REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8709100239 DOC. DATE: 87/08/31 NOTARIZED: NO DOCKET #
FACIL: 50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
AUTH. NAME AUTHOR AFFILIATION
KOBER, R. W. Rochester Gas & Electric Corp.
RECIP. NAME RECIPIENT AFFILIATION
STAHLE, C. Office of Nuclear Reactor Regulation, Director (Post 870411
STAHLE, C. Document Control Branch (Document Control Desk)

SUBJECT: Forwards preliminary design info for ATWS sys scheduled for installation during 1989 refueling outage, per commitment. Final design phase in progress. Detailed answers to NRC 860922 questions will be provided in Apr 1988.

DISTRIBUTION CODE: A055D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 8
TITLE: OR/Licensing Submittal: Salem ATWS Events GL-83-28

NOTES: License Exp date in accordance with 10CFR2, 2.109(9/19/72). 05000244

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD1-3 LA	1	0	PD1-3 PD	3	3
	STAHLE, C	1	1			
INTERNAL:	ARM/DAF/LFMB	1	0	NRR LASHER, D	1	1
	NRR/DEST/ICSB	1	1	NRR/DEST/PSB	1	0
	NRR/DEST/RSB	1	1	NRR/DLPQ/QAB	1	0
	NRR/DOEA/GCB	1	0	NRR/PMAS/ILRB	1	0
	OGC/HDS2	1	0	REG FILE 01	1	1
	RES/DE/EIB	1	1			
EXTERNAL:	LPDR	1	1	NRC PDR	1	1
	NSIC	1	1			

TOTAL NUMBER OF COPIES REQUIRED: LTTR 19 ENCL 12

ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

ROGER W. KOBER
VICE PRESIDENT
ELECTRIC PRODUCTION

TELEPHONE
AREA CODE 716 546-2700

August 31, 1987

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Mr. Carl Stahle
PWR Project Directorate No. 1
Washington, D.C. 20555

Subject: Anticipated Transients Without Scram
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

References: 1. September 22, 1986 letter from D. DiIanni (NRC) to R. Kober (RG&E)
2. October 27, 1986 letter from R. Kober (RG&E) to G. Lear (NRC)

Dear Mr. Stahle:

The attached material is presented to fulfill our commitment to provide preliminary design information for the ATWS system which RG&E will install during the 1989 refueling outage.

The final design phase of this project is now in progress. The detailed answers to the questions in Reference 1 will be provided in April 1988 instead of March 1988 as previously committed because of the extensive engineering support necessary for the 1988 refueling outage beginning in February.

Very truly yours,

Roger W. Kober

Roger W. Kober

Attachment

A055
1/1

ATTACHMENT

KEY ELEMENTS - R.E. GINNA ATWS SYSTEM

1. Diversity

The plant specific submittal should indicate the degree of diversity that exists between the AMSAC equipment and the existing Reactor Protection System. Equipment diversity to the extent reasonable and practicable to minimize the potential for common cause failures is required from the sensors output to, but not including, the final actuation device, e.g., existing circuit breakers may be used for the auxiliary feedwater initiation. The sensors need not be of a diverse design or manufacture. Existing protection system instrument-sensing lines, sensors, and sensor power supplies may be used. Sensor and instrument sensing lines should be selected such that adverse interactions with existing control systems are avoided.

Response

The tentative RG&E design utilizes Feedwater Low Flow to sense and respond to an ATWS event. Figure 1 illustrates how the ATWS system inputs are to be obtained from the existing feedwater flow instrumentation. For diversity, the new ATWS hardware will be other than Foxboro H Line (Consotrol) and Westinghouse BF relays.

2. Logic power supplies

The plant specific submittal should discuss the logic power supply design. According to the rule, the AMSAC logic power supply is not required to be safety-related (Class 1E). However, logic power should be from an instrument power supply that is independent from the reactor protection system (RPS) power supplies. Our review of additional information submitted by WOG indicated that power to the logic circuits will utilize RPS batteries and inverters. The staff finds this portion of the design unacceptable, therefore, independent power supplies should be provided.

Response

The power to the logic circuitry will be provided by the existing Technical Support Center (TSC) battery which is independent of the RPS and will not fail upon loss of offsite power.

3. Safety-related interface

The plant specific submittal should show that the implementation is such that the existing protection system continues to meet all applicable safety criteria.

Response

The existing RPS is isolated from the ATWS logic by means of Foxboro M/66BR-OH current repeaters. Therefore, the existing RPS will continue to meet all applicable safety criteria.

4. Quality Assurance

The plant specific submittal should provide information regarding compliance with Generic Letter 85-06, "Quality Assurance Guidance for ATWS Equipment that is not Safety-Related".

Response

Currently RG&E plans to implement an existing Quality Assurance Program developed for "Non-Seismic Category I - Safety-Related Items" for the design, fabrication, installation, inspection, test and operation of ATWS equipment. This program meets or exceeds the guidance provided in Generic Letter 85-06. The program is defined in Section 2.2 of Appendix A to the Ginna Station Quality Assurance Manual. A copy of Appendix A has been previously provided to the NRC.

5. Maintenance Bypasses

The plant specific submittal should discuss how maintenance at power is accomplished and how good human factors engineering practice is incorporated into the continuous indication of bypass status in the control room.

Response

Maintenance at power will require placing the ATWS system in a bypass mode which will isolate the ATWS output relays from the turbine trip and auxiliary feedwater pump start logic. The continuous indication of bypass status in the control room, as well as all control room modifications, will require a human factors engineering review. The conceptual design is reviewed by the RG&E Nuclear Engineering group to ensure that the modification meets the principles of human factors engineering as established by the guidelines of NUREG-0700. Modification design cannot be finalized until approval of the human factors engineering considerations is obtained.

6. Operating bypasses

The plant specific submittal should state that operating bypasses are continuously indicated in the control room; provide the basis for the 70% or plant specific operating bypass level; discuss the human factors design aspects of the continuous indication; and discuss the diversity and independence of the C-20 permissive signal (Defeats the block of AMSAC).

Response

The ATWS operating bypass will be continuously indicated in the control room. The ATWS system actuation signals are blocked below a level of 40 percent power, as determined by one of two turbine load signals being below predetermined setpoints. Both of the turbine load signals exceeding their setpoint (corresponding to 40 percent power) will arm the ATWS logic, and permit actuation of the turbine trip and auxiliary feedwater start circuits. This interlock is provided consistent with WCAP 11436, since it has been demonstrated that the reactor coolant system pressure does not approach the ASME stress level C limit of 3200 psig when an ATWS event occurs below 40 percent power. This will be provided to insure that spurious AMSAC actuations do not occur at low power operations and during start-up. The block will automatically be removed as power increases above the 40% level and reinstated as power decreases below the 40% level. A human factors review of the bypass continuous indication will be performed as discussed in Item 5. Diversity and independence of the C-20 permissive will be achieved in the same manner as for the feedwater flow analog inputs described in Items 1 and 3.

7. Means for bypassing

The plant specific submittal should state that the means for bypassing is accomplished with a permanently installed, human factored, bypass switch or similar device, and verify that disallowed methods mentioned in the guidance are not utilized.

Response

The means for bypassing the ATWS actuation logic will be a permanently installed, human factored, manual bypass switch located on the main control board. The manual bypass will not involve lifting leads, pulling fuses, manually tripping relays, or physically blocking relays.

8. Manual initiation

The plant specific submittal should discuss how a manual turbine trip and auxiliary feedwater actuation are accomplished by the operator.

Response

A manual turbine trip is accomplished by actuating the single Manual Turbine Trip pushbutton on the main control board. Auxiliary feedwater flow is manually initiated by moving both motor driven auxiliary feedwater pump breaker control switches on the main control board from auto to the close position. When each pump is started, its respective discharge valve opens to supply its corresponding steam generator.

9. Electrical independence from existing reactor protection system

The plant specific submittal should show that electrical independence is achieved. This is required from the sensor output to the final actuation device at which point non-safety-related circuits must be isolated from safety related circuits by qualified Class 1E isolators. Use of existing isolators is acceptable. However, each plant specific submittal should provide an analysis and tests which demonstrates that the existing isolator will function under the maximum worst case fault conditions. The required method for qualifying either the existing or diverse isolators is presented in Appendix A.

Response

Electrical independence from existing reactor protection system hardware is achieved with existing Foxboro M/66BR-OH current repeaters (isolators). The qualification and effectiveness of these isolators' ability to provide electrical isolation of maximum credible faults has been evaluated under SEP Topic VII-1.A and, on July 30, 1981, the NRC formally concluded that the Foxboro M/66BR-OH isolators in use at Ginna Station are suitably qualified for providing Class IE isolation and satisfy all current licensing criteria.

10. Physical separation from existing reactor protection system

Physical separation from existing reactor protection system is not required, unless redundant divisions and channels in the existing reactor trip system are not physically separated. The implementation must be such that separation criteria applied to the existing protection system are not violated. The plant specific submittal should respond to this concern.

Response

To ensure physical separation from the existing RPS, ATWS system field cables will not be run in RPS cable trays or conduits, and ATWS system instrumentation and relays will be installed in a cabinet physically separate from RPS cabinets.

11. Environmental Qualification

The plant specific submittal should address the environmental qualification of ATWS equipment for anticipated operational occurrences only, not for accidents.

Response

The ATWS system hardware will be suitable for the environment in which it is intended to operate. ATWS equipment is not subject to 10CFR 50.49.

12. Testability at Power

Measures are to be established to test, as appropriate, non safety related ATWS equipment prior to installation and periodically. Testing of AMSAC may be performed with AMSAC in bypass. Testing of AMSAC outputs through the final actuation devices will be performed with the plant shutdown. The plant specific submittals should present the test program and state that the output signal is indicated in the control room in a manner consistent with plant practices including human factors.

Response

At power, operability of the ATWS system will be testable from each analog input to the output actuation relay. During shutdown, operability of the system will be tested from the analog inputs to verification of turbine trip latch mechanism and auxiliary feedwater pump start. The output signal will be indicated in the control room in a manner consistent with plant practices including human factors.

13. Completion of Mitigative Action

AMSAC shall be designed so that, once actuated, the completion of mitigating action shall be consistent with the plant turbine trip and auxiliary feedwater circuitry. Plant specific submittals should verify that the protective action, once initiated, goes to completion, and that the subsequent return to operation requires deliberate operator action.

Response

The ATWS system output actuation relay will be of the latching type to ensure that the protective action, once initiated, goes to completion. A manual reset of the ATWS system will be required following each actuation. A time delay will be included in the circuit to insure that a manual reset cannot be accomplished prior to completion of the protective action.

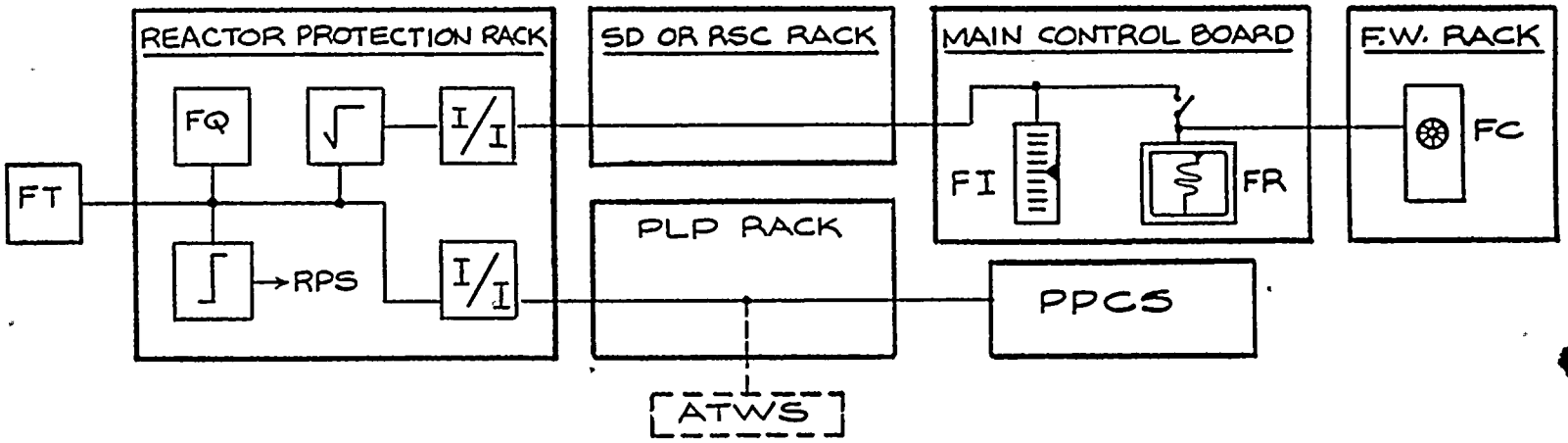
14. Technical Specifications

Technical specification requirements related to AMSAC will have to be addressed by plant specific submittals.

Response

The WOG has taken a position that Technical Specifications for AMSAC are unnecessary and do not enhance the overall safety of nuclear power plants. Normal nuclear plant administrative controls are sufficient to control AMSAC.

TYPICAL FEEDWATER FLOW INSTRUMENTATION CHANNEL



NOTES:

1. FT — FLOW TRANSMITTER
2. FQ — FLOW TRANSMITTER POWER SUPPLY
3. √ — SQUARE ROOT EXTRACTOR
4. I/I — M/66 BR-OH CURRENT REPEATER
5. FI — FLOW INDICATOR
6. FR — FLOW RECORDER
7. FC — FLOW CONTROLLER
8. RPS — REACTOR PROTECTION SYSTEM
9. PPCS — PLANT PROCESS COMPUTER SYSTEM
10. ⌋ — ALARM BISTABLE

FIGURE 1

ROCHESTER GAS & ELECTRIC CORP.
ROCHESTER, NEW YORK

NUMBER	REVISION	INITIAL DATE
0	ORIGINAL	

DRAWN BY | CHECKED BY | RESP. ENG. | ENG. MANG'R.

SCALE

NO.