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SUBJECT: Provides update to util 860616 ltr re implementation of NUREG-0737,Item 6.2,Suppl 1, "ERC."

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July 13, 1990

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Allen R. Johnson
Project Directorate I-3
Washington, D.C. 20555

Subject: Regulatory Guide 1.97 Conformance
Emergency Response Capability
TAC No. 51093
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Johnson:

The purpose of this submittal is to provide an update to RG&E's June 16, 1986 submittal concerning RG&E's implementation of NUREG-0737 item 6.2 Supplement 1, Emergency Response Capability, concerning Reg. Guide 1.97 documentation. It includes both an update of information, and a response to the nine issues listed in the NRC's February 20, 1990 correspondence. Rochester Gas and Electric has prepared a technical response for each of the nine topics and has retained the report format used in our previous correspondence. Attachment A provides the additional information pertaining to the NRC's requests on the open issues. Attachment B provides a completed tabulation matrix concerning RG&E's Reg. Guide 1.97 position.

RG&E technical responses to the identified issues provides data to resolve the issue directly for most open items. However, in some identified instances, exception is taken to the subject guidance topics based upon technical justification. The major issues which involve exception statements include neutron flux monitoring, containment isolation valve position indication, radioactivity concentration or radiation level in circulating primary coolant, and containment spray flow monitoring. RG&E is actively pursuing the neutron flux topic in cooperation with two other nuclear utilities (Westinghouse PWRs) to review and document the use of other existing qualified plant instrumentation and emergency operations procedural approaches to ascertain and maintain reactor subcriticality status during harsh containment environment circumstances.

Add: ALLEN R. JOHNSON 1/1

A003
1/1

RG&E will support engineering discussions leading to the resolution of any open issues.

Very truly yours,

Robert C. Mecredy

Robert C. Mecredy
Division Manager
Nuclear Production

HKM\103
Attachments

xc: Allen R. Johnson (Mail Stop 14D1)
Project Directorate I-3
Washington, D.C. 20555

U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Ginna Senior Resident Inspector

ATTACHMENT A
REGULATORY GUIDE 1.97 REVIEW

The responses below are ordered to be consistent with the USNRC correspondence concerning emergency response capabilities, dated February 20, 1990. Previously assigned paragraph numbers contained in the EG&G report, "Conformance to Regulatory Guide 1.97, R.E. Ginna Nuclear Power Plant", attached to the April 14, 1986 NRC letter have been referenced in this Attachment A. Attachment B has been organized, expanded and annotated.

1
3.1 ADHERENCE TO REGULATORY GUIDE 1.97

RG&E has previously provided specific completion and exception status for compliance with Section 6.2 of NUREG-0737, Supplement 1 concerning emergency response capability. The RG&E letters of February 28, 1985 and June 16, 1986 furnished Reg. Guide 1.97 equipment qualification status information data. Completion dates for near-term future modifications are identified later in this response. Completion dates for Regulatory Guide 1.97 modifications not previously committed to, or for which agreement has not been reached between RG&E and the NRC, will be established, as necessary, with the NRC Project Manager.

Table 1 of Regulatory Guide 1.97 specifies that Category 1 and 2 items should be environmentally qualified to Regulatory Guide 1.89 and NUREG-0588. Subsequent to that time, 10CFR50.49 requirements involving "Environmental Qualification of Electrical Equipment...", was implemented at Ginna Station with an effective date of November 30, 1985. This 10CFR50.49 regulation defines the evaluation process required to identify post-accident monitoring equipment which should be environmentally qualified. Equipment which performs critical safety functions includes those items of electrical equipment required to ensure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, and (iii) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the 10CFR100 guidelines. 10CFR50.49 also specifies that non safety-related equipment which could cause failure of the above equipment, and certain post-accident monitoring equipment, should be environmentally qualified. RG&E considers that 10CFR50.49 is the appropriate vehicle for defining the scope of instrumentation which meets these three categories. Environmental qualification program determinations are provided in RG&E's 10CFR50.49 compliance documentation, rather than in the submittals associated with NUREG-0737 and Regulatory Guide 1.97.RG&E has reviewed the Ginna Station Emergency Operating Procedures and UFSAR Chapter 15 concerning plant design basis events to determine which instrumentation is used to provide information to the operator which may affect

his actions. Any installed instrumentation required to perform a safety-related function and that is required to operate during and following an accident resulting in a harsh environment, has been included in the scope of RG&E 10CFR50.49 Environmental Qualification Program. Instrumentation not meeting this criteria, although designated in Regulatory Guide 1.97 Table 3 to require environmental qualification (by virtue of being classified as Category 2) may not be so designated for RG&E's 10CFR50.49 program. The rationale for Regulatory Guide 1.97 Category 2 instrumentation assignments is explicitly provided in Section 3.3 of this Attachment and in the Attachment B tables.

2
3.2 TYPE A VARIABLES

RG&E has completed its review of Type A variables, and included them in the modified "USNRC Reg. Guide 1.97 Revision 3 Comparison Table" (Attachment B). All type A variables are considered Category 1, unless specific exceptions are taken.

The sodium hydroxide tank level instrumentation was evaluated with regard to Emergency Operating Procedures and use of the Containment Spray System during harsh environment conditions. RG&E has concluded that the sodium hydroxide (NaOH) level transmitters do not require upgrading to a Category 1 Type A variable based on Safety Evaluation NSL 0000 009 October 25, 1989, which provided an evaluation of spray chemistry requirements, possible boron dilution phenomena, and sump pH requirements during postulated sump recirculation modes. The Emergency Operating Procedures (EOPs) do not require any operator attention or response related to NaOH tank level conditions in the revised procedural documents issued July 21, 1989, (these were reviewed by the NRC EOP inspection (89-80) with no open issues identified).

This evaluation response completes the June 16, 1986 letter (Topic 3.2) commitment to determine if NaOH tank level transmitters should be replaced with 10CFR50.49 qualified transmitters.

Based on recent RG&E review, additional instrumentation will be categorized as Type A measurement variables. These include two redundant sets of Steam Generator wide range level transmitters. The future transmitter installations will become operational when the new Advanced Digital Feedwater Control System (ADFCS) is operational (1991 tentative schedule). These instruments will meet Category 1 requirements. RG&E is planning to upgrade the Containment Temperature Monitors to Category 2. RG&E plans to provide one additional Category 1 Residual Heat Removal System Flow Transmitter to provide redundancy for FT-626.

3
3.3.1 Neutron Flux Detection

Existing RG&E excore Nuclear Instrument System (NIS) neutron flux detection equipment that monitors source range (SRM), intermediate range (IRM) and power range (PRM) reactor flux conditions, is Westinghouse furnished original plant electrical equipment whose specifications predate the Emergency Response Capability regulatory activities. Regulatory Guide 1.97 Table 3 guidance notes the neutron flux detection equipment as Type B measurement variables with Category 1 attributes.

RG&E review of neutron flux monitor functions presents no reasons for these devices to be Category 1 at Ginna Station, and intends to take exception to the Regulatory Guide 1.97 guidance since the existing Category 3 equipment is suitable to perform all its necessary functions.

RG&E has reviewed the Ginna Station UFSAR Chapter 15 accident analyses, as well as the Emergency Operating Procedures (EOPs), to determine the requirements for use of the NIS PRM, SRM, and/or IRM instrumentation during environmentally harsh design basis accident scenarios. No automatic or manual operator actions required for accident mitigation are described for any Chapter 15 events which require excore NIS operation during or after the onset of a "harsh" environment per 10CFR50.49.

The Ginna Station EOP series E (Emergency), ES (Emergency Supplement), and ECA (Emergency Contingency Action) do not take credit for the source, intermediate or power range neutron flux monitors to perform any required safety functions, and are thus not considered a Type A variable. These instruments do not meet RG&E's criteria for inclusion in our 10CFR50.49 Equipment Qualification Program.

RG&E's FR (Functional Restoration) procedures, as well as the Critical Safety Function Status Tree (CSFST Red Path) do utilize the excore NIS displays as an indication of reactivity conditions. The FR and ECA procedures are beyond design basis events, where all potentially available equipment is used to mitigate events and sets of events beyond the licensed capability of Ginna Station (e.g., dual steam line breaks, Steam Generator Tube Rupture with Steam Line Break, etc.). It is not RG&E's intent to replace equipment considered potentially useful for beyond-design-basis-event situations, unless this is considered warranted as a part of RG&E's Severe Accident Management strategy. The Severe Accident Management strategy will be developed within the context of our current Probabilistic Risk Assessment/Individual Plant Examination (PRA/IPE) process.

The excore NIS is also used in attachments to the Emergency Procedures as the Red Path CSFST F-01 reactor subcriticality determination devices. No discrete

actions other than reactivity monitoring are accomplished by the instruments. The underlying accident scenarios already make use of all potential sources of reactivity control (drop control rods, inject boric acid) and no actions within the Ginna Station design basis are necessary for more reactivity control than already provided by automatically actuated systems. Again, the comments above regarding Severe Accident Management apply.

RG&E does agree that some potential operator confusion could arise over the use of the CSFST Red Path, if the SRMs failed high-scale due to the harsh environment. Although automatic safety systems would maintain all required safety functions, operator concern could arise. RG&E therefore proposes to modify the CSFST Red Path, to make use of instrumentation which is already Class 1E and incorporated into RG&E's 10CFR50.49 Equipment Qualification Program to provide a better indication of beyond design basis conditions than the excore NIS. This requires the use of the core exit thermocouples (CETs), in combination with the Reactor Vessel Level Indicating System (RVLIS). This would be supplemented with additional Boron analysis requirements by use of the Post Accident Sampling System (PASS) to determine shutdown margin.

EOP instructions presently require Operators to observe Core Exit Thermocouples (CETs). Because of the multiplicity (39) and the reactor locations of the CETs*, Operators may (in a situation clearly beyond the licensing requirements for Ginna Station) locate core hot spots which could be indicative of added heat flux due, for example, to a loss of subcriticality at a specific location(s) in the reactor core. Such operator CET observations after emergency reactor shutdown would result in procedurally required borated water additions to add negative reactivity thus assuring shutdown margin (SDM) adequacy as well as assuring core cooling. During design basis accidents, while core conditions are being evaluated and while Safety Injection Pump(s) are being operated, the CET temperature displays will be consulted by the operators to determine the interval periods when SI pumps may be turned off based upon stable core temperature indications.

The EOPs require SDM determinations which involve PASS Boron analysis techniques. Excess Boron concentration above the conservative minimum requirement (in ppm) provides the objective measurement basis that the core is shut down and remains subcritical.

* The RG&E Ginna Tech. Specs. require a minimum of four active CETs per reactor core quadrant during plant operations.

The preceding excore NIS discussion linked with other core criticality/SDM measurement techniques is being further investigated by RG&E and two other Westinghouse PWR nuclear utilities. Assessment of the use of CETs and RVLIS as alternative measurement means, and EOP procedural upgrades, are underway.

4
3.3.4 Containment Isolation Valve Position Indication

A detailed RG&E review of the UFSAR Chapter 6 (Engineered Safety Features; Subsection 6.2 Containment Systems) discloses that the containment mechanical boundaries are protected by piping and valve configuration designs which provide defense-in-depth. System design considerations include redundancy provisions (valving or closed IST and Appendix J piping systems), functional operability testing, and seismic and missile protection.

In RG&E's correspondence with the NRC relative to Environmental Qualification and USNRC IE Bulletin 78-04, it has been noted that failure of any externally mounted valve position indication switch would have no adverse effect on the isolation capability of any containment valve based on the control circuit design. The valve stem position switches mounted on air operated valves are utilized only for indication purposes and are not incorporated in any control logic schemes.

Motor Operated Valves (MOVs) have integral limit/torque switch compartments adjacent to the motor and gearing attached to the process valve. The valve open or close cycle is operated from a remote location and relies upon control commands while providing valve position indication at the plant operators control location. The motor operated valves do require wiring intraconnections within the integral switch compartment torque and position sensing devices. The control logic cross-connected wiring within the Limitorque compartment has been replaced with environmentally qualified conductors during specific surveillance and valve refurbishment and upgrade efforts associated with the MOVATS program. MOVATS testing and surveillance programmatic maintenance is scheduled for motor operated valves whether or not they are included in the 10CFR50.49 environmental qualification program (safety-related and in a harsh environment), or if the valve has been identified as being located in a mild environment, or not required to operate during a DBA.

Motor Operated Valves at Containment Isolation boundaries (and other MOV locations) identified in the Plant Technical Specifications Table 3.6-1 provide closed/not-closed indicator light displays in the control room. The MOVATs testing and valve rework efforts assure that the valves function correctly, and that limit switch operated displays are correct. Containment Isolation MOVs remain in a committed long term surveillance program.

Regulatory Guide 1.97 Table 3, Type B variables, notes that a Category 1 assignment exists for Containment Isolation Valve position indication (closed/not-closed). Rochester Gas and Electric requests that an exemption be granted from guidance on environmental qualification topics associated with the individual valve position switches located in potentially harsh locations. RG&E

has verified (as documented in SER Topic VI-4) that, in accordance with the licensing requirements for Ginna Station, proper containment isolation will occur even assuming a worst-case single failure.

Emergency Operating Procedures do not require Operations personnel to take any immediate actions based solely on the open or closed valve position indication during a design basis accident. Although EOPs do specify that the operator verify containment isolation valve position, failure of position indication will not cause loss of any safety function, or incorrect and unsafe operator actions.

In the EOPs, if a valve indicates open (whether open or closed) the operator is directed to close the valve. Failure of the valve position indication does not prevent motion of the valve itself. It is not expected that the operator would manually attempt to position a valve located in a "harsh" environment. If a valve indicates closed (whether it is open or closed) the operator will not attempt to manipulate the valve (and certainly, not to open it). Thus, adequate containment isolation is ensured by the defense-in-depth provision built into the system, rather than by valve position indication. Therefore, RG&E has chosen not to designate valve position indication for containment isolation valves as a Type A, Category 1 variable.

5
3.3.11 Pressurizer Heater Status
(Electric Current Indication)

Pressurizer (PZR) heater electric current draw status is a Regulatory Guide 1.97 Category 2, Type D variable. At Ginna there are two diverse PZR heater groups operated from the main control room benchboard location. A handswitch and illuminated status lights are provided for each of the two heater groups. The Plant Operations Group presently relies upon and observes either the Bus 14 kilowatt (KW) power draw meter readouts or the Bus 16 kilowatt (KW) meter readouts in the control room to determine that either of the PZR heater banks are drawing power whenever control bank handswitch or backup bank handswitch is operated. An electrical load as large as either 400 KW PZR heater bank is readily quantified and observed whenever the bank is on (or off). If the 400 KW backup bank is required to be on, the incremental load increase is noted on the Bus KW meter. Operator decisions concerning emergency diesel generator loading conditions may be made upon KW display information.

The control bank heater group provides modulating proportional heater control from its Silicon Controlled Rectifier (SCR) control cabinet in the Auxiliary Building. The SCR panel at the intermediate level (East) is internally equipped with current transformers (CTs) and provides local panel ammeter monitoring each of three incoming 480 Volt Bus 14 phase lines.

RG&E has evaluated the Category 2, Type D Regulatory Guide 1.97 recommendation to monitor electric current draw. The control bank equipped with diverse ammeters' indications at the remote panel location, plus a control room status light display with its associated handswitch and its analog controller on the benchboard is judged to be in compliance with the intent of the Guide. The Bus 14 KW meter is also available in the control room to indicate power draw conditions imposed by the control bank of PZR heaters. Since these heater controls and motor control center are located in environmentally mild plant locations, they are not included in Ginna's 10CFR50.49 program.

The second heater group is identified as the backup heater bank which draws its power from 480 Volt Bus 16 and performs as an on/off group. This backup bank can be handswitch operated from the control room or a remote shutdown panel location. No local CTs or ammeters are provided for the backup heater circuitry.

The backup heater bank equipped with a control room status light display with its benchboard handswitch, plus the remote location handswitch and its status light display, working in conjunction with the Bus 16 KW metering MCR display is judged to also be in compliance with the intent of Regulatory Guide 1.97. The Category

2 controls and motor control center are located in environmentally mild locations so the equipment is not included in Ginna's 10CFR50.49 Program.

The key measurement variables which monitor the pressure/temperature effect produced by the pressurizer heater bank actuation(s) are the pressurizer and RCS pressure transmitters which monitor primary coolant pressure, and the pressurizer level transmitters which monitor water level. These environmentally qualified Category 1, Type A transmitters are incorporated into the 10CFR50.49 program.

6
3.3.12 Pressurizer Relief (Quench) Tank (PRT) Temperature

The quench tank temperature is monitored by the TE-439 loop and is presently scaled to indicate 0 to 300°F_{MAX}. The Regulatory Guide 1.97 recommendation notes a temperature range of 50° to 750°F. The physical configuration of the tank includes a rupture disk with a 100 psig setpoint. For saturated steam conditions, the corresponding maximum temperature expected within the tank would be 338°F. The rupture disk is designed to burst open if Pressurizer Safety Valves or Power Operated Relief Valves (PSV or PORV) discharge fluids $\geq$ 100 psig into the quench tank.

PORV and block valve position status and pressurizer safety valve position indications are available on the control room panelboard to detect whether RCS fluids are establishing a flow path to the PRT. These are environmentally qualified position sensing instrumentation devices provided to detect safety or relief actuations.

RG&E has evaluated the PRT tank parameters and consequently proposes to rescale the TE-439 loop to the recommended 50° to 400°F range which conservatively envelops the postulated 338° setpoint. RG&E has initiated an Engineering Work Request to complete this instrument rescaling effort.

7
3.3.13 Steam Generator Wide Range Level Transmitter

Ginna Station is presently equipped with one wide range level plus three narrow range level transmitters for each steam generator. The wide range transmitters monitor steam generator level from tubesheet to separators (0" to 520" H_2O), and provide data to the Safety Assessment System (SAS) computer and to a permanent recorder/display on the main control panel. Existing Ginna Emergency Operating Procedures (EOPs) do not require any Operator action or decisions during design basis accidents involving containment harsh atmosphere conditions, based on SG wide range level instrumentation. Existing wide range level transmitters $LT\text{-}460_{SG\text{-}1A}$ and $LT\text{-}470_{SG\text{-}1B}$ have been regarded to be as Category 2, Type D measurement variables. This decision to base EOP Operator actions on other level transmitter displays results from original Westinghouse design philosophy which involves qualified Category 1, Type A narrow range steam generator level transmitters which provide Class 1E control and display functions. The steam generator narrow range level transmitters interact with reactor protection and control systems, provide main control board level indication and provide data to the SAS.

Rochester Gas and Electric plans to replace the existing analog feedwater control system with an Advanced Digital Feedwater Control System (ADFCS) currently scheduled for installation during the 1991 Refueling Outage. Environmentally qualified steam generator wide range level transmitters conforming with 10CFR50.49 and the guidance language stated in Regulatory Guide 1.97 will be installed at that time. Two redundant transmitters monitoring level between tubesheet up to separators will be furnished for each steam generator. The wide range transmitters will be treated as Category 1, Type A equipment upon completion of that modification. When redundant wide range level for each SG is incorporated on a Type A variable, the fully qualified, redundant Class 1E transmitters, LT-461, LT-462, $LT\text{-}463_{(SG\text{-}1A)}$ and LT-471, LT-472, $LT\text{-}473_{(SG\text{-}1B)}$ will be considered for deletion as a Type A variable. No changes in form or function for these six level transmitters will be undertaken.

8

3.3.14 Containment Spray Flow
(Providing a Flow Indication Capability)

There are no Containment Spray (CS) flow indications or transmitters provided for the two CS pumps. There are no required Operator actions or decisions based upon CS pump flow parameters dictated by the Emergency Operating Procedures. CS pump operating status during normal plant operations or following a safety injection signal can be determined from the main control board switch position and illuminated displays. The containment spray pumping system components and Class 1E electrical systems are single failure proof.

The Emergency Operating Procedures requirements make no mention of CS flowrate measurements. CS pump operation is dependent upon environmentally qualified containment pressure transmitter signals which provide containment isolation signals and pump actuation commands if adverse containment conditions above setpoint are detected. Containment pressure is the selected Category 1, Type A measurement variable to determine the containment spray pump operation and containment environments pressure reduction effectiveness. EOPs require the Operator to make decisions based upon Containment pressure to maintain pumping, restart pump(s) after sump recirculation switchover or to secure pump operations during design basis accident conditions.

Although there is no requirement to do so, indirect determinations of Containment spray flowrate can be calculated after the containment spray system pump suction switchover from the Refueling Water Storage Tank (RWST) to the containment sump recirculation water source has been initiated. The determination may be made from Category 1, Type A flowrate instrumentation which is monitoring the Residual Heat Removal (RHR) recirculation pumping operation (FT-626). A portion of the available RHR flow (monitored by Category 1, Type A transmitters FT-931A, FT-931B) is split between the containment spray pumps (no flow metering) and the Safety Injection (SI) pumps (monitored by Category 1, Type A transmitters FT-924, FT-925). The subtracted difference[NOTE1] in flowrate split between the RHR and the SI pumps is the net flow directed to the CS pumps. Sufficient indirect CS flowrate information is, therefore available to the Operations staff if the data is requested. There is no EOP requirement to monitor Sodium Hydroxide tank level during a DBA which involves a containment spray pumping occurrence (see Topic 2).

NOTE 1: [FT-931A + FT-931B] - [FT-924 + FT-925] =
Containment Spray Pump(s) Flow in gallons per minute

9

3.3.18 Component Cooling Water to Engineered Safeguards Features (Flow Measurement)

RG&E provides redundant single failure proof Component Cooling Water (CCW) pumps. CCW pump on-auto-off control and illuminated status indication is provided on the main control board. Category 2, Type D pump pressure control and alarm as well as CCW surge tank level control room alarm and monitoring instruments are installed to monitor system operation. CCW system flow and temperature are locally monitored and are alarmed in the main control room. The CCW instrumentation is located in environmentally mild locations in the Auxiliary Building. The CCW Category 2, Type D measurement instrumentation has not been included in the Ginna EQ program for that reason.

Local rotameter indicating switch flow instrumentation to bearing and/or pump seal coolers (with main control room flow alarm provisions) is located near each of the combined CCW discharge outlets from the two RHR, the two CS and the three SI Emergency Safety Features (ESF) pumps. The local rotameter indicating switches facilitate system coolant flowrate adjustments for administratively controlled CCW to ESF pumps. Thus, substantial process information exists to monitor and verify operability of the prealigned and adjusted CCW system.

The CCW system is administratively controlled and process flow destinations procedurally aligned during all plant operating conditions to provide cooling water flow to the ESF pumps. The Emergency Operating Procedures do not require process valve manipulations, instrument realignments or system monitoring during a design basis accident. The combination of the CCW system single failure proof design and administrative control over cooling system valving alignments ensure that, even assuming a worst-case single failure, no loss of required safety function can occur to more than one train. Therefore, RG&E considers that the existing Category 2, Type D instrumentation presently installed in the process area and control room that provides indication or alarm instrumentation to be justified as it is presently configured.

ATTACHMENT B

USNRC REGULATORY GUIDE 1.97, REVISION 3
INSTRUMENTATION COMPARISON TABLE
WITH NOTE/SECTION

Rochester Gas and Electric Corporation
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

ISSUE:	DATES
Original	February 25, 1985
Second	June 16, 1986
Third	July 12, 1990

ROCHESTER GAS AND ELECTRIC CORPORATION

USNRC REGULATORY GUIDE 1.97 REVISION 3 COMPARISON TABLE NOTE 1

VARIABLE / Regulatory Guide 1.97 Type B Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
REACTIVITY CONTROL					
Neutron Flux	10^{-6} to 100% power	1	Source, Intermediate and Power Range Are Not Environmentally Qualified to Category 1 ■1.0E-1 to 1.0E06 cps/n/cm² SRM ■1.0E-11 to 1.0E-3 Amps/n/cm²/sec IRM ■1.7E-6 to 4.25 Amps/section PRM		See Attachment A Item 3.3.1 PWR Owners Group Formulated to Evaluate Plant Equipment
Control Rod Position	Full In or Not Full In	3	(Microprocessor MRPI Rod Position Indicator) System Replaced Original Plant Equipment. Category 3 MRPI Digital System was Placed In-Service During 1987		N/A
RCS Soluble Boron Concentration	0-6000 ppm	3	Available on PASS Boron Analyzer (Range: 50±50 to 6000±300 ppm)	15	Former Item 3.3.2
RCS Cold Leg Water Temperature (Type A)	50-700°F	1	TE-409B-1 and TE-410B-1 (one per loop) (Range: 0-700°F) [EQ Program]	17	N/A
CORE COOLING					
RCS Hot Leg Water Temperature (Type A)	50-700°F	1	TE-409A-1 and TE-410A-1 (one per loop) (Range: 0-700°F) [EQ Program]	18	N/A
RCS Pressure (Type A)	0-3000 psig	1	PT-420A, PT-420 (Range: 0-3000 psig) [EQ Program]		N/A
RCS Pressurizer Pressure (Type A)	Plant-Specific	1	PT-429, PT-430, PT-431, PT-449 (Range: 1700 to 2500 psig) [EQ Program]		N/A
Core Exit Temperature (Type A)	200-2300°F	1	Incore Core Exit Thermocouples [CET] with Connectors (Range: 0 to 2300°F) [EQ Program]	19	Former Item 3.3.3 and Regulatory Guide 1.97 Rev. 3 Table 3, Note 3

VARIABLE / Regulatory Guide 1.97 Type B Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
Coolant Inventory Level in Reactor (Type A)	Bottom of Hot Leg to Top of Vessel	1	Reactor Vessel Level Indicating System (RVLIS) Calculations Involve Combinations of Differential Pressure (Flow, Level) plus CET and RCS Loop Temperature Transmitter Signals that Monitor Bottom of Vessel to Top of Vessel [EQ Program]	16	N/A
Degrees of Subcooling (Type A)	200°F Subcooling to 35°F Superheat	2	■ EOP Requirement Utilizes Category 1 Core Exit Thermocouples and RCS Pressure Instrumentation Displays Linked with a Subcooled/Superheat Nomogram to Ascertain Wide Range Primary Coolant Fluid Conditions Greater Than 200°F Subcooled Through 35°F Superheat [EQ Program]	19	Former Item 3.3.3
			■ Hot Leg RTD Plus RCS Pressure Analog Signal Computation Produces Redundant 0 to 100°F Subcooled Category 1 Data and Diverse Information Displays [EQ Program]	18 19	
			■ Core Exit Thermocouples Plus RCS Pressure; Diverse Isolated Analog/Digital Data in the Plant Process Computer System Generates >200°F Subcooled Through >35°F Superheat Demand Display Data for Safety Assessment [Category 3] System Displays		
MAINTAINING REACTOR COOLANT SYSTEM INTEGRITY					
Containment Sump: Wide Range Water Level (Type A)	Plant-Specific	1	Sump B: LC-942 (A-E) and LC-943 (A-E) Indication of 8, 78, 113, 180, 214 inches (214 inches ≈500,000 gallons which was previously accepted by NRC) [EQ Program]		N/A
Containment Sump: Narrow Range Water Level	Plant-Specific	2	Sump A: LT-2039 and LT-2044 (Range: 0-30 ft H_2O)	2 33	N/A

VARIABLE Regulatory Guide 1.97 Type B Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVER SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
Containment Pressure (Type A)	-5 psig to 3 Times Design Pressure	1	PT-946, PT-948 & PT-950 (10-200 psia) PT-945, PT-947, PT-949 (0 to 60 psig) [EQ Program]		N/A
MAINTAINING CONTAINMENT INTEGRITY					
Containment Isolation Valve Position	Closed/Not Closed	1	Position Switches Are Only Used for Air Operated Valve Status Light Indication, Not Control Logic Purposes (Not Category 1 Devices). Motor Operated Valves (Limitorque) Have been incorporated into the RG&E MOVATS Surveillance Program.		See Attachment A Item 3.3.4

VARIABLE Regulatory Guide 1.97 Type C Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
FUEL CLADDING					
Radioactivity Concentration or Radiation Level in Circulating Primary Coolant	1/2 to 100 Times Tech Spec Limit R/Hr	1	Available with PASS (Post-Accident Sampling System). Separate Radiation Isotopic Spectrosocpy Analysis Techniques May Be Manually Performed After PASS LGSP (Liquid and Gas Sample Panel) Sample Acquisition and Dilution Ginna Radiation Level Measurement Range: .01mR to 1.0E04R/Hr. (This is a Category 3 Analysis Device)	20	Former Item 3.3.5
Analysis of Primary Coolant (Spectrum)	10^{-5} to 10 Ci/ml or TID-14844 Source Term in Coolant Volume	3	Existing Capability. Separate Radiation Analysis Techniques After PASS LGSP Sample Acquisition. High Range can be extended by LGSP Dilution Techniques	20	N/A
REACTOR COOLANT PRESSURE BOUNDARY					
Radiation Exposure Rate, Containment	10^{-1} to 10^{4} R/Hr	3	Electronic Microprocessor Area Radiation Monitor Units: Monitor R-2 Range: 0.01 R/Hr to 1.0E05 R/Hr Range	21	Former Item 3.3.6

VARIABLE Regulatory Guide 1.97 Type C Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
Effluent Radioactivity - Noble Gas From Condenser Air Removal System Exhaust	10^{-6} to 10^{5} µCi/cc	2	Electronic Microprocessor Gas Radiation Process Unit (Eberline SPING units) (Ranges: NOBLE GAS 10_{-6} µCi/cc to 1.0E05µCi/cc; Monitor R-15 Xe 133 Equiv. @ 600 SCFM Condenser Air Ejector Exhaust mixed with Gland Seal Steam	3 14	N/A
CONTAINMENT					
Containment Hydrogen Concentration (Type A)	0-10%	1	Redundant Category 1 COMSIP Containment H_2 Monitors 0 to 10% Concentration [EQ Program]; A Train, B Train		N/A
Containment Effluent Radioactivity: Monitor R-12 Noble Gases at Release Points:			SPING Electronic Microprocessor Air Particulate and Radioactive Gas Process Monitors With an Active Range of 1.0E0 through 1.0E07 cpm (counts per minute or as indicated below):		
■ Containment Purge Vent Exhaust	10^{-6} to 10^{5} µCi/cc	2	1.0E-8µCi/cc to 1.0E05µCi/cc Range Xe 133 Equiv. @ 11,000 SCFM	3 14	N/A
■ Plant Building Exhaust Vent	10^{-6} to 10^{3} µCi/cc	2	1.0E-8µCi/cc to 1.0E05µCi/cc Range Xe 133 Equiv. @ 76,000 SCFM	3 14	N/A
■ Vent from S/G Safety Relief and Atmospheric Dump Valves	10^{-1} to 10^{3} µCi/cc	2	1.0E-1µCi/cc to 1.0E03 Ci/cc Range with time compensation calculation	3 14	N/A
Effluent Radioactivity - Monitor R-11 Particulates and Halogens Sampling with Onsite Analysis Capability:			SPING Electronic Microprocessor Air Particulate and Radioactive Gas Processor Monitors with an Active Range of 1.0E0 through 1.0E07 cpm (counts per minute)		
■ Containment Purge Vent Exhaust	10^{-3} to 10^{2} µCi/cc	3	Halogens > 1.0E-5 to 10 µCi Range Particulates 1.0E-6 to 1.0 µCi Range @ 11,000 SCFM as Cs 137	3 14	N/A
■ Auxiliary Building Vent Exhaust	10^{-3} to 10^{2} µCi/cc	3	Halogens > 5.0E-5 to 50µCi Range Particulates 2.5E-5 to 25 µCi Range @ 76,000 SCFM as Cs 137	3 14	N/A

VARIABLE Regulatory Guide 1.97 Type D Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
RESIDUAL HEAT OR DECAY HEAT REMOVAL					
RHR System Flow (LPI) (Type A)	0-110% Design	2	FT-626 (Range: 0-4000 gpm) FT-931A, FT-931B (0-2200 gpm) [EQ Program]	25	Former Item 3.3.10
RHR Heat Exchanger Outlet Temperature	40-350°F	2	TE-627 to Computer (Range: 50° to 400°F)	22	Former Item 3.3.7
SAFETY INJECTION SYSTEMS					
Accumulator Tank Level AND Accumulator Tank Pressure	10-90% Volume 0-750 psig	2 2	Accumulator SI Tank(s) Narrow Level Range Instruments Indicate ± 7 Inches from Administratively Controlled Nominal Setpoint LT 934 LT 938 LT 935 LT 939 Accumulator SI Tank(s) (Range: 0-800 psig Pressure) PT 936 PT 940 PT 937 PT 941	 12 23	Former Item 3.3.8 Former Item 3.3.8
Accumulator Isolation Valve Position	Closed or Open	2	MOV-841 and MOV-865 (Limitorque) Position Indicated on MCB	13	Former Item 3.3.4.
Safety Injection (SI) Flow (HPI) (Type A)	0-110% Design	2	FT-924 and FT-925 (Range: 0-1000 gpm) [EQ Program]	31	
Boric Acid Charging Pump Flow	0-110% Design	2	FT-128 (Range: 0-75 gpm)	24	Former Item 3.3.9
Refueling Water Storage Tank (RWST) Level (Type A)	Top to Bottom	2	LT-920 and LT-921 (Range: 0-1000" H_2O, ≈ 0 to 100%)	4	N/A
PRIMARY COOLANT SYSTEM					
Reactor Coolant Pump Status	Electric Current	3	Main Control Room Ammeters on 4 KV Bus (0-1200A) Along with Handswitches and Status Lights on Control Room Panelboards		N/A

VARIABLE — Regulatory Guide 1.97 Type D Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
Primary System Safety Relief Valve Positions (PORVs and Code Safeties) (Type A)	Closed/Not Closed	2	Class 1E Valve Position Monitors: ■ The Pressurizer Safety Reliefs are Equipped with LVDT Analog Valve Stem Motion/Position Detectors. [EQ Program] ZT-434 and ZT-435 ■ The PORVs are Equipped with Snap Action Position Switches [EQ Program] ZS-430 and ZS-431C		See Attachment A Item 3.3.12 N/A N/A
Pressurizer Level (Type A)	Bottom to Top	1	LT-426, LT-427, LT-428 (Range: 202" to 100" H_2O) [EQ Program]		N/A
Pressurizer Heater	Electric Current	2	Main Control Room Handswitch Controls for Each Control or Backup Bank Breaker w/Status Light Display; MCC Supply Voltage and MCC Bus KW Demand Meters for Control or Backup Groups Exist in Control Room	10	See Attachment A Item 3.3.11
Pressurizer Relief (Quench) Tank Level	Top to Bottom	3	LT-442 (0-100%) (Range: 0 to 84" $H_2O \approx$ 0 to 100%)		N/A
Pressurizer Relief (Quench) Tank Temperature	50-750°F	3	TE-439 (Existing Range: 0-300°F)		See Attachment A Item 3.3.12 Scale Change Planned: 50 to 400°F
Pressurizer Relief (Quench) Tank Pressure	0 to Design Pressure	3	PT-440 (Range: 0-150 psig) (Tank Rupture Disc Setpoint ≤ 100 psig)		N/A
SECONDARY SYSTEM STEAM GENERATOR					
S/G Level (Type A Proposed)	Tubesheet to Separators Wide Range Level	1	Wide Range LT-460 and LT-470 (Range: 0-520" H_2O) [EQ Program]		See Attachment A Item 3.3.13
S/G Level (Type A)	Narrow Range: 0-100%	1	LT-461, LT-462, LT-463 LT-471, LT-472, LT-473 (Range: 138" to 33.6" H_2O) [EQ Program]		See Attachment A Item 3.3.13
S/G Pressure (Type A)	From Atmospheric Pressure to 20% Above Lowest Safety Valve Setting	2	PT-468, PT-469, PT-478, PT-479 PT-482, PT-483 (Range: 0-1400 psig) [EQ Program]		N/A

VARIABLE / Regulatory Guide 1.97 Type D Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
Main Steam Flow (Type A) OR Safety/Relief Valve Position	Flow Range 0-110%	2	Main Steam Flow FT-464, FT-465, FT-474, FT-475 (Range: 0-3.8 x 10^6 pph) [EQ Program]		N/A
Main Feedwater Flow	0-110% Design Flow	3	FT-466, FT-467, FT-476, FT-477 (Range: 0-3.8 x 10^6 pph)		N/A
AUXILIARY FEEDWATER OR EMERGENCY FEEDWATER SYSTEM					
Auxiliary Feedwater Flow (Type A)	0-110% Design Flow	2	FT-2001, FT-2013; FT-2002, FT-2014 (Range: 0 to 275 gpm) MDAFW, or FT-2015, FT-2006, FT-2007 (Range: 0 to 500 gpm) TDAFW	6	N/A
Standby Auxiliary Feedwater Flow (Type A)	Plant-Specific	2	FT-4084, FT-4085 (Range: 0 to 250 gpm) SBAFW	6	N/A
Condensate Storage Tanks (Type A)	Plant-Specific	1	CST Seismically Qualified Transmitters LT-2022A and LT-2022B (Range: 0-24 ft.)	5	N/A
CONTAINMENT COOLING SYSTEMS					
Containment Spray Flow	0-100% Design Flow	2	Containment Spray Flow Determinations are Indirectly Available. EQ Qualified SI and RHR Flow Sensor Indications are Available. CS Flowrate can be Calculated from Indicated SI and RHR Flowrate Difference When in Recirculation Mode from Containment Sump B [EQ Program Transmitters] SI and RHR Flow Rate Difference		See Attachment A Item 3.3.14
CV Fan Heat Removal	Plant-Specific	2	CV Fan 1A, 1B, 1C, 1D On/Off Status Lights and Handswitches at MCB	7 8	N/A
CV Atmosphere Temperature	40-400°F	2	Six of 24 RTDs are R.G. 1.97 objects. Existing RTDs are Recorded and Indicated at the Containment Leak Rate Test Panel and the PPCS computer monitors the six RTDs. (Range: 0-300°F)	8 32	See Note 22
CV Sump Water Temperature Sump B (RHR Suction Source)	50-250°F	2	RTDs Installed as Part of RVLIS; TE-490A/B or TE-491A/B (Range: 0 to 360°F) [EQ Program]	16 26	Former Item 3.3.15

VARIABLE Regulatory Guide 1.97 Type D Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
CHEMICAL AND VOLUME CONTROL SYSTEM (CVCS)					
Reactor Water Makeup Flow	0-110% Design Flow	2	FI-144 (Range: 5-75 gpm Rotameter)	9 27	Former Item 3.3.16
Letdown Flow	0-110% Design Flow	2	FT-134 (Range: 0-100 gpm)	9	N/A
Volume Control Tank Level	Top to Bottom	2	LT-112 (Range: 0 to 76" H_2O ≈ 0-100%)	9	N/A
COOLING WATER SYSTEM (CCW)					
Component Cooling Water Pump Temperature to ESF	40-200°F	2	CCW System Conditions: ■ Heat Exchanger Temperature TE-621 (Range: 0 to 225°F) ■ Pump(s) Pressure Monitor PIC-617 (Range: 0 to 150 psig) ■ CCW Surge Tank Level LT-618 (Range: 0 to 46" H_2O ≈ 0 to 100%)	9 28	Former Item 3.3.17
CCW Flow to ESF	0-110% Design Flow	2	FT-619 (Range: 0 to 7000 gpm with Low Flow Alarm @ 1800 gpm)	9	See Attachment A Item 3.3.18
RADWASTE SYSTEMS					
High Level Radioactive Tank Levels					
■ Waste Drain (Holdup) Tank	Top to Bottom ≈ 0 to 100%	3	LT-1001 (Range: 0 to 128" H_2O)		N/A
■ Reactor Coolant Drain Tank	Top to Bottom ≈ 0 to 100%	3	LT-1003 (Range: 0 to 28" H_2O)		
Radioactive Gas Holdup Tank Pressure (Gas Decay)	0 to 150% Design	3	PT-1036, PT-1037, PT-1038, PT-1039 (Range: 0-150 psig) Design Pressure of Each Tank and its Safety Valve Setpoint is 150 psig. Normal Radgas Pump Operating Condition is < 100 psig	29	Former Item 3.3.19

VARIABLE Regulatory Guide 1.97 Type D Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
VENTILATION SYSTEMS					
Emergency Vent Damper Position (Containment Mini-Purge Valves)	Open/Close Status	2	Existing Valve Status Indication Provisions for Containment Air Supply or Purge Vent Valve is Located on MCB. Snap-Action Position Switches Installed on 6" Purge Supply and Exhaust Valves during the 1987 outage. Mini-Purge Valves: 7970, 7971; 7445, 7478. Main Purge Valves AOV-5869 and AOV-5879 are blind flanged, and accessed only when the reactor is secured off-line		See Attachment A Item 3.3.4
POWER SUPPLY SOURCES					
Status of Standby Power and Other Energy Sources Important to Safety - (Hydraulic, Pneumatic): 480V Bus	Voltage/Current	2	Diesel Generator Voltmeters, Wattmeters (KW) and Ammeters on the Main Control Board (MCB)	10	N/A
Instrument Bus	Voltage/Current	2	Voltmeters on Panels in Control Room; Ammeters on Inverters in Battery Rooms for Bus 1A and 1C	10	N/A
125 VDC Bus	Voltage/Current	2	Voltmeters and Ammeters in Control Room	10	N/A
Air or Nitrogen; Instrument Actuation	Pressure	2	Instrument Air PT-2023 (0 to 160 psig) Nitrogen Gas PT-1066 (0 to 150 psig) Nitrogen PT-455 and PT-456 (0 to 1000 psig) PORV and SI Accumulator Motive Gas	11 11 12	N/A

VARIABLE Regulatory Guide 1.97 Type E Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
CONTAINMENT RADIATION					
Containment Area Radiation, High Range (Type A)	1 to 10^7 R/Hr	1	R29, R30 1.0 R/Hr to 1.0E07 R/Hr [EQ Program]		N/A
AREA RADIATION					
Radiation Exposure Rate Meters (Continuous Indication at Fixed Locations)	Range, Location, and Qualification Criteria Have Been Developed to Satisfy NUREG-0654, Requirements for Emergency Radiological Monitors	2	Existing Microprocessor-Based Area Monitoring Equipment Displays. Area Monitor Active Range is 0.1 through 1.0E07mR/hour	3 21	Former Item 3.3.6
Radiation Exposure Rate in Areas Adjacent to Containment	10^{-1} to 10^4 R/Hr	3	Range: 0.1 through 1.0E07mR/hour	3 21	Former Item 3.3.6
AIRBORNE RADIOACTIVE MATERIALS RELEASED FROM PLANT					NOTE: Noble Gases, Particulates, Halogens and Vent Flowrate Information is Presented Elsewhere in This Comparison Table
ENVIRONS RADIATION AND RADIOACTIVITY					
Airborne Radiohalogens and Particulates - (Portable Sampling with Onsite Analysis Capability)	10^{-9} to 10^{-3} µCi/cc	3	Fixed or Portable Samplers 1.0E-12 µCi/cc to 1.0E-3 µCi/cc PASS Sampling Technique Varies Aliquot or Diluted Sample		N/A
Plant and Environments Radiation (Portable Instrumentation)	10^{-3} to 10^4 R/Hr, Gamma Photon 10^{-3} to 10^4 Rads/Hr, Beta Radiations and Low Energy Photons	3	1.0E-6 R/Hr to 1.0E03 R/Hr Gamma Photon 1.0E-3 R/Hr to 1.0E03 R/Hr Beta		N/A
Plant and Environments Radioactivity (Portable Instrumentation)	Multichannel Gamma Ray Spectrometer	3	1.0E-8 µCi to 10 µCi (or Higher Based Upon Sampling Dilution Techniques)		N/A
METEOROLOGY					
Wind Direction	0-360°	3	0 to 360°		N/A
Wind Speed	0-67 mph	3	Monitored at 33, 150, 250 ft Elevations (Range: 0-100 mph)		N/A

VARIABLE Regulatory Guide 1.97 Type E Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
Estimation of Atmospheric Stability	Based on Vertical Temperature Differences	3	RTDs at 33, 150, 250 ft Elevations; Delta T Between Each Elevation Range: -8° to +20°F		N/A
ACCIDENT SAMPLING CAPABILITY (ANALYSIS CAPABILITY ON-SITE)					
Primary Coolant and Sump		3 (all)	Available with PASS (Post Accident Sampling System)		
■ Gross Activity per ml	Grab Sample 1.0 µCi to 10.0 Ci		Dilution Means is Provided Within the PASS Liquid and Gas Sample Panel (LGSP), Then the prepared sample is brought to the counting facility.	20 30	Former Item 3.3.20
■ Gamma Spectrum	Isotopic Analysis		Lab Analysis with a Multichannel Gamma Spectrometer 1.0E-8 µCi to 10 µCi or Higher Based Upon Sampling Dilution Techniques	20 30	N/A
■ Boron Content	0-6000 ppm		$50^{\pm 50}$ to $6000^{\pm 300}$ ppm) with PASS Mannitol Auto-Titration Analysis Methodology		N/A
■ Chloride Content	0-20 ppm		5 ppb to 100 ppm Separate Lab Analysis After LGSP Grab Sample		N/A
■ Dissolved Hydrogen	0-2000 cc(STP)/Kg		(10-2000 cc/Kg) with PASS Gas Chromatagraph		N/A
■ Dissolved Oxygen	0-20 ppm		(0.1-20 ppm) with PASS Probe Measurement		N/A
■ pH	1-13		1-13 pH with PASS Boron Measurement Equipment		N/A
■ Conductivity	N/A		0.1-500 µmho/cm^2		N/A
Containment Air:	Grab Sample	3 (all)	Available with PASS		N/A
■ Hydrogen Content	0-10%		Available with Either the EQ Qualified COMSIP Hydrogen Monitors or PASS non-EQ Gas Chromatagraph 0 to 10%, 0 to 20% (or up to 100% concentration)		N/A
■ Oxygen Content	0-30%		0-30% with PASS Gas Chromatagraph		N/A

VARIABLE Regulatory Guide 1.97 Type E Designation	REQUIRED RANGE	NRC CATEGORY	EXISTING GINNA STATUS	NOTES	RECOVERY SCHEDULE FOR UPGRADE OR JUSTIFICATION OF EXISTING CONFIGURATION
■. Gamma Spectrum	Isotopic Analysis		Existing; Separate Ge(Li) Lab Analysis - Multi-Channel Gamma Spectrometer After PASS LGSP Grab Sample 1.0E-8 µCi to 10 µCi	20 30	N/A

ATTACHMENT B

NOTES

Note 1: Items in this RG&E Regulatory Guide 1.97 comparison table are listed in the order of appearance in Table 3 - PWR VARIABLES, with exceptions. The exceptions concern Table 3 individual items that are included under more than one Type of previously stated variables. For brevity, repeated items do not appear more than once (e.g., RCS Cold Leg Temperature, Containment Pressure, Noble Gas Effluents, etc.). If a Table 3 measurement variable is assigned more than one Type, the highest stated Category or Range receives a response in this attachment wherever it first appears (e.g., Core Exit Thermocouple Category 3, Type B variable or, [response prepared for] Category 1, Type C variable).

Note 2: The two narrow range Sump A Category 2 Type B level transmitters are noted here as an adjunct measurement. The wide range level Category 1 redundant measurements in Sump B satisfy the Regulatory Guide 1.97 concerns.

Note 3: The Category 2 radiation monitoring equipment is located in mild environments prior to any event that would actuate a protective interlock or alarm based on a radiation condition above the setpoint. Radiation monitors deal with area, liquid process, gas and particulate conditions. Most of these applications at Ginna result in a control room alarm with administrative control procedures imposed on the operators response to clear the alarm condition. Five designated alarm conditions also provide an electrical interlock to secure possible particulate, gas, or liquid release paths well below any Tech Spec allowable limits (containment air particulate or gas, Auxiliary Building air particulate or gas, and steam generator blowdown drain). The Ginna P-9 procedure deals with radiation monitor setpoint backgrounds and conservatively establishes setpoints. Procedure PC-23.5 details the radioactive release SPING-4 effluent monitoring equipment. Parameters measured deal with noble gas, gamma background, area monitoring, particulate and halogen gas concentrations. During Design Basis Accident conditions involving a safety injection or containment isolation signal, the radiation monitors act rapidly to perform their design alarm, recording and/or interlock functions. The Emergency Operating Procedures do not require the further deployment of these monitoring devices.

Air particulate, radgas and liquid monitors are generally located in mild environments during normal plant operations. Post Accident Sampling System (PASS) provisions are designed to access potentially hot samples from isolated systems which would be monitored by online rad monitoring equipment. The defense-in-depth strategy involving the use of Category 3, Type B PASS limits the degradation of many radiation monitors due to harsh environs while also providing alternative measurement means. Some area monitors may, be exposed to design basis concentrations of radioactive and thermal accident harsh environments. Again, defense-in-depth provisions for hand-held radiation survey and contaminated fluid assay metering devices or PASS (which is not single failure-proof) provides the capability to procedurally follow plant recovery operations. For these reasons, Environmental Qualification of radiation monitoring devices is not required.

Note 4: The RWST level monitoring redundant transmitters are located in an environmentally mild location during normal and accident (DBA) conditions. Manual and automatic instrumentation actions occur during Safety Injection and Switchover to Sump B RHR suction. Operator actions rely on RWST level instrumentation indications. Since the level transmitters are located in a mild environment, Equipment Qualification is not required for these Class 1E Foxboro N-E11DM transmitters.

Note 5: Condensate Storage Tank (CST) level transmitter provisions are not redundant per tank. However, each of the two tanks with a single transmitter is piped together with administratively controlled locked open 10" valves and thus redundant indication is provided. Furthermore, the CSTs are not located in a Seismic Category 1 building, although the installed Foxboro Model N-E13DM level instruments are Seismic Category 1 devices. (This is consistent with Section B, 6th paragraph and Table 1, Topic 3 of Regulatory Guide 1.97.) Level transmitter redundancy or building seismic qualification is analyzed not to be a concern based upon tank crosstie configuration and the Regulatory Guide 1.97 cited reference. The level transmitters are in an environmentally mild location therefore they have not been included in the Equipment Qualification Program.

Note 6: The Ginna Station auxiliary feedwater arrangements located in mild environment locations provide a qualified redundant Seismic Category 1 system. If for any reason AFW supply sources have to be augmented with another diverse supply source, a piped cross-connect exists which allows the AFW pumps or the SBAFW pumps to take suction from the Service Water pumps, (that draw water from Lake Ontario). The seismically qualified AFW to SW system piping crosstie is available to provide an unlimited source of auxiliary feedwater to the steam generators.

Note 7: The service water Category 3 local flow and temperature indicator/switch sensors downstream of each containment air fan cooler water side heat exchanger provide evidence that heat is being removed when compared with the temperature of the service water supply to each of the coolers. There are high temperature alarms provided in the control room for each fan's service water discharge line. The local service water flow indicator/switch and temperature indicator/switch sensors are in an environmentally mild location and therefore not in the EQ Program. Main Control Room panelboard handswitch and status lights provide the Operator with fan operation data.

Note 8: The determination that containment heat removal is occurring after an accident (DBA) involves the use of Category 1, Type A instrumentation. Environmentally Qualified containment pressure and containment sump water temperature provide the required post DBA temperature decrease data. Containment Air Temperature monitoring devices are also being considered for upgrade.

Note 9: The Category 2, Type D CVCS flow and level, and CCW temperature & flow measurement instrumentation is located in a non-harsh environment in the auxiliary building. The Emergency Operation Procedures do not stipulate that these Class 1E sensor systems have to be deployed during an accident (DBA), nor do operators have to form decisions based on display data. For these reasons, the foregoing instrumentation is regarded to be non-EQ.

Note 10: The Category 2, Type D electrical voltage and current instrumentation sensors are located within switchgear in a mild environment. They are not subject to a harsh environment during a Design Basis accident (DBA). The Emergency Operation Procedures (EOPs) do not specifically require any subsequent operator actions or decisions based on output data. The remote switchgear located electrical sensors are therefore not included in the EQ Program.

Note 11: The pressure transmitters that monitor instrument air and nitrogen are located in mild environments at all times. The EOPs do not require any operator observations nor safety significant decision-making based upon pressure indications at the MCB. The pressure transmitters are not included in the EQ Program for these reasons.

Note 12: The two N_2 high pressure accumulator pressure transmitters monitor a backup motive gas source to operate PORVs and safety injection charged accumulators. Solenoid operated valves, check valve configurations and pressure control valves direct the gas to various administratively controlled destinations prior to any accident scenario. Since the pressure transmitters perform their service in mild environment conditions and are not subject to DBA harsh environs, they are not included in the EQ Program.

Note 13: The accumulator motorized valves have been placed in the open position by administrative control, then electrically locked in that open condition by removal of fuses to prevent inadvertent safety injection accumulator isolation. The MOV-841 and MOV-865 valves remain in the open configuration isolated from RCS fluids by the passive check valves 842A and 842B. Since the administratively controlled accumulator Limitorque valves achieve the safety-related process alignment without actuation prior to harsh environs, they're not included in the Equipment Qualification Program.

Note 14: The new, replacement microprocessor-based Eberline SPING-4 process radiation monitoring system equipment digitally measures noble gas, particulates and halogen activity. Plant-specific administrative procedures provide calculation scaler coefficients for conversion from cpm readout notations to ion-specific results (μCi/cc or mR/hr). The administrative procedures of interest include P-9 (ranges, tech spec limits and setpoints), EPIP 2-4 conversion methods and scalar constants, PC-23.5 concerned with Eberline SPING-4 effluent monitor ranges with data conversion multipliers/setpoint limits, and computer alarm and time based trend values are found in the PPCS (Plant Process Computer System) index.

Note 15: <u>RCS Soluble Boron Concentration</u>
Former Topic 3.3.2

The USNRC SER dated April 14, 1986 deals with Boron analysis range topics. NUREG-0737 Item II.B.3 approval for Boron analysis range and accuracy statements was deferred for RG&E in the USNRC correspondence dated April 14, 1986. The Boron analysis inaccuracy allowances were published* June 30, 1982 as NUREG-0737 supplementary information. In the NRC document dated June 30, 1982, it is stated: "In general this analysis should be accurate within ±5% of the measured value (i.e., at 6000 ppm Boron, the tolerance is ± 300 ppm while at 1000 ppm boron the tolerance is ±50 ppm). For concentrations below 1000 ppm boron the tolerance band should remain at ± 50 ppm." Ginna plant administrative controls over analyzer standard solution checks during computerized calibration runs are more restrictive (in the order of ± 20 ppm, or recalibrate and standardize again). The documented ±5% accuracy band remains the governing Boron measurement allowance.

*June 30, 1982 correspondence between S.A. Varga (USNRC ORB to J. Dolan, Docket 50-315 D.C. Cook IMEC; Criterion 10).

Note 16: The Category 1, Type A Reactor Vessel Level Indicating System (RVLIS) was placed in service during March 1987. The design basis and equipment features concerning the RVLIS were evaluated by the USNRC TAC #45137 Amendment No. 30 to RG&E's Operating License. The determination by the USNRC in its correspondence dated September 23, 1988 was that the safety basis and performance was acceptable.

Note 17: RCS Cold Leg RTDs have been stipulated to be Type A measurement variables. The Cold Leg RTDs do not provide any signal input data into Engineered Safety Feature control system apparatus. However, they directly provide the Operator with decision-making display data. EOP (Emergency Operating Procedures) requirements are imposed upon the Operator to observe Cold Leg RTDs and perform a contingent action based on TE-409 B-1/TE-410 B-1 signal information. Operators observe either of the cold leg RTD temperatures to maintain an overall cooldown rate < 100°F per hour to minimize metal thermal stress on RCS components. The cold leg RTDs also are utilized in the Analog Reactor Vessel Level Indicating System (RVLIS). Each cold leg RTD is environmentally qualified and documented in RG&E's 10CFR50.49 program. The RVLIS RTD input signal in either analog signal process rack converts its

resistance signal into diverse instrument signals suitable to drive each of two main control board cold leg temperature indicators (0 to 700°F). RVLIS is a Category 1, Type A analog indicating system for operator assessment duties during all plant operating conditions. RVLIS does not provide any permissive or stop logic control signal outputs to electrical equipment.

Note 18: RCS hot leg RTDs have been stipulated as Type A measurement variables. The hot leg RTDs TE-409 A-1 and TE-410 A-1 do not provide any signal input data into Engineered Safeguards Feature control system apparatus. However, they directly provide the Operator with decision-making display data. EOP (Emergency Operating Procedure) requirements are imposed upon the Operator to observe the two diverse hot leg RTDs in the eventuality that CETs aren't available and perform a contingent backup action based on RCS temperatures $\leq$325°F. The primary action steps involve possible securing of one or more SI pumps based on Core Exit Thermocouple/RCS Pressure Subcooling determinations, and RHR pumping system availability. Another use for hot leg RTDs include the Subcooling Margin Monitors (SMM) that utilize single hot leg RTD analog data inputs and links RCS pressure data to produce two different 0 to 100°F subcooled margin indications in the main control room. No SMM Operator decision or observation requirements exist, since the EOPs rely on other qualified system components to provide SMM information (Core Exit Thermocouples/RCS pressure). The hot leg RTDs are environmentally qualified and are documented in RG&E's 10CFR50.49 program. The signals from each hot leg RTD are routed to the main control board indicators.

Note 19: Degrees of Subcooling
(RCS Circulating Fluid)
Former Item 3.3.3

Item II.F.2 of NUREG-0737 which deals with circulating primary fluid subcooled margin parameters was reviewed and approved by the NRC in the SER dated September 7, 1980. The Ginna Station Emergency Operating Procedures (EOPs) require that primary Reactor Coolant System (RCS) loop circulating fluid subcooling information be generated by means of Operator observations and calculations. The EOP provides a graphic minimum Subcooled Margin Monitor (SMM) nomogram format based on Category 1, Type A variable measurements involving main control room display instrumentation and Operator prepared data plots of core exit thermocouple temperature and RCS pressure. Regulatory Guide 1.97 Category 2 Type C measurement variable guidance applies to this SMM topic. EOPs involved with a harsh containment condition requires that the Operations team prepare a minimum SMM Ginna nomograph which displays subcooled region margin conditions (or inadequate subcooling margin) under normal or adverse containment conditions. The SMM nomograph conservatively accounts for any instrumentation inaccuracies. The effective range of this nomograph exceeds the 200°F subcooled/35°F superheat range recommendation of Regulatory Guide 1.97. Subcooled margin monitoring information derived from core exit thermocouple and RCS pressure is also automatically calculated and displayed on the non safety-related Safety Assessment System (SAS). The effective range of the SAS also exceeds the 200°F subcooled/35°F superheat Regulatory Guide 1.97 guidance.

The redundant existing Class 1E subcooled margin monitor analog panel meters that are based upon qualified analog signal inputs from reactor outlet hot leg temperature RTDs and RCS wide-range pressure have an indication range of 0-100°F subcooled. The SMM meters are not required to be observed by EOPs but provide a diverse backup information display and will therefore be left as-is. The present Ginna Station subcooled margin display arrangement utilizing Category 1, Type A variable measurements was acceptable based upon NRC approval in the September 7, 1980 SER.

Note 20: Radioactivity Concentration or Radiation Level in Circulating Primary Coolant (Isotopic Analysis)
Former Topic 3.3.5

The NRC SER, dated April 14, 1986 found the instrumentation provided for this measurement variable to be acceptable. The original design basis for implementation of NUREG-0737 Topic II.B.3, involves sampling requirements to perform a radiological analysis within a three hour time period for "certain radionuclides in the reactor coolant...". The NUREG-0737 Clarification, dated October 31, 1980, (2)(d), states "Alternatively, have inline monitoring capabilities to perform all or part of the above analysis". Ginna's response involved the selection of semi-automated manual dilution techniques involving sample withdrawal and preparation of the sample aliquot by the Post-Accident Sampling System, not an inline monitoring capability. The remote-manual sampling and dilution capabilities of the existing installed equipment are equivalent to Category 3, Type C attributes.

The Ginna Post-Accident Sampling System (PASS) is equipped with remote-manual abilities to acquire a Reactor Coolant System (RCS) sample, then manipulate the sample by diluting it approximately 1000:1. The dilutant may then be manually delivered to either of two diverse counting facilities at Ginna Station for multichannel spectrometer isotopic analyses. The PASS panel is utilized by Health Physics technicians at least once per week to produce routine proceduralized analyses when the unit is on-line.

Regulatory Guide 1.97 guidance for radiation concentration determinations states that Category 1, Type C attributes apply to this measurement variable with the purpose stated to be detection of breach (Fuel Cladding topic). Fuel cladding breach detection is not within the Ginna licensing basis but is acknowledged to be a concern during Functional Restoration activities. Functional Restoration activity is beyond the Ginna licensing basis. No EOP activity involved with design basis DBA occurrences requires that the radiation concentration determinations in RCS be performed, and there's no consequent operator action requirement. Safety Injection boration will have been performed to shut down the reactor and maintain it in a subcritical

state. Other Environmentally Qualified 10CFR50.49 equipment has been chosen and dedicated to track the course of the DBA. For these reasons, RG&E requests that an exception be granted to retain the existing PASS Category 3, Type C measurement methodology.

Note 21: Radiation Exposure Rate
(Area Monitoring)
Former Topic 3.3.6

Area radiation monitors are Category 2, Type E instruments, and meet NRC Regulatory Guide 1.97 range guidance language. The monitors are detailed in the Attachment B chart data under the heading "Area Radiation". ("Environs Radiation and Radioactivity", "Containment Radiation", and "Containment" topics are somewhat related to this issue.) The EOPs do not require operator response to any area radiation monitor alert during a DBA. The main control room or computerized area monitor displays serve as a human warning function, not as an automatic protective system. The area radiation monitoring system has been upgraded to include microprocessor based local and remote readout displays. Dedicated main control panelboard recorders post area monitor radiation data. The microprocessor-based field remote and control board area monitor signal handling apparatus has an overall span range of 0.1 through 1.0E07 mR/hour. Specifics concerning these monitors, their setpoint data and calculation scalar constants are administratively controlled within the P-9 procedures for all radiation monitors at fixed locations in the Ginna Plant. Computer outputs dealing with alarm and time based trends are processed by the Plant Process Computer System (PPCS). Alarm setpoints and trend information are maintained within the PPCS computer index.

Note 22: RHR Heat Exchanger Outlet Temperature
Former Item 3.3.7

RG&E has determined the maximum RCS fluid approach temperature upstream from the RHR heat exchangers, before temperature reduction during post-LOCA sump recirculation. This reactor coolant fluid temperature is approximately 264°F. The installed instrument range of 50°F to 400°F is considered sufficient to compensate for equipment or operating uncertainties and provides a wide margin when RHR heat exchangers attemperate the recirculating fluids.

The temperature is derived from one Resistance Temperature Device which monitors RCS fluid conditions. The RTD is located in potentially harsh environs and its temperature data is directed to the Plant Process Computer System and also to the Safety Assessment System computer displays.

This measurement variable is characterized as a Category 2, Type D instrumentation per Regulatory Guide 1.97. It does not perform a safety-related function at Ginna. There are no EOP requirements for this Category 2, Type D temperature measurement, nor is there any required Operator response based on its display. For these reasons, the RHR heat exchanger outlet temperature instrumentation is not included in the 10CFR50.49 Program.

Note 23: Accumulator Tank Level and Pressure
Former Topic 3.3.8

The April 14, 1986 NRC SER correspondence found the Category 2, Type D instrumentation provided for this variable to be acceptable. No further response was required at that time.

The SI accumulators are administratively maintained in a pressure charged and filled status under normal plant operating circumstances. No Operator action is required other than the routine surveillance of the accumulators' level fill and pressurized ready state during normal plant operation.

During DBA conditions which result in subsequent harsh environment in containment there are no EOP directed safety-related Operator requirements which rely upon level or pressure accumulator display data.

The ready-to-discharge state of the SI accumulators is monitored in each of two vessels. Two electronic displacement type narrow band level transmitters and two electronic pressure transmitters are provided for each accumulator vessel. Main control panelboard indicators and alarms are provided for the Operator. Since the instrumentation does not provide any additional information relative to the safety function of the accumulators, but only monitors accumulator operational readiness prior to any event which would result in a harsh environment, these Category 2 Type D measurement variable transmitters are not included in RG&E's 10CFR50.49 Equipment Qualification Program.

Note 24: Boric Acid Charging Flow
Former Topic 3.3.9

The NRC SER, dated April 14, 1986 found that Category 2, Type D instrumentation provided for this variable to be acceptable. No further response was determined to be necessary at that time.

The boric acid charging pumps' combined flow measurement utilizes a differential pressure electronic pressure transmitter and its associated orifice plate. The flow transmitter is located north of the Refueling Water Storage Tank at an Auxiliary Building basement location which is generally located in mild environments. Normal temperature is approximately 80°F (50°-104° variation) and background area radiation is normally less than 20 mRem at the transmitter location (1.0E04 Rads during a DBA).

The Operator may observe CVCS charging pump motor status flowrate indication and control setpoints at the main control panelboard. The charging pumps and their ancillary equipment are excluded from the listing of designated design basis equipment which is required to mitigate the course of a design basis accident. The Safety Injection System is designated for that purpose. Since the pumps themselves are not required apparatus and are located in an environmentally mild location, the electrical environmental qualifications have not been incorporated in Ginna's 10CFR50.49 EQ Program.

The FT-128 flow transmitter is designated as a Category 2 Type D measurement variable. The CVCS pumping system line flow differential pressure in an environmentally mild location is not required by the EOPs during the course of a DBA. For these reasons, flow transmitter FT-128 is excluded from the 10CFR50.49 EQ Program.

Note 25: Low Pressure Injection System Flow
(Residual Heat Removal [RHR])
Former Topic 3.3.10

The RHR System flow transmitter meets the requirements of NUREG-0737 Supplement 1 Section 6.2 with an exception. FT-626 RHR flow is not configured with a redundant flow transmitter loop. The existing FT-626 is an environmentally qualified nuclear service Foxboro N-E13DM series transmitter performing Category 1, Type A measurement and indication service. This flow transmitter may be exposed to a radiation harsh environment during a DBA (less than 5E04 Rads at 10 foot distance from a pump radiation source).

RG&E has issued an Engineering Work Request (EWR) to design and install a redundant flow transmitter to monitor RHR flow with the existing piped primary flow orifice FE-626. The EWR installation is currently scheduled for the 1993 Refueling Outage. The equipment selected for measurement duties will be environmentally qualified and incorporated in the 10CFR50.49 program. The redundant RHR flow signal will be made available as a Main Control Room display and also be directed to the RVLIS system.

Note 26: Containment Sump Water Temperature
Former Item 3.3.15

The Reactor Vessel Level Indicating System (RVLIS) is equipped with environmentally qualified Class 1E RTDs (Resistance Temperature Detectors) on the level transmitter differential pressure measurement sensing legs. The two RTD electrical termination provisions are located above the potential post-DBA floodplain in the containment basement. The RTDs are located on the RVLIS level sensor legs to provide liquid density temperature compensation signal corrections for the RCS level transmitter sensing fluid. One of two immersed RTD sensing elements TE-490 A/B, is located inside containment Sump A where it monitors the temperature of the floodplain sump fluids during a postulated design basis accident. The second of the potentially immersed RTD sensor assemblies, TE-491 A/B, is located approximately 4.3 feet above the containment basement floor in a floodplain mixing zone where representative liquid temperatures will be monitored. The design range for the compensation RTD loops are 0 to 360°F. The Category 1, Type A RVLIS system has been operational since 1987 and is designed to provide an isolated computerized RTD thermal data display on the Plant Process Computer upon Operator demand. There are no emergency operating procedural requirements for this sump temperature measurement, nor are there any Emergency Operation Procedural or decision steps involving the computerized display.

The RVLIS temperature detection equipment is qualified for the postulated harsh environment process conditions and all sensors, wiring and connections are in the Ginna EQ (Equipment Qualification) program. The containment water temperature measurement method complies with Regulatory Guide 1.97 recommendations for a Category 2 Type D measurement.

Note 27: Makeup-Flow In
(Reactor Water Makeup)
Former Topic 3.3.16

The NRC SER dated April 14, 1986 found that Category 2, Type D instrumentation provided for this variable to be acceptable. No further response is required.

Note 28: Component Cooling Water to Engineered Safeguards Features
(Temperature Measurement)
Former Topic 3.3.17

The NRC SER dated April 14, 1986 found that Category 2, Type D instrumentation provided for this variable to be acceptable. No further response is required.

Note 29: Radioactive Gas Holdup Tank Pressure
Former Item 3.3.19

Each of the four Category 3, Type D gas decay tank pressure conditions are normally maintained below a maximum operating pressure of < 100 psig. The normal operating pressure of 80 to 100 psig is limited by the design of the liquid ring rotary compressor which pressurizes the gas delivered to any of the decay tanks. The pressure transmitter range of 0-150 psig provides substantial margin over this operating range. Each of the gas decay holdup tanks is equipped with a pressure safety relief valve set at 150 psig and also equipped with a series connected rupture disc. 150 psig is equal to the pressure safety relief valve setpoint and is also the design pressure of the tank. RG&E considers that appropriate Operator action, would be taken as pressures approach 80 psig, but prior to the time that the full scale 150 psig reading was reached.

No Emergency Operating Procedures require any Operator action or decision as a consequence of the four main control room pressure displays. It is apparent that pressures greater than the relief valve setpoint pressure of 150 psig are not possible. Guidance in Regulatory Guide 1,97 suggests that 225 psig pressure indication (150% of design pressure) be available. Since tank overpressure relief takes place at 150 psig and the liquid-ring compressors are administratively controlled to pressure outputs in the range of 80 to < 100 psig, RG&E elects to retain the transmitter/indication ranges at the existing range of 0 to 150 psig. Decay tank rupture analyses have been performed per Chapter 15 of the UFSAR, with radiological consequences well below Part 100 guidelines.

RG&E, therefore, does not consider that there is a safety reason to modify the radgas decay tank pressure instrumentation.

Note 30: Accident Sampling
Former Topic 3.3.20

The NRC TER noted a few minor deviations from the guidance of Regulatory Guide 1.97 regarding the range of Category 3, Type E sampled parameters and noted that these deviations would be addressed under the review of NUREG-0737 Item II.B.3. An NRC SER dated April 14, 1984 determined the acceptability of RG&E's resolution of Item II.B.3 of NUREG-0737.

Note 31: Safety Injection Flow (SI)
(New HPI Topic)

The SI System flow transmitters meet the requirements of NUREG-0737 Supplement 1, Section 6.2 with an exception. FT-924 and FT-925 are not configured as redundant flow transmitter loops within each train. The SI piping system splits into a parallel piping arrangement. Each of two legs is equipped with one flow orifice and one transmitter. The symmetry of a flow transmitter in each of two redundant piped flowpaths provides SI flow measurement redundancy. The two piped flowpaths are designed to be single failure-proof. The existing flow transmitters are environmentally qualified nuclear service Foxboro N-E13DM series transmitters performing Category 1, Type A measurement and indication service. The flow transmitters in containment may be subject to the DBA harsh environment profiles (spray, humidity, temperature and pressure).

Note 32: Containment Air Temperature
(New Topic)

24 Containment Air Temperature RTDs are being replaced throughout containment. Six designated Category 2, Type D RTDs which are presently entered into the PPCS computerized display (1 operating deck, 4 intermediate, 1 basement), will receive data from the replacement RTDs. The PPCS provides the Containment Air Temperature display upon demand from the Operator (Regulatory Guide 1.97, Table 1, Topic 6 covers this Category 2 display topic).

The Containment Air RTDs are being environmental qualification tested in accordance with 10CFR50.49 Program requirements. The tentative completion date and dedication of the environmentally tested RTDs for EQ service is the 1991 Refueling Outage.

Note 33: Two Containment Sump A level transmitters LT-2039 and LT-2044 have been installed to monitor water level off-normal increase. These transmitters are maintained as Category 3, Type C devices not the Reg. Guide Category 2, Type C guidance for this measurement variable. The EOP E-0, Step 26 directs the operators to check if the RCS is intact and uses sump A level as one of several sources of the information to base that decision. There are no specified operator requirements during a sump level increase indication other than entering EOP *E-0 to determine if there's any leakage source if the RCS is not intact. EOP *E-1 uses committed Category 1 Type A measurement apparatus to follow the DBA and pinpoint the source of leakage. LT-2039 and LT-2044 are used in concert with other RCS breach detection instrumentation including radiation monitoring, containment pressure and Sump B level detection equipment for RCS breach determinations. Technical Specification Section 3.1.5 deals with RCS leakage limitations and plant responses whenever leak parameters are determined.

LT-2039 and LT-2044 operate at an early part of a reactor trip or safety injection occurrence and play no active role in the generation of trip or SI signals. Sump A level measurements are diagnostic aids used in concert with other environmentally qualified apparatus (radiation, pressure and sump B level). These two transmitters can fail, but they will not misdirect the operator nor can they interfere with SI or reactor trip sequences which preceded step 26.

RG&E requests an exemption from the Category 2 Guidance and seeks to retain the redundant LT-2039 and LT-2044 transmitters as Category 3, Type C measurement equipment.

* EOP E-0 Reactor Trip or Safety Injection
* EOP E-1 Loss of Reactor or Secondary Coolant.