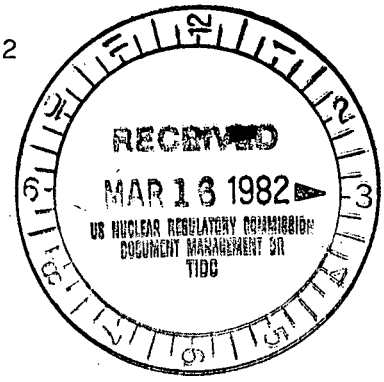
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 11, 1982



Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Adensam:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

By letter dated April 24, 1981 from R. L. Tedesco to H. G. Parris, TVA was requested to provide information concerning applicability of IE Bulletin 80-06 to Watts Bar Nuclear Plant. Enclosed is TVA's response to this concern specified as NRC question 31.147. This response includes information concerning proposed modifications as discussed with the NRC on March 8, 1982. This information should resolve open item 30 of the draft Safety Evaluation Report as discussed with the NRC reviewer and Project Manager during a meeting on February 18, 1982 and a telephone conference call on March 8, 1982.

If you have any questions concerning this matter, please get in touch with D. P. Ormsby at FTS 858-2682.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 11th day of March 1982

Bryant M. Lowery
Notary Public
My Commission Expires 4/4/82

Enclosure
cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

B001
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1/1
Drawings
To: PM

ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
BULLETIN 80-06

Question 31.147

Engineered Safety Features (ESF) Reset Controls (IE Bulletin 80-06)

If safety equipment does not remain in its emergency mode upon reset of an engineered safeguards actuation signal, system modification, design change or other corrective action should be planned to assure that protective action of the affected equipment is not compromised once the associated actuation signal is reset. This issue was addressed in IE Bulletin 80-06. IE Bulletin 80-06 required that reviews be conducted to determine which, if any, safety functions might be unavailable after reset, and what changes could be implemented to correct the problem. With minor modifications, the wording of the original Bulletin 80-06 is an appropriate basis for the current OL applicants to review their systems.

Provide your response to IE Bulletin 80-06 with two exceptions. First, the 90-day limit for response in Item 4 is not applicable. Second, your response should be in the form of an amendment to the FSAR.

A copy of IE Bulletin 80-06 is included as Attachment (1) to this request.

Response

TVA has completed a review of the drawings for all systems serving safety-related functions at the schematic level to determine whether or not, upon reset of an engineering safety feature (ESF) actuation signal, all associated safety-related equipment remains in its emergency mode. All safety-related equipment identified as that which would not remain in its emergency mode was evaluated for impact on plant safety and ability to achieve and maintain safe shutdown.

The following is a list of safety-related equipment which was identified as not remaining in its emergency mode. This equipment was evaluated and determined not to impact the safety of the plant or the ability to achieve and maintain safe shutdown based on the following justifications:

Auxiliary Feedwater Pump Turbine Speed Control Valve

FCV-1-52

The auxiliary feedwater pump turbine speed control valve (FCV-1-52) controls the auxiliary feedwater turbine speed in one of two modes. In the automatic (or flow control) mode, it regulates the flow from the turbine driven auxiliary feedwater pump. In the manual (or speed) mode, it regulates the turbine speed, allowing it to be ramped up or down. Reset of an SI signal has no effect

on the valve when the control room handswitch is in the auto position. With the handswitch in the ACC reset or manual position, an SI signal will force the valve to operate in the automatic (flow control) mode. During ESF operation, the speed control valve can modulate between two setpoints; upper speed limit or upper flow setpoint. The valve position will be the lesser of the two setpoints. However, either setpoint will put the valve in essentially the full open position. If the SI signal is then reset, the valve remains in the position it was in just before the reset. The valve does not return to its original position. TVA believes that adequate equipment control is maintained and no modification is necessary.

Auxiliary Feedwater Level Control Valve

LCV-3-172 - SG3 - Level Control Valve
LCV-3-173 - SG2 - Level Control Valve
LCV-3-174 - SG1 - Level Control Valve
LCV-3-175 - SG4 - Level Control Valve
LIC-3-172 - SG3 - Level Indicating Controller
LIC-3-173 - SG2 - Level Indicating Controller
LIC-3-174 - SG1 - Level Indicating Controller
LIC-3-175 - SG4 - Level Indicating Controller
LCV-3-148 - SG3 - Level Valve
LCV-3-156 - SG2 - Level Valve
LCV-3-164 - SG1 - Level Valve
LCV-3-171 - SG4 - Level Valve
LCV-3-148A- SG3 - Level Bypass Control Valve
LCV-3-156A- SG2 - Level Bypass Control Valve
LCV-3-164A- SG1 - Level Bypass Control Valve
LCV-3-171A- SG4 - Level Bypass Control Valve
LIC-3-148 - SG3 - Controller
LIC-3-156 - SG2 - Controller
LIC-3-164 - SG1 - Controller
LIC-3-171 - SG4 - Controller

Level control valves LCV-3-172, 173, 174, 175, 148, 156, 164, 171, 148A, 156A, 164A, and 171A, and their respective controllers, regulate auxiliary feedwater control to the steam generators. If the handswitches for these valves are in the auto position (as it is during normal operation), the ESF actuation signal or its reset has no effect on the valves. If, for some reason, a valve handswitch was in a position other than auto, the ESF signal would effectively cause the valve to act as if the handswitch were in the auto position. If the ESF signal were reset, the valve would remain in the position it was in just before the reset. TVA believes this is an adequate control scheme and no modification is required. See attached Figures 31.147-1 through 31.147-3 and FSAR Figure 10.4-20 for the applicable schematics and logic diagrams.

Main Feedwater Control and Low Load Bypass Valves

FCV-3-35A - SG1 - Inlet Flow Control Valve Bypass Valve
FCV-3-48A - SG2 - Inlet Flow Control Valve Bypass Valve
FCV-3-90A - SG3 - Inlet Flow Control Valve Bypass Valve
FCV-3-103A- SG4 - Inlet Flow Control Valve Bypass Valve
FCV-3-35 - SG1 - FW Inlet Flow Control Valve
FCV-3-48 - SG2 - FW Inlet Flow Control Valve
FCV-3-90 - SG3 - FW Inlet Flow Control Valve
FCV-3-103 - SG4 - FW Inlet Flow Control Valve

The valves numbered FCV-3-35, 48, 90, 103, 35A, 48A, 90A, and 103A are main feedwater control valves and feedwater control valve low load bypass valves, respectively. A feedwater isolation signal will cause them to close. In addition, the main feedwater pumps trip and the feedwater isolation valves and feedwater bypass isolation valves (just downstream of the control and bypass valves, respectively) close. A reset of the SI signal could cause these control valves to reopen; however, this is prevented by a reactor trip signal which was initiated by the SI. Since the feedwater pump turbines are now tripped and the feedwater isolation valves closed and require manual reset to open, no feedwater can be pumped into the steam generator even if the subject valves open. In addition, the feedwater isolation valve and a series check valve prevent backflow of water from the isolated steam generator. TVA believes that this is an adequate equipment control scheme and no modification is required.

Control Building Pressure Fan

PSV-31-1B
PSV-31-2B

Items PSV-31-1B and PSV-31-2B are used to transfer pressure sensing lines from the main control room to the unit 1 auxiliary instrument room when a control room isolation (CRI) signal is present. Simultaneously, the main control room and spreading room fresh air dampers close. Upon reset of CRI, the above dampers open, and the sensing lines transfer back to the main control room. This transfer is necessary to properly pressurize the control building.

Shutdown Board Room A Pressurizing Fans

The shutdown board room pressurizing fans maintain a slight positive pressure in the shutdown board areas of the auxiliary building to minimize contaminated inleakage. Phase A containment isolation trips the pressurizing fans and initiates auxiliary building isolation which starts the auxiliary building emergency gas treatment system. The ABGTS maintains a slight negative pressure in the building to prevent leakage of unfiltered air to

the outside. Reset of the containment isolation signal will allow restart of the low capacity shutdown board room pressurizing fans; however, auxiliary building isolation and ABGTS operation is not changed by phase A isolation reset. Fan restart will minimize inleakage of possible contaminants from the auxiliary building air space into the shutdown board room by maintaining the pressure in the board rooms slightly above the pressure in the surrounding areas of the auxiliary building. TVA believes that this is an acceptable mode of operation, and it is not necessary to modify the present system.

Control Building Ventilation

FCO-31-9 - Spreading Room Supply Fan Damper
FCO-31-10 - Spreading Room Supply Fan Damper
FCO-31-16 - Toilet & Locker Room Exhaust Fan Exhaust Damper
FCO-31-18 - Toilet & Locker Room Exhaust Fan Exhaust Damper
FCO-31-3 - Main Control Room Isolation Damper
FCO-31-4 - Main Control Room Isolation Damper
FCO-31-36 - Spreading Room Fresh Air Supply Damper
FCO-31-37 - Spreading Room Fresh Air Supply Damper

The spreading room supply fans (FCO-31-9 and -10), the toilet and locker room exhaust fans (FCO-31-16 and -18), and the main control and spreading room fresh air isolation dampers (FCO-31-3, -4, -36, and -37) are in the normal supply and exhaust paths of outside air to the main control room, toilet and locker room, and the spreading room. These dampers close and fans stop in the event of a control room isolation. This isolation can be initiated by a safety injection or by the presence of chlorine, smoke, high temperature, or high radiation levels in the fresh air supply ducts or by manual initiation from the main control room. The control room isolation signal seals in and will not reset upon the reset of the SI signal. Opening of the fresh air supply and exhaust paths will occur upon resetting the control room isolation signal. This signal can only be reset, however, if the initiating signal no longer exists. TVA believes this mode of operation ensures adequate equipment control and that no modification is necessary.

Lower and Upper Compartment Cooler Fans and Control Rod Drive Mechanism Cooler Fan

Reactor Lower Compartment Cooler Fans (RLCC)
Control Rod Drive Mechanism Cooler Fan (CRDMC)
Reactor Upper Compartment Cooler Fans (RUCC)

The RUCCs, RLCCs, and the CRDMCs function to maintain the temperature in the upper and lower containment compartments, the reactor well, and the CRDM shroud at acceptable levels during normal operation. Upon initiation of containment phase B isolation, the cooling water supply to the coolers is isolated

and the fans are tripped. Following reset of the isolation signal, the fans are allowed to restart. Although the cooling capacity of the upper and lower compartment and control rod drive mechanism coolers is lost (cooling water remains isolated), fan operation will enhance mixing of containment air in the upper and lower compartment spaces. These spaces include the area above the refueling floor, the steam generator and pressurizer compartments, the space below the reactor vessel, the space around the reactor vessel, the reactor vessel nozzle and support openings, and the reactor well space around the CRDM shroud. Restart of the fans after isolation signal reset and the resulting circulation and mixing of containment air in the upper and lower compartment spaces will not degrade plant safety performance. Consequently, TVA does not believe that it is necessary to alter the logic circuits to prevent fan restart.

Cask Loading Exhaust Dampers

FCO-30-122 - Cask Loading Area Exhaust Damper
FCO-30-123 - Cask Loading Area Exhaust Damper

FCO-30-122 and -30-123 are cask loading area exhaust dampers. These dampers isolate the cask load area exhaust in the event of an auxiliary building isolation signal or a high radiation signal in the spent fuel pit area. The auxiliary building isolation signal stops the normal ventilation and aligns and starts the auxiliary building general exhaust vent (the normal auxiliary building ventilation discharge). The auxiliary building isolation signal will not reset upon resetting the containment isolation signal. The auxiliary building isolation signal can be reset only if the initiating signals no longer exist. Reset will cause the cask loading area exhaust dampers to reopen. Since these valves reopen only on the reset of the auxiliary building isolation signal and specifically do not reset upon resetting the phase A containment isolation (ESF) signal, TVA believes this is an acceptable mode of operation and that no modification is necessary.

Smoke Removal Fan Circuit

FCO-31-204A - Smoke Removal Fan Circuit
FCO-31-204B - Smoke Removal Fan Circuit

The smoke removal fan circuit is a manually actuated fan system to remove smoke from the habitability zone or battery rooms. In the event of a control room isolation, dampers close (if they are open) to help maintain a slightly positive pressure in the main control room. If the control room isolation signal is reset, the valves return to their previous position. However, the control room isolation signal cannot be reset if any of the initiating signals are present. TVA believes that this logic ensures adequate equipment control, and no modification is necessary.

Auxiliary Building General Supply Exhaust Fans

Auxiliary Building General Supply and Exhaust Fans Elevation 737

On reset of ESF signal, this fan will restart; however, isolation valves downstream of the fans (which do not reset) prevent air flow.

ESF HVAC Equipment

Penetration Room Cooler Fans Elevation 737, 692, 713
CCW and AFW Pump Space Cooler Fans
Spent Fuel Pit Pumps Space Coolers
EGTS Room Coolers
Turbine Drive AFW and Boric Acid Space Coolers
Pipe Chase Cooler Fans

Upon reset of ESF signal, these coolers and fans are secured; however, thermostats in the affected areas will restart the unit if the temperature in the space exceeds a predetermined setpoint.

The following is a list of additional safety-related equipment which was originally shown as changing state on reset of the ESF signal. It has been determined that this equipment does not change state on reset of ESF; therefore, the components are being dropped from the list of affected equipment.

FCV-1-51 - Aux Feed Pump Turbine Trip and Throttle Valve
PCV-65-81 - Shield Building Isolation Valve
PCV-65-83 - Shield Building Isolation Valve
PCV-65-86 - EGTS Containment Annulus Isolation Valve
PCV-65-87 - EGTS Containment Annulus Isolation Valve

The following is a list of safety-related equipment which was identified as not remaining in its emergency mode. The equipment was evaluated and determined to impact the safety of the plant or the ability to achieve and maintain safe shutdown. Design changes have been initiated for this equipment. Modifications will be completed before fuel loading.

FCV-3-33 - SG1 - FW Isolation Valve
FCV-3-47 - SG2 - FW Isolation Valve
FCV-3-87 - SG3 - FW Isolation Valve
FCV-3-100 - SG4 - FW Isolation Valve
FCV-3-185 - SG1 - Main FW Check Valve Bypass
FCV-3-186 - SG2 - Main FW Check Valve Bypass
FCV-3-187 - SG3 - Main FW Check Valve Bypass
FCV-3-188 - SG4 - Main FW Check Valve Bypass
FCV-3-236 - Upper Tap Main FW SG1 Isolation Valve
FCV-3-239 - Upper Tap Main FW SG2 Isolation Valve
FCV-3-242 - Upper Tap Main FW SG3 Isolation Valve
FCV-3-245 - Upper Tap Main FW SG4 Isolation Valve

FCV-43-54D - SG1 - Blowdown Isolation Valve
FCV-43-56D - SG2 - Blowdown Isolation Valve
FCV-43-59D - SG3 - Blowdown Isolation Valve
FCV-43-63D - SG4 - Blowdown Isolation Valve
FCV-43-55 - SG1 - Blowdown Isolation Valve
FCV-43-58 - SG2 - Blowdown Isolation Valve
FCV-43-61 - SG3 - Blowdown Isolation Valve
FCV-43-64 - SG4 - Blowdown Isolation Valve
FCV-74-16 - RHR Heat Exchanger A Outlet Flow Control Valve
FCV-74-28 - RHR Heat Exchanger B Outlet Flow Control Valve

The above list is broken into three sections: The FCV-3s, the FCV-43s, and the FCV-74s. Each section is discussed below.

FCV-3s will be reset by steam generator loop and by train. A new switch and relay will be added in the instrument room so when the ESF signal is reset, the individual FCVs will not change state until the loop and train have been reset. See figures 31.147-4 through -6.

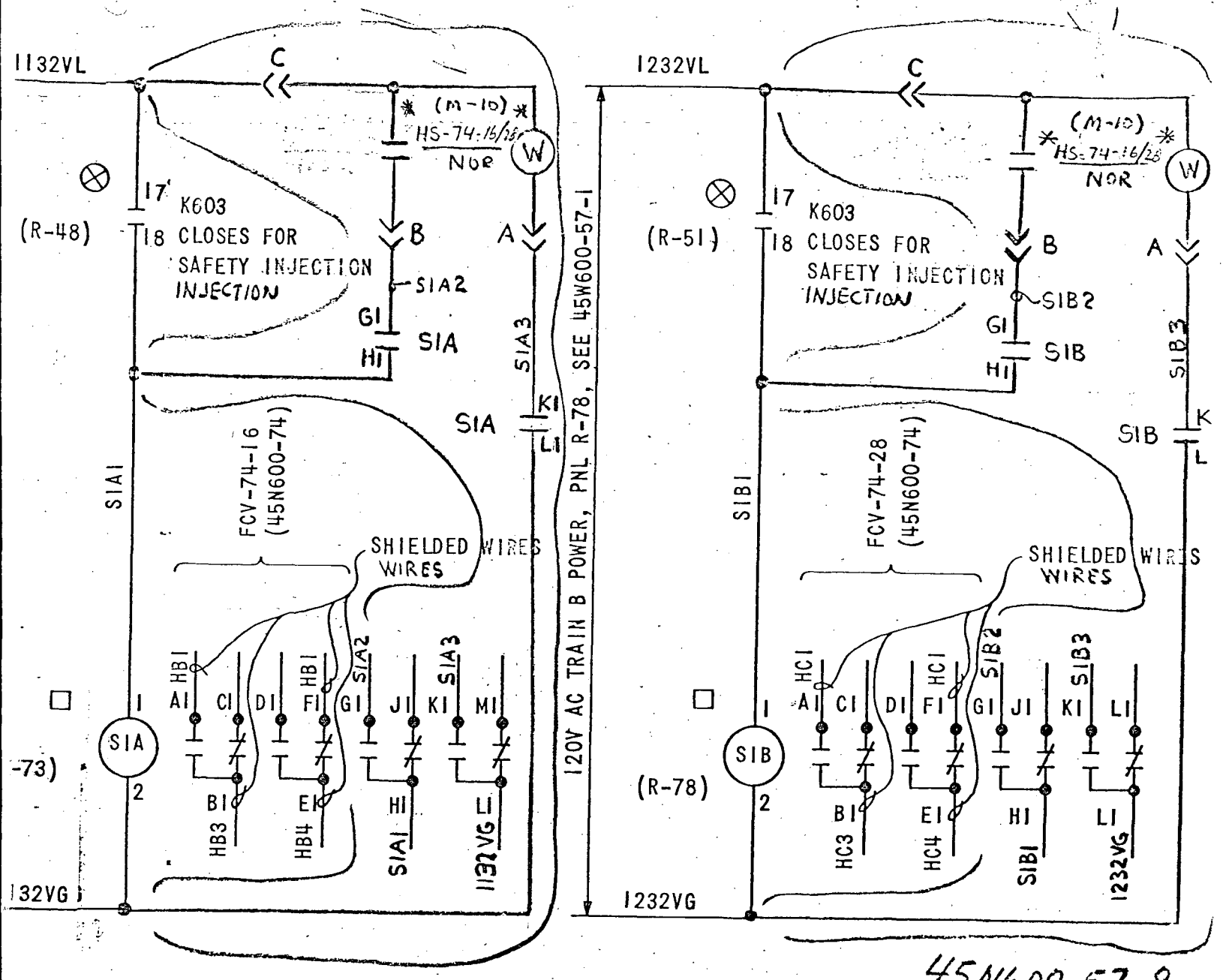
FCV-43s will have the ESF signal sealed in by means of a valve-mounted limit switch. The limit switch will be in the solenoid circuit so when an ESF signal closes the valve, opening the valve can only be done by moving the handswitch to open. Handswitches are located in the hot sample room. See figure 31.147-7.

FCV-74s will also use a limit switch to seal in the ESF signal and a new reset switch to individually reset the FCV. The new reset switch is located in the control room. See figure 31.147-8.

TVA has included verification of the actual installed instrumentation and control at the facility in the WBN preoperational testing program. The preoperational test program is scheduled for completion before fuel loading.

EAM GENERATOR SA
(INTERLOCK FROM AUXILIARY R

FIGURE 31.147-8



45N600-57-8

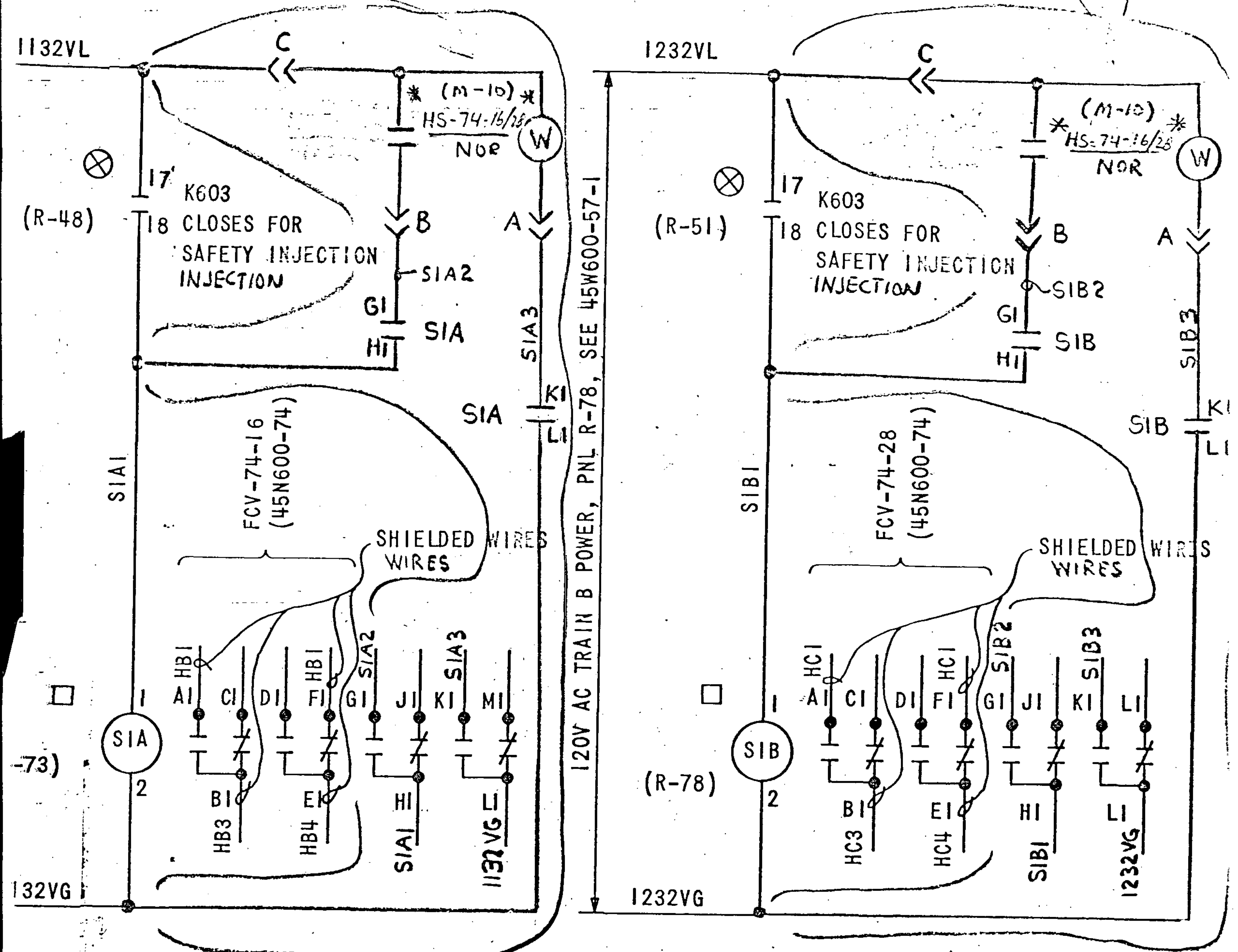
HR HEAT EXCH A & B OUTLET FLOW VALVES FCV-74-16 [HCV-606] &
CV-74-28 [HCV-607] AUXILIARY RELAYS (INTERLOCK FROM SAFETY INJECTION SIGNAL)

REV	ECN NO.	DATE	DSGN	DRWN	CHKD	SUPV	ENGR	INSP	SUPV	RECM	APPD
3	2936		REC								
ADD RESET-SEAL IN FOR FCV-74-16 & FCV-74-28 AUX RELAYS											
2	1549	7-20-78	RLS	KAL	TEB	JWB	[illegible]	—	[illegible]	[illegible]	[illegible]
REV 605B1 & 605B2.											
1	1387, S1	9-27-77	RLS	KL	WRG	JWB	[illegible]		[illegible]	[illegible]	[illegible]
1387: THIS IS A REDRAW. DELETE BVAR, BVBR+BVCR. S1: REV 605A1, 605A2, 605B1, 605B2, AFC, AFA, AFB, BVA+BVB, DELETE 605X1, 605X2, BVC+BVD. REV. NOTES.											

R2 MG
MG

STEAM GENERATOR SAMPL
(INTERLOCK FROM AUXILIARY R

FIGURE 31.141-8



45N600-57-8

HR HEAT EXCH A & B OUTLET FLOW VALVES FCV-74-16 [HCV-606] &
CV-74-28 [HCV-607] AUXILIARY RELAYS (INTERLOCK FROM SAFETY INJECTION SIGNAL)

REV NO	ECN NO.	DATE	DSGN	DRWN	CHKD	SUPV	ENGR	INSP	SUBM	RECM	APPD
3	2936		REC								
ADD RESET-SEAL IN FOR FCV-74-16 & FCV-74-28 AUX RELAYS											
2	1549	7-20-78	RLS	KAL	TEB	JWB	[illegible]	–	[illegible]	HRK	[illegible]
REV 605B1 & 605B2.											
1	1387, SI	9-27-77	RLS	KL	WRB	JWB	GKK		GKK	HBRK	[illegible]
1387: THIS IS A REDRAW. DELETE BVAR, BVBR+BVCR. SI: REV 605A1, 605A2, 605B1, 605B2, AFC, AFA, AFB, BVA+BVB, DELETE 605X1, 605X2, BVC+BVD. REV. NOTES.											