GPU Nuclear

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October 1, 1984
5211-84-2252

Office of Nuclear Reactor Regulation
Attn: J. F. Stolz, Chief
Operating Reactor Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Stolz:

Three Mile Island Nuclear Station Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
NUREG-0737, Supplement 1 - Regulatory Guide 1.97
(Revision 3)

Section 6.2 of Supplement 1 to NUREG-0737, pertaining to Regulatory Guide 1.97 requires each licensee to submit a report describing how it meets the specific recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." In the GPU Nuclear Corporation transmittal on the subject dated July 12, 1983, we committed to provide an implementation schedule and final report prior to the end of Cycle No. 5 but no later than September 30, 1984. This was reiterated by an NRC Confirmatory Order dated June 14, 1984.

Accordingly, enclosed is a comparison of the specific recommendations of Regulatory Guide 1.97 with the Three Mile Island Unit 1 design. For each variable, the report identifies either (1) full compliance, (2) noncompliance with a justification as to why the specific recommendations are not appropriate for this facility, or (3) noncompliance, with a commitment and schedule to upgrade. All upgrade modifications are scheduled for completion by the second refueling outage after restart, designated Refueling Outage 7.

The attached table highlights those Regulatory Guide 1.97 recommendations for which any degree of noncompliance has been identified, as well as the proposed resolution.

Sincerely,

H. D. Hukill
Director, TMI-1

SK:dls:0085u
Attachment
cc: J. Van Vliet
R. Conte

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1/1

GPU NUCLEAR CORPORATION
THREE MILE ISLAND NUCLEAR POWER STATION UNIT NO. 1
R.G. 1.97 (REV. 3) COMPLIANCE REVIEW
R.G. 1.97 INVENTORY AND COMPLIANCE TABLES

NOTES

CATEGORY 1 INSTRUMENTS

1. Environmental Qualification

An inventory and compliance table has been prepared for each variable indicated in R.G. 1.97 Table 3. The field sensors (i.e., transmitters eg, LT, FT, TE) are located in various plant areas, where as the secondary loop components such as indicators, recorders are located in the control room. For the line which shows the environment, the use of the term "Harsh" indicates that part of the loop (eg, field sensors) are located in a harsh environment; and "Mild" indicates that all components within the loop are located in a mild environment.

The R.G. 1.97 Inventory and Compliance Table will indicate a "yes" in the "plant specific" column for Environmental Qualification if the equipment is in the TMI-1 EQ Master List Rev. 8. This list contains equipment in the Harsh environment. A "no" in this column indicates that the qualification of field sensors in the loop which may be exposed to Harsh environment have not been satisfactorily addressed, and will be incorporated into the TMI-1 EQ Master List in the next revision and qualification or justification for continued operation will be documented in accordance with 10 CFR 50.49.

The qualification of all the control room devices i.e., indicators, recorders, etc. are considered to be satisfactory since they are high grade industrial equipment, designed, procured and installed in accordance with quality assurance requirements of 10 CFR 50 Appendix B.

If the instrument loop components including field sensors are located in a Mild area, they will be listed as "Not Applicable" in the plant specific column for Environmental Qualification.

2. Seismic Qualification

Seismic qualification of the post-accident monitoring instrumentation complies with the TMI-1 license basis as follows:

- Sensors and their related accessories which are mounted locally are seismically qualified to the appropriate response spectra. The displayed devices, such as indicators, recorders, etc., which are located on panels in the Control Room, have been previously qualified to generic envelope spectra. Control Panels in the Control Room were procured based upon seismic requirements.

- GPUN is planning to undertake a review to insure the qualification basis is satisfactory for Control Panels in the Control Room and to insure the envelope spectra used for displayed devices bound the appropriate panel response spectra.

3. Channel Availability

The instrumentation channel will be available prior to an accident except as provided in Paragraph 4.11, "Exception," as defined in IEEE 279-1971, "Criteria for Protection Sytems for Nuclear Power Generating Station," or as specified in the technical specifications. This availability applies only to the qualified portions of the channels. This complies with the requirements in Reg. Guide 1.97.

4. Quality Assurance

The R.G. 1.97 inventory and compliance table will indicate a "yes" in the "plant specific" column for QA if the equipment is classified as 1E and therefore, it has been designed, procured, installed and maintained in accordance with the TMI-1 QA Program at the time of installation.

5. Interfaces

Category 1 instrument channels are electrically isolated from non-qualified portions of the instruments loop up to and including the isolation device.

6. Servicing, Testing and Calibration

Category 1 instrumentation is part of the planned maintenance program. As described in Chapter 13 of USAR and Technical Specification, testing is performed on instrument strings on a regular basis. The testpoints for the instrument strings are under administrative control to prevent unplanned testing. The isolators for the instrument strings are accessible during and following a design basis event (considering posted radiation fields). Normal calibration of instrumentation located inside containment is on a refueling cycle basis.

7. Human Factors

A "yes" in this column indicates that for this display device, the Human Factors Evaluation has been completed as part of the Control Room Design Review Process. Human factors analysis recommendations was part of the CRDR submittal (per Letter No. 5211-84-2153, dated 6/29/84). A human factors review will be performed to implement the component identification requirements as related to Reg. Guide 1.97 (Revision 3).

8. Direct Measurement

To the extent practicable, monitoring instrumentation inputs are from sensors that directly measure the desired variables. This complies with the requirements of Reg. Guide 1.97.

CATEGORY 2 INSTRUMENTS

9. Environmental Qualification

An inventory and compliance table has been prepared for each variable indicated in R.G. 1.97 Table 3. The field sensors (i.e., transmitters eg, LT, FT, TE) are located in various plant areas, where as the secondary loop components such as indicators, recorders are located in the control room. For the line which shows the environment, the use of the term "Harsh" indicates that part of the loop (eg, field sensors) are located in a harsh environment; and "Mild" indicates that all components within the loop are located in a mild environment.

The R.G. 1.97 Inventory and Compliance Table will indicate a "yes" in the "plant specific" column for Environmental Qualification if the equipment is in the TMI-1 EQ Master List Rev. 8. This list contains equipment in the Harsh environment. A "no" in this column indicates that the qualification of field sensors in the loop which may be exposed to Harsh environment have not been satisfactorily addressed, and will be incorporated into the TMI-1 EQ Master List in the next revision and qualification or justification for continued operation will be documented in accordance with 10 CFR 50.49.

The qualification of all the control room devices i.e., indicators, recorders, etc. are considered to be satisfactory since they are high grade industrial equipment, designed, procured and installed in accordance with quality assurance requirements of 10 CFR 50 Appendix B.

If the instrument loop components including field sensors are located in a Mild area, they will be listed as "Not Applicable" in the plant specific column for Environmental Qualification.

10. Channel Availability

The out-of-service interval is based on normal technical specification requirements for the system it serves, where applicable, or by other requirements. This complies with the provisions of Reg. Guide 1.97.

11. Quality Assurance

The R.G. 1.97 Inventory and Compliance Table will indicate a "yes" in the "plant specific" column for QA if the equipment is classified as 1E, and therefore, it has been designed, procured, installed and maintained in accordance with the TMI-1 QA Program at the time of installation.

12. Interfaces

1E Qualified instrument channels are electrically isolated from non-qualified portions of the instruments loop up to and including the isolation device.

13. Servicing, Testing and Calibration

Category 2 instrumentation is part of the planned maintenance program. As described in Chapter 13 of USAR and Technical Specification, testing is performed on instrument strings on a regular basis. The testpoints for the instrument strings are under administrative control to prevent unplanned testing. The isolators for the instrument strings are accessible during and following a design basis event (considering posted radiation fields). Normal calibration of instrumentation located inside containment is on a refueling cycle basis.

14. Human Factors

A "yes" in this column indicates that for this display device, the Human Factors Evaluation has been completed as part of the Control Room Design Review Process. Human factors analysis recommendations was part of the CRDR submittal (per Letter No. 5211-84-2153, dated 6/29/84). A human factors review will be performed to implement the component identification requirements as related to Reg. Guide 1.97 (Revision 3).

15. Direct Measurement

To the extent practicable, monitoring instrumentation inputs are from sensors that directly measure the desired variables. This complies with the requirements of Reg. Guide 1.97.

CATEGORY 3 INSTRUMENTS

16. Quality Assurance

The instrumentation is of high-quality commercial grade and is selected to withstand normal power plant service environment. This complies with the provisions of Reg. Guide 1.97 (Revision 3).

17. Servicing, Testing and Calibration

Instrumentation is part of the planned maintenance program. As described in Chapter 13 of USAR and Technical Specification, testing is performed on instrument strings on a regular basis. The testpoints for the instrument strings are under administrative control to prevent unplanned testing.

18. Human Factors

A "yes" in this column indicates that for this display device, the Human Factors Evaluation has been completed as part of the Contol Room Design Review Process. Human factors analysis recommendations was part of the CRDR submittal (per Letter No. 5211-84-2153, dated 6/29/84).

19. Direct Measurement

To the extent practicable, monitoring instrumentation inputs are from sensors that directly measure the desired variables. This complies with the requirements of Reg. Guide 1.97.

GENERAL CATEGORY

20. On Demand

This signifies availability on the plant process computer at terminals in the control room, technical support center and near site emergency operations facility.

GPU Nuclear Corporation
Three Mile Island, Unit 1

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Neutron Flux	B	1

System Identification	Nuclear Instrumentation System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	Yes	Yes (2) Power Range Only
Redundancy	Yes	Yes
Number of Redundant Channels	2	2 Source, 2 Intermediate 4 Power
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4) Power Range Only
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	Continuous 1 Channel Power Range Only
Range	10^{-6} to 100% full power	10^{-7} to 125% full power
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE:		
COMMENTS: See Justification for power range environmental qualification, Page 1a. A review for this variable is continuing. Alternate parameters or Reclassification may be appropriate. The Commission will be informed on this item by November 1, 1984.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Neutron Flux

Following a LOCA, the power range detector functions to generate a reactor trip, and completes its safety function within 0.3 seconds post accident. This time period is small in comparison with the time required for the containment atmosphere to become a harsh environment. A reactor trip will also be initiated by low RCS pressure.

Therefore, GPUN does not consider qualification of this equipment for harsh environmental conditions necessary.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Control Rod Position	B	3

System Identification	Control Rod Drive Position	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	IE Inverter
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Not Required
Range	Full-in or not full-in	Full-in or not full-in
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Original plant installation		
COMMENTS: Continuous rod position indication, as well as full-in or full-out indication are provided for each control rod drive. Alarm lamps on the RDC panel alert the operator to the systems status at all times.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
RCS Soluble Boron Concentration	B	3

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Applicable
Environment		Not Applicable
Seismic Qualification	No	Not Applicable
Redundancy	No	Not Applicable
Number of Redundant Channels		Not Applicable
Power Source	Non-essential	Not Applicable
Channel Availability	No	Not Applicable
Quality Assurance	No	Not Applicable
Control Room Display Indicated	Continuous/On Demand	Not Applicable
Recorded	No	Not Applicable
Range	0 to 6000 ppm	Not Applicable
Interface	No	Not Applicable
Servicing, Testing & Calib.	Yes	Not Applicable
Human Factors	Yes	Not Applicable
Direct Measurement	Yes or no	Not Applicable

SCHEDULE: Does not exist.

COMMENTS:
No on-line facilty exists to measure RCS soluble boron content (boronmeter). Off-line facility utilized. See Page 3a for Justification.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: RCS Soluble Boron Concentration

For TMI-1 the determination of Reactor Coolant Boron Concentration is by normal or post accident sampling. RCS Boron need not be constantly monitored because the loss of negative reactivity due to Xenon decay is sufficiently slow that the control room operator need not know instantaneously or constantly the Boron concentration in the RCS. Therefore, GPUN considers that TMI-1 sampling is sufficient for this parameter.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
RCS Cold Leg Water Temperature	A, B	1

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand*
Range	50°F to 700°F	50°F to 650°F*
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Computer input will be moved to qualified loops by refueling outage #7.

COMMENTS: Recording is from original plant installation instruments (Non-Nuclear Instrumentation) which is not the same as a qualified loop. See Page 4a for Jusification for range. All other parameters are in compliance.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: RCS Cold Leg Water Temperature

The range of the T-cold instrumentation is considered by GPU to be adequate based on the fact that at maximum steam generator pressure of 1200 psig, saturation temperature is 600°F. Thus T-cold would be at all times less than or equal to this value. Therefore, GPUN considers that the existing TMI-1 maximum range value of 650°F is sufficient. This is a B&W Owners Group generic position.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
RCS Hot Leg Water Temp	B	1

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On demand*
Range	50°F to 700°F	120°F to 920°F*
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Computer input will be moved to qualified loop by refueling outage #7.

COMMENTS: Recording is from original plant installation instruments (Non-Nuclear Instrumentation) which is not the same as a qualified loop. See page 5a for Justification for range. All other parameters are in compliance.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: RCS Hot Leg Water Temperature

RCS hot leg water temperature range is 120°F to 920°F which does not envelope the lower end of Regulatory Guide 1.97 recommended range. However, at temperatures less than 300°F the plant will be in the decay heat removal mode at cold shutdown and this temperature is not required. Based on this consideration GPUN believes that the existing TMI-1 range is sufficient.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
RCS Pressure	A, B & C	1

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes (except Control Room display)
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous* (one channel only)
Recorded	Continuous/On Demand	Continuous/On Demand*
Range		
	0 to 3000 psig	0 to 2500 psig*
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Computer input will be moved to qualified loop by refueling outage #7 providing on demand recording and on-demand control room display.

COMMENTS: Recording is from original plant installation instruments (Non-Nuclear Instrumentation) which is not the same as a qualified loop. See Page 6a for Justification for range.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: RCS Pressure

The presently installed RCS pressure indications are of sufficient range (0-2500 psig) since the code safeties on the pressurizer at TMI-1 are all set to relieve pressure at 2500 psig. No additional operator action will be performed. Based on these considerations GPUN believes that the existing TMI-1 range is sufficient.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Core Exit Temperature	A, B & C	1

System Identification	BIRO/Normal Plant Incore Thermocouples	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	No*
Redundancy	Yes	Yes
Number of Redundant Channels	2	BIRO and Normal Incore Thermocouples
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand
Range	200°F to 2300°F	100°F to 2300°F
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Installed

COMMENTS: Digital Indicator does not meet seismic qualification. Digital indicators are expected to be received by 1/15/85 and will be installed and tested at first outage of 30 days duration after receipt of qualified meters. All other parameters are in compliance

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Coolant Inventory	B	1

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Will comply
Environment		Harsh
Seismic Qualification	Yes	Will comply
Redundancy	Yes	Will comply
Number of Redundant Channels	2	Will comply
Power Source	1E	Will comply
Channel Availability	Yes	Will comply
Quality Assurance	Yes	Will comply
Control Room Display		
Indicated	Continuous	On Demand*
Recorded	Continuous/On Demand	Will comply
Range	Bottom of Hot Leg to Top of Vessel	Will comply
Interface	Yes	Will comply
Servicing, Testing & Calib.	Yes	Will comply
Human Factors	Yes	Will comply
Direct Measurement	Yes or no	

SCHEDULE: Reactor Coolant Inventory Tracking System (RCITS) will be installed and testing will be completed by March, 1985.

COMMENTS: RCITS will comply with all requirements of RG 1.97 except, indication will be provided by computer based display.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Degrees of Subcooling	A & B	1

System Identification	Saturation Margin Monitoring	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	No*
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand
Range	200°F subcool to 35°F superheat	400°F subcool to 100°F superheat
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Installed

COMMENTS: Digital indicator does not meet seismic qualification. The digital indicator is expected to be received by 1/15/85 and will be installed and tested at first outage of 30 days duration after receipt of qualified meters. All other parameters are in compliance.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Sump Water Level (Narrow Range)	B & C	2

System Identification	Sump & Drainage System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (9)
Environment		Harsh
Seismic Qualification	No	Yes (2)
Redundancy	No	Yes
Number of Redundant Channels		2
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	Plant Specific	0 to 7.5 ft.
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Sump Water Level (Containment) (Wide Range)	B & C	1

System Identification	Sump & Drainage System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand
Range	Plant Specific	0 - 7.5 ft.
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Pressure	B & C	1

System Identification	Reactor Building Spray System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	Continuous (0-175 psig)
Range	-5 psig to 3 times design pressure	-5 psig to 3 times design pressure
Interface	Yes	Yes (5)
Servicing, Testing & Calib	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Installed

COMMENTS:

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Isolation Valve Position	B	1

System Identification	Reactor Building Isolation	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Not Applicable	Not Applicable
Range		
	Closed - not closed	Closed - not closed
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE: Original plant installation		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Radioactivity Concentration or Radiation Level in Circulating Primary Coolant	C	1

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	Yes	No*
Redundancy	Yes	No*
Number of Redundant Channels	2	
Power Source	1E	1E
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	Continuous
Range	1/2 Tech. Spec. limit to 100 times TSL	.008 - 4x 10^4 uCi/ml
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE: Installed		
COMMENTS: There is no tech spec limit for this monitor. See page 14a for justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Radioactivity Concentration or Radiation Level in Circulating Primary Coolant

Currently, no instrumentation exists to adequately measure this variable on line. The discussion of this variable is in the EGG report EE-6154, "Assessment of Generic Instrumentation Systems Used to Meet the Provisions of Regulatory Guide 1.97." This provides an excellent overview of the problem related to this measurement.

Existing letdown line radiation monitors, can be used to provide indication of fuel failure during normal operation. However, since the letdown line is isolated at reactor trip, it will not be available for long term measurement. Section II.B.3 of NUREG-0737 requires that capability exist at each plant to sample the RCS to assess the magnitude of fuel failures during post-accident conditions. As such, this measurement is the primary determinant of fuel failure during normal operation and post-accident. The letdown line radiation monitor is used as the initiator for sampling during normal operation and as a back-up indication. Therefore, GPUN recommends that for TMI-1 this parameter should be re-classified as Category 3. This is a B&W Owners Group generic position.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Analysis of Primary Coolant	C	3

System Identification		
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels	None	**
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	10 uCi/ml to 10 Ci/ml	**
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE:		
COMMENTS: Post-accident sampling system covers this requirement. See p. 67 and 68 of 76.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Area Radiation High Range	C, E	1

System Identification	Radiation Monitoring	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	Continuous
Range	1 - 10^7 R/hr	1 - 10^7 R/hr
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Effluent Radioactivity-Noble Gas Effluent from Condenser Air Removal	C, E	2

System Identification	Condenser Air Removal System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	Continuous/On Demand	Continuous
Range	10^{-6} - 10^{-2} uCi/cc 0 - 110% vent design flow	$3x10^{-7}$-$1x10^{5}$ uCi/cc 0-110% Vent Design Flow
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)

SCHEDULE: Installed

COMMENTS: Temporary Flow Indication is provided in the Control Room.
Flow indication will be qualified by refueling outage #7.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Hydrogen Concentration	A, C	1

System Identification	Post Accident Monitors	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	No*
Range	0 - 10% H_2	0 - 10% H_2
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE: Installed		
COMMENTS: Recorded information to be placed on computer by Refueling Outage #7.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Effluent Radioactivity - Noble Gases from Identified Release Points	C, E	2

System Identification	Radiation Monitoring System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	Continuous/On Demand	Continuous
Range	10^{-6} - 10^{-2} uCi/cc 0 - 110% vent design flow	$3x10^{-7}$-$1x10^{5}$ uCi/cc 0-50,000 cfm vent flow 0 - 300% vent design flow
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE:		
COMMENTS: Momentary Interruption of power is tolerable. Range achieved by overlapping RM-A9 Hi and Lo and RM-G24.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Effluent Radioactivity Noble Gases from Auxiliary Building	C&E	2

System Identification	Radiation Monitoring System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E
Channel Availability	Yes or No	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	Continuous/On Demand	Continuous
Range	10^{-6} - 10^{3} uCi/cc 0 - 110% vent design flow	$5x10^{-7}$ - $1x10^{3}$ uCi/cc 0 - 180% vent design flow
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)
SCHEDULE: Original equipment installation		
COMMENTS: Range achieved by overlapping RM-A8 Lo and RM-A8 Hi. Momentary interruption of power is tolerable.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
LPI/Decay Heat Removal System Flow	A, D	1

System Identification	Decay Heat Removal System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	Yes	No*
Redundancy	Yes	No*
Number of Redundant Channels	2	
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (10)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	No*
Range	0 - 110% design flow	0 - 125% design flow
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)

SCHEDULE: This system will be environmentally qualified prior to restart and will be in full compliance by refueling outage #7.

COMMENTS: The environmental qualification of equipment required for the Small Break LOCA was reviewed per NRC ltr. dated Aug. 8, 1984. As a result of this evaluation this system will be upgraded for environmental qualification prior to restart. The additional R.G. 1.97 requirements, which will be upgraded by refueling outage #7, are seismic qualification and redundancy outside the containment area.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Decay Heat Hx Outlet Temperature	D	2

System Identification	Decay Heat Removal System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or No	Yes (10)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	40°F - 350°F	0° - 300°F*
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)
SCHEDULE: Original Plant Installation.		
COMMENTS: See Pages 22a and 22b for Justifications of range and Quality Assurance, respectively.		

(s) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Decay Heat Hx Outlet Temperature

Decay heat removal operation initiated when the RCS temperature is less than 300°F (See USAR Table 9.5-1). Therefore, GPUN considers the plant specific range of 0-300°F for TMI-1 is sufficient to cover all post accident conditions.

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Decay Heat Hx Outlet Temperature

This instrument is part of the original plant installation. It was procured and installed as high quality commercial grade equipment. Over the years of operation it has demonstrated reliability and minimal maintenance. All future activities relative to this component will be subject to applicable QA requirements.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Accumulator Tank Level (Core Flood Tank Level)	D	2

System Identification	Core Flooding System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or No	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	10% - 90% Vol.	0 - 100% Vol. (H_2O)
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)
SCHEDULE: Original plant installation		
COMMENTS: See Page 23a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Accumulator Tank Level (Core Flood Tank Level)

Core flood tank level indication is provided in the Control Room. This instrument provides the operator information pertaining to tank status during normal operation. However, since the Core Flooding System is totally passive no monitoring of this parameter is required for any manual actions to mitigate the consequences of an accident. Therefore, GPUN recommends that for TMI-1 this parameter be reclassified as category 3. This is a B&W Owners Group generic position.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Accumulator Tank Pressure (Core Flood Tank Pressure)	D	2

System Identification	Core Flooding System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or No	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	0 - 750 psig	0 - 800 psig
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)
SCHEDULE: Original plant installation		
COMMENTS: See Page 24a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Accumulator Tank Pressure (Core Flood Tank Pressure)

Core flood tank pressure indication is provided in the Control Room with the range of 0-800 PSIG. This instrument provides the operator information pertaining to tank status during normal operation. However, since the Core Flooding System is totally passive no monitoring of this parameter is required for any manual actions to mitigate the consequences of an accident. Therefore, GPUN recommends that for TMI-1 this parameter be reclassified as category 3. This is a B&W Owners Group generic position.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Accumulator Isolation Valve Position	D	2

System Identification	Core Flooding System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E
Channel Availability	Yes or No	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	Closed or open	Closed or open
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)
SCHEDULE: Original plant installation		
COMMENTS: See Page 25a for Justificaton.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Accumulator Isolation Valve Position

These are motor operated valves whose circuit breakers are opened (de-energized) when the reactor is critical. The CF system is designed to inject borated water into the reactor core during a LOCA. Such an injection, if CF-V-1 could not isolate and CF-V-3 could not vent the CF tank, would result in some time delay in the ability to depressurize the RCS below 600 psig and 275°F. CF injection will not result in nitrogen injection into the RCS. Therefore, GPUN recommends that for TMI-1 this parameter be reclassified as Category 3.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Boric Acid Charging Flow	D	2

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	**
Environment		**
Seismic Qualification	Yes	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-1E/UPS	**
Channel Availability	Yes or No	**
Quality Assurance	Yes	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 110% design flow	**
Interface	Yes	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE:		
COMMENTS: Boric Acid Charging pump flow is "Not Applicable" to B&W Plants. See Page 26a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Boric Acid Charging Flow

The B&W - designed NSSS does not include a charging system as part of the Emergency Core Cooling System (ECCS). Flow paths from the ECCS to the RCS include high pressure injection (HPI) and low pressure injection (LPI) with the BWST or the RB Sump as the suction source, and the Core Flood Tank Injection. HPI and LPI flow rates are monitored, and BWST, RB Sump, and Core Flood Tank Levels are monitored by RG 1.97 variables. Therefore, Boric Acid Charging Flow does not need to be monitored as a Type D variable to monitor the operation of the ECCS. This is a B&W Owners Group generic position.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Flow in HPI System (Makeup Flow-in)	A, D	1

System Identification	Makeup System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	Yes	No*
Redundancy	Yes	No*
Number of Redundant Channels	2	
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	No*
Range	0 - 110% design flow	0 - 120% design flow
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or No	Yes (8)

SCHEDULE: This system will be environmentally qualified prior to restart and will be in full compliance by refueling outage #7.

COMMENTS: The environmental qualification of equipment required for the small Break LOCA was reviewed per NRC ltr. of Aug. 8, 1984. As a result of this evaluation, this system will be upgraded for environmental qualification prior to restart. The additional R.G. 1.97 requirements which will be upgraded by refueling outage #7, are seismic qualification and redundancy outside the containment area.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Flow in LPI System	D	2

System Identification		
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	**
Environment		**
Seismic Qualification	Yes	**
Redundancy	No	**
Number of Redundant Channels		**
Power Source	Non-1E/UPS	**
Channel Availability	Yes or No	**
Quality Assurance	Yes	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 110% design flow	**
Interface	Yes	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or No	**
SCHEDULE:		
COMMENTS: Same as Decay Heat Flow (see p. 21).		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Refueling Water Storage Tank Level (Borated Water Storage Tank)	A, D	1

System Identification	Decay Heat Sytem	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	Yes	No*
Redundancy	Yes	No*
Number of Redundant Channels	2	
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand
Range	Top to bottom	Top to bottom
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or No	Yes (8)

SCHEDULE: Original plant installation.

COMMENTS: This indication will be fully compliant by refueling outage #7. The entire system will be upgraded to satisfy the seismic and redundancy requirements of R.G. 1.97 by refueling outage #7.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Reactor Coolant Pump Status	D	3

System Identification	Reactor Coolant System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	Motor current	0 - 150% full load amps
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or No	Yes (19)
SCHEDULE: Original equipment installation		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary System Safety Relief Valve Positions or Flow Through or Pressure in Relief Valve	D	2

CRITERIA	NRC	PLANT SPECIFIC
System Identification		
Environmental Qualification	Yes	No*(1)
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	Closed - not closed	Closed - not closed
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)

SCHEDULE: Installed.

COMMENTS:

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Pressurizer Level	D	1

System Identification	AAME/RCS	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	Yes	Yes (1 Channel Only except for digital meter)
Redundancy	Yes	No*
Number of Redundant Channels	2	
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4) (1 Channel Only)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	Continuous/On Demand*
Range	Top to bottom	Top to bottom
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or No	Yes (8)

SCHEDULE: Original equipment installation (Non-Nuclear Instrumentation).

COMMENTS: Recording is associated with original equipment installation. See Page 32a for Justification of reclassification to Category 2, and for Justification of Temperature compensation (element) which is not environmentally qualified. A digital display instrumentation loop is installed which meets all R.G. 1.97 requirements except for seismic qualification of digital meter. A qualified meter will be installed by refueling outage #7.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Pressurizer Level

Pressurizer level is used as an indication that HPI throttling is allowed. The operator throttles HPI if he has adequate SCM & pressurizer level is on scale. However, failure to throttle under these conditions does not result in the violation of any safety limits (e.g. HPI is throttled upon reading 100F° subcooling, regardless of pressurizer level). Therefore, pressurizer level should be categorized as a Category 2 variable.

Pressurizer temperature compensation is not required for the reasons discussed above. Lack of compensation can delay HPI throttling, but there is no effect on safety limits.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Pressurizer Heater Status	D	2

System Identification	Pressurizer Heater System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels	None	
Power Source	Non-1E/UPS	Balance of Plant
Channel Availability		No
Quality Assurance	Yes	Yes (11)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	Electric current	On-Off*
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
SCHEDULE:		
COMMENTS:	Current indication is not provided at TMI-1. See Page 33a for Justification.	

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Pressurizer Heater Status

Pressurizer heater status is provided by On-Off indication only. This is considered sufficient indication at TMI-1 when used in conjunction with RCS Pressure. Therefore, GPUN recommends that for TMI-1 this parameter be reclassified as Category 3.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Quench Tank Level (RC Drain Tank Level)	D	3

System Identification	Liquid Waste Disposal System - RC Drain Tank	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous
Range	Top to bottom	0 - 100% volume
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or No	Yes (19)
SCHEDULE: Original plant installation		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Quench Tank Temperature (RC Drain Tank Temperature)	D	3

System Identification	Liquid Waste Disposal System - RC Drain Tank	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	50°F - 750°F	50°F - 275°F*
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or No	Yes (19)
SCHEDULE: Original plant installation		
COMMENTS: See Page 35a for Justification..		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Quench Tank Temp. (RC Drain Tank Temperature)

The RC drain tank is isolated upon reactor trip. RCD temperature approaching the temperature of 275°F maximum indicated temperature are indicative of leakage into the tank. Moreover, RCDT level and pressure indications are available for monitoring RC drain tank performance. Temperature, pressure and level of isolated tank are sufficient to monitor tank performance. Leakage into the RCDT is also indicated by pressurizer discharge pipe accelerometer, elbow tap differntial pressure for flow indication, or tail pipe temperature. Therefore, GPUN considers that 50°F-275°F range for RCDT temperature indication is sufficient to monitor for abnormal tank operating conditions.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Quench Tank Pressure (RC Drain Tank Pressure)	D	3

System Identification	Liquid Waste Disposal - RC Drain Tank	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	0 - design pressure	0 - 100 psig (0 - 140% Rupture Disc Pressure)
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or No	Yes (19)

SCHEDULE: Original plant installation

COMMENTS:

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Steam Generator Level	A, D	1

CRITERIA	NRC	PLANT SPECIFIC
System Identification	Main Steam System	
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand*
Range	From tube sheet to separators	0 - 600 inches Full Range Instrument
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or No	Yes (8)

SCHEDULE: Computer input will be moved to qualified loop by refueling outage #7.

COMMENTS: Recording is from original plant installation instruments (Non-Nuclear Instrumentation) which is not the same as a qualified loop. All other parameters are in compliance.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Steam Generator Pressure	A, D	1

System Identification	Main Steam System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand*
Range	From atmos. press. to 20% above the lowest safety valve setting	0 - 1200 psig (to 20% above lowest safety)
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or No	Yes (8)

SCHEDULE: Computer input will be moved to qualified loop by refueling outage #7.

COMMENTS: Recording is from original plant installation instruments (Non-Nuclear Instrumentation) which is not the same as a qualified loop. All other parameters are in compliance.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
SG Safety/Relief Valve Position or Main Steam Flow	D	2

System Identification	Main Steam System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Audible alarm
Recorded	No	No
Range	Closed - not closed	Closed - not closed
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or No	Yes (15)
SCHEDULE: Installed		
COMMENTS: See page 39a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: SG Safety/Relief Valve Position or Main Steam Flow

The key variables to determine the SG Safety/Relief valve position or Main Steam flow are SG Level and SG pressure. Valve position indication is provided as backup. Therefore, based on this consideration GPUN recommends that for TMI-1 this parameter be reclassified as Category 3. This is a B&W Owners Group generic position.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Main Feedwater Flow	D	3

System Identification	Feedwater System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous/On Demand
Range	0 - 110% design flow	0 - 110% design flow
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Auxiliary or Emergency Feedwater Flow	A, D	1

System Identification	Emergency Feedwater System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (1)
Environment		Harsh
Seismic Qualification	Yes	Yes (2)
Redundancy	Yes	Yes
Number of Redundant Channels	2	2
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	Yes (4)
Control Room Display Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	No*
Range	0 - 110% design flow	0 - 110% design flow 0 - 800 gpm/meter
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)
SCHEDULE: Installed		
COMMENTS: On Demand recording will be provided by refueling outage #6.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Condensate Storage Tank Water Level	A, D	1

System Identification	Condensate System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	Yes	No*
Redundancy	Yes	No*
Number of Redundant Channels	2	
Power Source	1E	1E Inverter
Channel Availability	Yes	Yes (3)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous	Continuous
Recorded	Continuous/On Demand	On Demand
Range	Plant specific	0 - 20 ft.
Interface	Yes	Yes (5)
Servicing, Testing & Calib.	Yes	Yes (6)
Human Factors	Yes	Yes (7)
Direct Measurement	Yes or no	Yes (8)

SCHEDULE: Original plant installation

COMMENTS: Instrumentation scheduled to be upgraded no later than refueling outage #6.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Spray Flow	D	2

System Identification	Reactor Building Spray System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	0 - 110% design flow	0 - 120% design flow 0 - 1800 gpm
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)

SCHEDULE: Original plant installation

COMMENTS: See Page 43a for Justification for Quality Assurance.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Containment Spray Flow

This instrument is part of the original plant installation. It was procured and installed as high quality commercial grade equipment. Over the years of operation it has demonstrated reliability and minimal maintenance. All future activities relative to this component will be subject to applicable QA requirements.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Heat Removal by the Containment Fan Heat Removal System	D	2

System Identification	RB Cooling Water Outlet Temp.	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Will Comply
Environment		Harsh
Seismic Qualification	No	Will Comply
Redundancy	No	Will Comply
Number of Redundant Channels		Will Comply
Power Source	Non-1E/UPS	Will Comply
Channel Availability	Yes or No	Will Comply
Quality Assurance	Yes	Will Comply
Control Room Display		
Indicated	Continuous/On Demand	Will Comply
Recorded	No	Will Comply
Range	Plant specific	Will Comply
Interface	Yes	Will Comply
Servicing, Testing & Calib.	Yes	Will Comply
Human Factors	Yes	Will Comply
Direct Measurement	Yes or no	Will Comply

SCHEDULE: Indication will be upgraded by refueling outage #7.

COMMENTS: See Page 44a for Justification.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Heat Removal by the Containment Fan Heat Removal System

Portions of this upgraded loop will be part of the original plant installation, procured and installed as high quality commercial grade equipment. Over the years of operation it has demonstrated reliability and minimal maintenance. All future activities relative to this component will be subject to applicable QA requirements.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Atmosphere Temperature	D	2

System Identification	HVAC - Reactor Building	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	Yes
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous
Range	40°F to 400°F	0 - 300°F*
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE: Original equipment installation		
COMMENTS: See Page 45a&b for Justifications. Redundancy: Various sensor location and two common displays		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Containment Atmospheric Temperature

The purpose of the Containment Atmosphere Temperature indication as stated in RG 1.97 and paraphrased herein is to provide indication that the Reactor Building Cooling and/or Spray System is accomplishing its design objective, i.e., to cool the Reactor Building atmosphere and maintain it below its designed temperature limit following any postulated design bases accident. This objective is primarily confirmed by observation that the Category 1 qualified Containment Pressure indications are decreasing. These have a range to three times design pressure which will cover the complete spectrum of postulated accidents that challenge these systems. Accordingly, Containment Atmosphere Temperature indications provide a backup to the pressure indicators. Therefore, GPUN recommends that for TMI-1 this parameter should be reclassified as Category 3 instruments. This is a B&W Owners Group generic position.

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Containment Atmospheric Temperature

The TMI design basis accident containment analysis are provided in the updated FSAR Chapter 6. The presently installed 0-300°F containment temperature indicators provide sufficient range to monitor the entire spectrum of containment temperature transients as analyzed in the FSAR. The containment temperature will be the saturation temperature for indicated containment pressure during loss of coolant accidents and for any event in which building spray has been initiated. Based on these considerations GPUN believes that the existing TMI-1 range is sufficient.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Sump Water Temperature	D	2

System Identification	Decay Heat	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	Yes
Number of Redundant Channels		1/loop
Power Source	Non-1E/UPS	UPS
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	50° - 250°F	0-300°F
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE:		
COMMENTS: See Page 46a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Containment Sump Water Temperature

The minimum available NPSH for the DH removal pump is independent of sump temperature and no automatic or manual actions are initiated based on this temperature. Therefore, GPUN recommends that for TMI-1 this parameter should be reclassified as Category 3 instruments.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Makeup Flow-in	D	2

CRITERIA	NRC	PLANT SPECIFIC
System Identification	Makeup and Purification System	
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	0 - 110% design flow	0 - 110% design flow
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE:		
COMMENTS: See page 47a for justification. This is the emergency boration path for reactivity transients and is not needed for events producing harsh environments.		

( ) As per attached notes
* non-compliant
** not applicable

GPU Nuclear Corporation
Three Mile Island, Unit 1

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Makeup Flow-In

This indication was provided as part of the original plant instrumentation but was replaced during the current shutdown. It was procured and installed as high quality commercial grade equipment. All future activities relative to this component will be subject to applicable QA requirements.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Letdown Flow-out	D	2

System Identification	Makeup and Purification System	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	0 - 110% design flow	0 - 110% design flow
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE: Original equipment installation		
COMMENTS: 0 - 160 gpm is equal to 0 - 110% rated flow. See Page 48a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Letdown Flow-out

During design basis events such as LOCAs, the Make-up and Purification System is isolated. Letdown flow is a backup variable to the make-up tank level for certain accidents. Letdown flow rate can be estimated, if necessary based on Pressurizer level. Therefore, GPUN recommends that for TMI-1 this parameter should be reclassified as Category 3 instruments.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Volume Control Tank Level (Makeup Tank Level)	D	2

System Identification	Makeup System - Make-up Tank	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	On Demand
Range	Top to bottom	Top to bottom 0 - 100 inches
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes	Yes (15)

SCHEDULE: Installed

COMMENTS: Meets all requirements and will be placed on the E.Q. master List.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Component Cooling Water Temperature to ESF System	D	2

System Identification	Nuclear Services, Decay Heat Closed Cooling	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	No*
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	No*
Control Room Display		
Indicated	Continuous/On Demand	On Demand
Recorded	No	On Demand
Range	40°F - 200°F	40-250° 40-300°
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)

SCHEDULE: Original Plant Installation.

COMMENTS: See Page 50a for Justification for Nuclear Services Quality Assurance
See Page 50b for Justification for Decay Heat Closed Cooling reclassification to Category 3.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Component Cooling Water Temperature to ESF System - Nuclear Services

This instrument is part of the original plant installation. It was procured and installed as high quality commercial grade equipment. Over the years of operation it has demonstrated reliability and minimal maintenance. All future activities relative to this component will be subject to applicable QA requirements.

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Component Cooling Water Temperature to ESF System - Nuclear Services

Decay Heat Heat Exchanger Outlet Temperature, page 22, provides an adequate measure of decay heat closed cooling water system heat removal capability. GPUN considers that this variable should be reclassified to Category 3.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Component Cooling Water Flow to ESF System	D	2

System Identification	NSCCW, DHCCW	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	None
Environment		
Seismic Qualification	Yes	None
Redundancy	No	None
Number of Redundant Channels		
Power Source	Non-1E/UPS	None
Channel Availability	Yes or no	None
Quality Assurance	Yes	None
Control Room Display Indicated	Continuous/On Demand	None
Recorded	No	None
Range	0 - 110% design flow	None
Interface	Yes	None
Servicing, Testing & Calib.	Yes	None
Human Factors	Yes	None
Direct Measurement	Yes or no	None
SCHEDULE:		
COMMENTS: Flow display is not provided at TMI-1. See Page 51a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Component Cooling Water Flow to ESF System.

Since all decay heat and nuclear services closed cycle cooling systems component cooling water valves are manual valves which are normally open, pump status and system temperature is sufficient indication for system operation. Except (NVS 52 & 53) where valve position indication is provided. These indications are considered to meet the requirements of Reg. Guide 1.97.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
High-level Radioactive Liquid Tank Level	D	3

System Identification	Waste Disposal - Liquid	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous
Range	Top to bottom	0 - 100% (Top to bottom)
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Original plant installation		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Radioactive Gas Holdup Tank Pressure	D	3

System Identification	Waste Disposal - Gas	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	None
Environment		Harsh
Seismic Qualification	No	None
Redundancy	No	None
Number of Redundant Channels		
Power Source	No	None
Channel Availability	No	None
Quality Assurance	No	None
Control Room Display Indicated	Continuous/On Demand	None
Recorded	No	None
Range	0 - 150% design pressure	None
Interface	No	None
Servicing, Testing & Calib.	Yes	None
Human Factors	Yes	None
Direct Measurement	Yes or no	None
SCHEDULE:		
COMMENTS: Measurement not available in the Control Room. Local indication only available on demand. See Page 53a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Radioactive Gas Holdup Tank Pressure.

The design pressure for these tanks is 150 psig. When the pressure reaches 82 psig, it initiates a local high pressure alarm. Also it can be indicated on a local indicator on demand. At 85 psig the relief valve opens and discharges to auxiliary building, where it will be detected and indicated by auxiliary building radiation monitor. Moreover, when relief valve opens, it will annunciate in the common problem panel in control room. Based on these considerations GPUN believes that the existing indications and alarms are sufficient to meet the requirements of R.G. 1.97.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Emergency Ventilation Damper Position (Control Room)	D	2

System Identification	Control Room Ventilation	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Yes (9)
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	IE Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	Open - closed	Open-Closed
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE:		
COMMENTS: Demand signal indication supplied in control room for additional dampers.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Status of Standby Power and Other Energy Sources	D	2

System Identification	Electrical and Instrument Air Systems	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualificatio	Yes	No* (Instrument Air)
Environment		Harsh
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	Self-powered or ESFGD DC Pnl. (UPS)
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display		
Indicated	Continuous/On Demand	Continuous
Recorded	No	No
Range	Plant specific	Voltage: 0 - 6000 volts Current: 0 - 1200 amps Pressure: 0 - 150 psig
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE: Original equipment installation		
COMMENTS: Existing readouts and alarms provide proven reliable indication of status. This also applies to Diesel Generator Load indicator and Class IE 480 VAC indicators.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Radiation Exposure Rate	E	3

System Identification	Radiation Monitoring	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Harsh
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	1E Inverter
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	Continuous/On Demand	Continuous
Range	10^{-1} - 10^{4} R/hr	10^{-1} - 10^{4} R/hr
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Reactor Shield Building Annulus (if in design)	E	2

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Not Applicable
Seismic Qualification	No	Not Applicable
Redundancy	No	Not Applicable
Number of Redundant Channels		Not Applicable
Power Source	Non-1E/UPS	Not Applicable
Channel Availability	Yes or no	Not Applicable
Quality Assurance	Yes	Not Applicable
Control Room Display Indicated	Continuous/On Demand	Not Applicable
Recorded	Continuous/On Demand	Not Applicable
Range	10^{-6} - 10^{4} uCi/cc 0 - 110% vent design flow	Not Applicable
Interface	Yes	Not Applicable
Servicing, Testing & Calib.	Yes	Not Applicable
Human Factors	Yes	Not Applicable
Direct Measurement	Yes or no	Not Applicable
SCHEDULE:		
COMMENTS: Not in design for TMI-1 plant.		

( ) As per attached notes
* non-compliant
** not applicable

GPU Nuclear Corporation
Three Mile Island, Unit 1

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Common Plant Vent or Multipurpose Vent	E	2

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Not Applicable
Seismic Qualification	No	Not Applicable
Redundancy	No	Not Applicable
Number of Redundant Channels		
Power Source	Non-1E/UPS	Not Applicable
Channel Availability	Yes or no	Not Applicable
Quality Assurance	Yes	Not Applicable
Control Room Display Indicated	Continuous/On Demand	Not Applicable
Recorded	Continuous/On Demand	Not Applicable
Range	10^{-6} - 10^{3} uCi/cc 0 - 110% vent design flow	Not Applicable
Interface	Yes	Not Applicable
Servicing, Testing & Calib.	Yes	Not Applicable
Human Factors	Yes	Not Applicable
Direct Measurement	Yes or no	Not Applicable
SCHEDULE: Not Applicable		
COMMENTS: TMI-1 d Miscellaneous Vent		See Pages 17, 19 & 20 for

( ) As per
* non-c
** not a

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Vent from Steam Generator Safety RV or Atmospheric Dump Valves	E	2

System Identification	Radiation Monitoring	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	Yes	Not Applicable
Environment		Mild
Seismic Qualification	No	No
Redundancy	No	No
Number of Redundant Channels		
Power Source	Non-1E/UPS	1E Inverter
Channel Availability	Yes or no	Yes (10)
Quality Assurance	Yes	Yes (11)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	Continuous/On Demand	Continuous
Range	10^{-1} - 10^{3} uCi/cc	3.96×10^{-2} - 980.4/946.7 uCi/cc*
Interface	Yes	Yes (12)
Servicing, Testing & Calib.	Yes	Yes (13)
Human Factors	Yes	Yes (14)
Direct Measurement	Yes or no	Yes (15)
SCHEDULE: Installed		
COMMENTS: See Page 59a for Justification.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 Rev. 3 - INVENTORY & COMPLIANCE TABLE

JUSTIFICATION

Variable: Vent from Steam Generator Safety Relief Valve or Valves Atmospheric Dump Valves.

The range of existing radiation monitors for vent from steam generator safety RV or atmospheric dump valves is 3.96×10^{-2} - 980/947 uCi/cc which is taken from a test result conducted by Battelle. This does not envelop the recommended range of 10^{-1} - 1000 uCi/cc. However these monitors were procured, installed and maintained in accordance with GPUN QA program and represented the state-of-the-art for this type of equipment at the time of purchase. GPUN considers the existing upper range of 980 uCi/cc is sufficient.

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
All Identified Plant Release Points Sampling Particulate and Halogens	E	3

System Identification	Condensers Exhaust, Aux. Bldg. Purge, RB Purge	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-Essential	IE (except condenser)
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display		
Indicated	Continuous/On Demand	On and off
Recorded	Continuous/On Demand	Not Applicable
Range	10^{-3} - 10^{2} uCi/cc 0 - 110% vent design flow	10^{-3} - 10^{2} uCi/cc 0-110% vent design flow
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE:		

COMMENTS: Sample collected on silver zeolite and carbon. Onsite analysis via Canberra Jupiter-Radionuclide Identification and Quantitative Measurement system. Systems are Isokinetic (except RMA5), thus matches vent flow.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Airborne Radiological and Particulates from Various Locations (Portable)	E	3

System Identification	Radiation Monitoring	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Self-contained (battery pack)
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Not Applicable
Recorded	Continuous/On Demand	Not Applicable
Range	10^{-9} - 10^{-3} uCi/cc	10^{-10} - 10^{-3} uCi/cc
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Not Required
Direct Measurement	Yes or no	Yes (19)
SCHEDULE:		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Plant and Environs Radiation (Portable Instrumentation)	E	3

System Identification	Radiation Monitoring	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Self-contained
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Not Applicable
Recorded	Continuous/On Demand	Not Applicable
Range	10^{-3} - 10^{4} R/hr, photons 10^{-3} - 10^{4} rad/hr, beta	Less than 10^{3} - 10^{6} R/hr, photons 10^{-3} - 10^{4} R/hr, beta
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Not Applicable
Direct Measurement	Yes or no	Yes (19)
SCHEDULE:		
COMMENTS: Beta probe calibrated for 1500 rad/hr can achieve 10,000 rad/hr with correction factor. This is a portable survey instrument, which is self-contained with its own power source.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Plant Environs Radioactivity (Portable)	E	3

System Identification	Meteorological	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Self-contained
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Not Applicable
Recorded	Continuous/On Demand	Not Applicable
Range	Isotopic analysis	Isotopic analysis
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (18)
Human Factors	Yes	Not Applicable
Direct Measurement	Yes or no	Yes (19)
SCHEDULE:		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Wind Direction	E	3

System Identification	Meteorological	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous
Range	0 - 360° (± 5°)	0 - 540°
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Wind Speed	E	3

System Identification	Meteorological	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous
Range	0 - 22 mps (50 mph) ± 0.2 mps (0.5 mph)	0 - 30, 60, 90 mps
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Estimation of Atmospheric Stability	E	3

System Identification	Meteorological	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	Not Required
Environment		Mild
Seismic Qualification	No	Not Required
Redundancy	No	Not Required
Number of Redundant Channels		
Power Source	Non-essential	Non-essential
Channel Availability	No	Not Required
Quality Assurance	No	Yes (16)
Control Room Display Indicated	Continuous/On Demand	Continuous
Recorded	No	Continuous
Range	Based on vertical temp. Diff. -5°C - 10°C per 50m Intervals	Measured at 33 ft. and 150 ft. to specified range and accuracy
Interface	No	Not Required
Servicing, Testing & Calib.	Yes	Yes (17)
Human Factors	Yes	Yes (18)
Direct Measurement	Yes or no	Yes (19)
SCHEDULE: Installed		
COMMENTS:		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump Gross Activity (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	1 uCi/ml - 10 Ci/ml	1 uCi/ml - 10 Ci/ml
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump Gamma Spectrum (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display		
Indicated	Continuous/On Demand	**
Recorded	No	**
Range	Isotopic analysis	Isotopic analysis
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump Boron Content (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display	Continuous/On Demand	**
Indicated		
Recorded	No	**
Range	0 - 6000 ppm	0 - 6000 ppm
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**

SCHEDULE: Not Applicable

COMMENTS: Onsite analysis capability exists.

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump Chloride Content (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 20 ppm	0 - 20 ppm
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump Dissolved Hydrogen or Total Gas (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 2000 cc (STP)/kg	0 - 2000 cc (STP)/kg
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump Dissolved Oxygen (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 20 ppm	0 - 20 ppm
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

F G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Primary Coolant and Sump pH (Grab Sample)	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display		
Indicated	Continuous/On Demand	**
Recorded	No	**
Range	1 - 13	1 - 13
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Air (Grab Sample) Hydrogen Content	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display		
Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 10 Vol. -% 0 - 30 Vol. -% for ice condensers	0 - 10% vol.
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Air (Grab Sample) Oxygen Content	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display Indicated	Continuous/On Demand	**
Recorded	No	**
Range	0 - 30 Vol. -%	0 - 30% Vol.
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

GPU Nuclear Corporation
Three Mile Island, Unit 1

R.G. 1.97 REVISION 3 - INVENTORY & COMPLIANCE TABLE

Variable	Type	Category
Containment Air (Grab Sample) Gamma Spectrum	E	3

System Identification	**	
CRITERIA	NRC	PLANT SPECIFIC
Environmental Qualification	No	**
Environment		
Seismic Qualification	No	**
Redundancy	No	**
Number of Redundant Channels		
Power Source	Non-essential	**
Channel Availability	No	**
Quality Assurance	No	**
Control Room Display		
Indicated	Continuous/On Demand	**
Recorded	No	**
Range	Isotopic analysis	Isotopic analysis
Interface	No	**
Servicing, Testing & Calib.	Yes	**
Human Factors	Yes	**
Direct Measurement	Yes or no	**
SCHEDULE: Not Applicable		
COMMENTS: Onsite analysis capability exists.		

( ) As per attached notes
* non-compliant
** not applicable

Highlights of Deviations from R.G. 1.97 Specific Recommendations

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Neutron Flux Page 1	B/1	Environmental Qualification Seismic Qualification Quality Assurance Control Room Recording	Information on this item to be provided by November 1, 1984.	----	----
RCS Soluble Boron Concentration Page 3	B/3	On-line capability is not provided.	See Justification, page 3a.		
RCS Cold Leg Water Temperature Page 4	A, B/1	Control Room Recording Range	Computer input to be moved to qualified loop. See Justification for range, page 4a.	----	Refueling Outage 7
RCS Hot Leg Water Temperature Page 5	B/1	Control Room Recording Range	Computer input to be moved to qualified loop. See Justification for range, page 5a.	----	Refueling Outage 7
RCS Pressure Page 6	A, B, C/1	Control Room Recording Range Display	Computer input to be moved to qualified loop. See Justification for range, page 6a.	----	Refueling OUtage 7
Core Exit Temperature Page 7	A, B, C/1	Seismic Qualification	Digital Indicator to be seismically qualified.	Seismic Qualified Digital Panel Meters	First outage of 30 days duration after receipt (anticipated 1/15/85) of digital indicator.
Coolant Inventory Page 8	B/1	Capability not provided	Reactor Coolant Inventory Tracking System to be installed.	RCS Inventory Trending System; RCS Void Fraction Trending System	March, 1985
Degree of Subcooling Page 9	A, B/1	Seismic Qualification	Digital Indication to be seismically qualified.	Seismic Qualified Digital Panel Meters	First outage of 30 days duration after receipt (anticipated 1/15/85) of digital indicator.

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Radioactivity Concentration or Radiation Level in Circulating Primary Coolant Page 14	C/1	Environmental Qualification Seismic Qualification Redundancy Quality Assurance	Reclassification to Category 3. See Justification, page 14a.	----	----
Effluent Radioactivity Noble Gas - Effluent from Condenser Air Removal. Page 17	C, E/2	Quality Assurance	Flow indication to be qualified.	----	Refueling Outage 7
Containment Hydrogen Concentration Page 18	A,C/1	Control Room Recording	Recorded information to be placed on computer	----	Refueling Outage 7
LPI/Decay Heat Removal System Flow Page 21	A, D/1	Environmental Qualification(1) Seismic Qualification Redundancy Quality Assurance Control Room Recording	Indication to be upgraded to full compliance.	Small Break LOCA	EQ Prior to Restart; Refueling Outage 7
Decay Heat H_x Outlet Temperature Page 22	D/2	Environmental Qualification (1) Quality Assurance Range	See Justification, for range and quality assurance, pages 22a and 22b.	----	March, 1985
Accumulator Tank Level (Core Flood) Tank Level) Page 23	D/2	Environmental Qualification Quality Assurance	Reclassification to Category 3. See Justification, page 23a.	----	----
Accumulator Tank Pressure (Core Flood Tank Pressure) Page 24	D/2	Environmental Qualification Quality Assurance	Reclassification to Category 3. See Justification, page 24a.	----	----

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Accumulator Isolation Valve Position. Page 25	D/2	Environmental Qualification Quality Assurance	Reclassification to Category 3. See Justification, page 25a.	----	----
Boric Acid Charging Flow Page 26	D/2	Capability not provided	Not applicable to B&W Plants. See Justification, page 26a.	----	----
Flow in HPI System (Makeup Flow-In) Page 27	A, D/1	Environmental Qualification(1) Seismic Qualification Redundancy Quality Assurance Control Room Recording	Indication to be upgraded to full compliance.	Small Break LOCA	EQ Pricr to Restart; Refueling Outage 7
Refueling Water Storage Tank Level (Borated Water Storage Tank) Page 29	A, D/1	Seismic Qualification Redundancy	Indication to be upgraded to full compliance.	----	Refueling Outage 7
Primary System Safety Relief Valve Positions or Flow through or Pressure in Relief Valve Page 31	D/2	Environmental Qualification(1)	Environmental Qualification	----	March, 1985
Pressurizer Level Page 32	D/1	Environmental Qualification Seismic Qualification Redundancy	See Justification for environmental qualification of temperature compensation (element), page 32a. Seismically qualified digital meter to be installed. Reclassification to Category 2.	Seismic Qualified Digital Panel Meters	Refueling Outage 7

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Pressurizer Heater Status Page 33	D/2	Range	Reclassification to Category 3. See Justification, page 33a.	----	----
Quench Tank Temperature (RC Drain Tank Temperature) Page 35	D/3	Range	See Justification page 35a.	----	----
Steam Generator Level Page 37	A, D/1	Control Room Recording	Computer input to be moved to qualified loop.	----	Refueling Outage 7
Steam Generator Pressure Page 38	A, D/1	Control Room Recording	Continuous Control Room Recording Capability to be provided	----	Refueling Outage 7
Steam Generator Safety/Relief Valve Position or Main Steam Flow Page 39	D/2	Environmental Qualification Quality Assurance	Reclassification to Category 3. See Justification, page 39a.	----	----
Auxiliary or Emergency Feedwater Flow Page 41	A, D/1	Control Room Recording	On-Demand recording capability to be provided	----	Refueling Outage 7
Condensate Storage Tank Water Level Page 42	A, D/1	Seismic Qualification Redundancy Quality Assurance	Indication to be upgraded to full compliance.	ESF System Upgrade to Safety Grade Design	Refueling Outage 6
Containment Spray Flow Page 43	D/2	Environmental Qualification (1) Quality Assurance	See justification for, quality assurance, page 43a.	----	March, 1985

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Heat Removal by the Containment Fan Heat Removal System System Page 44	D/2	Indication does not exist	Indication to be provided in full compliance	----	Refueling Outage 7
Containment Atmosphere Temperature Page 45	D/2	Environmental Qualification Quality Assurance Range	Reclassification to Category 3. See Justification, for reclassification page 45a and for range, page 45b.	----	----
Containment Sump Water Temperature Page 46	D/2	Environmental Qualification Quality Assurance	Reclassification to Category 3. See Justification, page 46a.	----	----
Makeup Flow-In Page 47	D/2	Quality Assurance	See Justification, page 47a	----	
Letdown Flow-out Page 48	D/2	Environmental Qualification Quality Assurance	Reclassification to Category 3. See Justification, page 48a.	----	----
Volume Control Tank (Makeup Tank Level) Page 49	D/2	Environmental Qualification (1)	Meets all requirements and will be placed on EQ master list.	----	March, 1985
Component Cooling Water Temperature to ESF System Page 50	D/2	Environmental Qualification(1) Quality Assurance	See Justification, for quality assurance, page 50a	----	March, 1985
Component Cooling Water Flow to ESF System Page 51	D/2	Capability not provided.	See Justification, page 51a.	----	----

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Radioactive Gas Holdup Tank Pressure Page 53	D/3	Measurement not available in Control Room	See Justification, page 53a.	----	----
Status of Standby Power and Other Energy Sources Page 55	D/2	Environmental Qualification	Instrument Air Pressure Transmitter to be Environmentally qualified.	----	March, 1985
Vent from Steam Generator Safety Relief Valves or Atmospheric Dump Valves Page 59	E/2	Range	See Justification, page 59a.	----	----
Primary Coolant and Sump Gross Activity (Grab Sample) Page 67	E/3	Capability not available for drawing sump sample.	Capability being installed.	Post Accident Sampling and Monitoring.	December, 1984
Primary Coolant and Sump Gamma Spectrum (Grab Sample) Page 68	E/3	Capability not available for drawing sump sample.	Capability being installed.	Post Accident Sampling and Monitoring.	December, 1984
Primary Coolant and Sump Boron Content (Grab Sample) Page 69	E/3	Capability not available for drawing sump sample.	Capability being installed.	Post Accident Sampling and monitoring.	December, 1984

Variable	Type Category	Deviations from Recommendations	Upgrade/Justification	Related Upgrade	Schedule
Primary Coolant and Sump Chloride Content (Grab Sample) Page 70	E/3	Capability not available for drawing sump sample.	Capability being installed.	Post Accident Sampling and Monitoring.	December, 1984
Primary Coolant and Sump Dissolved Hydrogen or Total Gas (Grab Sample) Page 71	E/3	Capability not available for drawing sump sample.	Capability being installed.	Post Accident Sampling and monitoring.	December, 1984
Primary Coolant and Sump Dissolved Oxygen (Grab Sample) Page 72	E/2	Capability not available for Drawing sump sample.	Capability being installed	Post Accident Sampling and Monitoring.	December, 1984
Primary Coolant and Sump pH (Grab Sample) Page 73	E/3	Capability not available for drawing sump sample.	Capability being installed.	Post Accident Sampling and Monitoring.	December, 1984

NOTES:

(1) Will be incorporated into the TMI-1 EQ Master List in the next revision and qualification or justification for continued operation will be documented in accordance with 10 CFR 50.49.

(2) A human factors review will be performed to implement the component identification requirements as related to Reg. Guide 1.97 (Types A, B and C instruments designated as Categories 1 and 2)