD (ES)	ACTUATED FUNCTION/ POSITION	FUNCTION/ POSITION AFTER NSS/ES RESET	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
Loop A Containment Atmos Monitor Sys Iso Valves	SV-8101A through SV-8110A	A,F,Z	D	D	E-122, Sh 29 E-113, Sh 11	A71-3(14), A71-3(15)	Manual bypass available
Loop B Containment Atmos Monitor Sys Iso Vlv	SV-8101B through SV-8110B	A,F,Z	D	D	E-122, Sh 29 E-113, Sh 11	A71-3(14), A71-3(15)	Manual bypass available

Attachment 3
Figure 1

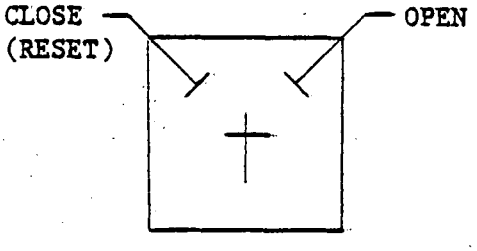
PROPOSED SYSTEM MODIFICATION #1



K* Contact will open on receipt of NSS or ES signal.



HS
MAINTAIN CONTACT



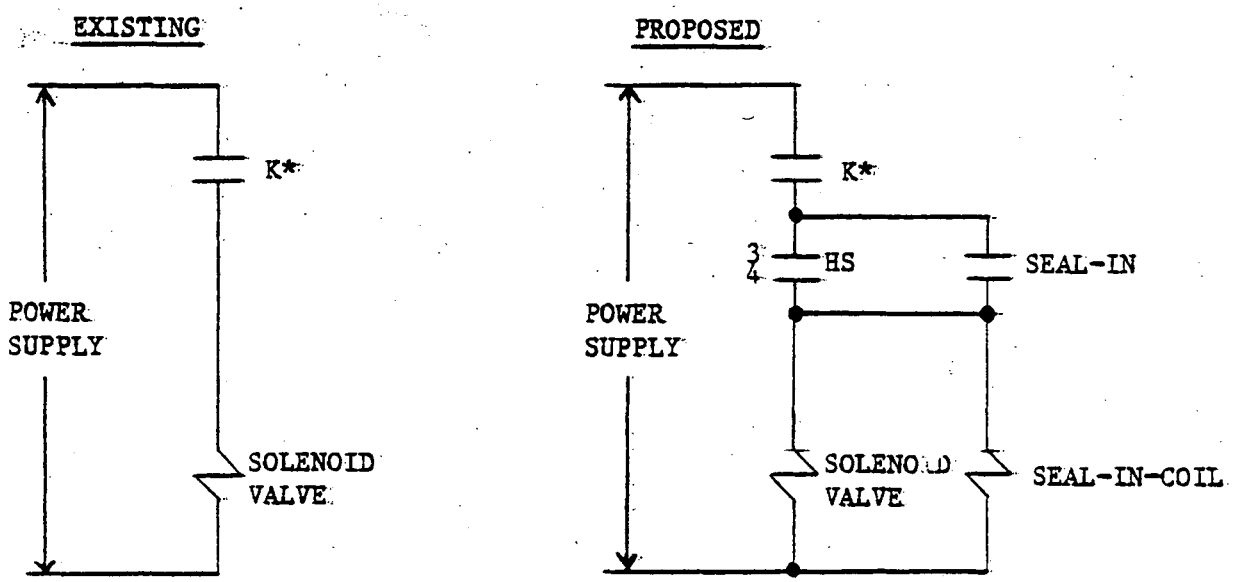
HS
MAINTAIN CONTACT

	OPEN	CLOSE
1 — 2		X
3 — 4	X	

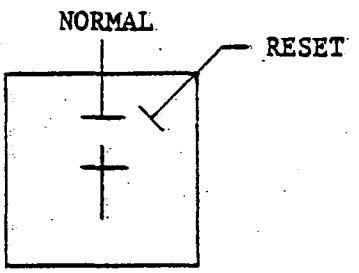
	OPEN	CLOSE/RESET
1 — 2		X
3 — 4	X	

PROPOSED FIX: Use existing switch, add seal-in-coil, and reconnect as shown.

PROPOSED SYSTEM MODIFICATION #2



K* Contact will open on receipt of NSS or ES signal.

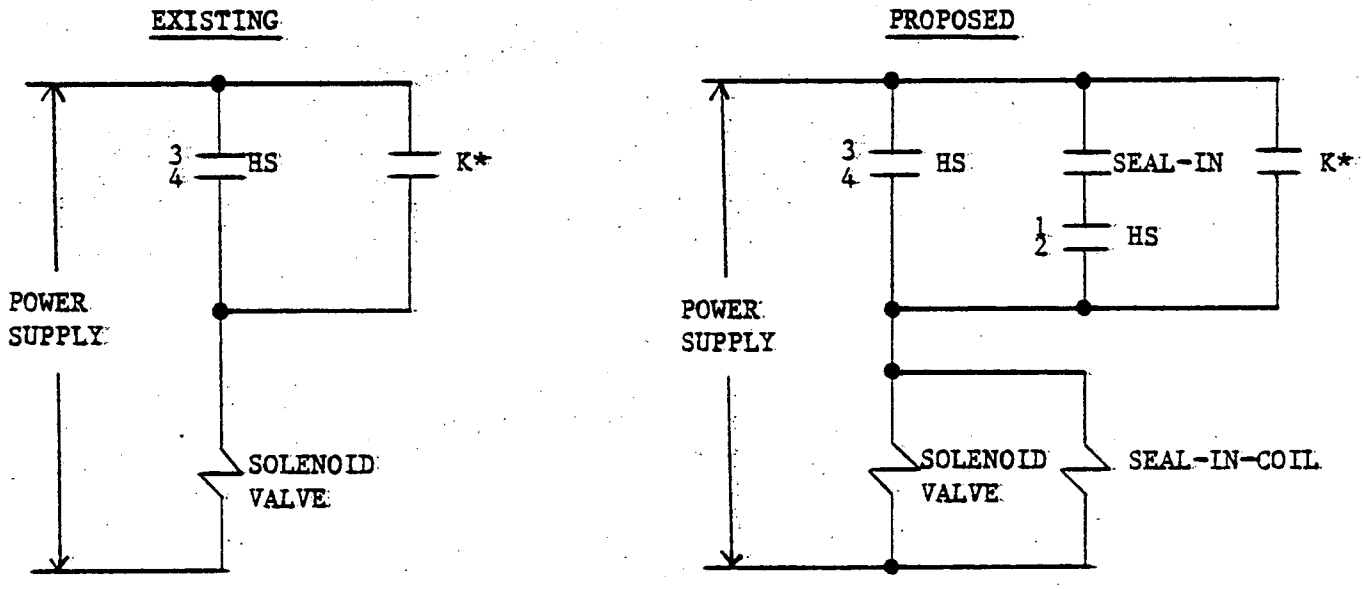


HS
SPRING RETURN
TO NORMAL

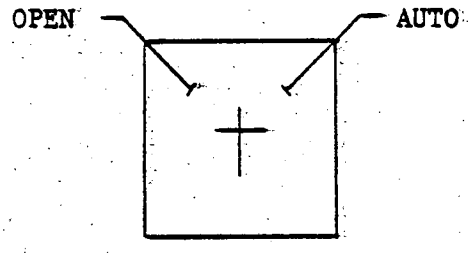
	RESET	NORMAL
1 — 2		X
3 — 4	X	

PROPOSED FIX: Add the Hand Switch (HS), seal-in-coil, and reconnect as shown.

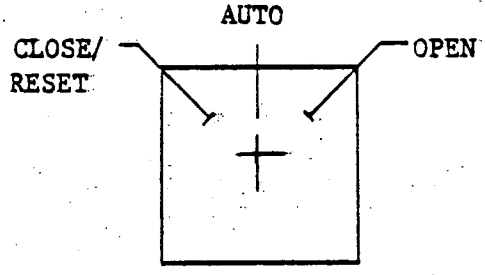
PROPOSED SYSTEM MODIFICATION #3



K* Contact will close on receipt of NSS or ES signal.



HS
MAINTAIN CONTACT



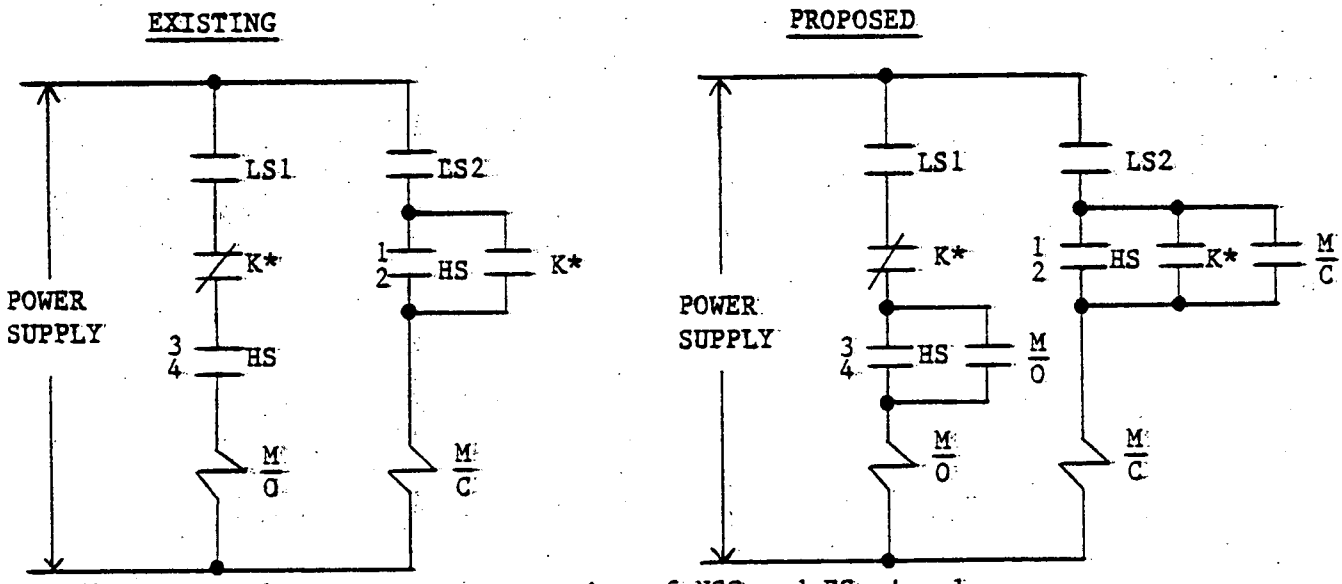
HS
SPRING RETURN TO "AUTO"

	OPEN	AUTO
1–2		X
3–4	X	

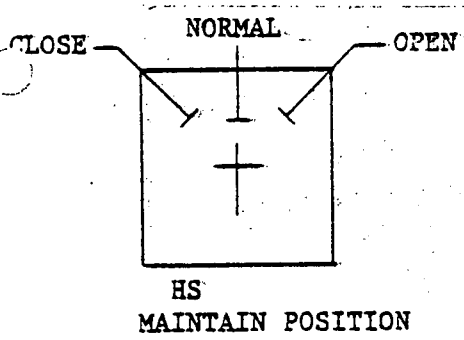
	OPEN	AUTO	CLOSE/RESET
1–2	X	X	
3–4	X		

PROPOSED FIX: Replace the existing switch with a new switch, add seal-in-coil, and reconnect as shown.

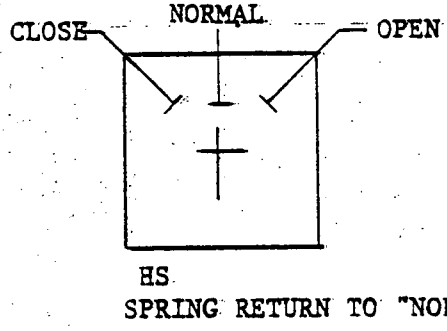
PROPOSED SYSTEM MODIFICATION #4



K* Contact changes state on receipt of NSS and ES signal.
LS1 – Opens when valve is fully open. LS2 – Opens when valve is fully closed.



HS
MAINTAIN POSITION



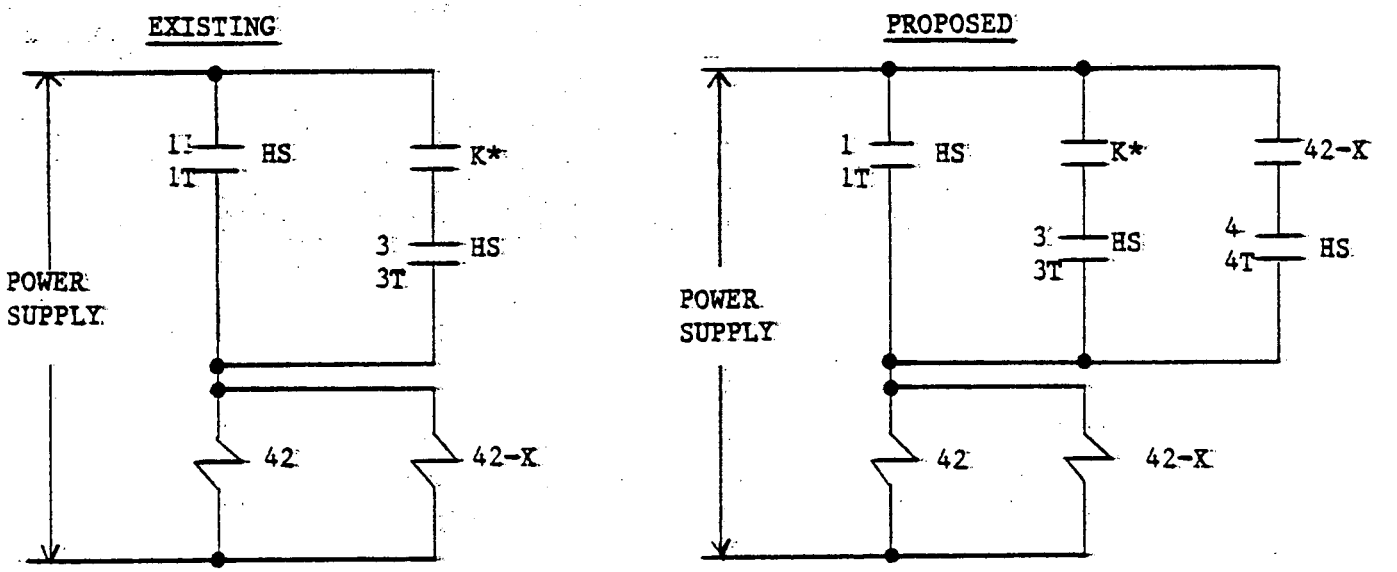
HS
SPRING RETURN TO "NORMAL"

	OPEN	NORMAL	CLOSE
1–2			X
3–4	X		

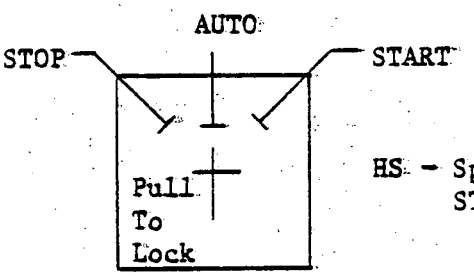
	OPEN	NORMAL	CLOSE
1–2			X
3–4	X		

PROPOSED FIX: Replace the existing maintain position switch with new spring return to "Normal" switch. Reconnect as shown.

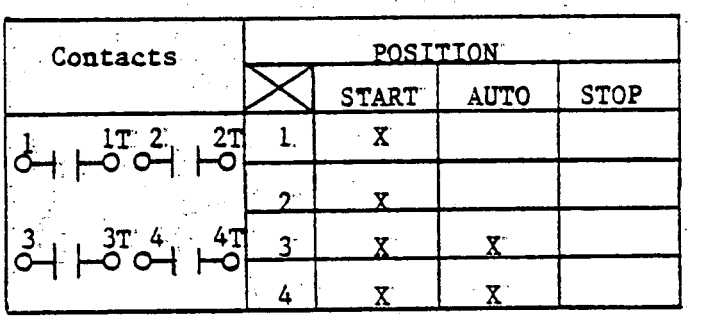
PROPOSED SYSTEM MODIFICATION #5



K* Contact will close on receipt of NSS or ES signal.



HS - Spring return to "AUTO" only from STOP PULL LOCK



PROPOSED FIX: Use existing switch, reconnect as shown.

ATTACHMENT 4

REMAINDER OF RESPONSE TO NRC LETTER OF MARCH 28, 1980

Item 1, Criterion 1

In keeping with the requirements of General Design Criteria 55 and 56, the overriding of one type of safety actuation signal (e.g., radiation) should not cause the blocking of any other type of safety actuation signal (e.g., pressure) for those valves that have no function besides containment isolation.

Response

The degree of compliance with this criterion is shown in Attachment 5. "Yes" indicates that the criterion is met; "no" indicates that the criterion is not met.

Item 1, Criterion 2

Sufficient physical features (e.g., keylock switches) are to be provided to facilitate adequate administrative controls.

Response

This criterion is satisfied for all equipment reviewed by the use of keylock control switches for override function administrative controls (see Attachment 5).

Item 1, Criterion 3

A system level annunciation of the overridden status should be provided for every safety system impacted when any override is active (see Regulatory Guide 1.47).

Response

The degree of compliance with this criterion is shown in Attachment 5.

Item 1, Criterion 4

Diverse signals should be provided to initiate isolation of the containment ventilation system. Specifically, containment high radiation, safety injection actuation, and containment high pressure (where containment high pressure is not a portion of safety injection actuation) should automatically initiate CVI.

Response

The accident parameters, automatic signals from the nuclear safety system (NSS), or engineering safeguard (ES) are listed in the table for IE Bulletin 80-06 (Attachment 2). Note that diverse signals are provided to initiate isolation of the containment ventilation system.

Item 1, Criterion 5

The instrumentation and control systems provided to initiate the ESF should be designed and qualified as safety-grade equipment.

Response

As described in Section 7 of the FSAR, the instrumentation and control systems analyzed are designed to meet the criteria of IEEE Standard 279, which in turn requires that nuclear power plant protection systems be designed and qualified as safety-grade equipment.

Item 1, Criterion 6

The overriding or resetting of the ESF actuation signal should not cause any valve or damper to change position.

Response

As shown in the "remarks" column of Attachment 5, the following equipment has bypass (override) switches at the individual equipment level, rather than at the individual accident parameter level.

1. Reactor water sample valves

2. Nitrogen supply isolation valves

3. Containment atmosphere monitoring system isolation valves

For equipment with the override switch at the equipment level mentioned above, receipt of any one accident signal causes the valve to close or assume its accident state. Operation of the existing keylock override switch will cause the valve to reopen or change state. In this sense, Criterion 6 is not satisfied. However, if the override switch is not implemented subsequent to the receipt of an accident signal and the accident signal then resets, the valve will not reopen or change state beause of the presence of an interposing lockout-relay or the use of a spring-return equipment control switch. In this sense, Criterion 6 is satisfied.

For equipment with the override switch at the individual accident parameter level, Criterion 6 is satisfied. Here either implementation of overrides or resetting of accident signals will not cause any equipment to change state.

Item 2, Part 1

In addition to responding to the general questions above, please provide the following specific information:

Provide an as-built tabulation of all ESF/auxiliary supporting features (ASF) valves and dampers required to be operated automatically following an accident. This tabulation should include the following:

a. Component designation
b. System served
c. Safety function (e.g., containment isolation, spray initiation)
d. Actuation signal sources
e. Reference to control citcuitry (see Item 2(3) below)
f. Indication of whether or not the component safety function indicated in Item 2(1) can be defeated through the use of a manual override or bypass in either the control system or actuation signal system circuitry.

Response

The tabulation of all ESF equipment elsewhere in this response to IE Bulletin 80-06 (Attachment 2) satisfies this item.

Item 2, Part 2

For each manual bypass or override feature identified in Item 2(1), provide a description of the physical feature(s) provided to prevent inadvertent operation and to satisfy the requirements of IEEE Standard 279-1971, Section 4.14.

Response

As shown in Attachment 5 under Criterion 2, keylock switches are provided for enabling the override function. The key cannot be removed from the switch while the switch is in the override position, which enhances the administrative control aspects of the override feature. All keys required for deliberate override or manual bypassing of safety systems are under the direct control of the shift supervising engineer. The preceding controls are supplemented by the alarm and/or amber light for annunciation of the override condition as described in Attachment 5 under Criterion 3.

Item 2, Part 3

For each actuation signal system and component actuation system identified in Item 2(1)d and 2(1)e incorporating a manual reset, override, or bypass feature, provide a complete circuit description, including detailed pictorial information (i.e., as-built circuit diagram, schematics, logics), sufficient to allow a thorough understanding of the operation of such circuitry, including the function and effect of all control devices (e.g., relays, contacts, switches, diodes, etc).

Response

A copy of all drawings listed in our response to IE Bulletin 80-06 (Attachment 2) and all drawings listed in Attachment 5 are attached for your use.

Item 2, Part 4

For each actuation signal identified in Item 2(1) above, identify the design standards, quality assurance requirements, and component qualification standards involved to ensure that the systems will perform their designated safety function upon demand.

Response

The circuitry for the Duane Arnold Energy Center (DAEC) safety systems was designed in accordance with IEEE Standard 279-1968 or 1971, depending upon the time of design and the version of the standard which governed. A more complete description of the qualification criteria for the safety systems was provided in our response to IE Bulletin 79-01B.

To ensure that the above objectives are met, Iowa Electric established a comprehensive quality assurance program encompassing the design, manufacturing, fabrication, and construction activities at the DAEC. The program was developed to meet the requirements of Appendix B to 10 CFR 50. In detail, the program ensures adherence to specified standards of workmanship and implementation of all applicable specifications. It also includes the observance of proper preoperational and operational testing and maintenance procedures, as well as the documentation of the foregoing, by keeping appropriate records. These records are available so any desired items of information is retrievable for reference. These records will be maintained during the life of the operating license.

EQUIPMENT DESCRIPTION	EQUIPMENT NO	Criterion #1 Individual Isol Parameter Override	Criterion 2 Admin Cont w/ keylock switch	Criterion 3 System Lev Annun	BECHTEL ELECTRICAL SCHEME 7884	GE DRAWING 7884-APED	REMARKS
RHR Loop A Contain Cool Vlv (RHR Cont Spray)	MO-2000	Yes	Yes	Yes	E-121, Sh 48	E11-7(13), E11-7(5) E11-7(4), E11-7(7) E-11-7(2), E11-7(11)	
RHR Loop B Contain Cool Vlv (RHR Cont Spray)	MO-1902	Yes	Yes	Yes	E-121, Sh 48	E11-7(15), E11-7(8) E11-7(7), E11-7(2) E11-7(5), E11-7(11)	
RHR Loop A Test Iso Vlv (RHR Cont Spray)	MO-2005	Yes	Yes	Yes	E-121, Sh 49	E11-7(13), E11-7(5) E11-7(4), E11-7(7) E11-7(2), E11-7(11)	
RHR Loop B Test Iso Vlv (RHR Cont Spray)	MO-1932	Yes	Yes	Yes	E-121, Sh 49	E11-7(15), E11-7(8) E11-7(7), E11-7(5) E11-7(2), E11-7(11)	
RHR Loop A Test to Torus Vlv (RHR Cont Spray)	MO-2007	Yes	Yes	Yes	E-121, Sh 59	E11-7(13), E11-7(5) E11-7(4), E11-7(7) E11-7(2), E11-7(11)	
RHR Loop B Test To Torus Vlv (RHR Cont Spray)	MO-1934	Yes	Yes	Yes	E-121, Sh 59	E11-7(15) E11-7(8) E11-7(7), E11-7(5) E11-7(2), E11-7(11)	
RHR Loop A Test to Torus Vlv (RHR Cont Spray)	MO-2006	Yes	Yes	Yes	E-121, Sh 59A	E11-7(13), E11-7(5) E11-7(4), E11-7(7) E11-7(2), E11-7(11)	
RHR Loop B Test to Torus Vlv (RHR Cont Spray)	MO-1933	Yes	Yes	Yes	E-121, Sh 59A	E11-7(15), E11-7(8) E11-7(7), E11-7(5) E11-7(2), E11-7(11)	
RHR Loop A Cont Cool Reg Vlv (RHR Cont Spray)	MO-2001	Yes	Yes	Yes	E-121, Sh 60	E11-7(13), E11-7(5) E11-7(4), E11-7(7) E11-7(2), E11-7(11)	
RHR Loop B Cont Cool Reg Vlv (RHR Cont Spray)	MO-1903	Yes	Yes	Yes	E-121, Sh 60	E11-7(15), E11-7(8) E11-7(7), E11-7(5) E11-7(2), E11-7(11)	
React Wtr Sample Vlv (inbd)	SV-4639	No	Yes	Yes	E-122, Sh 10	A71-3(9), A71-3(7) A71-3(6), A71-3(5) A71-3(2)	Bypass switch for equipment
React Wtr Sample Vlv (outbd)	SV-4640	No	Yes	Yes	E-122, Sh 10	A71-3(9), A71-3(7) A71-3(6), A71-3(5) A71-3(2)	Bypass switch for equipment
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4300	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4309	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	

ATTACHMENT 5 (continued)

EQUIPMENT DESCRIPTION	EQUIPMENT NO	Criterion 1 Indiv Isol Parameter Override	Criterion 2 Admin Cont w/ keylk switch	Criterion 3 Sys Level Annun	BECHTEL ELECTRICAL SCHEME	GE DRAWING	REMARKS
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4310	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4302	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd)(purge & vent vlv)	SV-4307	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4308	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4312	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd) (purge & vent vlv)	SV-4313	Yes	Yes	Yes	E-122, Sh 12	A71-3(14), A71-3(2)	
Atmos Cont Vlv (inbd)	SV-I804A	Yes	Yes	No	E-122, Sh 12	A71-3(14)	
Atmos Cont Vlv (outbd) (purge & vent vlv)	SV-4301	Yes	Yes	Yes	E-122, Sh 13	A71-3(15), A71-3(2)	
Atmos Cont Vlv (outbd) (purge & vent vlv)	SV-4303	Yes	Yes	Yes	E-122, Sh 13	A71-3(15), A71-3(2)	
Atmos Cont Vlv (outbd) (purge & vent vlv)	SV-4306	Yes	Yes	Yes	E-122, Sh 13	A71-3(15), A71-3(2)	
Atmos Cont Vlv (outbd) (purge & vent vlv)	SV-4311	Yes	Yes	Yes	E-122, Sh 13	A71-3(15), A71-3(2)	
Atmos Cont Vlv (outbd)	SV-I804B	Yes	Yes	No	E-122, Sh 13	A71-3(15), A71-3(2)	
N_2 Sup Iso Vlv (inbd)	SV-4371B	No	Yes	Yes	E-122, Sh 24 E-113, Sh 11	A71-3(14)	Bypass switch for equipment
N_2 Sup Iso Vlv (outbd)	SV-4371A	No	Yes	Yes	E-122, Sh 24 E-113, Sh 11	A71-3(15)	Bypass switch for equipment
Loop A Containment Atmos Monitor Sys Iso Vlvs	SV-8101A through SV-8110A	No	Yes	No	E-122, Sh 29 E-113, Sh 11	A71-3(14)	Override switch for equipment. There is amber light indication of override
Loop B Cont Atmos Monitor Sys Iso Vlvs	SV-8101B through SV-8110B	No	Yes	No	E-122, Sh 29 E-113, Sh 11	A71-3(15)	Override switch for equipment. There is amber light indication of override
Lockout Relay	LR-5830A	Yes	Yes	No	E-113, Sh 11	A71-3(14)	
Lockout Relay	LR-5830B	Yes	Yes	No	E-113, Sh 11	A71-3(15)	

G-0809

Attachment 6

LIST OF DRAWINGS

Bechtel Drawings

7884-E111-17	
7884-E111-18	
7884-E113-11	
7884-E113-12	
7884-E113-13	
7884-E113-14	
7884-E112-16	
7884-E113-19	
7884-E113-35	
7884-E113-37	
7884-E113-38	
7884-E113-39	
7884-E113-40	
7884-E113-64	
7884-E113-82	
7884-E113-83	
7884-E120- 6	
7884-E121- 2	
7884-E121- 3	
7884-E121- 5	
7884-E121- 7	
7884-E121- 8	
7884-E121-11	
7884-E121-13	
7884-E121-14	
7884-E121-15	
7884-E121-16	
7884-E121-17	
7884-E121-18	
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7884-E121-23	
7884-E121-23A	
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7884-E121-27	
7884-E121-29	
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7884-E121-31	
7884-E121-32	
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7884-E121-40	
7884-E121-41	
7884-E121-42	
7884-E121-48	
7884-E121-49	
7884-E121-50	
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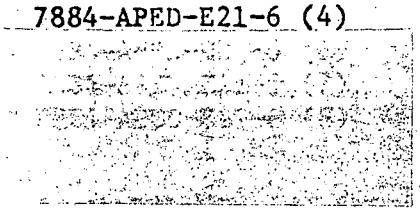
7884-E121-58	
7884-E121-59	
7884-E121-59A	
7884-E121-60	
7884-E122- 2	
7884-E122- 3	
7884-E122- 4	
7884-E122- 5	
7884-E122- 6	
7884-E122- 7	
7884-E122- 9	Note 2
7884-E122-10	Notes 2, 3
7884-E122-11	
7884-E122-12	Notes 2, 4
7884-E122-13	Notes 2, 4
7884-E122-14	
7884-E122-15	
7884-E122-23	Note 2
7884-E122-24	Notes 1, 2
7884-E122-29	

General Electric Drawings

7884-APED-A71-3 (2)	Notes 2, 3, 4	7884-APED-E41-6 (3)
7884-APED-A71-3 (5)		7884-APED-E41-6 (4)
7884-APED-A71-3 (6)		7884-APED-E41-6 (6)
7884-APED-A71-3 (7)	Note 2	7884-APED-E41-6 (7)
7884-APED-A71 3 (8)		7884-APED-E41-6 (8)
7884-APED-A71-3 (9)		
7884-APED-A71-3 (10)		7884-APED-E51-9 (2)
7884-APED-A71-3 (11)		7884-APED-E51-9 (3)
7884-APED-A71-3 (12)		7884-APED-E51-9 (5)
7884-APED-A71-3 (13)		7884-APED-E51-9 (6)
7884-APED-A71-3 (14)	Notes 2, 4	7884-APED-E51-9 (7)
7884-APED-A71-3 (15)	Notes 2, 4	
7884-APED-A71-3 (16)	Note 2	
7884-APED-B21-18 (2)		
7884-APED-B31-16 (6)		
7884-APED-E11-7 (2)		
7884-APED-E11-7 (4)		
7884-APED-E11-7 (5)		
7884-APED-E11-7 (6)		
7884-APED-E11-7 (7)		
7884-APED-E11-7 (8)		
7884-APED-E11-7 (9)		
7884-APED-E11-7 (11)		
7884-APED-E11-7 (13)		
7884-APED-E11-7 (14)		
7884-APED-E11-7 (15)		
7884-APED-E11-7 (16)		
7884-APED-E11-7 (17)		
7884-APED-E21-6 (2)		
7884-APED-E21-6 (4)		



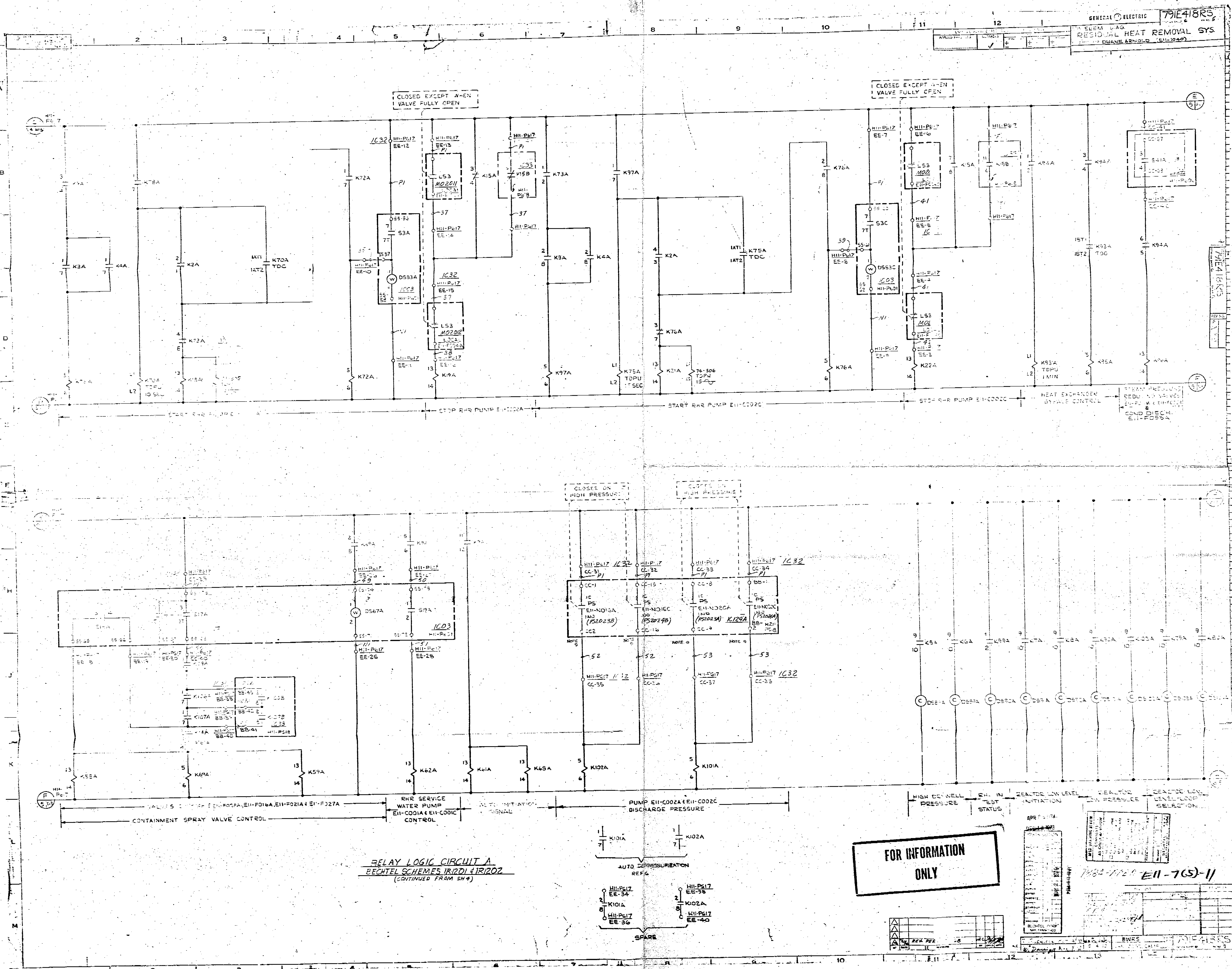
Following drawings will be useful for referencing, but are not referenced in Attachments 3 and 5.

7884-E113-18 Note 1
7884-E113-36

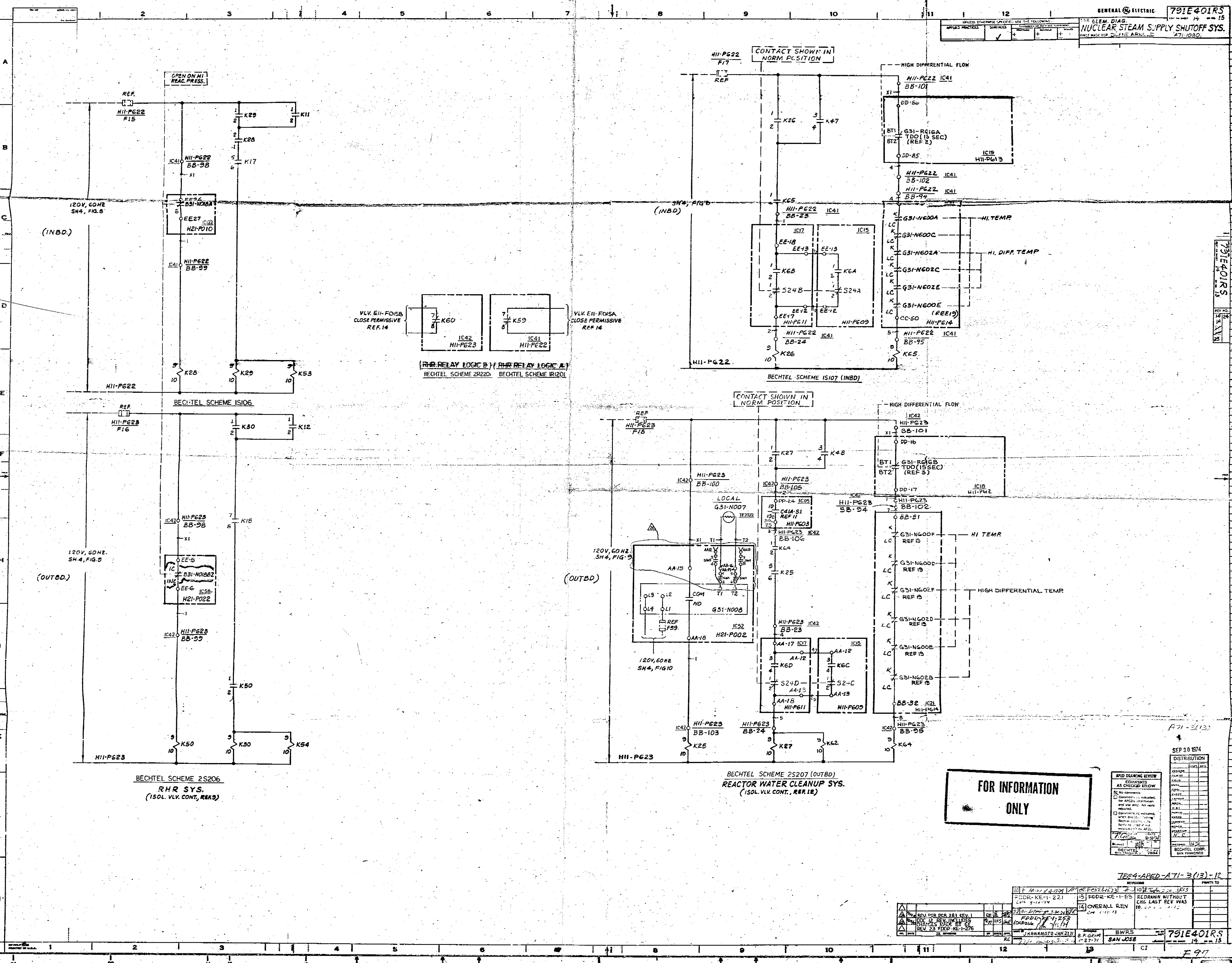
7884-APED-A71-3 (1) Notes 1, 2
7884-APED-B21-18 (1)
7884-APED-B31-16 (3)
7884-APED-E11-7 (3)
7884-APED-E21-6 (1)
7884-APED-E41-6 (1)
7884-APED-E51-5 (1)

NOTES

1. Drawings revised per DCR 906
2. Drawings revised per DCR 907
3. Drawings revised per DCR 908
4. Drawings revised per DCR 918


791E418RS
GENERAL ELECTRIC
ELEM. DIAG.
RESIDUAL HEAT REMOVAL SYS.
DUANE ARNOLD (E11-1040)
CLOSED EXCEPT WHEN VALVE FULLY OPEN
START RHR PUMP E11-C002A
STOP RHR PUMP E11-C002A
START RHR PUMP E11-C002C
STOP RHR PUMP E11-C002C
HEAT EXCHANGER BYPASS CONTROL
CLOSES ON HIGH PRESSURE
CONTAINMENT SPRAY VALVE CONTROL
RHR SERVICE WATER PUMP E11-C001A & E11-C001C CONTROL
PUMP E11-C002A & E11-C002C DISCHARGE PRESSURE
HIGH DRYWELL PRESSURE
REACTOR LOW LEVEL INITIATION
AUTO DEPRESSURIZATION
SPARE
RELAY LOGIC CIRCUIT A
BECHTEL SCHEMES 1R1201 & 1R1202
(CONTINUED FROM SH 4)
FOR INFORMATION ONLY
E11-7(S)-11
BWRS

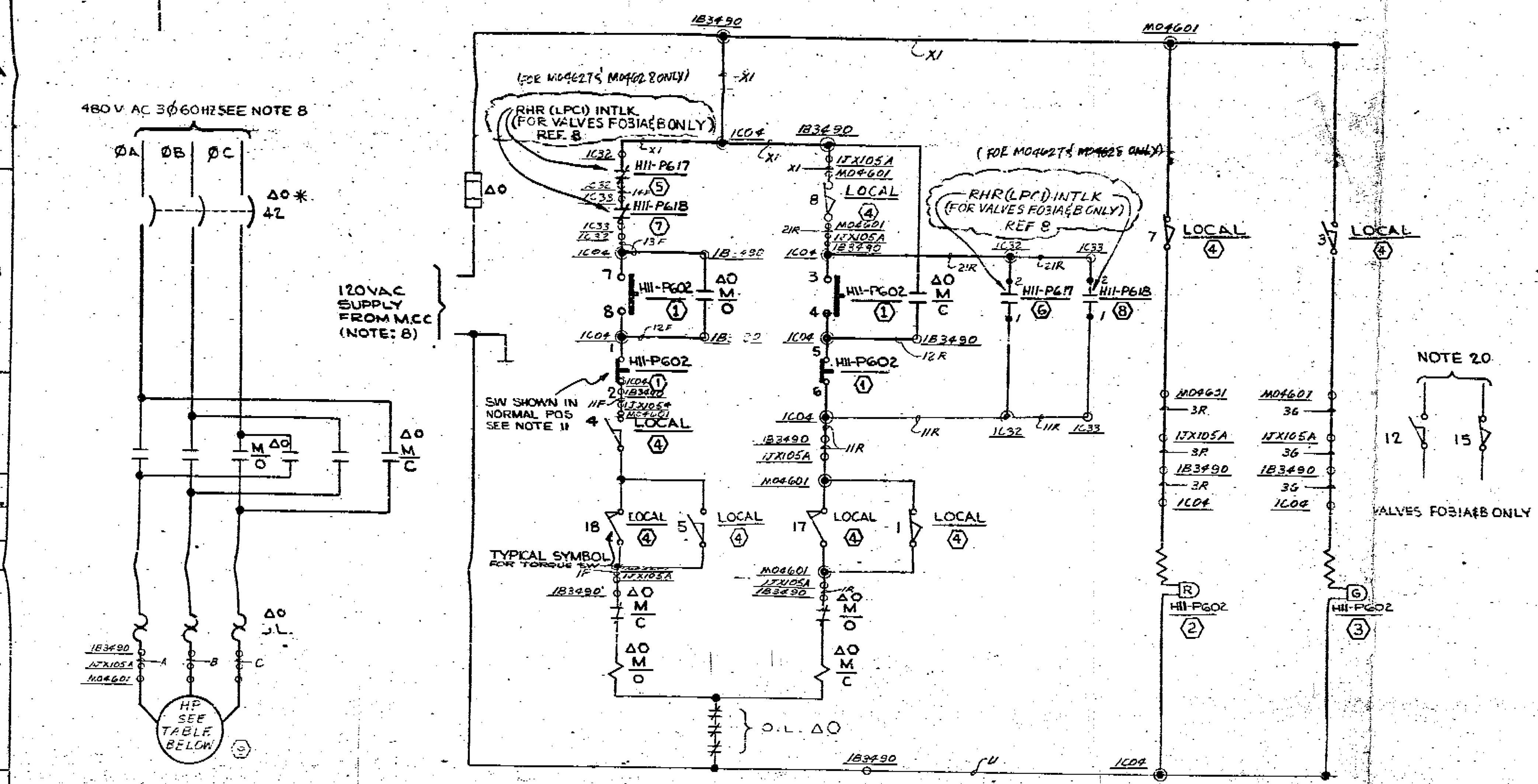
E
30



GENERAL ELECTRIC
791E401RS
ELEM. DIAG.
NUCLEAR STEAM SUPPLY SHUTOFF SYS.
CONTACT SHOWN IN NORM POSITION
HIGH DIFFERENTIAL FLOW
OPEN ON HI REAC. PRESS.
(INBD.)
(OUTBD.)
120V, 60HZ SH4, FIG.8
120V, 60HZ SH4, FIG.9
120V, 60HZ SH4, FIG.10
HI. TEMP.
HI. DIFF. TEMP
HIGH DIFFERENTIAL TEMP.
VLV. E11-F015B CLOSE PERMISSIVE REF. 14
VLV. E11-F015A CLOSE PERMISSIVE REF 14
RHR RELAY LOGIC B
RHR RELAY LOGIC A
BECHTEL SCHEME 2R220
BECHTEL SCHEME 1R120
BECHTEL SCHEME 1S106
BECHTEL SCHEME 2S206
RHR SYS.
(ISOL. VLV. CONT., REF.8)
BECHTEL SCHEME 1S107 (INBD)
BECHTEL SCHEME 2S207 (OUTBD)
REACTOR WATER CLEANUP SYS.
(ISOL. VLV. CONT., REF.12)
H11-P622
H11-P623
LOCAL
G31-N007
G31-N008
H21-P002
FOR INFORMATION ONLY
SEP 30 1974
DISTRIBUTION
BECHTEL CORP. SAN FRANCISCO
REDRAWN WITHOUT CHG LAST REV WAS
OVERALL REV
BWRS
SAN JOSE
791E401RS
30

GENERAL ELECTRIC 731E287C

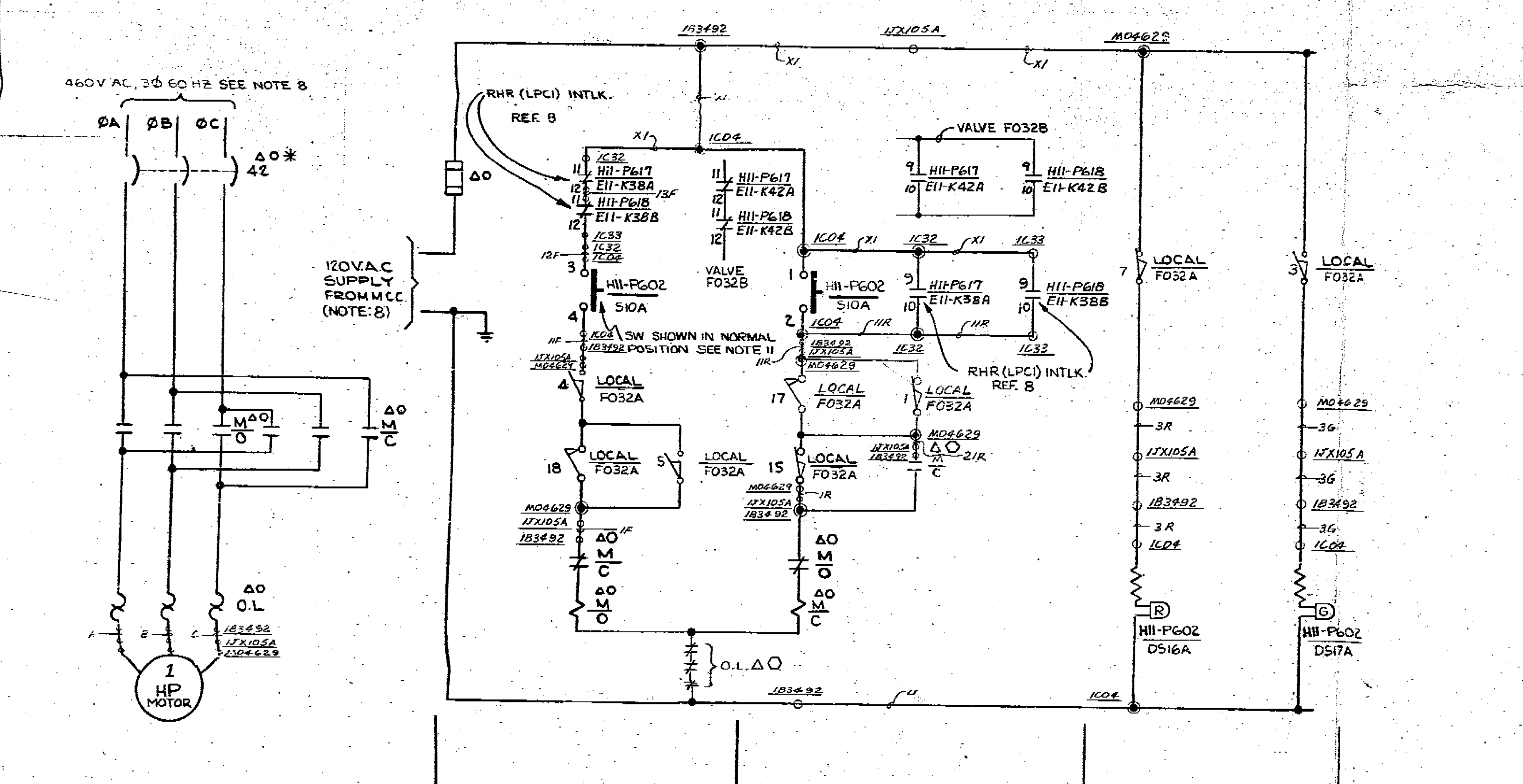
ELEM DIAGRAM REACTOR RECIRCULATION PUMP & M-G SET



VALVE OPEN — VALVE CLOSE — INDICATION

PUMP SUCTION VALVE ——— F023A&B (M04601 & M04602)
PUMP DISCHARGE VALVE ——— F031A&B (M04627 & M04628)
(SHOWN IN OPEN POSITION)

BECHTEL SCHEME 1B3490 (2B4490)
REF 12, SHS 1B3491 (2B4491)



VALVE OPEN — VALVE CLOSE — INDICATION

PUMP DISCHARGE BYPASS VALVE F032 A (TYP FOR B EXCEPT AS NOTED)
(SHOWN IN OPEN POSITION)

BECHTEL SCHEME 1B3492 (2B4492)

MOTOR NO (9)	H.P.	VALVE Nº (4)	CONTROL ROOM PANEL CONTROL SWITCH PART Nº (1)	CONTROL ROOM PANEL RED IND. LAMP PART Nº (2)	CONTROL ROOM PANEL GREEN IND. LAMP PART Nº (3)	RHR (LPCI) RELAY & CONTACT DESIGNATION (5) RELAY	CONTACT	(6) RELAY	CONTACT	(7) RELAY	CONTACT	(8) RELAY	CONTACT
M04601	[illegible]	F023A	S8A	DS10A	DS11A								
M04602	[illegible]	F023B	S8B	DS10B	DS11B								
M04627	[illegible]	F031A	S9A	DS12A	DS13A	E11-K38A	7-8	E11-K38A	5-6	E11-K38B	7-8	E11-K38B	5-6
M04628	[illegible]	F031B	S9B	DS12B	DS13B	E11-K42A	7-8	E11-K42A	5-6	E11-K42B	7-8	E11-K42B	5-6

TYPICAL:
——— CONTACT OPEN
——— CONTACT CLOSED

CONTACT DEVELOPMENT - SUCTION VALVE F023A&B

CONTACT	VALVE POSITION: FULL OPEN	90% OPEN		FULL CLOSED	FUNCTION	LOCATION (ZONE/SHT)
1					BYPASS VALVE CLOSE TORQUE SW	C5/6
2					INTL'K M/G DRIVE MTR BKR CLOSE CIR	B6/1
3					INTL'K VALVE GREEN IND LIGHT	B7/6
4					INTL'K VALVE OPEN CIRCUIT	C4/6
5					BYPASS VALVE OPEN TORQUE SW	C4/6
6					SPARE	—
7					INTL'K VALVE RED IND. LIGHT	B6/6
8					INTL'K VALVE CLOSING CIR	E5/6
9					SPARE	—
10					↕	—
11						—
12					SPARE	—
13					INTL'K M/G DRIVE MTR BKR TRIP CIR	B11/1
14					SPARE	—
15					SPARE	—
16					SPARE	—
17	CLOSING TORQUE SW. OPENS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE.					C5/6
18	OPENING TORQUE SW. OPENS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING OPENING CYCLE.					C3/6

CONTACT DEVELOPMENT-DISCHARGE VALVE F031A&B

CONTACT	VALVE POSITION: FULL OPEN	90% OPEN		FULL CLOSED	FUNCTION	LOCATION (ZONE/SHT)
1					BYPASS VALVE CLOSE TORQUE SW	C5/6
2					INTL'K RECIRC. FLOW LIMIT	J13/3
3					INTL'K VALVE GREEN IND LIGHT	B7/6
4					INTL'K VALVE OPEN CIRCUIT	C4/6
5					BYPASS VALVE OPEN TORQUE SW	C4/6
6					INTL'K M/G DRIVE MTR BKR CLOSE CIRC.	C6/1
7					INTL'K VALVE RED IND LIGHT	B6/6
8					INTL'K VALVE CLOSING CIR	E5/6
9					SPARE	—
10					SPARE	—
11					SPARE	—
12					INTL'K JET PUMP FLOW MEAS INSTR	C8/6
13					INTL'K M/G DRIVE MTR BKR TRIP CIR	B11/1
14					SPARE	—
15					INTL'K JET PUMP FLOW MEAS INSTR	C8/6
16					SPARE	—
17	CLOSING TORQUE SW. OPENS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE.					C5/6
18	OPENING TORQUE SW. OPENS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING OPENING CYCLE.					C3/6

CONTACT DEVELOPMENT-DISCHARGE BYPASS VALVE F032A&B

CONTACT	VALVE POSITION: FULL OPEN		FULL CLOSED	FUNCTION	LOCATION (ZONE/SHT)
1				BYPASS VALVE CLOSE TORQUE SW	J5/6
2				INTL'K M/G DRIVE MTR BKR CLOSE CIR	D6/1
3				INTL'K VALVE GREEN IND LIGHT	H7/6
4				INTL'K VALVE OPEN CIRCUIT	J3/6
5				BYPASS VALVE OPEN TORQUE SW	J4/6
6				SPARE	—
7				INTL'K VALVE RED IND LIGHT	H6/6
8				SPARE	—
9				↕	—
10					—
11				SPARE	—
12				INTL'K M/G DRIVE MTR BKR TRIP CIR	C11/1
13				SPARE	—
14				SPARE	—
15				INTL'K VALVE CLOSING CIR	J5/6
16				SPARE	—
17	CLOSING TORQUE SW OPENS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE.				J3/6
18	OPENING TORQUE SW OPENS CONTROL CIRCUIT IF MECHANICAL OVERLOAD OCCURS DURING OPENING CYCLE.				J5/6

FOR INFORMATION ONLY

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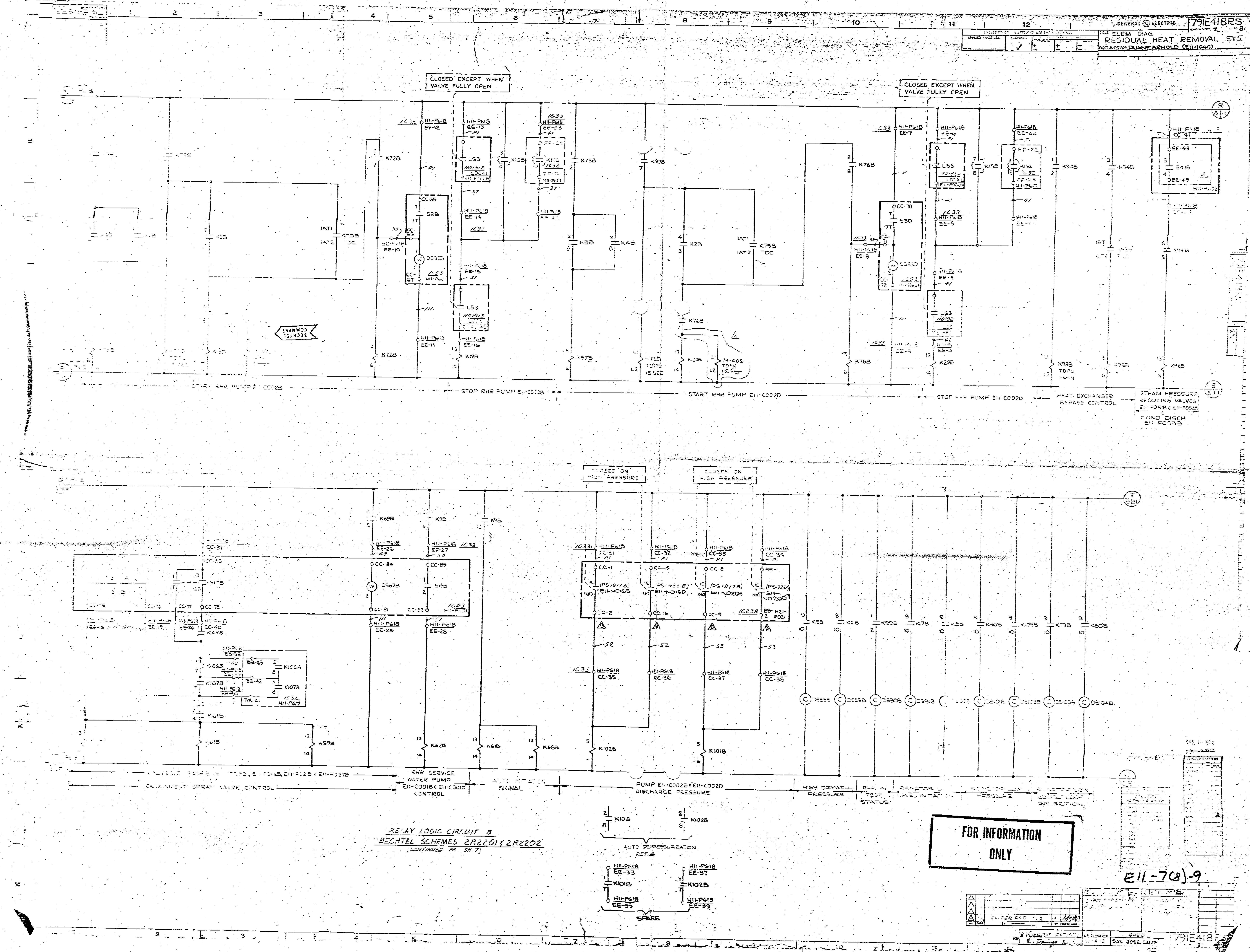
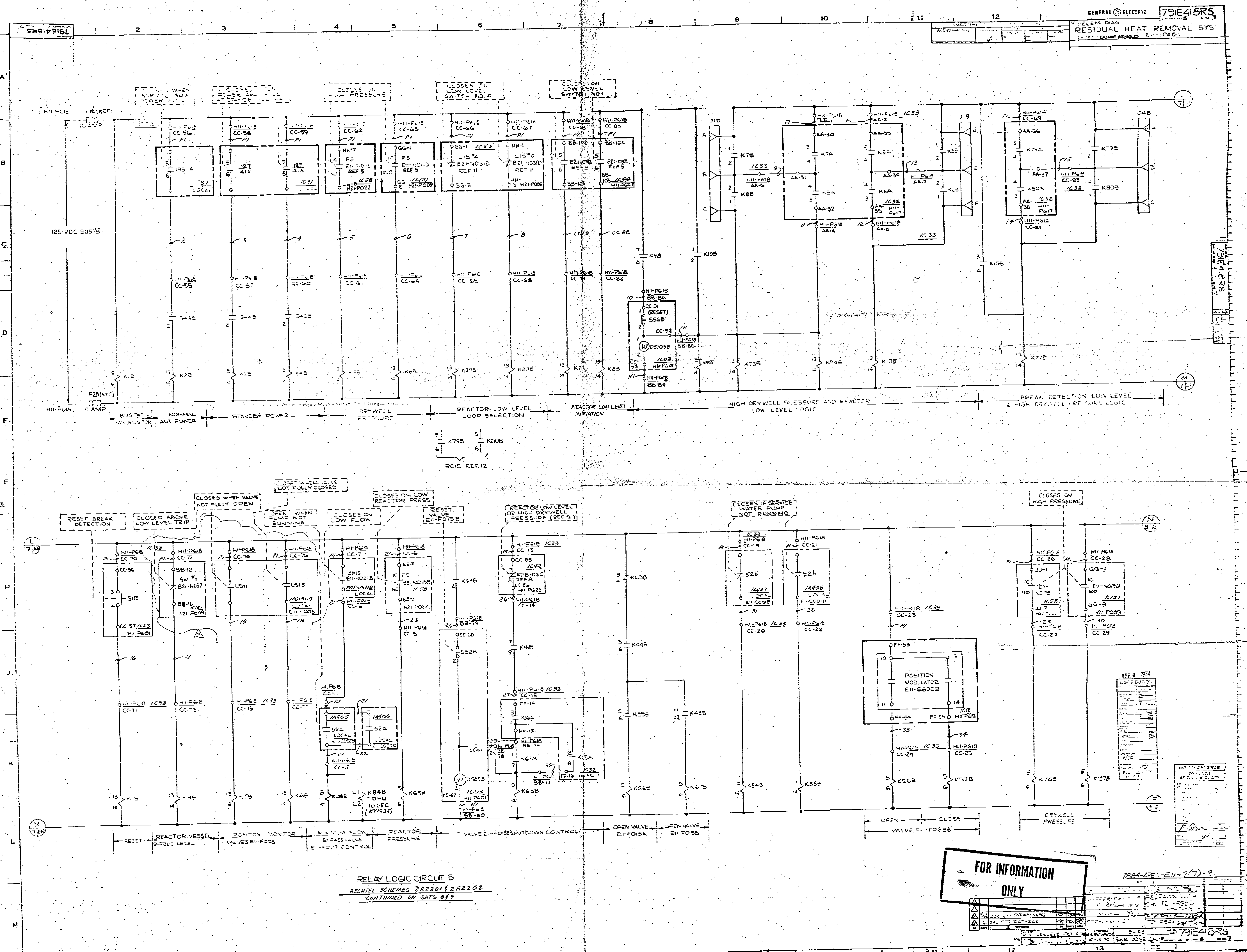
APED SAN JOSE 731E287CA



FOR INFORMATION ONLY

E11-7(8)-9



GENERAL ELECTRIC
791E418RS
ELEM DIAG
RESIDUAL HEAT REMOVAL SYS
DUANE ARNOLD
125 VDC BUS "B"
BUS "B" PWR MONITOR
NORMAL AUX POWER
STANDBY POWER
DRYWELL PRESSURE
REACTOR LOW LEVEL LOOP SELECTION
REACTOR LOW LEVEL INITIATION
HIGH DRYWELL PRESSURE AND REACTOR LOW LEVEL LOGIC
BREAK DETECTION LOW LEVEL & HIGH DRYWELL PRESSURE LOGIC
RCIC REF.12
RESET BREAK DETECTION
CLOSED ABOVE LOW LEVEL TRIP
CLOSED WHEN VALVE NOT FULLY OPEN
CLOSED WHEN VALVE NOT FULLY CLOSED
OPEN WHEN PUMP NOT RUNNING
CLOSES ON LOW FLOW
CLOSES ON LOW REACTOR PRESS
RESET VALVE E11-F015B
REACTOR LOW LEVEL OR HIGH DRYWELL PRESSURE (REF 3)
CLOSES IF SERVICE WATER PUMP NOT RUNNING
CLOSES ON HIGH PRESSURE
POSITION MODULATOR E11-S600B
RESET
REACTOR VESSEL SHROUD LEVEL
POSITION MONITOR VALVES E11-F008
MINIMUM FLOW BYPASS VALVE E11-F007 CONTROL
REACTOR PRESSURE
VALVE E11-F015B SHUTDOWN CONTROL
OPEN VALVE E11-F015A
OPEN VALVE E11-F015B
OPEN
CLOSE
VALVE E11-F068B
DRYWELL PRESSURE
RELAY LOGIC CIRCUIT B
BECHTEL SCHEMES 2R2201 & 2R2202
CONTINUED ON SHTS 8 & 9
FOR INFORMATION ONLY
791E418RS
SAN JOSE
JORM MICROLAB
30 X

NUCLEAR STEAM SUPPLY SYSTEM
DUANE ARNOLD
EXISTING CONNECTION TO PP-23 IS REMOVED PER DCR #907
CONTINUED FROM SH 1
K35A SH 10
K35B SH 11
K35C
K35D SH 11
K35E SH 10
B21-F022E SH 10
K35F SH 11
B21-F022F SH 11
K35G SH 10
B21-F022G SH 10
K35H SH 11
B21-F022H SH 11
K26 SH 13
COMP SH 2
CONTACT TO BE CONVERTED TO NORMALLY CLOSED POSITION
AGASTAT SERIES GP RELAY TABULATION
K463 SH 9
B31-F019 SH 2
K464 SH 9
B31-F020 SH 2
NORMAL
BYPASS
GE TYPE CR2940 SWITCH
2 POSITION CYLINDER LOCK
KEY REMOVABLE IN THE NORMAL POSITION
MAINTAINED CONTACTS.
SWITCH DESIG.
CONT.
SH NO.
S7A
S8A
B21-F022A
B21-F022B
B21-F022C
B21-F022D
LOCAL
DRYWELL PENETRATION
K65
B21-F028A
B21-F028B
B21-F028C
B21-F028D
H11-P601
H11-P603
H11-P602
RED
WHT
ANNUNCIATOR CIRCUIT
MAIN STEAM LINE HIGH FLOW
MAIN STEAM LINE LOW PRESSURE
CONDENSER VACUUM BYPASS
RWCS LEAK DET
NON REGENERATIVE HEAT EXCHANGER
COMPUTER
TORUS DRYWELL VENT VALVE BYPASS PERMISSIVE
VESSEL FLANGE SEAL LEAK
PENETRATION
PP-23
K463
K464
K1
IC03 H11-P601
IC04 H11-P602
COOLANT SAMPLING VALVES 4639/4640 BYPASS
MAIN STEAM LINE LOW PRESSURE
REAC. VESSEL LOW LOW WATER LEVEL
STEAM TUNNEL HI TEMP
MAIN STEAM LINE HI FLOW
OPEN CKT.
CLOSE CKT.
MCC
VALVE (SHOWN CLOSED)
LS5
TSO
LS4
TSC
LS1
LS7
LS8
MOTOR OPERATED AC VALVE & CONTROL CENTER
FIG. 1
SHUNT FIELD
ARM
SERIES FIELD
LS3
TSO
LS1
TSC
LS8
LS2
SHOWN CLOSED VALVE
TYP MOTOR OPERATED DC VALVE & CONTROL CENTER
FIG. 2
DCR PACKAGE INDEX
ITEM NO. 5
7854-APED-A71-312
FOR DCR 908
USE ONLY
REV
PREPARED BY
VERIFIED BY
0
CP 12/19/80
SP 12/27/80
1
REDRAWN
J KAWAMOTO JAN 27 71
B P GRIM 1-27-71
SAN JOSE, CALIF.
731E40