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 FACIL: 50-244 Robert Emmet Ginna Nuclear Power Plant, Unit 1, Roches 05000244
 AUTH. NAME AUTHOR AFFILIATION
 WHITE, L.D. Rochester Gas & Electric Corp.
 RECIP. NAME RECIPIENT AFFILIATION
 ZIEMANN, D.L. Operating Rectors Branch 2

SUBJECT: Forwards review of safety actuation circuits w/manual override. Concludes reset operation does not prevent equipment from operating which is necessary to mitigate a postulated accident.

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February 16, 1979

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis L. Ziemann, Chief
Operating Reactor Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Review of Safety Actuation Circuits with Overrides
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Ziemann:

Your letter dated November 29, 1978 requested restrictions be placed on containment purging during normal operation and that a review of all safety actuation signal circuits which incorporate manual override features be made. The Rochester Gas and Electric Corporation (RG&E) letter dated January 2, 1979 transmitted the RG&E commitments on purging during normal operation and stated that the required review of override features would be completed by mid February 1979. The purpose of this letter is to transmit the results of that review. Details of the review are presented in Appendix A.

The review of all safety actuation signal circuits which incorporate a manual override feature indicates that actuating a particular override (reset) does not cause the bypass of other safety actuation signals. The reset switches described in Appendix A are push button switches located on the control board with no physical restraints.

In all cases where the safety actuation signal is generated automatically and the reset switch is actuated, the safety actuation signal will be inhibited until all logic paths for automatically generating the safety actuation signal have opened. Once all logic paths open, the particular safety actuation signal reset relays de-energize and re-establish the ability to automatically generate the safety actuation signal. Since the reset remains actuated only if the input signals causing the automatic safety actuation signal persist and these input signals are annunciated, no separate annunciation for the reset actuation is necessary. The operator has sufficient information to deduce a certain system is in the reset mode.

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TO Mr. D.L. Ziemann, Chief

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In no case does actuation of a particular reset switch prevent the operator from manually operating the equipment from the control board. Therefore, operation of a reset does not prevent equipment from operating which is necessary to mitigate the consequences of a postulated accident.

Very truly yours,



L. D. White, Jr.

LDW:np
Attachment

Appendix A

Review of Safety Actuation Signal Circuits Incorporating Manual Overrides

The following summarizes the results of a review of safety actuation signal circuits which incorporate a manual override feature. The purpose of the review is to ensure that overriding of one safety actuation signal does not also cause the bypass of any other safety actuation signals:

1. SAFETY INJECTION CIRCUIT:

This circuit has a reset switch which gives the operator the means of resetting safety injection one minute or longer after initiation. Actuation of the reset switch in itself does not change the state of any equipment, but permits the operator to place the equipment affected by safety injection to the position desired.

If safety injection is caused by automatic actuation, and the reset switch is actuated, automatic safety injection will be inhibited until all logic paths for automatic safety injection have opened. Once all logic paths open, the safety injection reset relays de-energize and re-establishes automatic safety injection capabilities.

Manual safety injection initiation is available at all times.

There is no annunciation of the safety injection circuit being in the reset mode.

The purpose of the reset switch on the safety injection system is to allow equipment to be realigned for the recirculation phase of a postulated LOCA.

2. CONTAINMENT VENTILATION ISOLATION CIRCUIT:

This circuit has a reset switch which gives the operator the means of resetting containment ventilation isolation. Once the reset switch has been actuated, most of the equipment will automatically return to the state selected prior to the isolation signal.

If containment ventilation isolation was caused automatically, either by safety injection or high radiation alarm on containment gas and/or particulate monitors, and this condition continues to exist after the reset switch has been actuated, then containment ventilation isolation cannot be achieved automatically or by the manual isolation switches until this logic clears. Once the automatic logic clears, the containment ventilation isolation reset relays de-energize and re-establishes automatic or manual isolation capabilities.

Manual operation of the valves from the control board is available at all times.

There is no annunciation of the automatic containment ventilation isolation system being in the reset mode.

The purpose of the reset switch on the containment ventilation isolation system is to allow purging of containment in order to limit potential hydrogen concentration buildup following a postulated LOCA when high containment activity and safety injection signals could be present.

3. CONTAINMENT ISOLATION CIRCUIT:

This circuit has a reset switch which gives the operator the means of resetting containment isolation. Once the reset switch has been actuated, some equipment will return automatically to the position selected prior to the isolation signal.

If containment isolation was caused automatically by an automatic safety injection signal, and containment isolation reset switch is actuated without resetting safety injection, containment isolation cannot be obtained by the manual containment isolation switches until safety injection is reset.

Actuation of the reset permits the operator to place the valves affected by the containment isolation signal in the position desired. This capability is necessary so that the operator has flexibility in dealing with post accident conditions within containment.

There is no annunciation of the automatic containment isolation being in the reset mode.

4. CONTAINMENT SPRAY CIRCUIT:

This circuit has a reset switch which gives the operator the means of resetting containment spray. Once the reset switch has been actuated the spray additive tank discharge valves will return automatically to the position called for by the controller prior to the containment spray signal. The containment spray pumps and their discharge valves would require operator action to change state.

If containment spray was caused automatically by the high containment pressure logic, and this logic continues to exist after reset, containment spray cannot be initiated by the manual spray switches. Once the high pressure logic has cleared, the containment spray reset relays de-energize and re-establishes automatic or manual containment spray capabilities.

Actuation of the reset permits the operator to place the valves and pumps affected by the containment spray signal in the state desired. This capability is necessary so that the operator has flexibility in dealing with post accident conditions within containment.

There is no annunciation of the automatic containment spray system being in the reset mode.

5. FEEDWATER ISOLATION RESET:

This circuit has a reset switch which gives the operator the means of resetting the isolation signal to the feedwater bypass valves only. The main feedwater valves will remain closed until the isolation logic clears, and then they automatically assume the position requested by their control circuit.

If feedwater isolation is caused by high steam generator level logic, and this condition still exists after the reset switch is actuated, a safety injection signal would not cause an isolation to that particular feedwater bypass valve. It should be noted that a safety injection signal also causes the main feedwater pumps to be tripped, therefore, closing the feedwater bypass valves on a safety injection signal is redundant.

There is no annunciation of the automatic feedwater isolation system being in the reset mode.

6. NUCLEAR INSTRUMENTATION SYSTEM DEFEAT, BYPASS, AND BLOCK SWITCHES:

This system has several switches which are used for the following purposes:

- (a) Defeat Switches - Defeats a permissive which reinstates a trip logic.
- (b) Bypass Switches - Bypasses a trip or runback function for calibration or maintenance purposes. Protection is still provided by redundant channel or channels.
- (c) Block Switches - Blocks trips generated by source, intermediate, and power range channels. These switches are actuated as permissive setpoints are reached to permit taking reactor critical and up in power. These blocks automatically reset as power is decreased below its particular setpoint.

All the above switches if actuated, are indicated by one or more of the following: status light, alarm on the computer, or actuate an annunciator.

7. INSTRUMENT AND CONTROL DEFEAT SWITCHES:

The following switches and their circuits were reviewed to insure that they are only performing their intended function, and no other safety functions are being bypassed. The purpose for these switches is to be able to switch control from one sensor loop to another for testing, calibration and maintenance purposes. In all cases, reactor trip and safety injection signals are generated prior to defeat switches, and are not affected by switch position.

- (a) P/429A Pressurizer Pressure Selector Switch - Used to select two of the four pressurizer pressure channels for controlling pressurizer heaters, sprays, and power relief valve PCV-430.
- (b) L/428A Pressurizer Level Selector Switch - Used to select two of the three pressurizer level channels for controlling charging pump speed, letdown isolation, and pressurizer heaters.
- (c) T/405E and T/405F Delta T Defeat Switches - Used to defeat a channel from the over temperature and over power turbine runback circuit, and to remove a channel Delta T signal from the input of the summer for generating the average Delta T signal or the Rod Insertion Limit Circuit.
- (d) T/401A and T/401B Tavg Defeat Switches - Used to defeat a Tavg channel from the input to the average Tavg summer which is used for full length rod control, condenser steam dump, and pressurizer level setpoint.