



MISSISSIPPI POWER & LIGHT COMPANY

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P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

July 15, 1982

NUCLEAR PRODUCTION DEPARTMENT

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-13
File 0290/L-813.0/C-195.0
Regulatory Guide 1.97 Compliance
License Condition 2.C (23)
AECM-82/317

Please find attached Mississippi Power & Light's (MP&L) submittal of information required by the GGNS Operating License No. NPF-13 for the License Condition 2.C (23), Compliance with Regulatory Guide 1.97, which states:

By July 15, 1982, MP&L shall provide a proposal including a proposed implementation schedule of meeting Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," dated December 1980.

Regulatory Guide 1.97 was developed to provide a comprehensive requirement for instrumentation to monitor plant conditions during and after an accident. Specific variables with established monitoring ranges and instrumentation qualification criteria were developed for various types of accident conditions. During the inception of Regulatory Guide 1.97, it was intended to act as a document that would be addressed uniformly for the entire nuclear industry. However, it has been recognized by both the NRC and the nuclear industry that specific application to all plants is not appropriate. In addition, some variable requirements (i.e. core thermocouples) have been shown to be not the most practicable means for accident monitoring.

Since the issuance of Regulatory Guide 1.97 (Rev. 2) in December 1980, extensive evaluation of the regulatory guide and the means for implementation of the variables has been ongoing. The resolution of Regulatory Guide 1.97 is still of concern within the industry and the NRC. Likewise, there are still several critical issues that need to be resolved prior to MP&L developing a complete position on Regulatory Guide 1.97.

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SECY-82-111 entitled "NRC Staff Recommendations on the Requirements for Emergency Response Capability" directly addresses the revised NRC policy for implementation of this guide. This document basically provides that the Regulatory Guide 1.97 requirements be considered on a plant specific bases with overall considerations being given to its coordination with the total emergency response effort. MP&L agrees with this position in order that implementation of Regulatory Guide 1.97 can be factored in with the provisions for the GGNS emergency response facilities, control room review, NUREG-0588 review, emergency operating procedures, and the existing post-accident instrumentation that is incorporated in the plant. It is our understanding that SECY-82-111 is awaiting approval by the NRC Commissioners at this time.

In addition, MP&L has been an active member in the BWR Owners Group on Regulatory Guide 1.97. The Owners Group has been involved in review of generic instrumentation capable of meeting the Regulatory Guide 1.97 requirements and the practicality of specific variable requirements. The results of the Owners Group efforts will be considered in the development of the MP&L position on implementation and qualifications for post-accident instrumentation for GGNS. The Owners Group report is scheduled to be in final form in August 1982.

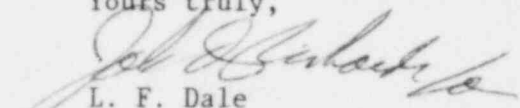
Even though MP&L is still evaluating the application of Regulatory Guide 1.97 for GGNS, a plant specific Regulatory Guide 1.97 compliance review has been performed for GGNS. Attachment I provides a comparison of the GGNS design to the specific requirements for each Regulatory Guide 1.97 BWR type variable. This attachment includes the specific Regulatory Guide 1.97 variable requirements, the existing GGNS design, a statement of GGNS compliance, the GGNS control room requirements and either a final or interim MP&L position on its implementation. Attachment I is consistent with the recommended NRC guidance provided by the draft SECY-82-111 (March 10, 1982) for addressing Regulatory Guide 1.97 for Operating Licensees.

The schedule for implementation of Regulatory Guide 1.97 cannot be defined until the MP&L position, design considerations and equipment availability and qualifications are determined. The June 1983 implementation schedule requested in Regulatory Guide 1.97 (Rev. 2) and as previously committed to in AECM-81/225, dated July 21, 1981, is not a realistic schedule given the above considerations.

MP&L plans to provide a final Regulatory Guide 1.97 position for GGNS by December 15, 1982. This report will address MP&L's position and proposed implementation schedule for each Regulatory Guide 1.97 variable on GGNS.

Please contact this office, if additional information is required.

Yours truly,



L. F. Dale
Manager of Nuclear Services

SAB/SHH/JDR:lm
Attachment

cc: (See Next Page)

MISSISSIPPI POWER & LIGHT COMPANY

AECM-82/317

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1 REACTIVITY CONTROL

1A Neutron Flux

Range: 10^{-6} to 100% full-power (SRM, APRM)

Cat.: 1 Type: B

GG Design: GGNS has six source range monitors (SRM) that have a range from 10^{-1} to 10^6 CPS (10^3 - 10^9 nv) and the eight IRM monitors that have a range from 10^8 - 10^{13} nv (10^{-4} %- 40% reactor power). All SRM and IRM detectors consist of fission chambers. SRM and IRM levels are continuously recorded. APRMs provide power range from 0-125%

Compliance: The neutron monitoring instrumentation is non-class 1E and is not qualified to NUREG-0588 and does not use 1E power. Continuous recording is provided. An arrangement of incore or excore flux monitors would have to be provided.

Control Rm: Two to four new pen type continuous recorders with a range of 10^{-6} to 100% power would need to be provided on the P680 along with an additional annunciator.

Interim
MP&L Pos.: The appropriateness of the requirements for this variable is being reviewed by MP&L and our position will be provided in a future transmittal on R.G. 1.97 compliance. The existing monitoring system is capable of performing the intended safety function of this variable until an evaluation of this system is completed.

1B Control Rod Position

Range: Full in or not full in

Cat.: 3 Type: B

GG Design: Each control rod drive (193) has a position probe attached to it which consists of several switches. The top two position switches of each probe indicate "OVERTRAVEL" or "ROD FULL IN". A "FULLY IN" indicating light is provided for each rod on panel H13-P680. Each rod has a two-digit display on the rod interface display module giving individual rod position by segment of a seven-segment display device.

Compliance: In compliance

Control Rm: No additions

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

1C RCS Soluble Boron Concentration (Sample)

Range: 0 to 1000 ppm

Cat.: 3 Type: B

GG Design: RCS boron concentration will be obtained by analytical lab analysis as part of the P.A.S.S. discussed in Item 22A (Grab Sample). The monitoring range will be from 0.1 ppm to 10 ppm on a sample diluted by a factor of 1000. This will be adequate range for boron concentration in the RCS after boron injection. (See item 22A)

Compliance: In compliance

Control Rm: No additions

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

2 CORE COOLING

2A Coolant Level in Reactor

Range: Bottom of core support plate to less of top of vessel or center line of main steam line. (216.0" to 648")

Cat.: 1 Type: (Type A for GGNS), B

GG Design: Level instruments exist to monitor vessel water level from 216.3" to 933.0" referenced to vessel zero (six groups of instruments).

Compliance: The existing water level instruments are 1E qualified and are being upgraded to meet NUREG-0588 requirements.

Control Rm: Reactor water level is continuously recorded in the control room.

Interim

MP&L Pos.: The existing water level monitoring is or is being upgraded in compliance with this variable; however, the resolution on the issue of inadequate core cooling may dictate design changes in the present GGNS water level monitoring.

2B BWR Core Thermocouples

Range: 200°F to 2300°F, Four thermocouples per quadrant

Cat.: 1 Type: B

GG Design: In-core thermocouples are not provided to measure core cooling. These instruments have not been previously used.

Compliance: In-core thermocouples should not be required for diverse water level monitoring; however, other means are being investigated.

Control Rm: Control Room provisions will be determined when resolution of inadequate core cooling is finalized.

Interim

MP&L Pos.: The means to measure inadequate core cooling has not been developed; however, MP&L is actively participating in a BWR owners group to resolve this issue. Core thermocouples are no longer being considered a viable means for inadequate core cooling monitoring. This issue will be resolved independently from the overall R.G. 1.97 compliance.

3 MAINTAINING REACTOR COOLANT SYSTEM INTEGRITY

3A RCS Pressure

Range: 15 psia to 1500 psig

Cat.: 1 Type: (Type A for GGNS), B

GG Design: Post-accident reactor pressure is monitored by B21-PT-N062 A/B and recorded on a recorder B21-UR-R623A/B over a 0-1500 psig range. The B21-PT-N062 A/B are being upgraded to meet NUREG-0588 requirements.

Compliance: The B21-PT-N062 instruments have a maximum range of 0-3000 psig. The calibrated span has been set at 1500 psig.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

3B Drywell Pressure

Range: 0 to design pressure (0-30 psig)

Cat.: 1 Type: (Type A for GGNS), B

GG Design: Instruments B21-PT-N067C, G, L, R and B21-PT-N094A, B, E, F monitor drywell pressure from 0-5 psig. Instruments M71-PDT-N001A/B monitor drywell pressure from -10 to +40 psid and are recorded on M71-PDR-R601A/B (Ref. 1). The M71-PDT-N001 A/B transmitters are being upgraded to NUREG-0588 requirements.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

3C Drywell Sump Level

Range: Bottom to top (0-36")

Cat.: 1 Type: B

GG Design: The drywell equipment and floor drain sumps have nonqualified Mercoid level switches to start and stop the sump pumps and to initiate high level alarms. Drywell floor drain sump level is also monitored by a level transmitter with a range 0-30" H₂O (E31-LT-N093) and recorded on a level recorder (E31-LR-R618).

Compliance: To meet the Regulatory Guide requirements would require the purchase of 3 or 4 new nuclear safety-related sealed system pressure transducers (level transmitters) with a range 0-36" H₂O.

Control Rm: To meet the Regulatory Guide would require 2 single-pen nuclear safety-related recorders with a scale 0-36" H₂O to be added to the P870 along with 2 high level annunciators.

Interim

MP&L Pos.: MP&L is investigating the appropriateness of qualifying level transmitters to meet this variable requirement. MP&L's position on this variable will be provided in a future transmittal on R.G. 1.97 compliance. The existing drywell sump level monitoring system is sufficient for performing the intended safety function of this variable until an evaluation of this system is completed.

4 MAINTAIN CONTAINMENT INTEGRITY

4A Primary Containment Pressure

Range: 10 psia to design pressure (-5 to 15 psig)

Cat.: 1 Type: (Type A for GGNS), B

GG Design: See Item 7B

Compliance: See Item 7B

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

4B Primary Containment Isolation Valve Position (excluding check valves)

Range: Closed - not closed

Cat.: 1 Type: B

GG Design: All motor-operated and air-operated containment isolation valves have "Open/Closed" lights. Some manual valves also have position indication.

Compliance: 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.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

5 FUEL CLADDING

5A Radioactivity Concentration or Radiation Level in Circulating Primary Coolant

Range: $\frac{1}{2}$ Tech Spec limit to 100 times Tech Spec limit, R/hr

Cat.: 1 Type: C

GG Design: Main steam line radiation levels are monitored by Instruments D17-RITS-K610A thru D17-RITS-K610D. These instruments provide a range from 1 mRem/hr to 10^3 Rem/hr. No continuous recording is provided. These instruments are Class 1E.

Compliance: The existing MSL Radiation Monitors are inadequate to meet the requirements of this regulatory guide. The proposed P.A.S.S. provides this capability but with a time delay for analyzing a sample. To meet this requirement would require a safety related medium range (1 R/hr to 200 R/hr) radiation monitor to be installed on each recirc loop.

Control Rm: Two safety related single pen recorders would need to be added to P680.

Interim

MP&L Pos.: The appropriateness of the requirements for this variable are being reviewed by MP&L and will be provided in a future transmittal on R.G. 1.97 compliance. Until resolution of this variable is determined, adequate monitoring is provided by the GGNS P.A.S.S. system and MSL radiation monitoring system.

5B Analysis of Primary Coolant (Gamma Spectrum)

Range: 10 uCi/gm to 10 Ci/gm or TID-14844 source term in coolant volume

Cat.: 3 Type: C

GG Design: Isotopic analysis is being provided in the Grand Gulf P.A.S.S. to monitor radioactive concentrations (See item 22A)

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

5C BWR Core Thermocouples

Range: 200°F to 2300°F

Cat.: 1 Type: C

GG Design: See Item 2B

Compliance: See Item 2B

Control Rm: See Item 2B

Interim

MP&L Pos.: See Item 2B

6 REACTOR COOLANT PRESSURE BOUNDARY

6A RCS Pressure

Range: 15 psia to 1500 psig

Cat.: 1 Type: (Type A for GGNS), C

GG Design: See Item 3A

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

6B Primary Containment Area Radiation

Range: 1 R/hr to 10^5 R/hr

Cat.: 3 Type: C

GG Design: See Item i7a

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

6C Drywell Drain Sumps Level (Identified and Unidentified Leakage)

Range: Bottom to top

Cat.: 1 Type: C

GG Design: See Item 3C

Compliance: See Item 3C

Control Rm: See Item 3C

MP&L Pos.: See Item 3C

6D Suppression Pool Water Level

Range: Bottom of ECCS suction line to 5 ft. above normal water level
(El. 102'-6" to El. 116'-7")

Cat.: 1 Type: (Type A for GGNS), C

GG Design: Supp. pool water level is measured by instruments E30-LT-N003 C/D and E30-LT-N004 A/B with a range from El. 103'-6" to 117'-4". These instruments are being upgraded to meet NUREG-0588 requirements.

Compliance: The monitoring range for water level was reduced from 105'-3" to 103'-6" to include center line of ECCS suction line. The recorders are qualified to meet 1E requirements. The centerline of ECCS suction is adequate for lower end level monitoring.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

6E Drywell Pressure

Range: 0 to design pressure (psig)

Cat.: 1 Type: (Type A for GGNS), C

GG Design: See Item 3B

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

7 CONTAINMENT

7A RCS Pressure

Range: 15 psia to 1500 psig

Cat.: 1 Type: (Type A for GGNS), C

GG Design: See Item 3A

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

7B Primary Containment Pressure

Range: 10 psia pressure to 3 times design pressure for concrete; 4 times design pressure for steel

Cat.: 1 Type: (Type A for GGNS), C

GG Design: Instruments M71-PDT-N027A/B monitor containment pressure from 0-50 psig and M71-PDT-N002A/B monitor containment pressure from -5 to +5 psig. Both N027A/B and N002A/B are recorded on M71-PDR-R601A/B. The M71-PDT-N027 A/B and M71-PDT-N002 A/B transmitters are being upgraded to meet the NUREG-0588 qualification requirements.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

7C Containment and Drywell Hydrogen Concentration
E2ac

Range: 0 to 30% (capability of operating from 12 psia to design pressure) (Cont is -3 to 45 psig; DW is -3 to 30 psig)

Cat.: 1 Type: (Type A for GGNS), C

GG Design: Instrumentation exists (E61-J001A/B & J002A/B, E61-AITS-K001A/B & K002A/B, and E61-AR-R602A/B) to monitor hydrogen over a range 0-10%. Recording is provided on 1E61-AR-R602 A/B.

Compliance: GG does not meet the monitoring range requirements. To meet the reg. guide would require modifying the existing H₂ analysis to be capable of burning off the extra H₂ (30% versus 10% by adding more O₂ to the sample. These instruments are Class 1E qualified. NUREG-0737 only requires 0-10% monitoring range.

Control Rm: No changes

Interim

MP&L Pos.: A 0-10% hydrogen monitoring range is adequate for GGNS; however, this matter may require further consideration with the GGNS hydrogen control issue.

7D Containment and Drywell Oxygen Concentration (for inerted containment plants)

Range: 0 to 10% (capability of operating from 12 psia to design pressure)

Cat.: 1 Type: C

DOES NOT APPLY TO GRAND GULF

7E Containment Effluent Radioactivity - Noble Gases (from identified release points including Standby Gas Treatment System Vent)

Range: 10⁻⁶ uCi/cc to 10⁻² uCi/cc

Cat.: 3 Type: C

GG Design: Exhaust effluent monitoring systems monitor noble gases over a range of 10⁻⁷ to 10⁵ uCi/cc. See also Item 19A.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

7F Radiation Exposure Rate (inside buildings or areas, e.g., auxiliary building, fuel handling building, secondary containment, which are in direct contact with primary containment where penetrations and hatches are located)

Range: 10^{-1} R/hr to 10^4 R/hr

Cat.: 2 Type: C

GG Design: Low range area monitors are provided at 54 locations throughout the plant in areas where radioactivity could exist. Four ranges of instruments are provided based on the maximum expected radiation zone of the area to be monitored. These ranges are 10^{-2} to 10^3 mR/hr, 10^{-1} to 10^4 mR/hr, 1 to 10^5 mR/hr, and 0.1 to 10^7 mR/hr. All instruments were purchased and installed as non-safety-related devices. (See also requirements of item 18A)

Compliance: The ranges of the present instruments are adequate to monitor the expected radiation levels during normal conditions. During severe accident conditions, access to the drywell and containment would not be permitted. To meet the intent of the Regulatory Guide, would require purchasing approximately 30 additional higher range radiation monitors with a scale 10^{-1} to 10^4 R/hr to be placed in parallel with the corresponding existing area monitors powered from an emergency power source and meeting 10 CFR 50 Appendix B.

Control Rm: Additional space would be required in the control room (i.e. P844) for 30 area rad monitor indicators.

Interim

MP&L Pos.: The appropriateness of the requirements for this variable is being reviewed by MP&L and our position will be provided in a future transmittal on R.C. 1.97 compliance. Until resolution of this variable is determined for GGNS, adequate monitoring is provided by the existing non qualified exposure rate monitoring system.

7G Effluent Radioactivity - Noble Gases (from bldgs. as indicated above)

Range: 10^{-6} uCi/cc to 10^3 uCi/cc

Cat.: 2 Type: C

GG Design: Same as Item 19D

Compliance: Same as Item 19D

Interim

MP&L Pos.: Same as Item 19D

8 CONDENSATE AND FEEDWATER SYSTEM

8A Main Feedwater Flow

Range: 0 to 110% design flow (0 to 16.6 Mlb/hr)

Cat.: 3 Type: D

GG Design: Instrumentation exists which monitors feedwater flow as follows: C34-FT-N002A/B from 0 to 10 Mlb/hr per feedwater loop; N71-FT-N016A/B from 0 to 8.23 Mlb/hr per feedwater loop; N21-FT-N087A/B from 0 to 14 Mlb/hr per reactor feedwater pump suction line. Only N21-FT-N087A/B have control room indication (also 0-14 Mlb/hr)

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

8B Condensate Storage Tank Level

Range: Bottom to top (0 - 31'0")

Cat.: 3 Type: D

GG Design: GGNS level transmitter P11-LT-N003 monitors level from 1'-1" to 41'-1"; P11-LSL-N014, P21-LS-N038 & P21-LS-N055 from 5'-0" to 30'-0"; C61-LT-N102 from 0'-9" to 25'-9"; and E22-LT-N054 C&G and E51-LT-N035A&E from 0'-9½" to 2'-5½". C61-LT-N102 & P11-LT-N003 have level indicators while E22-N054C/G and E51-N035A/E have indicating trip units.

Compliance: Range of CST is 0 to 31'-0". Instrumentation exists to monitor and indicate level from 1'-1" to 41'-1". Since 1'-1" is much less than 31', present instrumentation will suffice. To meet reg. guide would require re-calibrating C61-LT-N012 from 0-300" (0'-9" to 25'-9") to 0-372" (0'-0" to 31'-0")

Control Rm: Changing the scale on C61-LI-R102 (1H22 P150) from 0-300" to 0-372" would be required to meet the reg. guide exact requirements.

MP&L Pos.: The existing monitoring range on the CST level complies with the intent of R.G. 1.97 for this variable and no changes are considered necessary.

9 PRIMARY CONTAINMENT-RELATED SYSTEMS

9A Suppression Chamber Spray Flow

Range: 0 to 110% design flow (0 to 6215 gpm/loop)

Cat.: 2 Type: D

GG Design: Instruments E12-FT-N015A/B monitor RHR flow over a range 0-10,000 gpm; also instruments C61-FT-N200A/B monitor RHR flow over a range 0-10,000 gpm on the remote shutdown panel.

Compliance: The instruments described measure total RHR flow. This flow may be directed to the reactor vessel or containment spray nozzles, but not both simultaneously. Exclusive spray flow instrumentation is not provided. To meet the reg. guide would require a safety related flow element and transmitter to be installed in the Div. 1 and Div. 2 containment spray loop piping.

Control Rm: Containment spray flow indication would be required for both Div. 1 and Div. 2 RHR on P601.

MP&L Pos.: The individual measurement of containment spray flow beyond the RHR system is not necessary and no system changes will be incorporated in the GGNS design.

9B Drywell Pressure

Range: 12 psia to 3 psig - 0 to 110% design pressure (0-33 psig)

Cat.: 2 Type: (Type A for GGNS), D

GG Design: See Item 3B

Compliance: In compliance

Control Rm: No change

MP&L Pos.: The existing Grand Gulf design complies with the requirements of this variable.

9C Suppression Pool Water Level

Range: Top of vent to top of weir wall (El. 105'4" to El. 117'4")

Cat.: 2 Type: (Type A for GGNS), D

GG Design: See Item 6D

Compliance: In compliance

Control Rm: No change

MP&L Pos.: The existing Grand Gulf design complies with the requirements of this variable.

9D Suppression Pool Water Temperature

Range: 30°F to 230°F

Cat.: 2 Type: (Type A for GGNS), D

GG Design: Instrumentation exists to monitor suppression pool water temperature from 30°F to 230°F with indication on indicating trip units and on recorders M71-TR-R605A-D. The temperature instruments are being qualified to NUREG-0588 requirements.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirements of this variable.

9E Drywell Atmosphere Temperature

Range: 40°F to 440°F

Cat.: 2 Type: (Type A for GGNS), D

GG Design: Instrumentation M71-TE-N008A/B/C/D exists to monitor drywell atmosphere temperature from 0°F to 400°F with indication on recorders M71-TR-R602A/B and M71-TR-R603A/B

Compliance: Maximum calculated drywell temperature post LOCA is 330°F. Monitoring temperature from 0-400F encompasses 121% maximum calculated accident temperature. To meet the regulatory guide would require re-calibrating M71-TT-N605A-D from 0-400F to 40-440°F.

Control Rm: The red pen scales on recorders M71-TR-R602A/B and M71-TR-R603A/B would have to be changed from 0-400°F to 40-440°F.

MP&L Pos.: The existing instrument range of 0 to 400° provides an adequate monitoring range (0 to 120% of accident temp) and no changes are proposed for a greater temperature range.

9F Drywell Spray Flow

Range: 0 to 110% design flow

Cat.: 2 Type D

DOES NOT APPLY TO GRAND GULF

10 MAIN STEAM SYSTEM

10A Main Steamline Isolation Valves' Leakage Control System Pressure

Range: 0 to 15" of water, 0 to 5 psig

Cat.: 2 Type: D

GG Design: Instrumentation exists to monitor inboard and outboard system pressure over a range of 0 to 50 psia and a range of 0 to 100 psig and are environmentally qualified.

Compliance: The trip units continuously indicate system pressure on the P654 and P655 panels.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

10B Primary System Safety Relief Valve Positions, Including ADS or Flow Through or Pressure in Valve Lines

Range: Closed - not closed or 0 to 50 psig

Cat.: 2 Type: D

GG Design: The downstream of each SRV is being fitted with a single hydraulic sensing line connected to a pressure switch. All sensors, switches, relays and indicators are IE and NUREG-0588 qualified.

Compliance: These sensors have been recently installed to meet NUREG-0737 requirements - In compliance

Control Rm: No additional changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

11 SAFETY SYSTEMS

11A Isolation Condenser System Shell-Side Water Level

Range: Top to bottom

Cat.: 2 Type: D

DOES NOT APPLY TO GRAND GULF

11B Isolation Condenser System Valve Position

Range: Open or closed

Cat.: 2 Type: D

DOES NOT APPLY TO GRAND GULF

11C RCIC Flow

Range: 0 to 110% design flow (0 to 880 gpm)

Cat.: 2 Type: D

GG Design: Instrument E51-FI-N003 monitors RCIC flow over a range 0-221" H₂O (0 to 800 gpm). Instruments E51-FK-R600, and E51-FI-R606, also indicate RCIC flow. Instrument E51-FI-N051 shares the same flow element as E51-FI-N003 and monitors flow over a range 0-31" H₂O (0-300 gpm)

Compliance: E51-FI-N003 would need to be recalibrated to 0-1000 gpm.

Control Rm: GE instruments E51-FK-R600 and E51-FI-R606 presently have indicator scales of 0-800 gpm. These need to be changed to have a 0-1000 gpm scale.

MP&L Pos.: The RCIC flow monitoring upper range will be increased from 800 gpm to 1000 gpm to comply with the requirements for this variable.

11D HPCI Flow (HPCS)

Range: 0 to 110% design flow - 0 to 7826 gpm

Cat.: 2 Type: D

GG Design: HPCS is used instead of HPCI. Instrument E22-FI-N005 monitors HPCS flow from 0-10,000 gpm. Instrument E22-FI-R603 indicates the HPCS flow over a range of 0-10,000 gpm on 1H13-P601

Compliance: GE supplied Instrument E22-FI-N005 is 1E qualified and is being upgraded to meet NUREG-0588 requirements.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirements of this variable.

11E Core Spray System Flow (LPCS)

Range: 0 to 110% design flow - 0 to 7826 gpm

Cat.: 2 Type: D

GG Design: Instrument E21-FI-R600 monitors LPCS flow over a range of 0-10,000 gpm. from the E21-FT-N003 flow transmitter.

Compliance: GE instrument E21-FT-N003 is 1E qualified and exempted from NUREG-0588 requirements due to mild environment.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirements of this variable.

11F LPCI System Flow

Range: 0 to 110% design flow (0 to 8195 gpm)

Cat.: 2 Type: D

GG Design: Instruments E12-FI-R603A/B/C monitor RHR flow over a range 0-10,000 gpm. from transmitters E12-FT-N015A/B/C. These instruments are 1E qualified and are being upgraded to meet NUREG-0588 requirements.

Compliance: The instruments described measure total RHR flow. This flow may be directed to the reactor vessel or containment spray nozzles, but not both simultaneously. Exclusive LPCI instrumentation is not provided. To fully comply with this requirement would necessitate a flow element in each leg of the LPCI RCS inlet piping.

Control Rm: To meet the reg. guide LPCI flow indication would be required for both Div. 1 and Div. 2 RHR loops on P601.

MP&L Pos.: The individual measurement of LPCI flow beyond the RHR system is not necessary and no system changes will be incorporated in the GCNS design.

11G SLCS Flow

Range: 0 to 110% design flow

Cat.: 2 Type: D

GG Design: No SLCS flow monitoring is provided for typical BWR's due to boron crystallization

Compliance: SLCS Storage Tank Level and Pump Discharge Pressure monitoring provides an indication to system operation. To meet this requirement will require the addition of a pressure sensitive or ultrasonic flow meter placed between the SLCS injection pump and the test tank. Qualified instruments and recorders would need to be provided. Indirect flow monitoring can be determined from tank level monitoring, pump discharge pressure, and explosive valve position.

Control Rm: SLCS flow indication for systems A and B would be required on P601.

Interim

MP&L Pos.: The appropriateness of the requirement for this variable is being reviewed by MP&L and our position will be reported in a future transmittal on R.G. 1.97 compliance. Until resolution of this variable is determined for GGNS, adequate monitoring is provided by the existing SLCS tank level monitoring and pump discharge pressure.

11H SLCS Storage Tank Level

Range: Bottom to top

Cat.: 2 Type: D

GG Design: Instrument C41-LI-R001 monitors level from 0'-6 1/8" to 11'-5 1/8" (0 to 5200 gals). Also C41-LT-N001 monitors level from 0'-6 1/8" to 11'-0 1/8" (0 to 5000 gals).

Compliance: GE considers the bottom of the tank to be 2½" above the centerline of the tank outlet. This corresponds to tank level 0'-6 1/8". GE considers also the maximum volume to be 5150 gals. Therefore the present instrument covers the required range but are not environmentally qualified. This Regulatory Guide requirement, if met, would require a new instrument to be purchased just to receive the required QA levels.

Control Rm: The existing SLCS Storage Tank Level indicator would have to be replaced with a seismically qualified indicator.

Interim

MP&L Pos.: The appropriateness of this variable will be evaluated in coordination with the variable requirements for SLCS flow and MP&L's position will be reported in a future transmittal on R.G. 1.97 compliance. Until resolution of this variable is determined the existing SLCS tank level monitoring will be sufficient.

12 RESIDUAL HEAT REMOVAL (RHR) SYSTEMS

12A KHR System Flow

Range: 0 to 110% design flow - (0 to 8195 gpm)

Cat.: 2 Type: D

GG Design: Instruments E12-FI-R603A/B/C monitor RHR flow over a range 0-10,000 gpm. from transmitters E12-FT-N015A/B/C. These are Class 1E and 0588 qualified.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirements of this variable.

12B RHR Heat Exchanger Outlet Temperature

Range: 32°F to 350°F

Cat.: 2 Type: D

GG Design: Instruments E12-TE-N027A/B monitors RHR heat exchanger discharge temperature over a range 40° to 400°F. In addition, E12-TE-N004A/B and E12-TE-N002A/B monitor heat exchanger B001A/B inlet and outlet temperature respectively over a range 40° to 400°F also. Recorder E12-TJRS-R601 records all these temperatures.

Compliance: The present temperature instruments have not been environmentally qualified per Regulatory Guide 1.89, do not receive power from the emergency power source, do not meet 10 CFR 50 Appendix B, and are not periodically tested per Regulatory Guide 1.118.

Control Rm: Recorder E12-TJRS-R601 would need to be replaced with a seismically qualified instrument.

Interim

MP&L Pos.: The appropriateness of the Cat. 2 requirement for this variable is being reviewed by MP&L and our position will be provided in a future transmittal on R.G. 1.97 compliance. Until resolution of this variable is determined the existig RHR Heat Exchanger Outlet Temp. monitoring instrumentation is sufficient for this purpose.

13 COOLING WATER SYSTEM

13A Cooling Water Temperature to ESF System Components

Range: 32°F to 200°F

Cat.: 2 Type: D

GG Design: Instruments P41-TE-N011A/B monitor SSW pump A/B discharge temperature over a range 0-750°F with indication on the BOP computer. P41-TW-N300A-C are in the SSW A/B and HPCS SW return lines.

Compliance: To meet the regulatory guide would require purchasing and installing 3 additional Class 1E type T thermocouples and Class 1E temperature monitors.

Control Rm: Recorder EI2-TJRS-R601 would need to be replaced with a qualified recorder.

MP&L Pos.: The appropriateness of the requirement for this variable for qualified instrumentation is being reviewed by MP&L and our position will be provided in a future transmittal on R.G. 1.97 compliance. The existing non qualified instrumentation is sufficient to meet the monitoring requirement until resolution of this variable is determined.

13B Cooling Water Flow to ESF System Components

Range: 0 to 110% design flow

Cat.: 2 Type: D

GG Design: P41-FT-N016A-C, N018A-C, N020C, and C61-FT-N001A/B monitor SSW and HPCS SW flow over a range of 0-15,000gpm & 0-1,000 gpm respectively.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

14 RADWASTE SYSTEMS

14A High Radioactivity Liquid Tank Level

Range: Top to bottom

Cat.: 3 Type: D

GG Design: Instrumentation is provided to monitor the level in these tanks from within a few inches of tank bottom (instrument tap) to beyond the tank overflow connection. Each tank has its level indicated on a flow indicating controller and recorded on the radwaste console on a level recorder.

Compliance: Instruments monitor to within a few inches of tank bottom and to within a few inches of tank top. Since monitoring is essentially to tank bottom, monitoring to the actual tank bottom is not considered necessary. Since the centerline of the tank overflows are below the upper range of the instruments (ie. below tank top), monitoring to tank top is not necessary. In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the intent of the requirement of this variable.

15 VENTILATION SYSTEMS

15A Emergency Ventilation Damper Position

Range: Open-closed status

Cat.: 2 Type: D

GG Design: Each emergency ventilation damper is monitored and has an open and a closed position light in the control room. The instrumentation is qualified to Nureg 0588 criteria.

Compliance: In compliance

Control Rm: No change

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

16 POWER SUPPLIES

16A Status of Standby Power and Other Energy Sources Important to Safety (hydraulic, pneumatic)

Range: Voltages, currents, pressures

Cat.: 2 Type: D

GG Design: Instrumentation exists to monitor voltages and currents for the following Class 1E power supplies and systems: E22, P75, P81, R20 and R21. Instruments exist in the control room to monitor battery bus voltage for system L21 with local indication to monitor battery bus current. There are no instruments to monitor pressure in the ADS air receivers or accumulators. Instruments P75-PSL-N018A/B, P75-PSLL-N085A/B & N086A/B, P75-PI-R009A/B, R010A/B, R011A/B & R012A/B all are non Class 1E instruments which monitor diesel generator starting air storage tank pressure. Instruments P81-PSL-N111A/B, N112A/B, N115A/B and N116A/B are Class 1E instruments which monitor HPCS diesel generator air starting pressure but P81-PI-R107A/B and R108A/B are not Class 1E.

Compliance: All the instrumentation provided to monitor Class 1E power supply and system voltage and current meet the requirements of Regulatory Guide 1.97 except for those instruments in the E22 (HPCS) system.

Control Rm: To meet the Regulatory Guide would require purchasing 10 voltage/current indicators qualified to the requirements of Regulatory Guide 1.89, powered from an emergency power source and meeting the requirements of 10 CFR 50 Appendix B to replace the E22 existing instruments. Testing as per Regulatory Guide 1.118 would also be required. An additional 24 Class 1E pressure transmitters and 24 Class 1E meters would need to be purchased to monitor the air accumulator pressures. Indication would be provided on the P864 and P601 panels.

Interim

MP&L Pos.: The appropriateness of additional instrumentation to meet the requirements for this variable is being evaluated by MP&L and will be provided in a future transmittal on R.G. 1.97 compliance. The existing instrumentation in the HPCS system (except for air accumulator pressure) is sufficient to monitor this system until resolution of this variable is determined.

17 CONTAINMENT RADIATION

17A Primary Containment Area Radiation - High Range

Range: 1 R/hr to 10^7 R/hr

Cat.: 1 Type: (Type A for GGNS), E

GG Design: Instruments D21-RITS-K648 A-D monitor radiation in the Drywell and Containment (2 on opposite sides in each) with a range 10^0 - 10^7 R/hr and are recorded on D21-RR-R601A/B.

Compliance: Class 1E battery backup power is provided.

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

17B Reactor Building or Secondary Containment Area Radiation

Range: 1 R/hr to 10^7 R/hr for Mark III containment

Cat.: 2 Type: E

SEE PRIMARY CONTAINMENT AREA
RADIATION (ITEM 17A)

18 AREA RADIATION

18A Radiation Exposure Rate (inside buildings or areas where access is required to service equipment important to safety)

Range: 10^{-1} R/hr to 10^4 R/hr

Cat.: 2 Type: E

GG Design: Same as Item 7F

Compliance: Same as Item 7F

Control Rm: Same as Item 7F

Interim

MP&L Pos.: Same as Item 7F

19 AIRBORNE R/DIOACTIVE MATERIALS RELEASED FROM PLANT

19A Noble Gases and Vent Flow Rate

Drywell Purge, Standby Gas Treatment System Purge (for Mark I and II plants) and Secondary Containment Purge (for Mark III plants)

Range: 10^{-6} uCi/cc to 10^5 uCi/cc, 0 to 110% vent design flow (Not needed if effluent discharges through common plant vent)

Cat.: 2 Type: E

GG Design: Containment Vent, FHA Vent and SGTS A/B Vent. Exhaust effluent monitor systems monitor Noble Gases over a range 10^{-7} - 10^5 uCi/cc. These monitors are not Class 1E and the containment and FHA microcomputer and the readout equipment are not powered from a high reliable power source or backed up with power from the battery. The SGTS monitors are powered from a Class 1E power supply by means of two series Class 1E circuit breakers which provide isolation. Radiation monitoring is performed for the following vent flow rates: Containment is 0-4,600 cfm (7800 design); Auxiliary Bldg. is 0-38,000 cfm (35,360 cfm design); SGTS is 0-5,600 cfm (6,000 cfm design); Turbine Bldg. is 0-9,800 cfm (7,790 cfm design) and Radwaste is 0-58,500 cfm (53,600 cfm design)

Compliance: To meet the regulatory guide would require upgrading and qualifying the present systems to Class 1E status or replace the entire effluent radiation monitoring systems (includes the isokinetic sample system) with Class 1E systems and providing high reliable power with battery backup. NUREG-0737 does not require 1E qualified instruments. The vent monitoring flow rate does not meet 110% design flow for the containment vent and the SGTS vent.

Control Rm: To meet the Reg. Guide all exhaust vent effluent monitoring indicators and recorders will need to be upgraded to IE qualification.

Interim

MP&L Pos.: The appropriateness of the Cat. 2 requirements of this variable is being reviewed by MP&L and our position will be provided in a future transmittal on R.G. 1.97 compliance. The existing non qualified noble gas effluent monitoring system is sufficient until resolution of this variable is determined.

19B Secondary Containment Purge (for Mark I, II, and III plants)

Range: 10^6 uCi/cc to 10^4 uCi/cc, 0 to 110% vent design flow (Not needed if effluent discharges through common plant vent)

Cat.: 2 Type: E

GG Design: Refer to SGTS in Item 19A

Compliance: To meet the R.G. 1.97 requirements the existing SGTS A/B Rad. monitors would need to be upgraded to Class 1E.

Control Rm: Included in Item 19A

Interim

MP&L Pos.: The requirements for this variable are being considered in coordination with Item 19A.

19C Secondary Containment (reactor shield building annulus, if in design)

Range: 10^{-6} uCi/cc to 10^4 uCi/cc, 0 to 110% vent design flow (Not needed if effluent discharges through common plant vent)

Cat.: 2 Type: E

D O E S N O T A P P L Y T O G R A N D G U L F

19D Auxiliary Building (including any building containing primary system gases, e.g., waste gas decay tank)

Range: 10^{-6} uCi/cc to 10^3 uCi/cc, 0 to 110% vent design flow (Not needed if effluent discharges through common plant vent)

Cat.: 2 Type: E

GG Design: Turbine Building Vent and Offgas and Radwaste Building Vent exhaust effluent monitor systems are identical to the systems described in Item 19A.

Compliance: To meet the regulatory guide would require upgrading and qualifying the present systems to Class 1E status or replace the entire effluent radiation monitoring systems (included the isokinetic sample system) with Class 1E systems and providing high reliable power with battery backup. See also 19A. NUREG-0737 does not require 1E qualified instruments.

Control Rm: Changes included in Item 19A

Interim

MP&L Pos.: The requirements for this variable are being considered in coordination with Item 19A.

19E Common Plant Vent or Multi-purpose Vent Discharging Any of Above Releases (if drywell or SGTS purge is included)

Range: 10^{-6} uCi/cc to 10^3 uCi/cc, 0 to 110% vent design flow, 10^{-6} uCi/cc to 10^4 uCi/cc

Cat.: 2 Type: E

D O E S N O T A P P L Y T O G R A N D G U L F

19F All other Identified Release Points

Range: 10^{-6} uCi/cc to 10^2 uCi/cc, 0 to 110% vent design flow (Not needed if effluent discharges through other monitored plant vents)

Cat.: 2 Type: E

N O O T H E R R E L E A S E P O I N T S I D E N T I F I E D

19G Particulates and Halogens, All Identified Plant Release Points. Sampling with Onsite Analysis Capability

Range: 10^{-3} uCi/cc to 10^2 uCi/cc, 0 to 110% vent design flow

Cat.: 3 Type: E

GG Design: SGTS A/B, Containment Vent, Turbine Building Vent, FHA Vent and the Offgas and Radwaste vent monitor both iodine and particulate from 10^{-6} CPM. A microcomputer with associated readout equipment is provided for each system to record the activity levels.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

20 ENVIRONS RADIATION AND RADIOACTIVITY

20A Radiation Exposure Meters (continuous indication at fixed locations)

Range: Range, location, and qualification criteria to be developed to satisfy NUREG-0654, Section II.H.5b and 6b requirements for emergency radiological monitors

Cat.: - Type: E

GG Design: 57 TLD Field Monitors are provided on a radius of 1-10 miles.

Compliance: This will meet the NRC's requirement for fixed field monitors along with the application of field monitoring teams. Continuous indication is not required.

Control Rm: Not applicable

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

20B Airborne Radiohalogens and Particulates (portable sampling with onsite analysis capability)

Range: 10^{-9} uCi/cc to 10^{-3} uCi/cc

Cat.: 3 Type: E

GG Design: Four Radeco Model H809C Air Samplers are provided for field sampling with charcoal filters. The onsite analysis capability includes 3 multi-channel analysers (2 in cold lab and 1 in hot lab) Nuclear Data #66 and Ortec #7054

Compliance: In compliance

Control Rm: Not applicable

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

20C Plant and Environs Radiation (portable instrumentation)

Range: 10^{-3} R/hr to 10^4 R/hr, photons 10^{-3} rads/hr to 10^4 rads/hr, beta radiations and low-energy photons

Cat.: 3 Type: E

GG Design: Four Eberline RO-7 Dose Rate Meters (1mR/hr - 200 R/hr) and 3 Ludlum Model 125 micro ratemeters are provided for environ monitoring

Compliance: The dose ratemeters do not provide the 10^4 high range sensitivity. For hand held environ monitoring a 10,000 R/hr sensitivity is unnecessary.

Control Rm: Not applicable

MP&L Pos.: The high range instrument sensitivity of 10^4 R is not necessary and the existing 200 R/hr. range is adequate and no instrument changes are being proposed.

20D Plant and Environs Radioactivity (portable instrumentation)

Range: Multichannel gamma-ray spectrometer

Cat.: 3 Type: E

GG Design: 1 Nuclear #256D portable multi-channel analyser is available to the field monitor teams.

Compliance: In compliance

Control Rm: Not applicable

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

21 METEOROLOGY

21A Wind Direction

Range: 0 to 306° ($\pm 5^\circ$ accuracy with a deflection of 15°). Starting speed 0.45 mps (1.0 mph). Damping ratio between 0.4 and 0.6, distance constant 2 meters

Cat.: 3 Type: E

GG Design: Instrumentation exists to measure wind direction from 0 to 540° at 33 ft. and 162 ft. Accuracy is $\pm 2.5^\circ$ and threshold is 0.25 mph.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

21B Wind Speed

Range: 0 to 30 mps (67 mph) ± 0.22 mps (0.5 mph) accuracy for wind speeds less than 11 mps (25 mph) with a starting threshold of less than 0.45 mps (1.0 mph)

Cat.: 3 Type: E

GG Design: Instrumentation exists to measure wind speed from 0 to 100 mph at 33 ft. and 162 ft. Accuracy is 1.2% (± 0.3 mph at 25 mph) and threshold is 0.5 mph).

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

21C Estimation of Atmospheric Stability

Range: Based on vertical temperature difference from primary system, -5°C to 10°C (-9°F to 18°F) and $\pm 0.15^{\circ}\text{C}$ accuracy per 50-meter intervals ($\pm 0.3^{\circ}\text{F}$ accuracy per 164-foot intervals) or analogous range for alternative stability estimates

Cat.: 3 Type: E

GG Design: Instrumentation exists to measure vertical temperature difference from -10 F to $+20$ F. Accuracy is 5% of delta T.

Compliance: In compliance

Control Rm: No changes

MP&L Pos.: The existing Grand Gulf design complies with the requirement of this variable.

22 ACCIDENT SAMPLING CAPABILITY (ANALYSIS CAPABILITY ON SITE)

22A Primary Coolant and Sump

- 1) Gross Activity
- 2) Gamma Spectrum
- 3) Boron Content
- 4) Chloride Content
- 5) Dissolved Hydrogen or Total Gas
- 6) Dissolved Oxygen
- 7) pH

Range: Grab Sample

- 1) 10 uCi/ml to 10 Ci/ml
- 2) (Isotopic Analysis)
- 3) 0 to 1000 ppm
- 4) 0 to 20 ppm
- 5) 0 to 2000 cc(STP)/kg
- 6) 0 to 20 ppm
- 7) 1 to 13

Cat.: 3 Type: E

- GG Design:
- 1) 10^{-7} uCi/gm to 10Ci/gm
 - 2) Isotopic Analysis
 - 3) Analytical analysis (100 to 10,000 ppm)
 - 4) 0.1 to 100 ppm
 - 5) 0-100% H₂ in air
 - 6) 0-10/0-100 ppb
 - 7) 0-14

Grand Gulf does not sample and analyze the Drywell Floor and Equipment Drain Sumps or the Containment Floor and Equipment Drain Sumps until they are pumped to the Equipment Drain Collector Tanks or the Floor Drain Collector Tanks where they are grab sampled and analyzed for gross radio-activity.

Compliance: To meet the regulatory guide would require installing additional sample lines to the post accident sampling system from the 2 drywell floor and equipment drain sumps, the 6 ECCS pump room sumps, and the four floor and equipment drain sumps in the Auxiliary Building.

Control Rm: Not applicable

MP&L Pos.: All of the instruments and ranges required for this variable are provided in the Grand Gulf Post-Accident Sampling System. MP&L believes that the requirement to monitor individual sumps is unnecessary. Online analysis at the jet pump diffuser and suppression pool and grab sampling of the Equipment and Floor Drain Collector Tanks provides adequate sampling locations for chemical and radiological analysis.

22B Containment Air

- 1) Hydrogen Content
- 2) Oxygen Content
- 3) Gamma Spectrum

Range: Grab Sample

- 1) 0-10% 0-30% for inerted containment
- 2) 0-30%
- 3) Isotopic analysis

Cat.: 3

Type: E

GG Design: 1) 0-5%/0-10% (non inerted containment)
2) 0-20%/20-30% (To be added)
3) Isotopic Analysis Non Class 1E. H₂ recorded on
E61-AR- R602A/B. Isotopic Analysis stored in computer
and printed on readout equipment on demand.

Compliance: In compliance

Control Rm: Not applicable

MP&L Pos.: The existing Grand Gulf design complies with the
requirement of this variable.