REGULATORY GUIDE 1.97 (REVISION 2)

POSITION REPORT

FOR

GRAND GULF NUCLEAR STATION

UNIT 1

MISSISSIPPI POWER & LIGHT

FEBRUARY 1985

GGNS REGULATORY GUIDE 1.97 (REV. 2) POSITION REPORT

1.0 INTRODUCTION

NUREG-0737 Supplement 1, Item 6, "Regulatory Guide (RG) 1.97 - Application to Emergency Response Facilities," states that each operating license holder provide data to assist control room operators in preventing and mitigating the consequences of reactor accidents. RG 1.97 provides guidance to ensure that instrumentation necessary to measure certain prescribed variables during and after an accident is available to the appropriate personnel. As required by NUREG-0737 Supplement 1, this document has been developed to provide the GGNS position on Regulatory Guide 1.97, Revision 2, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident" (referred to in this document as RG 1.97).

Attachment 1 identifies the existing GGNS instrumentation for compliance to the variables provided in Table 1 of RG 1.97 and table contains the specific information requested by Section 6.2 of NUREG-0737 Supplement 1. The information presented in this attachment represents the existing GGNS design, except for the columns labeled "Reg Guide Compliance, Schedule, and GGNS Position." Attachment 2 contains the notes referenced in the Attachment 1 Position Report Tabulation. Attachment 3 provides the MP&L position statements with justification for the RG 1.97 positions on GGNS for those variables which deviate from the requirements of RG 1.97.

2.0 MP&L POSITION ON RG 1.97 DESIGN AND QUALIFICATION CRITERIA FOR GGNS

MP&L concurs with the intent of RG 1.97, which is to ensure that necessary and sufficient instrumentation exists in a nuclear power station for assessing plant and environmental conditions during and following an accident as required by 10CFR Part 50, Appendix A and General Design Criteria 13, 19 and 64. In general, MP&L also concurs with the positions and criteria referenced under RG 1.97 item C. "Regulatory Position" with the following clarifications:

2.1 Seismic Qualification of Category 2 Instrumentation (RG 1.97 para. 1.3.2.a) - Category 2 instruments which perform a safety-related function will meet the requirements of Regulatory Guide 1.100. Category 2 instruments which are part of a safety-related system for maintaining a pressure boundary will be seismically qualified to insure pressure boundary integrity during accident conditions if the loss of integrity could jeopardize the operation of the fluid system. The electrical components and control room indication for these variables will not be seismically qualified. Category 2 instruments that are not included in the clarifications discussed above, will not be designed to meet the seismic requirements of Regulatory Guide 1.100.

2.2 Environmental Qualification of Category 2 Instrumentation (RG 1.97 para. 1.3.2.a) - Instruments for Category 2 variables will be specified and designed to remain functional in a postulated accident environment. The qualification of these instruments will depend on

the instrument usage. Category 2 instruments which are functionally safety-related (i.e., Class IE) and are located in harsh environments will be qualified in accordance with 10 CFR 50.49. Category 2 instruments which actively form part of the pressure boundary of a safety related system or whose failure could otherwise affect a safety-related system will be qualified to the extent necessary to ensure that such failures do not occur. No additional environmental qualification will be required for the remainder of the Category 2 instruments.

2.3 Quality Assurance (QA) Requirements (RG 1.97 para. 1.3.1.e and 1.3.2.d) - Previously installed Category 1 and 2 instruments as identified in the attachments were installed under the existing QA programs in effect at that time, which met the requirements of 10 CFR 50, Appendix B. Instrumentation being implemented for RG 1.97 which is required to meet 10 CFR 50 Appendix B, will be installed under the existing QA program at the time of installation. MP&L's QA program is contained in the MP&L QA topical report; MPL-TOP-1A "Operational Quality Assurance Manual."

MP&L will evaluate Category 2 instrumentation for inclusion in the GGNS Q-List for both safety-related and nonsafety-related application. The GGNS operating QA program will then be applied to the appropriate portions of the Category 2 instrumentation as delineated in the Q-List.

2.4 Instrument Identification (RG 1.97 para 1.4b) - The identification of instruments for post-accident monitoring must take into consideration other NUREG-0737 Supplement 1 activities such as detailed control room design review and emergency operating procedures upgrade. By incorporating these activities and RG 1.97 into an integrated project (NUREG 0737 Supplement 1), the NRC has ensured that human factors engineering and RG 1.97 integration is achieved. GGNS will develop a philosophy regarding instrument channel identification as part of the overall Emergency Response Capability program, and it will be implemented as part of the GGNS Detailed Control Room Design Review (DCRDR).

2.5 Servicing, Testing and Calibration (RG 1.97 para. 1.5.a) - Servicing, testing and calibration programs of instruments are not provided herein, but will be established and implemented on a frequency necessary to maintain instrumentation operability.

3.0 COMPLIANCE TO NUREG-0737 SUPPLEMENT 1

This report fulfills the requirements of NUREG-0737 Supplement 1 section 6.2. As provided in Attachment 1, the Type A,B,C,D and E variables have been addressed showing instrument range, environmental qualification, seismic qualification, quality assurance, redundancy, power supply, control room display and schedule for implementation as discussed in the GGNS positions. Deviations, considered appropriate for GGNS, are discussed and supporting justification or alternatives are provided in Attachment 3. Where a variable was referenced as more than one type, only the most limiting application for GGNS was evaluated and addressed.

The measurement and indication of RG 1.97 variables per NUREG-0737 Supplement 1 section 6.1.b for display in the control room are discussed in the attachments to this report.

As required by NUREG-0737 Supplement 1 Sections 6.1.c, 6.1.d, 8.2.1.h, and 8.4.1.g, Types A, B, C, D, and E variables necessary for TSC and EOF functions will be provided primarily by the use of the GGNS Emergency Response Facility Information System/Safety Parameter Display System (ERFIS/SPDS) as identified in our letter from J. P. McGaughy to H. R. Denton dated April 15, 1983, in response to NUREG-0737 Supplement 1. A specific review of these variables for display in the EOF and TSC has not been performed. However, the GGNS ERFIS/SPDS computer based system which will contain both the SPDS safety parameters and the offsite dose assessment model for monitoring post accident status will be provided in the TSC and EOF. The SPDS displays and parameter set are still under development, but they will be identified in the GGNS SPDS Safety Analysis.

Human factors considerations of Section 5.1.d to NUREG-0737 Supplement 1 for existing RG 1.97 instrumentation will be evaluated during the GGNS DCRDR review phase and future modifications will be evaluated against the results established by the DCRDR summary results.

4.0 GGNS TYPE A VARIABLES

RG 1.97 defines Type A variables as "those variables to be monitored that provide the primary information required to permit the control room operator to take specific manually controlled actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for design basis accident events." Primary information is defined by RG 1.97 as "information that is essential for the direct accomplishment of the specified safety functions." (Variables associated with contingency actions that may be identified in written procedures are excluded from this definition of primary information.) The Type A variables were determined from a review of the control guidelines of the existing GGNS Emergency Procedures and the BWR Emergency Procedure Guidelines. Uninterruptible power supplies (UPS) for these variables were evaluated where momentary interruption is not tolerable. The type A variables have been or will be provided at GGNS are Category 1. The following RG 1.97 variables have been determined to be the Type A variables at GGNS as further identified in Attachment 1:

RPV Level
RPV Pressure
Drywell Pressure
Drywell Atmosphere Temperature
Primary Containment Pressure
Primary Containment Temperature
Suppression Pool Water Temperature
Suppression Pool Water Level
Containment Hydrogen Concentration
Drywell Hydrogen Concentration
Group 1 (MSIV) Isolation

GGNS POSITION REPORT TABULATION
REGULATORY GUIDE 1.97 (REVISION 2)

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
TYPE A VARIABLES									
1A RPV Level					Bottom of core support plate (-316.7) to centerline of main steam line (+118")				
Wide Range	1	A/1	Note 4	Note 5		+60 to -160 in. w.c.	1E	2 divs.	Recorded
Fuel Zone	1	A/1	Note 6	Note 21		-117.0 to -317.0 in. w.c.	Non-1E RPS	2 divs.	Recorded
Shutdown Range	1	B/2	Note 6	Note 21		0 to 180 in. w.c.	Non-1E RPS	None	Recorded
2A RPV Pressure	1	A/1	Note 4	Note 5	15 psia to 1500 psig	0-1500 psig	1E	2 divs.	Recorded
3A Drywell Pressure	1	A/1	Note 4	Note 5	0-110% design pressure (0-33 psig)	-10 to +40 psig	1E UPS	2 divs.	Recorded
4A Drywell Atmosphere Temperature	1	A/1	Note 4	Note 5	40 to 440 F	0-400 F	1E	2 divs.	Recorded
5A Primary Ctmt Pressure	1	A/1	Note 4	Note 5	10 psia - 3x design pressure 3x (15 psig)	-5/0/+5 psig 0-50 psig	1E UPS	2 divs.	Recorded
6A Primary Ctmt Temperature	1	A/1	Note 4	Note 5	N/A	0-400 F	1E	2 divs.	Recorded
7A Suppression Pool Wtr Temp	1	A/1	Note 4	Note 5	30 to 230 F	30-230 F	Non-1E RPS	2 divs.	Recorded
8A Suppression Pool Wtr Level	1	A/1	Note 4	Note 5	Bottom of ECCS suction (103'0") to 5 ft above normal level (116'7")	0-180 in. w.c. 103'6"-118'6" plant elevation	1E UPS	2 divs.	Recorded

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
TYPE A VARIABLES							
1A RPV Level							
Wide Range	Yes	Yes	B21-LT-N091 B21-UR-R623	-	Yes	NA	NA
Fuel Zone	No	Yes	B21-LT-N044 B21-LR-R615	Note 7	Yes	Second refuel outage	Position 1
Shutdown Range	No	Yes	B21-LT-N027 B21-LT-R605	Note 7	Yes Note 3	Second refuel outage	Position 1
2A RPV Pressure	Yes	Yes	B21-PT-N062 B21-UR-R623	Note 8	Yes	First refuel outage	Position 2
3A Drywell Pressure	Yes	Yes	M71-PDT-N001 M71-PDR-R601		Yes	NA	NA
4A Drywell Atmosphere Temperature	Yes Note 9	Yes	M71-TE-N013 M71-TE-N008 M71-TR-R602 M71-TR-R603	Note 10	Yes Note 3	First refuel outage	Position 3
5A Primary Ctmt Pressure	Yes	Yes	M71-PDT-N002 M71-PDT-N027 M71-PDR-R601	-	Yes	NA	NA
6A Primary Ctmt Temperature	Yes Note 9	Yes	M71-TE-N007 M71-TR-R602 M71-TR-R603	Note 11	Yes	NA	NA
7A Suppression Pool Wtr Temp	Yes Note 9	Yes	M71-TE-N012, N022, N023, N024, N025, N026 M71-TR-R605	Note 12	Yes	First refuel outage	Position 4
8A Suppression Pool Wtr Level	Yes	Yes	E30-LT-N003 E30-LR-R600	Note 13	Yes Note 3	First refuel outage	Position 5

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
9A Ctmt Hydrogen Concentration	1	A/1	Note 14	Note 5	0-30% H_2	0-10% H_2	1E	2 divs.	Recorded
10A Drywell Hydrogen Concentration	1	A/1	Note 14	Note 5	0-30% H_2	0-10% H_2	1E	2 divs.	Recorded
11A Group 1 Isolation	1	A/1	Note 4	Note 5 Note 19	Closed, open	Closed, open	Non-1E RPS	None	Indicated
TYPE B VARIABLES									
1B Neutron Flux	1	B/1	Note 16	Note 16	10^{-6} to 100% power	10^{-9}-125% power	Non-1E RPS	None	Note 17
2B Control Rod Position	3	B/3	None	None	Full in or Not full in	Note 20	Non-1E	NA	Note 20
3B RCS Soluble Boron Concentration Sample	3	E/3	See Item 20E		0-1000 ppm	See Item 20E	-	-	-
4B RPV Level	1	A/1	See Item 1A		-316.7 to +118"	See Item 1A	-	-	-
5B BWR Core Thermocouples	1	NA	NA	NA	200 to 2300 F	NA	NA	NA	NA
6B RPV Pressure	1	A/1	See Item 2A		15 psia to design pressure (1025 psig)	See Item 2A	-	-	-
7B Drywell Pressure	1	A/1	See Item 3A		0 to design pressure (30 psig)	See Item 3A	-	-	-
8B Drywell Sump Level	1	B/3	None	Note 21	Bottom to top (0-30")	0-30" H_2O	1E	None	Recorded
9B Primary Containment Pressure	1	A/1	See Item 5A		10 psia to design pressure (15 psig)	See Item 5A	-	-	-

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
9A Ctmt Hydrogen Concentration	Yes	Yes	E61-AITS-K002 E61-AR-R602	Note 15	Yes Note 3	NA	Position 6
10A Drywell Hydrogen Concentration	Yes	Yes	E61-AITS-K001 E61-AR-R602	Note 15	Yes Note 3	NA	Position 6
11A Group 1 Isolation	No	Yes	Note 18	Note 19	Yes Note 3	First refuel outage	Position 8
TYPE B VARIABLES							
1B Neutron Flux	Yes	Note 16	C51-NE-N001, N002, N011, N012, N013, N014 Note 17	Note 16	No	Second refuel outage	Position 7
2B Control Rod Position	No	None	C11-ZS-N124 C11-ZS-N125		Yes Note 3	NA	NA
3B RCS Soluble Boron Concentration Sample	-	-	-	-	-	-	-
4B RPV Level	-	-	-	-	-	-	-
5B BWR Core Thermocouples	NA	NA	NA	NA	NA	NA	Position 9
6B RPV Pressure	-	-	-	-	-	-	-
7B Drywell Pressure	-	-	-	-	-	-	-
8B Drywell Sump Level	No	Note 22	E31-LT-N093 E31-LR-R618	-	Yes Note 3	NA	Position 10
9B Primary Containment Pressure	-	-	-	-	-	-	-

ITEM NO. VARIABLE	REG GUI. CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
10B Primary Containment Isolation Valve Position	1	B/1	Note 4	Note 5	Closed-Not closed	Closed/open	1E Except Group 1	No	Indicated
TYPE C VARIABLES									
1C Radiation Conc. in Circulating Primary Coolant	1	E/3	None	None	(½ to 100) x tech spec limit (≤2 μCi/gm x I-131 and ≤100/Eμci/gm)	10^{-2} μCi/ml to any range by dilution	Non-1E	None	None
2C Analysis of Primary Coolant Gamma Spectrum	3	E/3	See Item 19E		10 μCi/gm to 10 Ci/gm	See Item 19E	-	-	-
3C BWR Core Thermocouples	1	NA	See Item 5B		200 to 2300 F	See Item 5B	-	-	-
4C RPV Pressure	1	A/1	See Item 2A		15 psia to 1500 psig	See Item 2A	-	-	-
5C Primary Ctmt Area Radiation	3	C/1	Note 4	Note 5	1 R/hr to 10^5 R/hr	$1-10^7$ R/hr	1E UPS	2 divs.	Monitor, recorded
6C Drywell Drain Sump Level	1	B/3	See Item 8B		Bottom to top (0-30")	See Item 8B	-	-	-
7C Suppression Pool Water Level	1	A/1	See Item 8A		Bottom of ECCS suction to 5 feet above normal water level	See Item 8A	-	-	-
8C Drywell Pressure	1	A/1	See Item 3A		0 to design pressure (0-30 psig)	See Item 3A	-	-	-
9C RPV Pressure	1	A/1	See Item 2A		15 psia to 1500 psig	See Item 2A	-	-	-
10C Containment & Drywell Hydrogen	1	A/1	See Items 9A & 10A		0-30% H_2 12 psia to design press. environ	See Items 9A & 10A	-	-	-
11C Containment & Drywell Oxygen	1	NA	NA	NA	0-10% O_2	NA	NA	NA	NA
12C Containment Effluent Radioactivity Noble Gas	3	E/2	See Item 4E		10^{-6} to 10^{-2} μCi/cc	See Item 4E	-	-	-

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
10B Primary Containment Isolation Valve Position	No	Yes	Note 23	Note 19	Yes Note 3	First refuel outage	Position 11
TYPE C VARIABLES							
1C Radiation Level in Circulating Primary Coolant	No	No	P.A.S.S.	-	Yes Note 3	NA	Position 12
2C Analysis of Primary Coolant Gamma Spectrum	-	-	-	-	-	-	-
3C BWR Core Thermocouples	-	-	-	-	-	-	-
4C RPV Pressure	-	-	-	-	-	-	-
5C Primary Ctmt Area Radiation	Yes	Yes	D21-RE-N048 D21-RR-R601	-	Yes	NA	NA
6C Drywell Drain	-	-	-	-	-	-	-
7C Suppression Pool Water Level	-	-	-	-	-	-	-
8C Drywell Pressure	-	-	-	-	-	-	-
9C RPV Pressure	-	-	-	-	-	-	-
10C Containment & Drywell Hydrogen	-	-	-	-	-	-	-
11C Containment & Drywell Oxygen	NA	NA	NA	Does not apply to GGNS	NA	NA	Ctmt is not inert; does not apply
12C Containment Effluent Radioactivity Noble Gas	-	-	-	-	-	-	-

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
13C Radiation Exposure Rate	2	NA	NA	NA	10^{-1} to 10^{4} R/hr	NA	NA	NA	NA
14C Effluent Radioactivity Noble Gases	2	E/2	See Item 7E		10^{-6} to 10^{3} µCi/cc	See Item 7E	-	-	-
TYPE D VARIABLES									
1D Main Feedwater Flow	3	D/3	None	None	0-110% design flow (0-22.6 mlb/hr)	0-14 mlb/hr per line	Non-1E UPS	2 channels	Indication
2D CST Level	3	D/3	None	None	Bottom to top (0-31'0")	1'1" to 41'1" level	Non-1E UPS	None	Indication
3D Ctmt Spray Flow	2	D/2	Note 4	Note 5	0-110% design flow (0-8195 gpm)	0-10 kgpm	1E	None	Indication
4D Drywell Pressure	2	A/1	See Item 3A		12 psia to 3 psig	See Item 3A	-	-	-
5D Suppression Pool Water Level	2	A/1	See Item 8A		Top of vent to top of weir wall	See Item 8A	-	-	-
6D Suppression Pool Water Temp	2	A/1	See Item 7A		30 to 230 F	See Item 7A	-	-	-
7D Drywell Atmosphere Temp	2	A/1	See Item 4A		40 to 440 F	See Item 4A	-	-	-
8D Drywell Spray Flow	2	NA	NA	NA	0 to 110% design flow	NA	NA	NA	NA
9D MSIV Leakage Control Sys Press.	2	D/2	Note 4	Note 5	0-15" w.c. 0-5 psid	0-50 psia 0-100 psig	1E	2 divs.	Recorded
10D SRV Position Pressure in Valve Line	2	D/2	Note 4	Note 5	0-50 psig	0-100 psig	1E UPS	None	Indication
11D Isol Cond Sys Shell-Side Wtr Lvl	2	NA	NA	NA	op to bottom	NA	NA	NA	NA

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
13C Radiation Exposure Rate	NA	NA	NA	NA	NA	NA	Position 13
14C Effluent Radioactivity Noble Gases	-	-	-	-	-	-	-
TYPE D VARIABLES							
1D Main Feedwater Flow	Yes Note 9	No	N21-FT-N087 N21-FI-R686	-	Yes	NA	NA
2D CST Level	Yes	No	P11-LT-N003 P11-LI-R601	-	Yes Note 3	NA	Position 14
3D Ctmt Spray Flow	Yes	Yes	E12-FT-N015 E12-FI-R603	-	Yes Note 3	NA	Position 15
4D Drywell Pressure	-	-	-	-	-	-	-
5D Suppression Pool Water Level	-	-	-	-	-	-	-
6D Suppression Pool Water Temp	-	-	-	-	-	-	-
7D Drywell Atmosphere Temp	-	-	-	-	-	-	-
8D Drywell Spray Flow	NA	NA	NA	Does not apply to GGNS	NA	NA	NA
9D MSIV Leakage Control Sys Press.	No	Yes	E32-PT-N051 E32-PT-N061 E32-PIS-N651 E32-PIS-N661	-	Yes	NA	NA
10D SRV Position Pressure in Valve Line	No	Yes	B21-PS-N150 B21-XA-L634	-	Yes	NA	NA
11D Iso Cond Sys Shell-Side Wtr Lvl	NA	NA	NA	Does not apply to GGNS	NA	NA	NA

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
12D Isol Cond Sys Vlv Position	2	NA	NA	NA	Open or Closed	NA	NA	NA	NA
13D RCIC Flow	2	D/2	Note 4	Note 5	0-110% design flow (0-880 gpm)	0-1000 gpm	1E UPS	None	Indication
14D HPCS Flow	2	D/2	Note 4	Note 5	0-110% design flow (0-7826 gpm)	0-10,000 gpm	1E UPS	None	Indication
15D LPCS Flow	2	D/2	Note 24	Note 5	0-110% design flow (0-7826 gpm)	0-10,000 gpm	1E	None	Indication
16D LPCI Flow	2	D/2	Note 4	Note 5	0-110% design flow (0-8195 gpm)	0-10,000 gpm	1E	None	Indication
17D SLCS Flow	2	NA	NA	NA	0-110% design flow	NA	NA	NA	NA
18D SLCS Storage Tank Level	2	D/3	None	None	Bottom to top (0-12'1")	0'6 1/8" - 11' 0 1/8"	1E	None	Indication
19D RHR System Flow	2	D/2	Note 4	Note 5	0-110% design flow (0-8195 gpm)	0-10,000 gpm	1E	None	Indication
20D RHR Heat Exchanger Outlet Temp	2	D/2	Note 24	Note 5	32 to 350 F	0-750°F	Non-1E UPS	None	Recorded (0-600°F)
21D Clg Wtr Temp to ESF Sys Components	2	D/2	Note 24	Note 5	32 to 200 F	0-750°F	Non-1E UPS	None	Recorded (0-600°F)
22D Clg Wtr Flow to ESF Sys Components	2	D/2	Note 24	Note 5	0-110% design flow (0-14,700 gpm SSW) (0-850 gpm HPCS)	0-15,000 gpm SSW 0-1000 gpm HPCS	1E UPS SSW IE HPCS	None	Available for call-up on computer
23D High Radio-activity Liquid Tank Level	3	D/3	None	None	Top to bottom (0-16'5") (0-16'7")	10 5/8" to overflow	Non-1E	2 channels	None Note 25
24D Emergency Ventilation Damper Position	2	D/2	Note 4	Note 5	Open, closed	Open/close	1E	None	Indicated

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
12D Isol Cond Sys Vlv Position	NA	NA	NA	Does not apply to GGNS	NA	NA	NA
13D RCIC Flow	Yes	Yes	E51-FT-N003 E51-FI-R606	-	Yes	NA	NA
14D HPCS Flow	Yes	Yes	E22-FT-N005 E22-FI-R603	-	Yes	NA	NA
15D LPCS Flow	Yes	Yes	E21-FT-N003 E21-FI-R600	-	Yes	NA	NA
16D LPCI Flow	Yes	Yes	E12-FT-N015 E12-FI-R603	-	Yes	NA	Position 15
17D SLCS Flow	NA	NA	NA	-	Yes Note 3	NA	Position 16
18D SLCS Storage Tank Level	No	None	C41-LT-N001 C41-LI-R601	-	Yes Note 3	First Refuel Outage	Position 17
19D RHR System Flow	No	Yes	E12-FT-N015 E12-FI-R603	-	Yes	NA	NA
20D RHR Heat Exchanger Outlet Temp	Yes	Yes	E12-TE-N027A&B E12-TJRS-R601	-	Yes	First Refuel Outage	Position 18
21D Clg Wtr Temp to ESF Sys Components	No	Yes	P41-TE-N011 E12-TJRS-R601	-	Yes	NA	Position 19
22D Clg Wtr Flow to ESF Sys Components	No	Yes	P41-FT-N016A&B, SSW P41-FT-N016C HPCS	-	Yes	NA	NA
23D High Radio-activity Liquid Tank Level	No	No	SG17-LT-N280 SG17-LT-N283	Note 25	Yes	NA	NA
24D Emergency Ventilation Damper Position	No	Yes	Note 26	-	Yes	NA	NA

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
Status of Standby Power & Other Energy Sources Important to Safety									
25D AC Power	2	D/3	Note 27	Note 27	Volts, amps	Note 27	Note 27	None	Indicated
26D DC Power	2	D/2	Note 27	Note 27	Volts, amps	Note 27	Note 27	None	Indicated
27D Hydraulic/ Pneumatic	2	D/3	Note 27	Note 27	Pressure	Note 27	Note 27	None	Indicated
TYPE E VARIABLES									
1E Primary Ctmt Area Radiation	1	C/1	See Item 5C		$1-10^7$ R/hr	See Item 5C	-	-	-
2E Reactor Building or Secondary Containment Area Radiation	1	C/1	NA	NA	$1-10^7$ R/hr	NA	NA	NA	NA
3E Radiation Exposure Rate	2	E/3	None	None	10^{-1} - 10^4 R/hr	Note 28	Non-1E UPS	None	Note 28
Noble Gases & Vent Flow Rate									
4E Drywell Purge, SGTS & Ctmt Purge	2	E/2	Note 6	Note 29	10^{-6} to 10^5 μCi/cc 0-110% vent design flow rate	Note 30	Note 30	None	Note 31
5E Secondary Ctmt Purge	2	E/2	See Item 4E		10^{-6} to 10^4 μCi/cc 0-110% vent design flow rate	See Item 4E	-	-	-
6E Secondary Ctmt (Shield Building Annulus)	2	NA	NA	NA	10^{-6} to 10^4 μCi/cc 0-110% vent design flow rate	NA	NA	NA	NA
7E Auxiliary Building	2	E/3	Note 6	Note 29	10^{-6} to 10^3 μCi/cc 0-110% vent design flow rate	Note 33	Note 33	None	Note 31
8E Common Plant Vent or Multi-purpose Vent Discharging	2	NA	NA	NA	10^{-6} to 10^3 μCi/cc 0-110% vent design flow rate	NA	NA	NA	NA

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
Status of Standby Power & Other Energy Sources Important to Safety							
25D AC Power	No	Note 27	Note 27	Note 27	Yes Note 3	NA	Position 20
26D DC Power	No	Note 27	Note 27	Note 27	Yes Note 3	NA	Position 20
27D Hydraulic/ Pneumatic	No	Note 27	Note 27		Yes Note 3	NA	Position 20
TYPE E VARIABLES							
1E Primary Ctmt Area Radiation	-	-	-	-	-	-	-
2E Reactor Building or Secondary Containment Area Radiation	NA	NA	NA	Does not apply to GGNS	NA	NA	NA
3E Radiation Exposure Rate	No	No	Note 28	-	Yes Note 3	NA	Position 21
Noble Gases & Vent Flow Rate							
4E Drywell Purge, SGTS & Ctmt Purge	No	No	Note 30	Note 32	Yes Note 3	First Refuel Outage	Position 22
5E Secondary Ctmt Purge	-	-	-	-	NA	NA	NA
6E Secondary Ctmt (Shield Building Annulus)	NA	NA	NA	Does not apply to GGNS	NA	NA	NA
7E Auxiliary Bldg	No	No	Note 33	Note 34	Yes Note 3	NA	Position 23
8E Common Plant Vent or Multipurpose Vent Discharging	NA	NA	NA	Does not apply to GGNS	NA	NA	NA

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
9E All Identified Plant Release Points; Sampling w/On-site Analysis Capability	2	NA	NA	NA	10^{-6} to 10^{2} μCi/cc 0-110% design flow	NA	NA	NA	NA
Particulates and Halogens									
10E All Identified Plant Release Points; Sampling w/Onsite Analysis Capability	3	E/3	None	None	10^{-3} - 10^{2} μCi/cc 0-110% design flow	Note 35	None	None	Note 31
11E Radiation Exposure Meters	NA	NA	None	None	NA	None	None	None	None
12E Airborne Radiohalogens & Particulates (Portable)	3	E/3	None	None	10^{-9} - 10^{-3} μCi/cc	10^{-9} to 10^{-3} μCi/cc	NA	NA	No
13E Plant & Environs Radiation (Portable)	3	E/3	None	None	10^{-3}-10^{4} R/hr photons 10^{-3}-10^{4} R/hr beta & low energy photons	10^{-3} to 2 x 10^{4} R/hr photons & beta	NA	NA	No
14E Plant & Environs Radioactivity	3	E/3	None	None	Multichannel spectrometer	Multichannel analyzer	NA	NA	No
15E Wind Direction	3	E/3	None	None	0-540°, starting speed .7 mph, dampening .4 at 10° distance constant 1.1 meters, accuracy ±3°	Note 39	Non-1E	Note 40	Note 40
16E Wind Speed	3	E/3	None	None	0-90 mph, accuracy ±1%, distance constant 5 ft, starting threshold 0.63 mph	Note 41	Non-1E	Note 40	Note 40
17E Estimation of Atmospheric Stability	3	E/3	None	None	-10°F to 20°F delta ±0.1°F or 1% of ΔT	Note 42	Non-1E	Note 40	Note 40

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
9E All Identified Plant Release Points; Sampling w/Onsite Analysis Capability	NA	NA	NA	No other release points identified	NA	NA	NA
Particulates and Halogens							
10E All Identified Plant Release Points; Sampling w/Onsite Analysis Capability	NA	No	Note 35		Yes	NA	NA
11E Radiation Exposure Meters	No	No	-		No	NA	Position 24
12E Airborne Radiohalogens & Particulates (Portable)	NA	No	Note 36	-	Yes	NA	NA
13E Plant & Environs Radiation (Portable)	NA	No	Note 37	-	No	NA	NA
14E Plant & Environs Radioactivity	NA	No	Note 38	-	Yes	NA	NA
15E Wind Direction	Yes	No	C84-ST-N018 & N022		Yes	NA	NA
16E Wind Speed	Yes	No	C84-ZT-N018 & N021		Yes	NA	NA
17E Estimation of Atmospheric Stability	Yes	No	C84-TT-N023 & N020		Yes	NA	NA

ITEM NO. VARIABLE	REG GUIDE CAT	GGNS TYPE/CAT	QUALIFICATION ENVIRON	QUALIFICATION SEISMIC	REG GUIDE RANGE	GGNS RANGE	POWER SUPPLY	REDUNDANCY	CONTROL ROOM DISPLAY
Accident Sampling									
I. Primary Coolant and Sump									
18E Gross Activity	3	E/3	None	None	10 μCi/ml to 10 Ci/ml	10^{-2} μCi/ml to any range by dilution	Non-1E	None	None
19E Gamma Spectrum	3	E/3	None	None	Isotopic Analysis	Isotopic Analysis	Non-1E	None	None
20E Boron Content	3	E/3	None	None	0-1000 ppm	250-10,000 ppm	Non-1E	None	None
21E Chloride Content	3	E/3	None	None	0-20 ppm	100 ppb-1 ppm 1-20 ppm	Non-1E	None	None
22E Dissolved H_2 or Total Gas	3	E/3	None	None	0-2000 cc/kg (STP)	.5-50% H_2	Non-1E	None	None
23E Dissolved O_2	3	E/3	None	None	0-20 ppm	500 ppb-19 ppm	Non-1E	None	None
24E pH	3	E/3	None	None	1-13 ppm	0-14 ± .2	Non-1E	None	None
II. Containment Air									
25E Hydrogen	3	E/3	None	None	0-10%	Note 44	Non-1E	None	None
26E Oxygen	3	E/3	None	None	0-30%	Note 44	Non-1E	None	None
27E Gamma Spectrum	3	E/3	None	None	Isotopic Analysis	Isotopic Analysis	Non-1E	None	None

ITEM NO. VARIABLE	SPDS (NOTE 1)	QA (NOTE 2)	INSTRUMENT	COMMENTS	REG GUIDE COMPLIANCE	SCHEDULE	GGNS POSITION
Accident Sampling			Note 43	Note 43	Yes Note 3	NA	Position 25
I. Primary Coolant and Sump							
18E Gross Activity	NA	NA	-	-	Yes	NA	-
19E Gamma Spectrum	NA	NA	-	-	Yes	NA	-
20E Boron Content	NA	NA	-	-	No	NA	-
21E Chloride Content	NA	NA	-	-	No	NA	-
22E Dissolved H_2 or Total Gas	NA	NA	-	-	No	NA	-
23E Dissolved O_2	NA	NA	-	-	No	NA	-
24E pH	NA	NA	-	-	Yes	NA	-
II. Containment Air							
25E Hydrogen	NA	NA	Note 44	Note 44	Yes	NA	-
26E Oxygen	NA	NA	Note 44	Note 44	Yes	NA	-
27E Gamma Spectrum	NA	NA	-	-	Yes	NA	-

NOTES FOR GGNS POSITION REPORT TABULATION
REGULATORY GUIDE 1.97 (REVISION 2)

Note 1 Items noted as "Yes" are presently input into the Emergency Response Facility Information System (ERFIS) which will be available for on-demand callup from the control room TSC and EOF. The ERFIS inputs will be evaluated further based on this document and the revised SPDS parameter set developed from the GGNS upgraded emergency operating procedures.

Note 2 Items indicated as "Yes" were installed under the existing QA programs in effect at that time which met the requirements of 10 CFR 50, Appendix B.

Note 3 Based on the modifications being proposed by MP&L and/or the existing GGNS design which is considered by MP&L to meet the "intent" of Regulatory Guide 1.97, GGNS is considered to be in compliance with Regulatory Guide 1.97, Rev. 2, for this variable.

Note 4 Instrumentation complies with 10 CFR 50.49.

Note 5 Instrument seismic qualification meets the requirements of IEEE 344-1975.

Note 6 Instrumentation is located in a harsh environment; however, it is not presently required to meet the 10 CFR 50.49 requirements.

Note 7 Only the existing wide range RPV level instruments meet the requirements for Category 1.

Note 8 These instruments are used as a primary indication which provides key information for assessing the extent of certain accidents, as required by the BWR EPGS.

Note 9 The same variable is input to ERFIS as to the control room, but the signals are derived from different instruments. The qualification and QA sections in the table are for control room input only. This will be evaluated further during the SPDS parameter set development.

Note 10 The existing GGNS design does not presently comply with Reg. Guide 1.97 in that instrumentation does not monitor a range of 40 to 440 F and is not on 1E UPS power.

Note 11 Based on the energy transfer rate between drywell and containment atmospheres (Reference FSAR Chapter 6.2), containment temperature will remain relatively constant

over the time period standby power would be unavailable (≈10 sec). Therefore, uninterruptible power is not required.

Note 12 The present GGNS normal power supply is RPS with manual switching to standby power through non-Class 1E control circuits.

Note 13 The existing GGNS instrumentation monitors a range from 103'-6" (centerline of ECCS suction) to 118'-6". The centerline of ECCS suction is the lowest available level for use of the suppression pool as a source for ECCS water (i.e., at or above this point the RHR pumps would begin to lose suction). Therefore, the remaining pool volume (below 103'-6") is not available for RPV injection.

Note 14 Post-LOCA gas analysis systems E61-J001A/B and J002A/B (of which E61-AITS - K001A/B and K002A/B are a part) are covered by 10 CFR 50.49 Qualification Program.

Note 15 Containment and Drywell Hydrogen Concentration

The discussion and models used for hydrogen control issues have shown that the hydrogen recombiners "trip" on over-temperature at approximately 4% hydrogen levels. The 1/20th scale test performed for the hydrogen control issue has also shown that hydrogen burn (caused by the hydrogen igniters) occurs at 6% hydrogen concentration.

Note 16 There are two areas in which the present instrumentation does not meet Category 1 requirements: the first is qualification; the second is that present power supplies are either non-Class 1E or not uninterruptible. The present status of both is shown in Table 1. The detectors and amplifiers were installed under the construction QA program.

Table 1
PRESENT STATUS OF NEUTRON MONITORING SYSTEM

Equipment	SRMs	IRMs	LPRMs/APRMs
Drive Mechanisms	Non-1E power, No qualification	Non-1E power, No qualification	Not applicable
Detectors & Amplifiers	RPS power	RPS power, IEEE 323-1971 & IEEE 344-1975	RPS power, IEEE 323-1971
Recorders & Indicators	Non-1E UPS power No qualification	Non-1E UPS power No qualification	Non-1E UPS power No qualification

Note 17 Recorders

C51-NR-R602A	SRM Recorder A
C51-NR-R602B	SRM Recorder B
C51-NR-R603A	IRM/APRM Recorder A
C51-NR-R603B	IRM/APRM Recorder B
C51-NR-R603C	IRM/APRM Recorder C
C51-NR-R603D	IRM/APRM Recorder D

Note 18 This table provides the instrument numbers for those valves used as Group 1 Isolation.

Valve	Instrument	Position Indicated on Isolation Valve Status Panel
B21-F022A	B21-ZS-N101A	Yes
B21-F022B	B21-ZS-N101B	Yes
B21-F022C	B21-ZS-N101C	Yes
B21-F022D	B21-ZS-N101D	Yes
B21-F028A	B21-ZS-N102A	Yes
B21-F028B	B21-ZS-N102B	Yes
B21-F028C	B21-ZS-N102C	Yes
B21-F028D	B21-ZS-N102D	Yes

Note 19 Primary containment isolation valve position indication is the key variable for determining the status of primary containment isolation. The present instrumentation meets the requirements of Regulatory Guide 1.97 with the following exceptions:

1. The position switches for the Group 1 isolation valves (B21-F022A, B, C, and D, and B21-F028A, B, C, and D) do not have a Class 1E power supply.

2. Redundant valve position indication is not provided for each valve. Therefore, valve position indication does not meet the single failure criterion of Section 1.3.1.b of Regulatory Guide 1.97.

3. The control room indicating lamps are not seismically qualified per IEEE 344-1975.

Group 1 Isolation

Group 1 isolation does not meet the specific criteria of a Type A variable, since no specific operator action is required from monitoring this variable. However, MP&L considers its importance for RPV isolation under accident conditions and its recognition as an entry condition into the RPV control guideline of the BWR EPGs, to be equivalent to a Type A variable.

Note 20 The Control Rod Position System consists of two independent channels in monitoring control rod position. Both channels have separate signals and perform exactly the same function. There are 49 control rod positions per rod, including fully inserted (position 00) per channel. The control room operator may select Channel A, Channel B, or both for display on a 2-character, seven segment L.E.D. display device for each rod. Additionally, there is a single indicating lamp for all rods fully inserted.

Note 21 This device was installed seismically, but is not qualified to function after a seismic event.

Note 22 This instrument was installed under the construction QA Program, but no QA Program was used for purchasing, manufacturing, shipping, receiving, or storing of this device.

Note 23 The following table provides the existing instrument numbers for the primary containment isolation valve position indication. (Group 1 isolation indication is provided in Note 18.)

Valve	Instrument	Position Indication on the Isolation Valve Status Panel
P71-F148	P71-ZS-N020	Yes
P71-F149	P71-ZS-N021	Yes
P52-F105	P52-ZS-N012	Yes
P53-F001	P53-ZS-N011	Yes
P45-F067	P45-ZS-N079	Yes
P45-F061	P45-ZS-N071	Yes
P45-F068	P45-ZS-N080	Yes
P45-F062	P45-ZS-N072	Yes
P45-F273	P45-ZS-N506	Yes
P45-F274	P45-ZS-N507	Yes
P45-F098	P45-ZS-N027	Yes
P45-F099	P45-ZS-N028	Yes

Valve	Instrument	Position Indication on the Isolation Valve Status Panel
P11-F075	P11-ZS-N005	No
P11-F130	P11-ZS-N070	Yes
P11-F131	P11-ZS-N071	Yes
P21-F017	P21-ZS-N017	No
P21-F018	P21-ZS-N003	Yes
P53-F003	P53-ZS-N012	Yes
P60-F009	P60-ZS-N009	Yes
P60-F010	P60-ZS-N010	Yes
P44-F053	P44-ZS-N009	No
P44-F069	P44-ZS-N032	No
P44-F070	P44-ZS-N029	No
P71-F150	P71-ZS-N022	No
E61-F009	E61-ZS-N019	Yes
E61-F010	E61-ZS-N020	Yes
E61-F056	E61-ZS-N027	Yes
E61-F057	E61-ZS-N028	Yes
E12-F011A	E12-ZS-N131A	Yes
E12-F011B	E12-ZS-N131B	Yes
E12-F024A	E12-ZS-N122A	No
E12-F024B	E12-ZS-N122B	No
E12-F028A	E12-ZS-N110A	No
E12-F028B	E12-ZS-N110B	No
E12-F037A	E12-ZS-N119A	No
E12-F037B	E12-ZS-N119B	No
G33-F053	G33-ZS-N121B	Yes
G33-F054A	G33-ZS-N121A	Yes
G33-F252A	G33-ZS-N128	Yes
G36-F101	G33-ZS-N138	No
G36-F106	G33-ZS-N136	Yes
M41-F011	M41-ZS-N026	Yes
M41-F012	M41-ZS-N027	Yes
M41-F034	M41-ZS-N018	Yes
M41-F035	M41-ZS-N019	Yes
G41-F028	G41-ZS-N103	Yes
G41-F029	G41-ZS-N102	Yes
G41-F044	G41-ZS-N101	Yes
B21-F019	B21-ZW-N117	Yes
B21-F016	B21-ZS-N116	Yes
B21-F067A	B21-ZS-N104A	Yes
B21-F067B	B21-ZS-N104B	Yes
B21-F067C	B21-ZS-N104C	Yes
B21-F067D	B21-ZS-N104D	Yes
E12-F021	E12-ZS-N122C	Yes

Valve	Instrument	Position Indication on the Isolation Valve Status Panel
E12-F008	E12-ZS-N104	Yes
E12-F009	E12-ZS-N103	Yes
E21-F012	E21-ZS-N106	No
E12-F023	E12-ZS-N132	Yes
E22-F023	E22-ZS-N106	Yes
E51-F078	E51-ZS-N133	Yes
E51-F031A	E51-ZS-N100	No
E51-F077	E51-ZS-N133	Yes
E51-F063	E51-ZS-N109	Yes
E51-F064	E51-ZS-N110	Yes
E51-F076	E51-ZS-N120	Yes
G33-F028	G33-ZS-N113	Yes
G33-F034	G33-ZS-N114	Yes
G33-F001	G33-ZS-N104	Yes
G33-F004A	G33-ZS-N105	Yes
G33-F039	G33-ZS-N110	Yes
G33-F040	G33-ZS-N109	Yes

Relief valves E12-F017A/B/C, E12-F025C, E12-F055A/B, E12-F036, E12-F005, E22-F014, E21-F018 and manual valves G41-F053 and G41-F201 are containment isolation valves that do not have position indication. In addition, the fuel transfer tube in the G41 system also does not have position indication. The two manual valves and the fuel transfer tube can be locked closed and kept under administrative control. The 10 relief valves are not capable of being fitted with position switches.

Note 24 Instrument is presently exempt from the existing NUREG-0588 requirements; therefore, qualification to 10 CFR 50.49 is not required.

Note 25 All sumps that could collect highly radioactive fluids after an accident pump to either the equipment drain collector tank or to the floor drain collector tank. Each tank has its level indicated and recorded on the radwaste console. The present instrumentation monitors a range from 10-5/8 inches to greater than tank overflow. This range covers the total usable volume of the tank. Monitoring the tank level below 10-5/8 inches is not considered necessary because this is below the pump shutoff level of 1 foot 2 inches.

Note 26 Primary containment penetrations for vents and purges are covered in containment isolation valve position section (Item 10B). The secondary containment dampers are as follows:

Valve (Damper)	Instrument	Valve Position Indicated on Isolation Valve Status Panel
Q1T41F006	T41-ZS-N025	No
Q1T41F007	T41-ZS-N026	Yes
Q1T42F003	T42-ZS-N013	No
Q1T42F004	T42-ZS-N016	No
Q1T42F011	T42-ZS-N002	No
Q1T42F012	T42-ZS-N001	No
Q1T42F019	T42-ZS-N022	No
Q1T42F020	T42-ZS-N021	No
Q1M41F007	M41-ZS-N023	Yes
Q1M41F008	M41-ZS-N022	Yes
Q1M41F036	M41-ZS-N020	Yes
Q1M41F037	M41-ZS-N021	Yes

Note 27 The variables in this category for GGNS are as follows:

1) ADS Air Receiver and Accumulator Pressure
2) Starting Air Pressure for Standby Diesel Generators
3) Starting Air Pressure for HPCS Diesel Generators
4) HPCS Standby Power, Voltage and Current (Division III)
5) Division I and II AC Power, Voltage and Current
6) Class 1E DC Power, Voltage and Current

STATUS OF STANDBY POWER INDICATORS

Function	Instrument	Type	Range
LCC 15 BA4 INCM FDR 52-15401	R20-II-R627A	185	0-1200A ac
480 V LCC 15 BA4	R20-EI-R628A	185	0-600 V ac
LCC 15 BA2 INCM FDR 52-15201	R20-II-R629A	185	0-1200A ac
480 V LCC 15 BA2	R20-EI-R630A	185	0-600 V ac
Bus 15AA INCM FDR 152-1511	R21-II-R613A	185	0-1500A ac
4.16 kV Bus 15AA	R21-EI-R615A	185	0-5.25 kV ac
LCC 15 BA6 INCM FDR 52-15601	R20-II-R648A	185	0-1200A ac
480 V LCC 15 BA6	R20-EI-R647A	185	0-600 V ac
Bus 15AA INCM FDR 152-1501	R21-II-R616A	185	0-1500A ac
Bus 15AA INCM FDR 152-1514	R21-II-R617A	185	0-1500A ac
LCC 15 BA5 INCM FDR 52-15501	R20-II-R631A	185	0-1200A ac
480 V LCC 15 BA5	R20-EI-R632A	185	0-600 V ac
LCC 15 BA1 INCM FDR 52-15101	R20-II-R633A	185	0-1200A ac

Function	Instrument	Type	Range
480 V LCC 15 BA1	R20-EI-R634A	185	0-600 V ac
LCC 15 BA3 INCM FDR 52-15301	R20-II-R635A	185	0-1200A ac
480 V LCC 15 BA3	R20-EI-R636A	185	0-600 V ac
DIESEL GENERATOR 11 (DIV. 1)			
Volts	P75-EI-R600A	180	0-5.25 kV ac
Frequency	P75-SI-R601A	180	55-65 Hz
Amps	P75-II-R604A	180	0-1500A ac
Field Volt	P75-EI-R605A	180	0-300 V dc
Field Amp	P75-II-R606A	180	0-400 A dc
Watts	P75-JI-R602A	180	0-10 MW
Vars	P75-JI-R603A	180	-10/0/+10 MVAR
125 V dc Bus 11DA	L21-EI-R603A	180	0-150 V dc
LCC 16 BB4 INCM FDR 52-16401	R20-II-R627B	185	0-1200A ac
480 V LCC 16 BB4	R20-EI-R628B	185	0-600 V ac
LCC 16 BB2 INCM FDR 52-16201	R20-II-R629B	185	0-1200A ac
480 V LCC 16 BB2	R20-EI-R630B	185	0-600 V ac
LCC 16 BB6 INCM FDR 52-16601	R20-II-R648B	185	0-1200A ac
480 V LCC 16 BB6	R20-EI-R647B	185	0-600 V ac
LCC 16 BB5 INCM FDR 52-16501	R20-II-R631B	185	0-1200A ac
480 V LCC 16 BB5	R20-EI-R632B	185	0-600 V ac
LCC 16 BB1 INCM FDR 52-16101	R20-II-R633B	185	0-1200A ac
480 V LCC 16 BB1	R20-EI-R634B	185	0-600 V ac
LCC 16 BB3 INCM FDR 52-16301	R20-II-R635B	185	0-1200A ac
480 V LCC 16 BB3	R20-EI-R636B	185	0-600 V ac
Bus 16 AB INCM FDR 152-1611	R21-II-R613B	185	0-1500A ac
4.16 kV Bus 16 AB	R21-EI-R615B	185	0-5.25 kV ac
Bus 16 AB INCM FDR 152-1614	R21-II-R617B	185	0-1500A ac
Bus 16 AB INCM FDR 152-1601	R21-II-R616B	185	0-1500A ac
DIESEL GENERATOR 12 (DIV. 2)			
Volts	P75-EI-R600B	180	0-5.25 kV ac
Frequency	P75-SI-R601B	180	55-65 Hz
Amps	P75-II-R604B	180	0-1500A ac
Field Volts	P75-EI-R605B	180	0-300 V dc
Field Amp	P75-II-R606B	180	0-400 A dc
Watts	P75-JI-R602B	180	0-10 MW
Vars	P75-JI-R603B	180	-10/0/+10 MVAR
125 V dc Bus 11DB	L21-EI-R603B	180	0-150 V dc
Bus 17AC INCM FDR 152-1704	E22 R622	180	0-1500A ac
Bus 17AC INCM FDR 152-1705	E22 R615	180	0-1500A ac
Bus 17AC INCM FDR 152-1706	E22 R620	180	0-1500A ac
MCC 17B01 INCM FDR 152-1703	E22 R621	180	0-300A ac
DIESEL GENERATOR 13 (HPCS, DIV. 3)			
Amps	E22 R607	180	0-800A ac
Vars	E22 R608	180	-4/0/+4 MVAR
Watts	E22 R609	180	0-6000KW ac
Bus Voltage	E22 R610	180	0-5.25 kV ac
480 V MCC 17B01 Voltage	E22 R617	180	0-600 V ac
DC Bus Voltage 125 V dc Bus 11 dc	E22 R618	180	0-150 V dc

The indicators listed are either GE Model 180 or Model 185. The Model 180 indicators were evaluated in accordance with IEEE 323-1974 and IEEE 344-1975 and are qualified to function at least 100 days after, but not during, a safe shutdown earthquake.

The Model 185 indicators were not qualified or required to function after a safe shutdown earthquake. However, they are qualified not to interrupt the operation of any Class 1E device by remaining structurally intact. The power supply for each device is the bus/LCC which that device monitors.

Both Model 180 and 185 indicators were installed under the existing QA program.

ADS Air Receiver Pressure

Transmitter	Indicator	Type	Range
B21-PT-N201A&B	B21-PI-R702	180	0-200 psig

The devices are to be implemented by an existing design change package. The devices for measuring and indicating ADS air receiver pressure will be qualified to 10 CFR 50.49 and IEEE 344-1975, and will be installed under the existing QA program.

There are no individual control room indicators for the standby diesel starting air storage tanks.

Note 28 Instruments for the Detection of Radiation Exposure Rate

Low range area monitors are provided at the following locations throughout the plant where radiation could be present.

Instrument	Function	Range	Recorder
D21-RE-N001	Radn Det RHR Room A	1-100,000 mR/hr	D21-RJR-R600A
D21-RE-N002	Radn Det RHR Room B	1-100,000 mR/hr	D21-RJR-R600A
D21-RE-N003	Radn Det RCIC Room	1-100,000 mR/hr	D21-RJR-R600A
D21-RE-N004	Radn Det Comp Clg Wtr HX	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N005	Radn Det Tip Mechanism Area	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N006	Radn Det Drwl Equip Hatch	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N007	Radn Det Drwl Pers Airlock	1-100,000 mR/hr	D21-RJR-R600A
D21-RE-N008	Radn Det Ctmt Pers Airlock	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N009	Radn Det Crd Hyd Units North	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N010	Radn Det Crd Hyd Units South	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N011	Radn Det RHR HX A Hatch	1-100,000 mR/hr	D21-RJR-R600A
D21-RE-N012	Radn Det RHR HX B Hatch	1-100,000 mR/hr	D21-RJR-R600A
D21-RE-N013	Radn Det SGTS Fltr Train	0.01-1000 mR/hr	D21-RJR-R600A

Instrument	Function	Range	Recorder
D21-RE-N014	Radn Det CRD Repair Room	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N015	Radn Det Outside CRD Rpr Rm	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N016	Radn Det Aux Bldg Sample Sta	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N017	Radn Det Ctmt Vent Equip Rm	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N018	Radn Det H_2 Sample Panel A	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N019	Radn Det H_2 Sample Panel B	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N020	Radn Det Ctmt Vent Fltr Tn	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N021	Radn Det Ctmt Sample Sta	0.1-10,000 mR/hr	D21-RJR-R600A
D21-RE-N022	Radn Det Fuel Handling Area	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N023	Radn Det Fuel Handling Area	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N024	Radn Det Fuel Handling Area	0.01-1000 mR/hr	D21-RJR-R600A
D21-RE-N025	Radn Det Fuel Handling Area	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N026	Radn Det Dryer Storage Area	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N027	Radn Det Sep Storage Area	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N028	Radn Det Ctmt Fuel Area N	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N029	Radn Det Ctmt Fuel Area S	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N030	Radn Det Ctmt Pers Airlock	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N031	Radn Det Turb Bldg Filtr Tn	0.1-10,000 mR/hr	D21-RJR-R600B
D21-RE-N032	Radn Det Turb Bldg Smpl Sta	0.1-10,000 mR/hr	D21-RJR-R600B
D21-RE-N033	Radn Det Mech Vac Pump Area	0.1-10,000 mR/hr	D21-RJR-R600B
D21-RE-N034	Radn Det Turb Bldg Inst Rack	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N035	Radn Det RX Feed Pump Area	1-100,000 mR/hr	D21-RJR-R600B
D21-RE-N036	Radn Det Turb Bldg Oper Fl	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N037	Radn Det Turb Bldg Oper Fl	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N038	Radn Det Turb Bldg Oper Fl	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N039	Radn Det Turb Bldg Oper Fl	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N040	Radn Det Rmt Shutdown Area	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N041	Radn Det Hot Machine Shop	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N042	Radn Det Rad Bldg Inst Rack	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N043	Radn Det Rad Bldg Sample Sta	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N044	Radn Det Rad Bldg Contr Sta	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N045	Radn Det Distlt Smpl Tk Rm	0.01-1000 mR/hr	D21-RJR-R600B
D21-RE-N046	Radn Det Rad Bldg HVAC Room	0.1-10,000 mR/hr	D21-RJR-R600B
D21-RE-N047	Radn Det Solid Radwaste Area	1-100,000 mR/hr	D21-RJR-R600B
D21-RE-N049	Radn Det Tech Support Center	0.01-1000 mR/hr	D21-RJR-R600C
D21-RE-N050	Radn Det Post ACC Smpl Area	1-100,000 mR/hr	D21-RJR-R600C
D21-RE-N600	Radn Det Control Room	0.01-1000 mR/hr	D21-RJR-R600B

Note 29 This device does not constitute a part of a safety system. Therefore seismic qualification is not required since it is Category 2.

Note 30 Noble Gases and Vent Flow Rate

Location and Function	Instrument	Range µCi/cc	Power Supply All non-UPS (unless noted)
I. FUEL HANDLING AREA			
A. Eberline SPING			
1. Low Range Noble Gas (NG)	D17-RE-N130	10^{-7}-$6x10^{-2}$	Non-1E
2. Mid-Range NG	D17-RE-N131	$2x10^{-2}$-$4x10^{2}$	Non-1E
B. GE Sample Panel			
Log Ccunt Rate Meter (LCRM)	D17-RITS-K619	$1.92x10^{-6}$ to $7.69x10^{-2}$	Non-1E UPS
C. Eberline AXM.			
1. Mid-Range Accident NG	D17-RE-N132	10^{-4}-10^{1}	Non-1E
2. High Range Accident NG	D17-RE-N133	10^{1}-10^{5}	Non-1E
II. STANDBY GAS TREATMENT B			
A. Eberline SPING			
1. Low Range NG	D17-RE-N142	10^{-7}-$6x10^{-2}$	1E (15B41)
2. Mid-Range NG	D17-RE-N143	$2x10^{-2}$-$4x10^{2}$	1E (15B41)
B. Eberline AXM.			
1. Mid-Range Accident NG	D17-RE-N144	10^{-4}-10^{1}	1E (15B41)
2. High Range Accident NG	D17-RE-N145	10^{1}-10^{5}	1E (15B41)
III. STANDBY GAS TREATMENT A			
A. Eberline SPING			
1. Low Range NG	D17-RE-N148	10^{-7}-$6x10^{-2}$	1E (15B41)
2. Mid-Range NG	D17-RE-N149	$2x10^{-2}$-$4x10^{2}$	1E (15B41)
B. Eberline AXM.			
1. Mid-Range Accident NG	D17-RE-N150	10^{-4}-10^{1}	1E (15B41)
2. High Range Accident NG	D17-RE-N151	10^{1}-10^{5}	1E (15B41)

IV. CONTAINMENT AREA

A. Eberline SPING

1. Low Range NG	D17-RE-N124	10^{-7}-$6x10^{-2}$	Non-1E
2. Mid-Range NG	D17-RE-N125	$2x10^{-2}$-$4x10^{2}$	Non-1E

B. GE Sample Panel

LCRM	D17-RITS-K603	1.92×10^{-6} 7.69×10^{-2}	Non-1E

C. Eberline AXM.

1. Mid-Range Accident NG	D17-RE-N126	10^{-4}-10^{1}	Non-1E
2. High Range Accident NG	D17-RE-N127	10^{1}-10^{5}	Non-1E

V. STACK FLOW INSTRUMENTS

Fuel Handling Area	D17-FT-N200C	0-35360 cfm	Non-1E
Standby Gas Treatment B	D17-FT-N200F	0-4300 cfm	1E (15B41)
Standby Gas Treatment A	D17-FT-N200E	0-4300 cfm	1E (15B41)
Containment Vent	D17-FT-N200B	0-6000 cfm	Non-1E

Note 31 The Eberline microprocessor-controlled noble gas, particulate, and iodine monitors will give an alarm and print out the parameters for the alarming station continuously. Post accident or any station information may be "called up" on the control room terminal at any time. The General Electric noble gas monitor channels are continuously recorded in the control room on the following recorders:

Containment, Off Gas and Radwaste Building Vents - D17-RR-R600
Turbine Building, Fuel Handling Area Vents - D17-RR-R607

These indicators/recorders will only be used to determine the noble gas activities released. To determine the iodine and particulate release activities, personnel will be required to remove the iodine/particulate filters from either the Eberline SPING, GE Sample Panel, Eberline AXM grab sample pallet or, for the standby gas treatment systems, from the alternate sample station on auxiliary building 139' elevation.

Note 32 The containment purge, fuel handling area ventilation, and standby gas treatment systems can be monitored by either a non-1E microprocessor-based system with on-demand callup and recording available in the control room, or a General

Electric-supplied sample panel with recording available (except SGTS A and B). The present system uses two separate sections to monitor the full range required by the Regulatory Guide. The AMC FM&IS panel controls sample flow to the Eberline SPING 4 detection system (for a range 10^{-7} to 4 x 10^{2} μCi/cc), or the GE Sample Panel, which has an installed sample pump and manual sample flow rate control (for a range 1.97 x 10^{-6} to 10^{-2} μCi/cc, except SGTS A and B).

The Eberline AXM Panel, with its installed vacuum pump, draws and analyzes a sample from the ventilation duct. (Note that this sample method meets the requirements of ANSI N13.1 at one ventilation flow rate only.) The sample results (vent flow rates for determining concentrations are provided by the AMC FM&IS panel via the SPING 4 microprocessor) are transmitted to the control room via the data acquisition module (range 10^{-4} to 10^{5} μCi/cc). It has been determined (Reference Mechanical Calc. 5.6.9.-N) that for post-LOCA conditions the release rate through the standby gas treatment system will be ≧1 x 10^{-3} μCi/cc and release rate through the containment and fuel handling area vent systems will be ≧1 x 10^{-2} μCi/cc prior to system isolation. Based on these release rates, it is not necessary to place Category 2 requirements on any low range instruments.

The present power supplies to the accident range monitors are as reliable as the power supplies for the ventilation systems which they monitor.

Note 33 Noble Gases and Vent Flow Rate

Location and Function	Instrument	Range μCi/cc	Power Supply All non-UPS (unless noted)
I. OFFGAS AND RADWASTE VENT			
A. Eberline SPING			
1. Low Range Noble Gas (NG)	D17-RE-N118	10^{-7} -6 x 10^{-2}	Non-1E
2. Mid-Range NG	D17-RE-N119	2 x 10^{-2} -4 x 10^{2}	Non-1E
B. GE Sample Panel			
LCRM	D17-RITS-K602	1.92 x 10^{-6} 7.69 x 10^{-2}	Non-1E UPS

C. Eberline AXM.

1. Mid-Range Accident	D17-RE-N120	10^{-4} -10^{1}	Non-1E
2. High Range Accident	D17-RE-N121	10^{1} -10^{5}	Non-1E

II. TURBINE BUILDING VENT

A. Eberline SPING

1. Low Range NG	D17-RE-N136	10^{-7}-$6x10^{-2}$	Non-1E
2. Mid-Range NG	D17-RE-N137	$2x10^{-2}$-$4x10^{2}$	Non-1E

B. GE Sample Panel

LCRM	D17-RITS-K620	1.92×10^{-6}	Non-1E
		7.69×10^{-2}	UPS

C. Eberline AXM.

1. Mid-Range Accident NG	D17-RE-N138	10^{-4}-10^{1}	Non-1E
2. High Range Accident NG	D17-RE-N139	10^{1}-10^{5}	Non-1E

III. STACK FLOW INSTRUMENTS

Offgas and Radwaste	D17-FT-N200A	0-53,600 cfm	Non-1E
Turbine Bldg	D17-FT-N200D	0-11,550 cfm	Non-1E

Note 34 The Turbine Building and Radwaste Building ventilation systems are presently monitored by a non-1E microprocessor-based system with on-demand callup and recording available in the control room, or a General Electric-supplied Sample Panel with recording available. The present system uses two separate sections to monitor the full range required by the Regulatory Guide. The AMC FM&IS panel controls sample flow to the Eberline SPING 4 detection system, which transmits its information to the control room (for a range 10^{-7} to 4×10^{2} μCi/cc), or the GE Sample Panel, which has an installed sample pump and manual sample flow rate control (for a range 1.97×10^{-6} to 10^{-2} μCi/cc).

The Eberline AXM Panel, with its installed vacuum pump, draws and analyzes a sample from the ventilation duct. (Note that this sample method meets the requirements of ANSI N13.1 at one ventilation flow rate only.) The sample results (vent flow rates for determining concentrations are

provided by the AMC FM&IS panel via the SPING 4 microprocessor) are transmitted to the control room via the data acquisition module (range 10^{-4} to 10^{5} μCi/cc).

For the Turbine Building and Radwaste Building, there are no postulated events which will cause a harsh environment. Therefore, no changes to these monitors are required.

Note 35 Iodine and Particulate

Location and Function	Instrument	Range μCi/cc	Power Supply All non-UPS (unless noted)
I. FUEL HANDLING AREA			
A. Eberline SPING			
Particulate	D17-RE-N128	8.43×10^{-5} to 8.43	Non-1E*
Iodine	D17-RE-N129	1.89×10^{-4} to 18.9	Non-1E*
B. AMC FM&IS			
Stack Flow	D17-RE-N200C	0-35360 cfm	Non-1E
II. STANDBY GAS TREATMENT B			
A. Eberline SPING			
Particulate	D17-RE-N140	8.43×10^{-5} to 8.43	1E (15B41)*
Iodine	D17-RE-N141	1.89×10^{-4} to 18.9	1E (15B41)*
B. AMC FM&IS			
Stack Flow	D17-FT-N200F	0-4300 cfm	1E (15B41)
III. STANDBY GAS TREATMENT A			
A. Eberline SPING			
Particulate	D17-RE-N146	8.43×10^{-5} to 8.43	1E (15B41)*
Iodine	D17-RE-N147	1.89×10^{-4} to 18.9	1E (15B41)*

B. AMC FM&IS			
Stack Flow	D17-FT-N200E	0-4300 cfm	1E (15B41)
IV. CONTAINMENT AREA			
A. Eberline SPING			
Particulate	D17-RE-N122	8.43×10^{-5} to 8.43	Non-1E*
Iodine	D17-RE-N123	1.89×10^{-4} to 18.9	Non-1E*
B. AMC FM&IS			
Stack Flow	D17-FT-N200B	0-6000 cfm	Non-1E
V. OFFGAS AND RADWASTE VENT			
A. Eberline SPING			
Particulate	D17-RE-N116	8.43×10^{-5} to 8.43	Non-1E*
Iodine	D17-RE-N117	1.89×10^{-4} to 18.9	Non-1E*
B. AMC FM&IS			
Stack Flow	D17-FT-N200A	0-53600 cfm	Non-1E
VI. TURBINE BUILDING VENT			
A. Eberline SPING			
Particulate	D17-RE-N174	8.43×10^{-5} to 8.43	Non-1E*
Iodine	D17-RE-N135	1.89×10^{-4} to 18.9	Non-1E*
B. AMC FM&IS			
Stack Flow	D17-FT-N200D	0-11,550 cfm	Non-1E

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*These installed monitoring instruments will be used for problem detection. Actual release rates will be determined by removing the collection filter, from either the GE, SPING sampler, or AXM and counting these filters in the onsite High Purity Intrinsic Germanium Spectroscopy System (multichannel analyzer) which has a range of 10^{-3} to 10^{2} μCi/cc.

Note 36 Four Radeco Model H809C air samplers are provided for field sampling with charcoal filters. The onsite analysis capability includes three multi-channel analyzers, two in cold lab and one in hot lab, (Nuclear Data #66 and Ortec #7054).

Note 37 Four Eberline RO-7 dose rate meters (1mR/hr - 20,000 R/hr) and three Ludlum Model 125 micro ratemeters are provided for environmental monitoring.

Note 38 1 Nuclear #256D portable multi-channel analyzer is available to the field monitor teams.

Note 39 Instrumentation exists to measure wind direction from 0 to 540° at 33 feet and 162 feet. Accuracy is ±3° with a starting threshold of 0.7 mph, distance constant of 1.1 meters, and a dampening ratio of 0.4 at 10°.

Note 40 Meteorological information is available in the control room either from the BOP computer or the met tower console.

Both primary and backup instruments are available for meteorological parameters.

Note 41 Instrumentation exists to measure wind speed from 0 to 90 mph at 33 feet and 162 feet. Accuracy is 1.0% and the starting threshold is 0.63 mph.

Note 42 Instrumentation exists to measure vertical temperature difference from -10 F to +20 F. Accuracy is 1.0 percent of delta temperature, or ±0.1°F.

Note 43 The post-accident sampling station is installed on the 93-foot elevation of the turbine building and allows for performing the following grab samples:

Containment atmosphere
Drywell atmosphere
Reactor recirc loop B
Jet pump flow line D
RHR loop A and B
Suppression pool

The post-accident sampling system allows the following on-line analysis for the above samples:

Cloride Conductivity pH Dissolved O_2 H_2	Liquid samples
Gross activity Gamma spectrum Isotopic analysis	All samples

Note 44 This analysis will be performed using a gas chromatograph and will have an effective range of 0-100 percent volume for hydrogen, oxygen, nitrogen, and trace gases. The sample for this analysis is drawn from the post-accident sample system discussed in Note 43.

GGNS REGULATORY GUIDE 1.97 (REVISION 2)
POSITION STATEMENTS

Position 1 Reactor Pressure Vessel Level

Table 1 of Regulatory Guide 1.97 requires a range extending from the bottom of the core support plate to the centerline of the main steam line. To comply with this requirement, MP&L will use two Fuel Zone, two normal Wide Range, and two Shutdown Range instruments.

Because of the range of monitoring required for the operator to take action in accordance with the Emergency Procedures and the fact that only the wide range RPV level instruments meet the requirements of Category 1, the following changes will be provided for indication over the full RPV level range required by Regulatory Guide 1.97.

1) Replace the fuel zone and shutdown range level instruments with instruments which are qualified to 10 CFR 50.49 and IEEE 344-1975.

2) Replace the fuel zone and shutdown range signal and power cables with Class 1E cables and upgrade the power supplies to Class 1E, UPS.

3) Replace the present fuel zone and shutdown range recorders with Class 1E two-pen recorders that are redundant and electrically separated.

4) All above items will be provided with two divisions.

This will provide two divisions of fully qualified and redundant level indication over the full range required by Regulatory Guide 1.97, except for the Shutdown Range instruments.

The two divisions of Shutdown Range instruments will share a reference leg, drywell sensing lines and drywell penetrations. This reference leg utilizes the top head vent as an RPV penetration. In order to fully meet the single failure criterion of Section 1.3.1.b of Regulatory Guide 1.97, an additional head penetration would be needed to provide a redundant reference column for the second Shutdown Range instrument. However, because of the following considerations, shutdown range will be designed to meet Type B with full Category 2 requirements excluding the addition of a redundant reference column.

1) Of the total range required by Regulatory Guide 1.97 (434.7") the Shutdown Range instruments are only used for the upper 58".

2) The only operator action (as identified by the BWR EPG) associated with the Shutdown Range is increasing RPV level to the main steam line outlet for alternate shutdown cooling.

3) Only a break of the reference leg or sensing line would prevent at least one division of the Shutdown Range instruments from being available. In this case, RPV pressure and SRV pressure or temperature indication could be used to determine if RPV level is at or above the main steam outlet.

4) The addition of another RPV and drywell penetration would be extremely difficult and costly for the marginal improvement in plant safety that would be realized.

Therefore, it is MP&L's position that implementation of the proposed water level instrumentation (without the addition of a redundant Shutdown Range reference leg) will meet the intent of Regulatory Guide 1.97, Category 1 requirements for this variable.

Position 2 Reactor Pressure Vessel Pressure

MP&L will provide Class 1E uninterruptible power to the reactor pressure vessel pressure instruments. This will ensure that a record of any pressure changes is available for accident evaluation. After this change is implemented, these instruments will meet the requirements of Reg. Guide 1.97.

Position 3 Drywell Atmosphere Temperature

The FSAR analysis of the main steam line break accident shows that drywell atmospheric temperature peaks between 1 and 2 seconds after the accident. Therefore, to ensure that the capability to monitor this variable is maintained (i.e., recorded) for accident evaluation, the power supplies for these devices will be upgraded to Class 1E, UPS. The present GGNS drywell atmospheric temperature monitored range is 0 to 400 F. The maximum calculated post LOCA drywell temperature is 330 F. All automatic and manual actions occur at less than or equal to 85 percent of full scale for the present instrument range. No additional margin in the monitored range is considered necessary.

It is MP&L's position that the present instrument range adequately monitors drywell atmospheric temperature and will meet the intent of Regulatory Guide 1.97.

Position 4 Suppression Pool Water Temperature

The power supply for Category 1 devices is required by Regulatory Guide 1.32 to be, "Station Standby Power and should be backed up by batteries where momentary interruption is not tolerable." The present GGNS normal power supply is RPS with manual switching to standby power through non-Class 1E

control circuits. Because this power supply does not meet the requirements of Regulatory Guide 1.97 Category 1, upgrading the power supply to Class 1E power is required. Because suppression pool temperature is relatively constant (Reference FSAR Figures 6.2-3 and 6.2-11, for wetwell temperature) over the time period that Class 1E standby power would not be available (~10 sec), uninterruptible power is not necessary. MP&L will change the power supply to the suppression pool water temperature monitoring devices from RPS to Class 1E standby power. With the implementation of Class 1E standby power, this variable will meet the requirements of Reg. Guide 1.97.

Position 5 Suppression Pool Water Level

The present range of the suppression pool level measurement is in compliance with Regulatory Guide 1.97 except at the lower end, which measures only to the centerline of the ECCS suction line rather than the bottom as required by the regulatory guide. However, lack of capability to monitor level to the bottom of the suction line does not preclude any safety system from performing its intended function. In addition, indication of level at the lower end of the scale is not required for any further manual safety action by the operator. The suppression pool level instrumentation therefore meets the intent of Regulatory Guide 1.97.

Position 6 Drywell and Containment Hydrogen Concentration

Emergency procedure guidelines are being developed for containment hydrogen control. GGNS procedures developed from these guidelines will not require operator action for hydrogen control at hydrogen levels in excess of 10%. This is based on the development of the hydrogen deflagration overpressure limit, the maximum hydrogen concentration in which operator action will be required by the hydrogen control procedure.

MP&L has installed a hydrogen ignition system for containment hydrogen control. The 1/20th scale test performed for the hydrogen control issue has shown that the hydrogen burn (caused by hydrogen igniters) will occur at hydrogen levels of 6%. Since the hydrogen igniter system is redundant, Class 1E, and turned on prior to hydrogen generation, homogeneous hydrogen levels greater than 6% should not occur. Therefore, the existing range for hydrogen monitoring (0-10%) meets the intent of the Reg. Guide 1.97.

Position 7 Neutron Flux

The only GGNS Emergency Procedure that requires operator action for neutron flux level is based on an ATWS event. The post ATWS drywell environment is very similar to the normal operating drywell environment and the drive mechanisms are designed to withstand normal environments. Additionally, the critical safety function of reactivity control for design basis accidents is performed by redundant, Class 1E automatic devices - no operator action is required. Although for unpostulated events such as ATWS, operator action may be required, the equipment operating environment is very similar to the normal operating environment.

Equipment used for mitigation of ATWS events function as a backup to safety devices used for design basis accident mitigation.

The ATWS Final Rule does not require Class 1E power for ATWS equipment; however, it does require a power supply independent from the Reactor Trip System that is uninterruptible and available following a loss of offsite power.

Even though MP&L considers neutron monitoring to be a Type B variable for operator action for an ATWS event, MP&L will pursue the implementation of Category 1 instrumentation. To date, MP&L believes that no neutron monitoring system has been fully qualified to meet the Category 1 requirements. However, MP&L will continue to follow industry development in this area and will either implement a system in the future that will comply to the Category 1 requirements or MP&L will upgrade the present system to provide the necessary reliability based on the GGNS specific design requirements.

Position 8 Group 1 Isolation

Redundant valve position indication is not provided for each valve. However, the requirement is met by the valves themselves. MP&L will provide Class 1E power to the position switches for the Group 1 Isolation valves (B21-F022 and F028). When this change is implemented, this instrumentation will meet the intent of Reg. Guide 1.97.

Position 9 BWR Core Thermocouples

Supplement 1 to NUREG-0737 states that "BWR incore thermocouples...are not required pending further development and consideration as requirements." Additionally, in generic letter 84-23 the NRC has stated that water level instrumentation in a BWR is relied upon for providing the operators with information which is used as a basis for actions to ensure adequate core cooling. Based on these items and our previous responses to Generic Letter 84-23 (AECM 84/0521), it is MP&L's position that Grand Gulf's reactor vessel water level instrumentation, as discussed in Position 1, provides reliable information to monitor core cooling. Therefore, the addition of in-core thermocouples is neither justified nor required.

Position 10 Drywell Sump Level

The GGNS BWR Mark III drywell has two drain sumps. These drain sumps are the equipment drain sump, which collect identified leakage, and the floor drain sump, which collects unidentified leakage.

These drywell sumps are low volume (~460 gals each) and their level instruments are designed to identify small leaks. The drywell leakage monitoring system is designed in accordance with Regulatory Guide 1.45 (Ref. FSAR Section 7.6.2.4.2.1). Sump level detection is only one of the

methods used to determine leakage from the reactor coolant system. The following are other methods of monitoring to determine leakage:

A. Unidentified Leakage

1) Fission product monitoring
2) Air cooler condensate monitoring
3) Drywell air temperature monitoring, Class 1E
4) Drywell pressure monitoring, Class 1E

B. Identified Leakage

1) Recirculation pump seal monitoring
2) Reactor vessel head seal monitoring
3) Safety relief valve exhaust temperature monitoring

The Grand Gulf Emergency Operating Procedures do not require any operator action based on sump level. The level of the sumps can be a direct indication of a small breach of the reactor coolant system boundary, but it provides no safety function for containment cooling or pressure control. Regulatory Guide 1.97 requires that Category 1 instruments function after an accident and provide the most direct indication of the accomplishment of a safety function. However, the drywell sump systems are deliberately isolated at the primary containment penetration upon receipt of a LOCA isolation signal to establish isolation and maintain containment integrity. Once the sumps are isolated and full, they can not provide any further information which could be useful for accident mitigation or long term surveillance. The existing sump level instrumentation is capable of functioning up to the point of sump isolation due to a LOCA signal.

Therefore, it is MP&L's position that the presently installed Category 3 instrumentation for the Equipment and Floor Drain sump levels is adequate and meets the intent of Reg. Guide 1.97.

Position 11 Primary Containment Valve Position Indication

The automatic primary containment isolation valves are redundant Class 1E and are actuated by redundant Class 1E signals. Inboard and outboard isolation valve position switches are electrically separated and powered from different divisions. It is MP&L's position that redundant valve position indication is not required for these valves and that the instrumentation, with the modifications implemented as described above and in Position 8, will meet the intent of Regulatory Guide 1.97.

Position 12 Radiation Concentration in Circulating Primary Coolant

The purpose for monitoring this variable is given as "detection of breach," referring, in this case, to breach of fuel cladding. Monitoring the active coolant (or a sample thereof) is the dominant consideration to determine fuel element failure. The Post-Accident Sampling System (PASS) provides a representative sample of the circulating reactor coolant.

The subject of concern in the Regulatory Guide 1.97 requirement is assumed to be an isolated NSSS that is shutdown. This assumption is justified because current radiation monitors in the condenser off-gas and main steam lines provide reliable and accurate information on the status of fuel cladding when the plant is not isolated. Further, PASS will provide an accurate status of coolant radioactivity, and hence cladding status, once it is activated. In the interim between NSSS isolation and operation of the PASS, the drywell and containment radiation monitors, drywell containment hydrogen monitors, condenser off-gas radiation monitors and main steamline radiation monitors will provide information on the status of the fuel cladding.

The usefulness of the information obtained by monitoring the radioactivity concentration or radiation level in the circulating primary coolant, in terms of helping the operator in his efforts to prevent and mitigate accidents, has not been substantiated. The critical actions that must be taken, per the GGNS EP's and the BWROG EPG's, to prevent and mitigate a gross breach of fuel cladding are (1) shut down the reactor and (2) maintain water level. Monitoring, as directed in Regulatory Guide 1.97, will have no influence on either of these actions. The purpose of this monitor falls in the category of "information that the barriers to release of radioactive material are being challenged" and "identification of degraded conditions and their magnitude, so the operator can take actions that are available to mitigate the consequences."

Because no planned operator actions are identified and no operator actions are anticipated based on this variable, MP&L will retain this variable as Category 3 using the present PASS. It is our position that this meets the intent of Reg. Guide 1.97.

Position 13 Radiation exposure rate inside buildings or areas that are in direct contact with primary containment where penetrations and hatches are located

The use of local radiation exposure rate monitors to detect breach or leakage through primary containment penetrations is not necessary. In general, radiation exposure rate in the secondary containment will be a function of radioactivity in primary containment and in the fluids flowing in ECCS piping, which will cause direct radiation shine on the area monitors. Because of the amount of piping and the number of electrical penetrations and hatches and their widely scattered locations, local radiation exposure rate monitors could give ambiguous indications. A more

appropriate means to detect breach of containment is by using the plant noble gas effluent monitors as discussed in Item 7E.

Based on the foregoing, monitoring of this variable will not be implemented.

Position 14 Condensate Storage Tank Level

The existing C.S.T. level instrumentation monitors levels from 6½ inches below the ECCS suction transfer point to the top of the tank. The level below the ECCS suction transfer point is not usable as an ECCS water source post-accident. It is MP&L's position that the instrumentation for this variable measures the full post-accident usable water level and, therefore, meets the intent of Regulatory Guide 1.97.

Position 15 Containment Spray and Low Pressure Coolant Injection Flow Rate

GGNS has existing instruments which monitor total RHR system flow and meet Category 2 requirements. The same instruments on each RHR loop monitor the following variables:

1) Containment spray flow (RHR A&B)
2) Low pressure coolant injection flow (RHR A&B)
3) Residual heat removal loop flows (RHR A, B&C), for other operation modes.

Simultaneous operation of the various modes is prevented either by design (in the automatic mode) or by plant operations procedures (in the manual mode). Valve position indications meeting the requirements of Category 2 are used by the operator to determine the system operations mode. There are also indirect Category 1 indications that can be used to determine the proper operation of the system in the desired mode (i.e., containment pressure and temperature to evaluate containment spray, and RPV level and pressure to evaluate LPCI).

It is MP&L's position that the existing instrumentation, which measures RHR system flow, provides adequate indication of containment spray flow and LPCI flow to meet the requirements of Regulatory Guide 1.97.

Position 16 Standby Liquid Control System Flow

The GGNS Standby Liquid Control System (SLCS) consists of the following major components: a storage tank with an electric heating system and sparger, a test tank, two 100-percent-capacity injection pumps (43 gpm each), two 100-percent-capacity injection valves, and associated piping instruments and valves.

The SLCS is manually initiated from the main control room panel by two keylocked on/off switches. Operation of either switch will start one pump, open the squib and storage tank outlet valves, and close the reactor water cleanup isolation valves. The SLCS storage tank pumps,

squib valves, tank outlet valves, and hand switches are all Seismic Category 1.

GGNS has the following existing indications of SLCS operation in the control room.

1) Squib valve position, Seismic Category 1
2) SLCS tank outlet valve position, Seismic Category 1
3) Storage tank level
4) Pump running lights

It is MP&L's position that this instrumentation, along with reactivity change indicated by monitoring neutron flux, provides an adequate alternative to monitoring SLCS flow. Therefore, it is MP&L's position that the existing SLCS instrumentation described above meets the intent of Reg. Guide 1.97.

Position 17 Standby Liquid Control System Tank Level

The SLCS storage tank level is monitored by a nonqualified level transmitter and an indicator. These instruments monitor a level between 0' 6-1/8" to 11'-1/8" (0-5000 gals). The bottom of the tank is considered to be 2-1/2" above the centerline of the tank outlet. This corresponds to a tank level of 0' 6-1/8". 5150 gallons (tank overflow volume) is considered to be the top of the tank. This corresponds to a tank level of 11' 4".

The current design basis for SLCS assumes a need for an alternative method of reactivity control without a concurrent loss of coolant accident or high energy line break. This design basis also recognizes that SLCS performs as a backup system to the reactor protective system or other engineered safety systems.

Additionally, the ATWS final rule (10 CFR 50.62) requires environmental qualification for anticipated operational occurrences only, not for accident scenarios, and it does not require seismic qualification. MP&L will recalibrate the existing level transmitter to monitor a range of 0 to 5150 gallons. MP&L will also evaluate the need to install an accumulator system as a backup source of instrument air for the SLCS tank level instrumentation.

It is MP&L's position that with these changes accomplished, the instrumentation will meet the intent of Regulatory Guide 1.97.

Position 18 RHR Heat Exchanger Outlet Temperature

This device was previously exempted from the NUREG-0588 program because it does not perform a safety function. However, due to the Reg. Guide 1.97 Category 2 requirements for post accident monitors, MP&L will either replace or provide qualification documentation for the RHR heat exchanger outlet temperature instrumentation. After this change is implemented, this instrumentation will meet the Category 2 requirements of Reg. Guide 1.97.

Position 19 Cooling Water Temperature to ESF System Components

MP&L interprets this variable as main system flow. The present system consists of dual element thermocouples which provide inputs to both the BOP computer and a recorder. Because this instrumentation does not perform any essential safety function, seismic qualification is not required. Also, all parts of the instrument loops are in mild environmental areas, and presently exempt from environmental qualification.

Therefore, it is MP&L's position that the presently installed instrumentation meets the Regulatory Guide 1.97, Category 2 requirements.

Position 20 Status of Standby Power and Other Energy Sources Important to Safety (hydraulic, pneumatic)

The variables for GGNS that provide status of standby power and other energy sources are separately addressed as follows:

ADS Air Receiver and Accumulator Pressure

The capability to monitor this variable in the control room with instrumentation which meets Category 2 requirements is being implemented in accordance with Licensing Condition 2.C.(33)(g).

Starting Air Pressure for the Standby Diesel Generators

The presently installed equipment does not provide control room indication to monitor starting air pressure. However, local indication which meets the requirements of Category 3 is provided along with local alarm capability that inputs to a common trouble alarm in the control room. Investigation by plant operations personnel is required when this common trouble alarm is actuated. The addition of a separate alarm or indication could possibly confuse the control room operator with multiple diagnostic indications and would not preclude the required operational investigation.

Rather than being a key variable, it is a backup variable in accordance with Regulatory Guide 1.97, Section B; Type D and E backup variables are Category 3. MP&L's position is that the present Category 3 instrumentation provides adequate information to monitor system status.

Starting Air Pressure for the HPCS Diesel Generators

Local indication and alarms are provided with instrumentation which meets Category 3 requirements but no control room indication is provided.

Starting air storage tanks are monitored locally by redundant pressure indicators and switches. These pressure switches control the electric and diesel driven air compressors for the HPCS starting air. This provides sufficient assurance of starting air availability.

Rather than being a key variable, it is a backup variable in accordance with the Regulatory Guide 1.97, Section B; Type D and E backup variables are Category 3. MP&L's position is that the present Category 3 instrumentation provides adequate information to monitor system status.

HPCS Standby Power, Voltage, Current and Frequency

The parameters requiring instrumentation to monitor the status of the HPCS Standby Power Supply are voltage and current at the 4.16 kV bus. Additional indication of the operability of the power supply is obtained from readings of the 4.16 kV bus frequency and the voltage on the Division III dc system.

Should the normal control room indication of bus voltage be lost, the same voltage can be monitored in the control room using the synchronizing circuits.

The normal current monitoring in the control room is accomplished using the HPCS diesel generator ammeter. Since there are only two feeder breakers supplied by the HPCS power supply, each of which is equipped with local ammeters, the total current supplied by the diesel generator could be obtained by summing these two readings should the normal indication fail.

Control room indication of diesel generator frequency is normally provided by the HPCS diesel generator frequency meter. Should this instrument be unavailable, the reading is displayed on the bus frequency meter when the generator is supplying bus 17AC.

The voltage of the Division III dc bus is displayed in the control room by the bus voltmeter and by an independent meter local to the bus.

Therefore, due to the backup capability to monitor system status, the presently installed Category 3 instrumentation meets the intent of Regulatory Guide 1.97.

DC Power Voltage and Current

The existing Grand Gulf design provides instruments in the control room to monitor the Class 1E dc power systems and voltage which meet Category 2 requirements.

The following information describes the monitoring capability of the GGNS dc power supply as discussed in SER, Section 8.3.2.

> The dc systems for each unit consist of two 125-volt, one 250-volt and two ±24-volt non-Class 1E battery systems, and three independent and redundant Class 1E 125-volt battery systems. Each of the three Class 1E 125-volt power subsystems provides the control power for

its associated Class 1E ac power load group channel; 4.16 kV switchgear, and 480-volt load centers. Also these dc subsystems provide dc power to the engineered safety feature valve actuation, plant alarm and indication circuits, and emergency lighting system, and the dc control power for each diesel generator. Loss of any one of the dc subsystems does not prevent the minimum safety function from being performed. Loss of dc power to the diesel generator is indicated on annunciators in the main control room. Each system is located in an area separated physically and electrically from other systems to ensure that a single failure in one train does not cause failure in the redundant train. All the essential components of Class 1E 125-volt dc systems are housed in Seismic Category 1 structures. There is no sharing between redundant Class 1E trains of equipment such as batteries, battery chargers, or distribution panels.

The specific requirements for dc power systems monitoring derive from recommendations embodied in Section 5.3.2(4), 5.3.3(5) and 6.3.4(5) of IEEE Std. 308-1974, and guidelines in Regulatory Guide 1.47. In summary, these general recommendations and guidelines simply state that the dc system (batteries, distribution systems, and chargers) shall be monitored to the extent that it is shown to be ready to perform its intended function. According to the guidelines used in the licensing review of the dc power system designs, the following indications and alarms of the Class 1E dc power system status should be provided in the control room:

- Battery current (ammeter-charge/discharge)
- Battery charger output current (ammeter)
- DC bus voltage (voltmeter)
- Battery charger output voltage (voltmeter)
- Battery high discharge rate alarm
- DC bus undervoltage and overvoltage alarm
- DC bus ground alarm (for ungrounded system)
- Battery breaker(s) or fuse(s) open alarm
- Battery charger output breaker(s) or fuse(s) open alarm
- Battery charger trouble alarm (one alarm for a number of abnormal conditions which are usually indicated locally)

The monitoring instruments and alarms called for in the above-cited guideline have been provided in the Grand Gulf control room, except as justified below.

Battery Current (ammeter-charge/discharge)

Since the purpose of this "Battery Current" indication is to determine the battery condition, the method of accomplishing this purpose should not be a minimum requirement. For the Class 1E batteries, Grand Gulf has a battery monitoring device which is like an extremely sensitive undervoltage relay. This device compares half of the

battery cells to the other half to determine if there is a voltage imbalance greater than ± 2%. If differences are detected, the general trouble alarm is activated and an operator is dispatched to correct the situation.

Battery Charger Output Current (ammeter)

This ammeter is located on the front of the charger panel where it provides useful information to maintenance or service personnel. Battery charger output current is not required in the main control room since any current deviations of significance would result in the charger undervoltage or overvoltage alarm which are in the control room.

Battery Charger Output Voltage (voltmeter)

Instead of a voltmeter on the charger output, a voltmeter is provided for the dc bus in addition to overvoltage and undervoltage alarms provided for the battery chargers.

Battery High Discharge Rate Alarm

The high discharge rate can only occur if there is an undervoltage on the dc bus or a ground fault between the bus and the battery. Since both of these two conditions are alarmed, the addition of this high discharge rate alarm is not required.

Based on the NRC's previously documented review, evaluation, and imposed requirements, the Class 1E dc power system has been determined to be acceptable. It is MP&L position that the existing GGNS instrumentation meets the intent of Reg. Guide 1.97 requirements.

Position 21 — Radiation exposure rate inside buildings or areas where access is required to service equipment important to safety

Regulatory Guide 1.97, Revision 2, requires monitoring of this variable for the following reasons:

1) Detection of significant releases
2) Release assessment
3) Long term surveillance

In general, radiation exposure rate in the secondary containment will be largely a function of radioactivity in the primary containment and fluids flowing in ECCS piping. This will cause direct radiation shine on the area monitors. Because of the radiation shine, local exposure rate monitors could give ambiguous indication of release assessments.

To prevent false indications of radionuclide release, the GGNS release assessments will be based on the data accumulated by removing the sample filters installed in either the Eberline SPING, AXM Grab Sample Pallet, or GE Sample Panel. These filters will be transported to the chemistry lab where they will be "counted", after some decay period, using high purity intrinsic germanium spectrographic detectors. The Eberline Sping panel, particulate and iodine channels may be used to provide indication/alarm of particulate or iodine buildup and signify a need for filter evaluation, because these measurements can be corrected for background levels. The area monitors do not contribute to the release assessment or detection of significant releases.

As for the Regulatory Guide requirement for long term surveillance, GGNS procedures require that any entry into a radiation area be evaluated and supervised by plant health physics personnel. This evaluation is to be based on local area radiation readings using portable survey instruments that meet Category 3 requirements. Therefore, the area monitors would only be used to give an idea of the radiation levels possible in the areas and would provide little benefit in meeting the Regulatory Guide requirements for long term surveillance.

Since these monitors are not used for release assessment or personnel entry requirements but only for order-of-magnitude indication, a range to 10^4 R/Hr is not required. Therefore, it is MP&L's position that the existing area radiation monitors meet the intent of Reg. Guide 1.97.

Position 22 — Noble Gases and Vent Flow Rate for Containment Purge, Standby Gas Treatment System (SGTS), and Fuel Handling Area

MP&L has supplemented the original GE-supplied effluent monitoring system with a state-of-the-art Eberline digital effluent monitoring system. This system provides monitoring over a range of 10^{-7} to 10^5 μCi/cc, which meets Regulatory Guide 1.97 requirements. This system comprises two sub-units:

1) A low range unit, meeting Category 3 requirements, comprises an AMC Isokinetic Probe and Flow Control Rack and a Eberline SPING-4 unit, which transmits information to the control room terminal. Monitoring is from 10^{-7} to 10^2 μCi/cc.

2) A high/accident range unit, which presently meets Category 3 requirements, comprises a sample probe, an Eberline AXM unit, and the data aquisition module. (Note: the vent flow rate for release analysis is provided by the FM&IS panel via the SPING-4 microprocessor.) Monitoring is from 10^{-4} to 10^5 μCi/cc. The present power supplies for the accident range monitors are at least as reliable as the power supplies to the HVAC trains they monitor. The SGTS A and B power supplies are Class 1E.

MP&L will install or upgrade the containment area, SGTS, and fuel handling area vent monitoring systems to meet Category 2 requirements as follows:

1) Install an environmentally qualified redundant vent flow rate monitoring network, separate from the AMC FM&IS panel, which provides input directly into the data acquisition module.

2) Environmentally qualify the Eberline AXMs and data acquisition modules.

With these changes implemented, this instrumentation will meet the intent of Regulatory Guide 1.97, with the exception of the range monitored by environmentally qualified devices. Based on the analysis performed to determine site boundary, LPZ outer boundary and control room doses resulting from a postulated LOCA, and the analysis performed to determine airborne activity inside the auxiliary and enclosure buildings, the activity release rate from the SGTS system would be $\geq 10^{-3}$ µCi/cc for iodine and daughter products and $\geq 10^{-1}$ µCi/cc for noble gases. Therefore, the noble gas activity release rate would be on scale for post accident conditions on the AXM panel.

Since containment area and fuel handling area vent effluent monitors are powered from the same power source as the ventilation system that they monitor, operability of the effluent monitor is ensured whenever the power source to that ventilation system is available. Providing more reliable power supplies or restoring these monitors to onsite power sources is not necessary. Therefore, the effluent monitoring system power supply modifications proposed for the first refueling outage, as discussed in letter from L. F. Dale to H. R. Denton (AECM-81/339), dated September 4, 1981, are not considered necessary and are being superseded by this submittal.

It is MP&L's position that implementation of the scheduled instrumentation upgrades will meet the intent of Regulatory Guide 1.97 and that additional qualification for the equipment which monitors below the range of the qualified AXMs is not necessary.

Position 23 Noble Gases and Vent Flow Rate for Auxiliary Building (including any building containing primary system gases)

MP&L has supplemented the original GE-supplied effluent monitoring system with a state-of-the-art Eberline digital effluent monitoring system. This system provides monitoring from a range of 10^{-7} to 10^{5} µCi/cc, which meets Regulatory Guide 1.97 requirements. This system comprises two sub-units:

1) A low range unit, meeting Category 3 requirements, comprises an AMC Isokinetic Probe and Flow Control Rack, and an Eberline SPING-4 unit, which transmits information to the control room terminal. Monitoring is from 10^{-7} to 10^{2} µCi/cc.

2) A high/accident range unit, which presently meets Category 3 requirements, comprises a sample probe, an Eberline AXM unit, and the data acquisition module. (Note: the vent flow rate for release analysis is provided by the FM&IS panel via the SPING 4 microprocessor.) Monitoring is from 10^{-4} to 10^{5} µCi/cc.

Because these instruments do not constitute a part of a safety system, seismic qualification is not required. Also, since there is no postulated event that could cause a harsh environment in these buildings, additional qualification for the normal environmental parameters is not required.

Since turbine building and radwaste building vent effluent monitors are powered from the same power source as the ventilation system that they monitor, operability of the effluent monitor is ensured whenever the power source to that ventilation system is available. Providing more reliable power supplies or restoring these monitors to onsite power sources is not necessary. Therefore, the effluent monitoring system power supply modifications proposed for the first refueling outage, as discussed in letter from L. F. Dale to H. R. Denton (AECM-81/339), dated September 4, 1981, are not considered necessary and are being superseded by this submittal.

It is MP&L's position that the presently installed Category 3 equipment meets the intent of Regulatory Guide 1.97.

Position 24 Radiation Exposure Meters

Per item 6.1.c.i of NUREG-0737 Supplement 1, "Continuous offsite dose monitors are not required pending their further development and consideration as requirements." MP&L does not plan to implement monitoring for this variable.

Position 25 Accident Sampling Capability Primary Coolant and Sumps

An April 1984, NRC internal memo from Victor Benaroya, Chief of Chemical Engineering Branch, to Faust Rosa, Chief, Instrument and Controls Systems Branch states, in part:

> The intent for obtaining a sump grab sample is to determine the location of component leakage under accident conditions.
>
> Instead of sump grab samples, sump high level alarms, liquid or airborne radioactivity monitoring of sump area, or temperature detectors in sump area, are acceptable methods in determining leakage into sumps.

GGNS has leak detection monitoring capabilities consisting of temperature, differential temperature, differential flow and/or sump level monitoring for the following areas:

1) Reactor water cleanup equipment rooms, Class 1E
2) Reactor core isolation cooling equipment rooms, Class 1E
3) Drywell drain sumps, Non-Q
4) Residual heat removal equipment areas, Class 1E
5) Containment drain sumps, Non-Q
6) Drywell, Class 1E
7) Containment, Class 1E
8) Main steam pipe tunnel, Class 1E
9) High pressure core spray equipment areas, Non-Q

GGNS also has the capability to sample the primary coolant system, suppression pool and the containment and drywell atmospheres for performing the analysis specified by the Regulatory Guide. The existing post accident sampling system has been designed to meet the previous requirements of TMI Action Item II.B.3. Because of these considerations, it is MP&L's position that the presently installed leak detection and sampling instrumentation meets the intent of Regulatory Guide 1.97.