RG 1.97 REVISION 3

COMPLIANCE REPORT

FOR RIVER BEND STATION UNIT 1

June, 1985

RG 1.97 Revision 3 Compliance Report For River Bend Station Unit 1

TABLE OF CONTENTS

	Page
COMPLIANCE REPORT	
Introduction	1
Purpose	1
Findings	1
Conclusions	2
References	3
VARIABLE DATA SHEETS	
Legend	4
Variable Data Sheet Index	8
Data Sheets	12
APPENDICES	
Appendix A Technical Justification for Neutron Monitoring System Deviations from RG 1.97 Regulatory Position	A1
Appendix B Technical Justification for Not Implementing Instrumentation to Measure Radiation Levels in the Circulating Primary Coolant	B1
Appendix C Methodology for Verifying Acceptable Loop Readout Accuracy for RG 1.97 Instrumentation	C1
Appendix D Technical Justification for Equipment Identification Deviation from RG 1.97 Table 1 Provision	D1
Appendix E Technical Justification for Drywell Sump Level Instrumentation Deviations from RG 1.97 Regulatory Position	E1

INTRODUCTION

River Bend Station (RBS), as part of its safety parameter display system (SPDS) accident monitoring instrumentation database identification study (Reference 2), generated a listing of RBS variables deemed necessary and sufficient to monitor the course of an accident in the unlikely event one should occur. The study, in order to establish a valid database of variables to be monitored by the SPDS, performed a preliminary review of RBS compliance with Regulatory Guide (RG) 1.97 Revision 3.

This compliance report serves to amplify the preliminary review, identify the specific implementation of RG 1.97 by RBS, and establish a formal database defining RBS implementation of the guide pursuant to the documentation request of Generic Letter 82-33 Item 6.2. Further, a few of the preliminary findings of Reference 2 are revised in this report as a result of further investigation of the subject matter.

PURPOSE

The subject report accomplishes the following objectives:

(1) Each variable presented in the guide was reviewed and a specific implementation for it is described in the report utilizing a variable data sheet.

The variable data sheets are compiled with sufficient information for an assessment of compliance with the regulatory position stated in the guide.

(2) Where RBS did not fully comply with the guide, technical discussions are presented to establish the basis upon which RBS took exception to specific provisions of the guide.

The technical discussions demonstrate that RBS meets the safety intent of the guide where exceptions are taken.

FINDINGS

RBS has established a comparison between the existing plant design and the regulatory guidance provided by RG 1.97 Revision 3. The following tabulation identifies how RBS complies with the fifty three (53) variables listed in RG 1.97 for post-accident monitoring:

(1) Forty three (43) variables are to be monitored in full compliance with the intent of the guide.

(2) The following six (6) variables monitor parameters which are not used by operators because of the RBS design and are, therefore, not implemented for this reason:

(1) containment and drywell oxygen concentration
(2) suppression chamber spray flow
(3) drywell spray flow
(4) isolation condenser system shell side water level
(5) isolation condenser system
(6) HPCI Flow

(3) Drywell sump level and neutron flux are to be monitored in partial compliance with the regulatory position of the guide.

(4) Instrument systems to monitor radioactivity concentration or radiation level in circulating primary coolant and BWR core temperature are two (2) variables which will not be implemented at RBS due to technical and operational problems associated with each which are described herein.

CONCLUSIONS

The existing design of RBS, in conjunction with the installations and upgrades defined in this report, is adequate to provide the information necessary to follow the course of an accident as delineated in RG 1.97 Revision 3.

REFERENCES

1. Regulatory Guide 1.97, Revision 3, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," U.S. Nuclear Regulatory Commission, May 1983.

2. RBG-17,668 (dated April 24, 1984), "Safety Parameter Display System Accident Monitoring Instrumentation Database Identification Study for River Bend Station Unit 1," Gulf States Utilities Company, April 1984.

3. "Emergency Procedure Guidelines Revision 3," BWR Owners' Group, December 1982.

4. "River Bend Station Final Safety Analysis Report," Gulf States Utilities Company, February 1985 (Amendment 6).

5. RBG-19,255 (dated October 31, 1984), "River Bend Station Detailed Control Room Design Review Summary Report," Gulf States Utilities Company, October 1984.

6. Generic Letter 82-33, "Supplement 1 to NUREG-0737 - Requirements for Emergency Response Capability," U.S. Nuclear Regulatory Commission, December 1982.

RG 1.97 REVISION 3 COMPLIANCE REPORT
VARIABLE DATA SHEET LEGEND

GENERAL DATA

Measure Variable - The variable label as defined in RG 1.97 Revision 3 is listed.

Variable Type - The regulatory guide types the variables according to function. A variable that belongs to two or more types is only analyzed once within this report.

RG 1.97 Category - This integer defines what is presented by RG 1.97 as the most stringent category classification of the subject variable.

RBS Category - This integer defines the category level that RBS instrumentation presently meets or will meet. If less stringent than the regulatory guide category, technical justification is provided for the deviation.

SPDS Input - A "Yes" is entered here if the subject variable is monitored by the SPDS.

Installation/Upgrade Schedule - For the purposes of this report all installations and upgrades of RG 1.97 type instrumentation are grouped as shown below:

Group 1: The instrumentation installation/upgrade is complete or will be complete prior to fuel load in accordance with this report.

Group 2: No instrumentation installation/upgrade for the subject variable will be performed pursuant to the justification(s) described herein.

Group 3: The instrumentation installation/upgrade will be performed prior to exceeding 5% power in accordance with this report.

Group 4: The instrumentation installation/upgrade will be performed prior to power ascension after the first refueling outage in accordance with this report.

Group 5: Instrumentation is presently installed but will not be upgraded to meet regulatory position guidance pursuant to the justification(s) described herein.

INSTRUMENT DATA

Sensor - This label is the alphanumeric identification assigned by Stone and Webster Engineering Corporation (SWEC) for the sensing instrument(s).

Display Location - The benchboard, vertical board, local panel,or rack identification where the sensor information is displayed.

Consult FSAR Figure 1.2-24 for the layout and identification of control room panels.

Power Supply - The power source(s) for the sensor and display loop(s).

Power panel designations are defined as follows:

Designation	Description	Type
ENB	Emer Swgr 4160V DC Control Supply	Class 1E 125 VDC Battery Bus
VBS	Vital Bus System	Class 1E 125 VAC UPS
SCA	Station Control Bus	Non-Class 1E 125 VAC Nonregulated
SCM	Station Control Monitoring Vital	Class 1E 125 VAC Regulated
VBN	Vital Bus Normal	Non-Class 1E 125 VAC UPS
BYS	Station Battery	Non-Class 1E 125 VDC Battery Bus
SCI	Station Control Bus	Non-Class 1E 125 VAC Nonregulated

Note: The power panel designation is contained within the power supply identification as the following underlined example shows 1VBN-PNL01B1.

Consult FSAR Section 8.3.1.3.2 for equipment identification details.

Display Range - The actual output display range as used by the plant operations personnel.

Display Type - The type of display used by the plant operations personnel (e.g. two pen recorder).

Vendor Model No. - The vendor model number for the sensor instrument(s) and display instrumentation is given if uniquely identifiable.

EQUIPMENT QUALIFICATION

Operability Time - The operability time defines the maximum length of time an instrument loop must function to follow the course of a design basis accident by giving information to the plant operators.

Operability times for Class 1E instrument loops are derived from SWEC Design Record File 245.600. Where applicable, non-Class 1E instrument loop operability times are based upon a GSU Engineering assessment of each variable with General Electric (GE) and SWEC review and concurrence of the data presented within this report.

Environmental Zone - This alphanumeric designator defines specific plant areas where the sensor(s) is located. Consult the tables of Section 2 of the RBS Environmental Qualification Document for environmental zone descriptions.

Instrument Accuracy - The instrument accuracy defines the estimated accuracy of the instrument loop readout(s) for a worst case design basis event where the loop information is required.

The acceptability of instrument accuracy for each variable is based upon an engineering assessment (See Appendix C).

Instrument channel readout accuracies which meet or do not exceed + 5% resolution of the display range are identified with the mnemonic STD (standard resolution) on the variable data sheets.

Instrument accuracies for Category 3 instruments are not defined for accident environments because they are not required to be qualified as stated in RG 1.97, Rev. 3. Hence, validated accuracy data is not always available to be published within the context of this report unless otherwise stated. RBS will perform a review of Category 3 instrument accuracies as required to ensure that ambiguous or misleading information is not presented to control room operators.

REFERENCE DRAWINGS/SPECIFICATIONS

Reference drawings and specifications are provided in this report to facilitate reviews.

NOTES

This section is used for technical notes and clarifications of the previous sections as required.

TABLE 1 COMPLIANCE REPORT

RG 1.97 Revision 3 contains a review checklist (Table 1) for the purpose of reviewing the licensee-supplied instrumentation against the guidance provided in the regulatory guide.

A RBS Unit 2 comparison with the table is provided. Where less than full compliance is indicated, a technical comment(s) is provided to justify the RBS position.

Compliance is defined in four categories as shown below:

FULL - All the table provisions for the particular criteria are presently complied with or will be complied with as indicated by the installation/upgrade schedule.

PARTIAL - A portion of the table provisions for the particular criteria are presently complied with or will be complied with as indicated by the installation/upgrade schedule.

NONE - None of the table provisions for the particular criteria are presently complied with nor will they be complied with.

NA - This indicates that there are not specific provisions to be complied with. However, the data sheet will provide the necessary information in most instances for the reader to evaluate conformance with the table criteria even though no specific provisions are identified in the regulatory guide.

RG 1.97 Revision 3 Compliance Report
Variable Data Sheet Index

Sheet No.

TYPE A VARIABLES

Coolant Level in Reactor Vessel..... 04-1

Drywell Pressure..... 07-1

Primary Containment Pressure..... 09-1

Containment and Drywell Hydrogen Concentration..... 15-1

Suppression Pool Water Level..... 14-1

TYPE B VARIABLES

Reactivity Control

Neutron Flux..... 01-1
Control Rod Position..... 02-1
RCS Soluble Boron Concentration..... 03-1

Core Cooling

Coolant Level in Reactor Vessel..... 04-1
BWR Core Temperature..... 05-1

Maintaining Reactor Coolant System Integrity

RCS Pressure..... 06-1
Drywell Pressure..... 07-1
Drywell Sump Level..... 08-1

Maintaining Containment Integrity

Primary Containment Pressure..... 09-1
Primary Containment Isolation Valve Position..... 10-1

TYPE C VARIABLES

Fuel Cladding

Radioactivity Concentration or Radiation Level in Circulating Primary Coolant..... 11-1

RG 1.97 Revision 3 Compliance Report
Variable Data Sheet Index

	Sheet No.
Analysis of Primary Coolant	12-1
BWR Core Temperature	05-1
Reactor Coolant Pressure Boundary	
RCS Pressure	06-1
Primary Containment Area Radiation	13-1
Drywell Drain Sumps Level	08-1
Suppression Pool Water Level	14-1
Drywell Pressure	07-1
Containment	
RCS Pressure	06-1
Primary Containment Pressure	09-1
Containment and Drywell Hydrogen Concentration	15-1
Containment and Drywell Oxygen Concentration	16-1
Containment Effluent Radioactivity - Noble Gases	17-1
Effluent Radioactivity - Noble Gases	18-1
TYPE D VARIABLES	
Condensate and Feedwater System	
Main Feedwater Flow	19-1
Condensate Storage Tank Level	20-1
Primary Containment-Related Systems	
Suppression Chamber Spray Flow	21-1
Drywell Pressure	07-1
Suppression Pool Water Level	14-1
Suppression Pool Water Temperature	22-1
Drywell Atmosphere Temperature	23-1
Drywell Spray Flow	24-1
Main Steam System	
Main Steamline Isolation Valves' Leakage Control System Pressure	25-1
Primary System Safety Relief Valve Positions, Including ADS or Flow Through or Pressure in Valve Lines	26-1

RG 1.97 Revision 3 Compliance Report
Variable Data Sheet Index

	Sheet No.
Safety Systems	
Isolation Condenser System Shell-Side Water Level	27-1
Isolation Condenser System Valve Position	28-1
RCIC Flow	29-1
HPCI Flow	30-1
Core Spray System Flow	31-1
LPCI System Flow	32-1
SLCS Flow	33-1
SLCS Storage Tank Level	34-1
Residual Heat Removal (RHR) Systems	
RHR System Flow	35-1
RHR Heat Exchanger Outlet Temperature	36-1
Cooling Water System	
Cooling Water Temperature to ESF System Components	37-1
Cooling Water Flow to ESF System Components	38-1
Radwaste Systems	
High Radioactivity Liquid Tank Level	39-1
Ventilation Systems	
Emergency Ventilation Damper Position	40-1
Power Supplies	
Status of Standby Power and Other Energy Sources Important to Safety	41-1
TYPE E VARIABLES	
Containment Radiation	
Primary Containment Area Radiation - High Range	13-1
Reactor Building or Secondary Containment Area Radiation	42-1

RG 1.97 Revision 3 Compliance Report
Variable Data Sheet Index

	Sheet No.
Area Radiation	
Radiation Exposure Rate	43-1
Airborne Radioactive Materials Released from Plant	
Noble Gases and Vent Flow Rate	44-1
Particulates and Halogens	45-1
Environs Radiation and Radioactivity	
Airborne Radiohalogens and Particulates	46-1
Plant and Environs Radiation	47-1
Plant and Environs Radioactivity	48-1
Meteorology	
Wind Direction	49-1
Wind Speed	50-1
Estimation of Atmospheric Stability	51-1
Accident Sampling Capability	
Primary Coolant and Sump	52-1
Containment Air	53-1

RG 1.97 REVISION 3 COMPLIANCE REPORT
VARIABLE DATA SHEETS

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Neutron Flux

Variable Type(s): B
RG 1.97 Category: 1
RBS Category: 3

SPDS Input: Yes
Installation/Upgrade Schedule: Group 5

INSTRUMENT DATA

Sensor: 1C51*JEN011 thru 14 (LPRM)
*JEN002A thru H (IRM)
*JEN001A,B,C,D (SRM)

Display Location: 1H13*P669
*P670
*P671
*P672

Display Range: 1-120% RP (LPRM/APRM)

$5X10^{-4}$-10% RP (IRM) (See Note #1)

10^{-7}-10^{-3}% RP (SRM) (See Note #1)

Display Type: Meter

Vendor Model No.: NA

Power Supply: Primary 1C71-PNLP001
-PNLP002
Backup 1EHS*MCC14A
*MCC14B
(See Note #2)

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 22A3739
22A3739AR

Instrumentation and Engineering Drawing: 945E110

Elementary Diagram: 851E884AA
851E230AA

NOTES

(1) The current design of RBS Unit 1 provides for retracting the SRM and IRM detectors approximately 2.5 feet below the active core. The SRM system has a sensitivity of 10^{-3}% rated power (RP) and a range from 10^{-3}% RP to 1% RP when the detectors are in the retracted position. The range values shown in the instrument data section are applicable for detectors fully inserted into the active core.

(2) The motor control centers identified (1EHS*MCC14A,B) furnish Class 1E, divisional 480 VAC power to stepdown, regulating transformers which in turn are used to power one or both RPS buses via manual control from the main control room in the event the normal RPS power supplies fail.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Partial	(2)
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(3)
6. Display and Recording	Full	
7. Range	Full	(4)
8. Equipment Identification	None	(1)
9. Interfaces	Full	

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) See Appendix A for discussion.

(3) Portions of the IRM and LPRM/APRM system were purchased as Category 1 by General Electric under a quality assurance program which fully complies with 10CFR50 Appendix B.

(4) The core decay heat generation rate (CDHGR) for RBS given full power, equilibrium conditions is approximately 0.3% RP 100 hours after core shutdown. The rate of change beyond 100 hours for the CDHGR is very slow with a time constant on the order of months. A retracted SRM detection system can detect criticality approximately two orders of magnitude below the equilibrium CDHGR several days into an event. Therefore, RBS utilizing its abnormal and emergency operating procedures finds it unnecessary for the NMS to measure below 10^{-3}% RP for critical flux levels.

It shall be noted that the SRM detectors will eventually be driven into the active core region upon restoration of offsite power giving the lower sensitivity of 10^{-6}% RP as specified in Table 2 of the guide.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Control Rod Position

Variable Type(s): B
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1B13-2SD124 (See Note #1)

Display Location: 1H13*P680
1C95*P604

Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 00 - 48 (00 = rod full-in)

Display Type: LED digital
SPDS/PPC CRT
Line printer

Vendor Model No. NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 221.230
Elementary Diagram: 851E478AA

Block Diagram: 865E910

NOTES

(1) An additional sequence number is appended to the subject identification to identify a particular position indicating probe. Each probe consists of two strings of magnetic reed switches redundant to one another which close in response to a magnetic ring travelling with the control rod drive piston.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: RCS Soluble Boron Concentration (Grab Sample)

Variable Type(s): B
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: NA

Display Location: Services Bldg
2nd Floor
Chemistry Lab

Power Supply: 1SCA-PNL9C2
1SCI-PNL9H3

Display Range: (See Note #1)

Display Type: CRT

Vendor Model No.: Beckman DU-6 Spectrophotometer

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Plant Procedure: COP-1020

NOTES

(1) This variable is measured by laboratory instrumentation whose range is calibration dependent.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Coolant Level in Reactor Vessel

Variable Type(s): A,B
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1 (See Note #1)

INSTRUMENT DATA

Sensor: 1B21*LTN044C,D,E
*LTN091A,B

Display Location: 1H13*P601

Power Supply: 1ENB*PNL02A
*PNL02B
1E22*S002
(See Note #5)
1VBS*PNL01A
*PNL01B

Display Range: +60" to -160" (wide range)
-112" to -312" (fuel zone range)

Display Type: Single pen recorder
Two pen recorder
Vertical meter

Vendor Model No.: Rosemount 1154 (See Note #4)
Tracor Westronics T4E recorder
Bailey 771 recorder
General Electric 180

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): CT-G
Instrument Accuracy: $\pm$10 in H_2O (meter) (LOCA/seismic)
$\pm$15 in H_2O (recorder) (seismic)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 22A4622
22A4622AT

Piping and Instrument Diagram: 25-1A, 1B

Elementary Diagram: 828E445AA

NOTES

(1) Fuel zone water level instrument channels are being upgraded to comply with NUREG-0737 Item II.F.2 and RG 1.97 provisions via GE FDDR LD1-2033.

(2) The approximate overall height of the RPV measured from the bottom of the vessel to the top of head flange is 842 inches. Active fuel length is 150 inches. The following elevation points are provided for reference:

Reference Point	Elevation (inches)
Vessel Bottom	0.0
Top of Active Fuel	358.6
Bottom of Dryer	505.6
Instrument Zero	**520.6**
Steam Line Nozzle	636.5

(3) Consult RBS FSAR Chapter 7 Question 421.014 response for further details concerning the water level measurement system design utilized at RBS Unit 1.

(4) The existing Rosemount 1152-T0280 instruments will be replaced by Rosemount Model 1154.

(5) The 120 VAC distribution panel is located in a cubicle as part of motor control center 1E22*S002 (Division 3).

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	Partial	(3)
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

(2) See Appendix D for justification.

(3) RBS takes exception to the upper range requirement for RPV water level. Since the operators will take manual action to secure RPV water level before it exceeds +60 inches, it is not deemed necessary to furnish Category 1 instrumentation in the upper range in close proximity to the main steam lines. RBS does furnish two Category 2 instrument channels which cover this upper range and they are deemed adequate for furnishing RPV water level information in the vicinity of the main steam lines. Further, automatic trip functions on high pressure injection systems occur at Level 8 (+55 inches) to limit the RPV water level and avoid water ingestion into the main steam lines or the safety relief valve system.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: BWR Core Temperature

Variable Type(s): B,C
RG 1.97 Category: NA
RBS Category: NA

SPDS Input: No
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) The use of instrumentation to measure core temperature is still under NRC Staff consideration and is subject to further development. RBS utilizes water level measurements to ascertain the condition of core cooling pursuant to the results of the BWROG Report SLI-8218. This approach is deemed acceptable by the NRC Staff as noted in Section 4.4.7 of the RBS SER.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: RCS Pressure

Variable Type(s): A,B,C
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 3

INSTRUMENT DATA

Sensor: 1B21*PTN062A,B

Display Location: 1H13*P601

Power Supply: 1VBS*PNL01A
*PNL01B
1ENB*PNL02A
*PNL02B

Display Range: 0-1500 psig

Display Type: Two pen recorder

Vendor Model No.: Rosemount 1154 (See Note #1)
Tracor Westronics T4E

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): CT-G
Instrument Accuracy: STD

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 224.000
Elementary Diagram: 828E445AA

Piping and Instrument Diagram: 25-1A

NOTES

(1) The existing Rosemount Model 1152-T0280 sensors will be replaced by Rosemount Model 1154 devices.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) River Bend Station fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

(2) See Appendix D for justification.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Drywell Pressure

Variable Type(s): A,B,C,D
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1CMS*PT2A,B
*PT29A,B

Display Location: 1H13*P808
*P841
*P842

Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 0-75 psia (wide)
-2 to +3.4 psid (narrow)

Display Type: Multi pen recorder
Vertical meter

Vendor Model No.: Rosemount 1153B
Tracor Westronics T4E
Rosemount 510

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-141-1, AB-141-2
Instrument Accuracy: $\pm$2.0 psi (wide) (LOCA)
$\pm$0.1 psi (narrow) (LOCA)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.481
Analog Wiring Diagram: 33-2.3
Piping and Instrument Diagram: 33-2A, 2B
Loop Calibration Report: 1.ILCMS.011, .012

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	(3)
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) River Bend Station fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

(2) See Appendix D for justification.

(3) The narrow range instruments will be added to the harsh environment EQ list to ensure qualification of the loop is documented.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Drywell Sump Level (Drywell Drain Sumps Level)

Variable Type(s): B,C
RG 1.97 Category: 1
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 4

INSTRUMENT DATA

Sensor: 1DFR-LT105,128

Display Location: 1H13*P870

Power Supply: 1VBN-PNL01A1

Display Range: 0-100%

Display Type: Vertical meter

Vendor Model No.: Rosemount 1153B
(See Note #1)
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 15 minutes
Environmental Zone(s): CT-G
Instrument Accuracy: ±3.7% FS

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.482
Elementary Diagram: 851E602AA

Piping and Instrument Diagram: 32-9F, 9A
Loop Calibration Report: 1.ILDFR.011, .013

NOTES

(1) The existing Rosemount 1151 transmitters will be replaced with Rosemount 1153B devices pursuant to the installation/upgrade schedule.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Partial	(1)
2. Redundancy	Partial	(1)
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix E for technical justification of deviation.

(2) See Appendix D for justification.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Primary Containment Pressure

Variable Type(s): A,B,C
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1CMS*PT4A,B

Display Location: 1H13*P808

Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 0-75 psia

Display Type: Multi-pen recorder

Vendor Model No.: Rosemount 1153B
Tracor Westronics T4E

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-141-1, AB-141-2
Instrument Accuracy: ±2.0 psi (LOCA)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.481-130
Analog Wiring Diagram: 33-2.3
Piping and Instrument Diagram: 33-2A, -2B

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Primary Containment Isolation Valve Position (excluding check valves)

Variable Type(s): B
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: (See Note #2)

Power Supply: (See Note #3)

Display Range: Open,
Mid-Position,
Closed (See Note #5)

Display Type: Indicating light
SPDS CRT

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): CT-G, et cetera
Instrument Accuracy: (See Note #4)

REFERENCE DRAWINGS/SPECIFICATIONS

The drawing/specification database for this variable is sufficiently large so as not to be included within the body of this report.

GSU Engineering will furnish drawing/specification references for individual valves upon request.

NOTES

(1) Consult FSAR Table 6.2-40 for a listing of primary containment isolation valves. Those valves requiring position indication are shown with an A and/or B in the power source column and have position switches which form an integral part of the valve. They are generally identified on design documents by the nomenclature "33-" followed by the circuit number associated with the valve (e.g. 33-1RHSN08).

(2) The valve positions are indicated in the main control room on several benchboards and vertical boards using indicating lights. The SPDS console 1C95*P604 also displays the subject valve positions for isolation verification purposes.

(3) All primary containment isolation valves are furnished indicating power from divisional, Class 1E buses.

(4) Limit switches are set to actuate as close as practical to the open/closed position of the valve in accordance with industry standard practice.

(5) Solenoid valves implement only open or closed indications whereas all other applicable valve types show mid-position travel. RBS does not monitor the position of check valves unless otherwise specified as indicated in Note #1. Consult RBS FSAR Section 6.2.4 for additional information.

The mid-position indication consists of both open and closed indicating lights being lit. The exact valve position in mid-travel is indeterminate unless otherwise specified.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	(2)
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(3)
6. Display and Recording	Full	

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) The primary containment isolation valves are redundant to one another. Therefore, the inboard/outboard valve combination position indication meets the intent of Category 1 while not furnishing redundant indication per valve.

(3) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Radioactivity Concentration or Radiation Level in Circulating Primary Coolant

Variable Type(s): C
RG 1.97 Category: 1
RBS Category: NA

SPDS Input: No
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) See Appendix B for a complete explanation of the RBS technical justification for not providing on-line monitoring of the subject variable.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Analysis of Primary Coolant (Gamma Spectrum)

Variable Type(s): C
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: Services Bldg
2nd Floor
Chemistry Lab

Power Supply: 1SCA-PNL9C2
1SCI-PNL9H3

Display Range: (See Note #2) Display Type: CRT

Vendor Model No.: Canberra Series 90 MCA/Gamma Spectrometer

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Station Operating Procedure: COP-1033

NOTES

(1) An HpGe type detector is utilized.

(2) This variable is measured by laboratory instrumentation whose range is calibration dependent.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Primary Containment Area Radiation (and high range)

Variable Type(s): C,E
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1RMS*RE20A,B
*RE16A,B

Display Location: 1H13*P878
*P879

Power Supply: 1SCV*PNL14A1
*PNL2B1

Display Range: 1-10^8 R/hr

Display Type: LED digital

Vendor Model No.: GA Tech RM-23

EQUIPMENT [illegible]MTION

Operability Time: 100 days
Environmental Zone(s): DW-1, CT-G
Instrument Accuracy: +100% of reading
-50%

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

NOTES

(1) Consult FSAR Section 12.3 for further details.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(1)
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Suppression Pool Water Level

Variable Type(s): C, D
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 3 (See Note #2)

INSTRUMENT DATA

Sensor: 1CMS*LT23A,B (wide)
1E22*LTN055C,G (narrow)
1E51*LTN036A,E (narrow)

Display Location: 1H13*P808
*P625
*P629

Power Supply: 1ENB*PNL02A
*PNL02B
(See Note #3)

Display Range: -18 ft to +4 ft about normal pool level (wide) (See Note #1)
-20 to +20 in H_2O (1E22*LTN055C,G)
-10 to +10 in H_2O (1E51*LTN036A,E)

Display Type: Multi pen recorder
Vertical meter

Vendor Model No.: Rosemount 1154/1152
Tracor Westronics T4E
Rosemount 510

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): CT-SP
Instrument Accuracy: $\pm$15 in H_2O (wide) (LOCA)
$\pm$4 in H_2O (narrow) (1E22*LTN055C,G) (LOCA)
$\pm$2 in H_2O (narrow) (1E51*LTN036A,E) (LOCA)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.481
Elementary Diagram: 11CMS01

Piping and Instrument Diagram: 33-2A, 2B
Loop Calibration Report: 1.ILCMS.009, .010

NOTES

(1) The depth of the suppression pool at normal level is 19'9". The ECCS suction is approximately 3'4" above pool bottom. RBS does not measure pool level to the bottom of the ECCS suction lines because ECCS NPSH is lost within the range of the existing instrument system.

(2) The existing wide range Rosemount 1153B devices utilize "P" output code electronics which is susceptible to radiation dose rate effects. Therefore, the instruments will be replaced with Rosemount 1154 devices to minimize this effect on instrument accuracy.

(3) 125 VDC power is furnished from HPCS DC distribution panel 1E22*S001PNL for Division III instruments 1E22*LTN055C,G.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(1)
9. Interfaces	Full	

10.	Servicing, Testing and Calibration	Full
11.	Human Factors	Full
12.	Direct Measurement	Full

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Containment and Drywell Hydrogen Concentration

Variable Type(s): A,C
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1CMS*AT25A,B

Display Location: 1H13*P808

Power Supply: 1SCM*PNL01A
*PNL01B

Display Range: 0-10% H_2
0-30% H_2
(See Note #1)

Display Type: Multi pen recorder

Vendor Model No.: Comsip KIII
Tracor Westronics T4E

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB 141-3, AB-141-4
Instrument Accuracy: $\pm$.87% H_2 (0-10% H_2)
$\pm$2.06% H_2 (0-30% H_2)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.421

Piping and Instrument Diagram: 33-2A, 2B

Elementary Diagram: 11CMS02

NOTES

(1) Dual range is switch selectable at sampling station. Standby configuration is set for 0-10% H_2 range.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Containment and Drywell Oxygen Concentration (for inerted containment plants)

Variable Type(s): C
RG 1.97 Category: 1
RBS Category: NA

SPDS Input: No
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) RBS utilizes a Mark III containment structure without an inerted atmosphere. Instrumentation to continuously measure the containment/drywell oxygen concentration is not furnished. RBS will rely upon its post accident sampling system and on-site laboratory facilities to furnish control room operators and support staff with the subject information in a timely fashion.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Containment Effluent Radioactivity - Noble Gases (from identified release points including Standby Gas Treatment System Vent)

Variable Type(s): C
RG 1.97 Category: 3
RBS Category: 2

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1RMS*RE125

Display Location: 1H13*P879

Power Supply: 1SCV*PNL2C1

Display Range: 10^{-7} to 10^{5} μCi/cc

Display Type: LED digital

Vendor Model No.: GA Tech RM-23

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-170-1
Instrument Accuracy: +100% of reading
-50%

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

Piping and Instrument Diagram: PID-22-1C

NOTES

(1) Three instruments are utilized to span the display range and are identified with one instrument number as an assembly.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Effluent Radioactivity - Noble Gases (from buildings or areas where penetrations and hatches are located, e.g., secondary containment and auxiliary buildings and fuel handling buildings that are in direct contact with primary containment)

Variable Type(s): C
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1RMS*RE5A

Display Location: 1H13*P879

Power Supply: 1SCV*PNL16A1

Display Range: 10^{-7} to 10^{5} μCi/cc

Display Type: LED digital

Vendor Model No.: GA Tech RM-23

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): FB-148-G
Instrument Accuracy: +100% of reading
-50%

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

Piping and Instrument Diagram: PID-22-6A

NOTES

(1) The auxiliary buidling and annulus region discharge to the main plant exhaust which is monitored by 1RMS*RE125 as previously discussed on Sheet 17-1 of this report.

(2) Three instruments are utilized to span the display range and are identified with one instrument number as an assembly.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(2)
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide provisions for Category 2 instrumentation.

(2) See Appendix D for justification.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Main Feedwater Flow

Variable Type(s): D
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1C33-FTN002A,B

Display Location: 1H13*P680

Power Supply: 1VBN-PNL01B1
1BYS-PNL02A2

Display Range: 0-8x10^6 lbm/hr

Display Type: Vertical meter

Vendor Model No.: Rosemount 1152
GE 105

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.230
Elementary Diagram: 828E232AA

Piping and Instrument Diagram: 6-1B
Loop Calibration Report: 1.ILFWS.082

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Condensate Storage Tank Level

Variable Type(s): D
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1CNS-LT110

Display Location: 1H13*P680

Power Supply: 1SCA-PNL18A1

Display Range: 0-40'

Display Type: Color graphic CRT

Vendor Model No.: Rosemount 1151

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: $\pm$1.6'

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 242.445
Elementary Diagram: 11CNS01

Piping and Instrument Diagram: 4-3A
Loop Calibration Report: 1.ILCNS.021

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	(1)
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) No control room, dedicated, on-line readout is provided for this instrument channel. However, the data may be accessed through the process computer and displayed via CRT on the principle plant control console 1H13*P680.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Suppression Chamber Spray Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: NA

SPDS Input: NA
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) RBS utilizes unique design features in the construction of its Mark III containment structure to avoid the necessity of using suppression chamber sprays. Therefore, monitoring of this variable is not included in the design of RBS.

Refer to Section 6.2 of the RBS FSAR for further details.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Suppression Pool Water Temperature

Variable Type(s): A,D
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1CMS*RTD40A,B,C,D Display Location: 1H13*P808 Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 0-200°F (See Note #1) Display Type: Multi pen recorder

Vendor Model No.: Pyco-122-3046-12-120.6
Tracor Westronics T4E

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): CT-SP
Instrument Accuracy: ± 14.5°F

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.461
Analog Wiring Diagram: 33-2.25, 2.26
2.27, 2.28

Piping and Instrument Diagram: 33-2A, 2B
Loop Calibration Report: 1.ITCMS.027, .028
1.ITCMS.029, .030

NOTES

(1) The design of RBS precludes the necessity for measuring suppression pool temperature beyond 200°F. This is a plant specific feature which is discussed in the RBS FSAR Section 6.2.1.1.3.1.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for details.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Drywell Atmosphere Temperature

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1CMS*RTD41A,B,C,D Display Location: 1H13*P808 Power Supply: 1VBS*PNL01A *PNL01B

Display Range: 40-440°F Display Type: Multi pen recorder

Vendor Model No.: Tracor Westronics D4E
Pyco 122-3046-12

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): DW-1
Instrument Accuracy: ±30.4°F

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.461
Analog Wiring Diagram: 33-2.29, 2.30
33-2.31, 2.32

Piping and Instrument Diagram: 33-2A

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Drywell Spray Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: NA

SPDS Input: NA
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) Unique design features of the drywell at RBS preclude the need for drywell sprays. Therefore, no instrumentation is provided to monitor this variable.

Consult Section 6.2 of the RBS FSAR for additional information.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Main Steamline Isolation Valve Leakage Control System Pressure

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1E33*PTN005
*PTN025

Display Location: 1H13*P654

Power Supply: 1SCM*PNL01A
*PNL01B

Display Range: 0-70 psig

Display Type: Vertical meter

Vendor Model No.: Rosemount 1152
Rosemount 510DU

EQUIPMENT QUALIFICATION

Operability Time: 30 days
Accident Zone(s): AB-114-6, AB-114-5
Instrument Accuracy: STD

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 222.250
Elementary Diagram: 793E922AA

Piping and Instrument Diagram: 795E868AA

NOTES

(1) RBS utilizes a positive pressure system to maintain containment integrity as opposed to a conventional vacuum system. Consult FSAR Section 7.3.1.1.3 for additional information.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Primary System Safety Relief Valve Positions including ADS or Flow Through or Pressure in Valve Lines

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1SVV*ZE10A (Typical of 16)

Display Location: 1H13*P601 *P953

Power Supply: 1SCM*PNL01B

Display Range: 0-100% full open

Display Type: Indicating light LED graduated lights

Vendor Model No.: Technology for Energy Corp. Model No. 133
Endevco No. 2273 AM1

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): DW-1
Instrument Accuracy: (See Note #1)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.529

Piping and Instrument Diagram: 3-1B

Elementary Diagram: ESK 11SVV02

NOTES

(1) The subject acoustical monitoring system does not provide a high resolution measurement of actual flow through the SRV. The system does provide for high resolution in detecting an open or leaking SRV. The system provides an SRV open light for flow rates in excess of 150 lbm/hr of steam leaking past an SRV and a resolution of ± 10% FS during full flow conditions.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(3)
6. Display and Recording	Full	
7. Range	NA	(2)
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	(2)

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) The subject instrumentation detects single and two-phase flow through the SRV's rather than SRV position. Because of the small changes in the SRV valve mechanism position, monitoring of the valve position directly requires a more involved sensing scheme which would be more prone to failure and drift anomolies than the acoustical monitors furnished at RBS. Therefore, the acoustical monitors are deemed to more fully meet the intent of the guidance of Table 1.

(3) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Isolation Condenser System Shell-Side Water Level

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: NA

SPDS Input: NA
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) The isolation condenser system concept is not utilized at RBS.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range		
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Isolation Condenser System Valve Position

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: NA

SPDS Input: NA
Installation/Upgrade Schedule: Group 2

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: NA

Power Supply: NA

Display Range: NA

Display Type: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) The isolation condenser system concept is not utilized at RBS.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: RCIC Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1E51*FTN003

Display Location: 1H13*P601

Power Supply: 1ENB*PNL02A

Display Range: 0-800 gpm

Display Type: Vertical meter

Vendor Model No.: Rosemount 1152
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 12 hrs
Environmental Zone(s): AB-095-2
Instrument Accuracy: STD

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 22..454
Elementary Diagram: 828E539AA

Piping and Instrument Diagram: 27-6A
Loop Calibration Report: 1.ILICS.014

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	(3)
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

(3) The subject instrument loop is qualified for its intended use during a control rod drop accident but is capable of accurate operation in more severe accident environments.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: HPCI Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: NA

SPDS Input: NA
Installation/Upgrade Schedule: NA

INSTRUMENT DATA

Sensor: (See Note #1)

Display Range: NA

Display Location: NA

Display Type: NA

Power Supply: NA

Vendor Model No.: NA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) RBS is equipped with an electrically driven high pressure core spray (HPCS) system rather than a steam-driven turbine high pressure coolant injection (HPCI) system. Therefore, RBS does not measure this variable.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	NA	
11. Human Factors	NA	
12. Direct Measurement	NA	

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Core Spray System Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1E22*FTN005 (HPCS)
1E21*FTN003 (LPCS)

Display Location: 1H13*P601

Power Supply: 1E22*S002
(See Note #1)
1VBS*PNL01A

Display Range: 0-7000 gpm

Display Type: vertical meter

Vendor Model No.: Rosemount 1152
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-095-6, AB-095-1
Instrument Accuracy: STD

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 222.230

Elementary Diagram: 828E536AA
828E535AA

Piping and Instrument Diagram: 27-4A
27-5A

Loop Calibration Report: 1.ILCSH.018
1.ILCSL.009

NOTES

(1) The 120 VAC distribution panel is located in a cubicle as part of motor control center 1E22*S002 (Division 3).

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

(2) See Appendix D for justification.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: LPCI System Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1E12*FTN015A,B,C

Display Location: 1H13*P601

Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 0-7000 gpm

Display Type: Vertical meter

Vendor Model No.: Rosemount 1152
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-095-5, AB-095-8
Instrument Accuracy: STD

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 221.434
Elementary Diagram: 828E534AA

Piping and Instrument Diagram: 27-7A,7B,7C
Loop Calibration Report: 1.ILRHS.013,.014,.015

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justifcation.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: SLCS Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1C41*PTN004

Display Location: 1H13*P601

Power Supply: 1VBS*PNL01A

Display Range: 0-1800 psig

Display Type: Vertical meter

Vendor Model No.: Rosemount 1152
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 2 hours
Environmental Zone(s): CT-4
Instrument Accuracy: ±2% FS

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 221.244
Elementary Diagram: 828E234AA

Piping and Instrument Diagram: 27-16A
Loop Calibration Report: 1.ILSLS.011

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	(4)
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	(3)

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

(2) See Appendix D for justification.

(3) Flow is not directly measured but rather discharge line pressure. The pressure response for a line break event is believed to be substantial enough to present the operator with an abnormal condition indication thus confirming system status when used in conjunction with other variables. Decreasing SLCS storage level will ensure that failure of the squib valves is detected since the pressure indication will indicate pumping head to be available.

(4) The subject instrument loop is qualified pursuant to 10CFR50.62.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: SLCS Storage Tank Level

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1C41-LTN001

Display Location: 1H13*P601

Power Supply: 1VBS*PNL[illegible]A

Display Range: 0-5,000 gal

Display Type: Vertical meter

Vendor Model No.: Rosemount 1151
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 2 hours
Environmental Zone(s): CT-6
Instrument Accuracy: ±2% FS

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 221.244
Elementary Diagram: 828E234AA

Piping and Instrument Diagram: 27-16A
Loop Calibration Report: 1.ILSLS.013

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	(3)
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(2)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

(2) See Appendix D for justification.

(3) The subject instrument loop is qualified in accordance with 10CFR50.62.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: RHR System Flow

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1E12*FTN015A,B,C *FTN007A,B (RHR HX Flow)

Display Location: 1H13*P601

Power Supply: 1VBS*PNL01A *PNL01B

Display Range: 0-7000 gpm 0-8000 gpm (RHR HX Flow)

Display Type: Vertical meter

Vendor Model No.: Rosemount 1152 GE 180

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-095-5, AB-095-8
Instrument Accuracy: STD

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 221.434
Elementary Diagram: 828E534AA

Piping and Instrument Diagram: 27-7A, 7B, 7C
Loop Calibration Report: 1.JLRHS.013, .014, .015

NOTES

(1) The subject instrumentation referenced herein is shown on FSAR Figures 5.4-12(a)(b)&(c) and 9.2-1(c). It monitors performance of the RHR system flow for the suppression pool cooling and shutdown cooling modes of operation.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: RHR Heat Exchanger Outlet Temperature

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1RHS*RTD47A,B

Display Location: 1H13*P601

Power Supply: 1SCA-PNL10A1
-PNL10B1

Display Range: 0-400°F

Display Type: Discrete recorder

Vendor Model No.: PYCO 122-(4030) -04-4.2-9
Tracor Westronics S4E

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-070-8, AB-070-7
Instrument Accuracy: ±28°F

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.461

Piping and Instrument Diagram: 27-7A,C
Loop Calibration Report: 1.ILRHS.045, .046

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Cooling Water Temperature to ESF System Components

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1SWP*RTD31A,B

Display Location: 1H13*P870

Power Supply: 1ENB*PNL02A
*PNL02B

Display Range: 0-125^{O}F
(See Note #1)

Display Type: Vertical meter

Vendor Model No.: PYCO 122-(4030) -04-4.2-9 RTD
GE 180

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): SW-1
Instrument Accuracy: $\pm$3.3% FS

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.461
Elementary Diagram: 11SWP02
11SWP05
11SWP07

Piping and Instrument Diagram: 9-10E
Loop Calibration Report: 1.ILSWP.171, .172

NOTES

(1) Consult FSAR Section 9.2.5.2 for a discussion of the temperature excursions for the standby service water system. Plant specific features of RBS obviate the need to measure the subject temperature beyond 125°F.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA p'ogram which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Cooling Water Flow to ESF System Components

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1SWP*FT59A,B
(See Note #1)

Display Location: 1H13*P870

Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 0-16,000 gpm

Display Type: Multi pen recorder

Vendor Model No.: Leeds & Northrup Speedomax M
Rosemount 1153B

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): FB-095-G
Instrument Accuracy: ±7.3% FS

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.481
Elementary Diagram: 11SWP06

Piping and Instrument Diagram: 9-10E
Loop Calibration Report: 1.ILSWP.012, .013

NOTES

(1) Cooling water flow to ESF system components is provided by one of two systems specifically normal or standby service water. A common header between the two systems is monitored for proper operating pressure by a multiplicity of Class 1E instrument channels which are redundant. If the header pressure drops below the system operating point the standby service water system is initiated and flow is supplied from this system which is the ultimate heat sink. A loss of header pressure also alarms in the main control room on benchboard 1H13*P870. A non-Class 1E instrument loop monitors flow in the normal service water system. It is furnished with a level of quality commensurate with its application in the normal service water system. This level of quality corresponds to a RG 1.97 Category 3 definition. The use of Class 1E pressure sensors on the common header serves to establish the operability of the service water system. Therefore, RBS deems that the existing instrument systems meet the provisions of RG 1.97 Revision 3.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: High Radioactivity Liquid Tank Level

Variable Type(s): D
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Tank Type	Sensor	Display Range	Reference Drawings
Floor Drain Tanks	1LWS-LT13A	0-30 feet	PID-31-1A
	1LWS-LT13B	0-30 feet	FSK-31-1D
	1LWS-LT13C	0-30 feet	AWD-100.2
Equipment Drain Tanks	1LWS-LT8A	0-30 feet	PID-31-1B
	1LWS-LT8B	0-30 feet	FSK-31-1B
	1LWS-LT8C	0-30 feet	AWD-100.2
	1LWS-LT8D	0-30 feet	
Regenerative Waste Tanks	1LWS-LT26A	0-30 feet	PID-31-1D
	1LWS-LT26B	0-30 feet	FSK-31-1B
			AWD-100.2
Recovery Sample Tanks	1LWS-LT521A	0-25 feet	PID-31-1E
	1LWS-LT521B	0-25 feet	FSK-31-1W
	1LWS-LT521C	0-25 feet	AWD-100.2
	1LWS-LT521D	0-25 feet	

INSTRUMENT DATA (continued)

Tank Type	Sensor	Display Range	Reference Drawings
Backwash Tank	1LWS-LT320	0-15 feet	PID-31-1F AWD-100.2
Phase Separator Tanks	1LWS-LT24A 1LWS-LT24B	0-15 feet 0-15 feet	PID-31-1F AWD-100.2

Display Location: 1LWS-PNL187

Power Supply: 1SCA-PNL18A1

Display Type: Vertical meter

Vendor Model No.: Rosemount 1151
General Electric 180 meter

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Consult instrument data for drawing references.

NOTES

None

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	(1)
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) Monitoring of this variable is directly attributable to specific conditions which occurred during the TMI-2 accident. Several radwaste tanks overflowed as a result of excessive accumulation of water from the containment building. The design of RBS precludes a similar condition from existing because containment isolation valves will not automatically reopen once they are closed by an isolation signal. Operator action is required to reset and reopen the subject valves. Therefore, RBS does not monitor this variable in the main control room owing to human factors considerations. This variable is monitored in the auxiliary control building should the need arise for this information. Consult FSAR Figure 1.2-4 for the general location of the auxiliary control building.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Emergency Ventilation Damper Position

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes (See Note #4)
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Containment Building HVAC

Damper/Valve	Reference Dwgs.
1HVR*AOD164	PID 22-D, ESK-7HVR03
*AOD143	PID 22-D, ESK-7HVR08
*AOD53A	PID 22-C, ESK-7HVR01
*AOD53B	PID 22-C, ESK-7HVR06
*AOD22A	PID 22-C, ESK-7HVR01
*AOD22B	PID 22-C, ESK-7HVR06
*AOD161	PID 22-C, ESK-7HVR02
*AOD23A	PID 22-C, ESK-7HVR07
*AOD23B	PID 22-C, ESK-7HVR07
*AOD142	PID 22-C, ESK-7HVR02
*AOD261	PID 22-C, ESK-7HVR07
*AOV261	PID 22-1B, ESK-7HVR09
*AOV126	PID 22-1B, ESK-7HVR04
*AOV166	PID 22-1B, ESK-7HVR04

Damper/Valve	Reference Dwgs
*AOV128	PID 22-1B, ESK-7HVR10
*AOV165	PID 22-1B, ESK-7HVR05
*AOV123	PID 22-1B, ESK-7HVR10
*AOV125	PID 22-1B, ESK-7HVR04
*AOD127	PID 22-1B, ESK-7HVR12
*AOD240	PID 22-1B, ESK-6HVR24
*AOD9A	PID 22-1D, LSK-22-14B
*AOD9B	PID 22-1D, LSK-22-14B
*AOD249	PID 22-1D, ESK-7HVR03
*AOD10A	PID 22-1D, ESK-7HVR08
*AOD10B	PID 22-1D, ESK-7HVR08
*AOD18A	PID 22-1D, ESK-7HVR03
*AOD18B	PID 22-1D, ESK-7HVR08
*AOD214	PID 22-1D, ESK-7HVR03
*AOD262	PID 22-1D, ESK-7HVR10

Control Building HVAC

Damper/Valve	Reference Dwgs
1HVC*MOV1A	PID 22-9A, ESK-6HVC13
*MOV1B	PID 22-9A, ESK-6HVC13
*MOD7A	PID 22-9A, ESK-6HVC24
*MOD7B	PID 22-9A, ESK-6HVC24
*AOD19C	PID 22-9A, ESK-7HVC01
*AOD19D	PID 22-9A, ESK-7HVC07
*AOD19E	PID 22-9A, ESK-7HVC01
*AOD19F	PID 22-9A, ESK-7HVC07
*AOD19A	PID 22-9A, ESK-7HVC02
*AOD19B	PID 22-9A, ESK-7HVC08
*AOD171	PID 22-9A, ESK-7HVC01
*AOD172	PID 22-9A, ESK-7HVC07
*AOD43A	PID 22-9A, ESK-7HVC02
*AOD43B	PID 22-9A, ESK-7HVC08

Damper/Valve	Reference Dwgs
*AOD3B	PID 22-9B, ESK-7HVC08
*AOD8A	PID 22-9B, ESK-7HVC01
*AOD8B	PID 22-9B, ESK-7HVC07
*AOD6A	PID 22-9B, ESK-7HVC01
*AOD6B	PID 22-9B, ESK-7HVC07
*AOD106	PID 22-9B, ESK-7HVC02
*AOD148	PID 22-9B, ESK-7HVC08
*AOD107	PID 22-9B, ESK-7HVC12
*AOD108	PID 22-9B, ESK-7HVC06
*AOD169	PID 22-9B, ESK-7HVC05
*AOD170	PID 22-9B, ESK-7HVC05
*AOD51A	PID 22-9C, ESK-7HVC06
*AOD51B	PID 22-9C, ESK-7HVC12
*AOD52A	PID 22-9C, ESK-7HVC06

Standby Gas Treatment System

Damper/Valve	Reference Dwgs
1GTS*AOD1A	PID 27-15, ESK-7GTS02
*AOD1B	PID 27-15, ESK-7GTS03
*AOD3A	PID 27-15, ESK-7GTS02

Damper/Valve	Reference Dwgs
*AOD3B	PID 27-15, ESK-7GTS03
*AOD23A	PID 27-15, NONE
*AOD23B	PID 27-15, NONE

Fuel Building HVAC

Damper/Valve	Reference Dwgs.
1HVF*AOD101	PID 22-6B, ESK-7HVF03
*AOD122	PID 22-6B, ESK-7HVF01
*AOD37A	PID 22-6B, ESK-7HVF01
*AOD37B	PID 22-6B, ESK-7HVF03
*AOD102	PID 22-6A, ESK-7HVF01
*AOD112	PID 22-6A, ESK-7HVF03

Damper/Valve	Reference Dwgs
*AOD104	PID 22-6A, ESK-7HVF01
*AOD137	PID 22-6A, ESK-7HVF03
*AOD20A	PID 22-6A. ESK-7HVF02
*AOD20B	PID 22-6A, ESK-7HVF04
*AOD31A	PID 22-6A, ESK-7HVF02
*AOD31B	PID 22-6A, ESK-7HVF04

Sensor: 33-1HVR815 (See Note #1)

Display Location: 1H13*P863

Power Supply: (See Note #2)

Display Range: Open, Mid-Position, Closed (See Note #5)

Display Type: Indicating lights

Vendor Model No.: NAMCO Type EA180

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): Consult instrument data section for general location of damper
Instrument Accuracy: (See Note #3)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 215.480

Consult instrument data section for further drawing references.

NOTES

(1) The position switches associated with each damper/valve are individually identified using a 33- followed by the damper/valve circuit number associated with each.

(2) All indicating circuits are furnished with divisional, Class 1E power.

(3) Limit switches are set to actuate as close as possible to the open/closed position of the valve in accordance with industry standard practice.

(4) The SPDS monitors only those damper positions described in Reference 2.

(5) The mid-position indication consists of both open and closed indicating lights being lit. The exact valve position in mid-travel is indeterminate unless otherwise specified.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide provisions for Category 2 instrumentation.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Status of Standby Power and Other Energy Sources Important to Safety (electric, hydraulic, pneumatic) (voltages, currents, pressures)

Variable Type(s): D
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: Yes (See Note #1)
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Pneumatic

Sensor: 1LSV*PT9A,B
*PT26A,B

Display Location: 1H13*P841
*P842

Power Supply: 1VBS*PNL01A
*PNL01B

Display Range: 0-150 psig

Display Type: Vertical meter

Vendor Model No.: Rosemount 1153B
Rosemount 510DU

Standby Power

Service	Sensor	Display Range	Display Location	Reference Drawing
DG-1A Volts	V-1EGSA07	0-5 KV	1H13*P877	ESK 8EGS03
DG-1B Volts	V-1EGSB07	0-5 KV	*P877	ESK 8EGS04
DG-HPCS Volts	1E22*R611	0-525 KV	*P601	828E537AA
DG-1A Current	A-1EGSA07	0-800 Amps	*P877	ESK 8EGS03
DG-1B Current	A-EGSB07	0-800 Amps	*P877	ESK 8EGS04
DG-HPCS-Current	1E22*R607	0-600 Amps	*P601	828E537AA

Service	Sensor	Display Range	Display Location	Reference Drawing
DG-1A Power	W-1EGSA07	0-5 MW	1H13*P877	ESK 8EGS03
DG-1B Power	W-1EGSB07	0-5 MW	*P877	ESK 8EGS04
DG-HPCS Power	1E22*R609	0-5000 KW	*P601	828E537AA
DG-1A Reactive	VAR-1EGSA07	0-5 MVAR	1H13*P877	ESK 8EGS03
DG-1B Reactive	VAR-1EGSB07	0-5 MVAR	*P877	ESK 8EGS04
DG-HPCS-Reactive	1E22*R608	-4000 to +4000 KVR	*P601	828E537AA
DG-1A Frequency	F-1EGSA07	55-65 HZ	1H13*P877	ESK 8EGS03
DG-1B Frequency	F-1EGSB07	55-65 HZ	*P877	ESK 8EGS04
DG-HPCS-Frequency	1E22*R612	55-65 HZ	*P601	828E537AA
DG-1A Bus Voltage	V-1EGSA08	0-5 KV	1H13*P877	ESK 8EGS03
DG-1B Bus Voltage	V-1EGSB08	0-5 KV	*P877	ESK 8EGS04
DG-HPCS-Bus Voltage	1E22*R610	0-5 KV	*P601	828E537AA
DG-1A-Incoming	A-1ENSA07	0-1200 AMPS	1H13*P877	ESK 8EGS03
DG-1B-Incoming	A-1ENSB07	0-1200 AMPS	*P877	ESK 8EGS04
DG-HPCS-Incoming	1E22*R619	0-11500 AMPS	*P601	828E537AA

Note: All of the above instrumentation is displayed utilizing GE vertical type 180 meters and derives power from the sampled bus.

DC Bus Volts				
1ENB*SWG01A	V-1ENBA03	0-150 VDC	1H13*P877	ESK 11ENB01
1ENB*SWG01B	V-1ENBB03	0-150 VDC	*P877	ESK 11ENB01
1E22*S001	V-1ENBC03	0-150 VDC	*P877	ESK 11ENB08
1E22*S001	E22*R618	0-150 VDC	*P601	828E537AA

DC Bus Current				
1ENB*SWG01A	A-1ENBA02	-1000 to +1000 A	1H13*P877	ESK 11ENB01
1ENB*SWG01B	A-1ENBB03	-1000 to +1000 A	*P877	ESK 11ENB01
1ENB*S001	A-1ENBC03	0-50 AMPS	*P877	ESK 11ENB08

Note: All of the above instrumentation is displayed utilizing GE vertical type 185 meters and derives power from the sampled bus.

Hydraulic

None

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): CB-136-1, AB-141-3, AB-114-3
Instrument Accuracy: (See Note #2)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.481
Loop Calibration Report: 1ILLSV.009, .010 Piping and Instrument Diagram: 27-20b

Consult instrument data tabulation for standby power source reference drawings.

NOTES

(1) RBS monitors the voltage on Class 1E buses.

(2) The accuracy of the standby power instrumentation is estimated not to exceed ±5% FS owing to the location of the sensors. The pneumatic instruments can exhibit an inaccuracy of ±6% FS for a worst case event.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	(3)
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(2)
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	None	(1)
9. Interfaces	Full	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) See Appendix D for justification.

(2) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

(3) The standby power instruments are located in mild environment and are qualified as a subcomponent of a larger piece of equipment (i.e., 416OV switchgear).

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Reactor Building or Secondary Containment Area Radiation
(See Note #1)

Variable Type(s): D
RG 1.97 Category: 1
RBS Category: 1

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1RMS*RE11A,B
*RE16A,B

Display Location: 1H13*P878
*P879

Power Supply: 1SCV*PNL14A1
*PNL2B1

Display Range: 10^{-6} to 10^{-1} R/hr
1 to 10^{8} R/hr

Display Type: LED digital

Vendor Model No.: GA Tech RM-23

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-170-2, CT-G
Instrument Accuracy: +100% of reading
-50%

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

NOTES

(1) RBS utilizes a Mark III containment design. The reactor building consists of a free-standing steel containment structure surrounded by a concrete shield wall. Consult FSAR Figure 1.2-12 for additional information. Additional secondary containment area radiation monitors are described on Sheets 43-1 and 43-2 of this report.

(2) 1RMS*RE11A,B monitor the annulus region. The air volume of the annulus is sufficiently large that a much lower range than that indicated in the guide must be used to detect the breach. Detection of significant radiation levels in the annulus will cause isolation of the annulus HVAC system and lineup to the standby gas treatment system.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	
2. Redundancy	Full	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(2)
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance requirements for the subject instrumentation and, therefore, is deemed to meet the quality assurance provisions of the guide for Category 1 instrumentation.

(2) See Appendix D for justification.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Radiation Exposure Rate (inside buildings or areas where access is required to service equipment important to safety)

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: 1RMS-CAB1

Power Supply: NA

Display Range: (See Note #2)

Display Type: Color graphic CRT

Vendor Model No.: General Atomics RM-80

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

NOTES

(1) Consult FSAR Table 12.3-1 for a tabulation of RBS area monitors.

(2) RBS utilizes its area radiation monitors for personnel protection. The range specified in RG 1.97 is intended for use as trending information to determine when operations personnel might enter an area for equipment repair or maintenance. RBS has chosen a lower range interval based on radiation protection considerations. Further, the 10^4 R/hr upper dose rate value specified by the guide will not provide the operations or support staff at RBS with information of any value in regards to radiation-induced equipment damage.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Noble Gases and Vent Flow Rate

Variable Type(s): E
RG 1.97 Category: 2
RBS Category: 2

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1RMS*RE5A,*FE5A
*RE125,*FE125
-RE6A,-FE6A

Display Location: 1H13*P878
*P879

Power Supply: 1SCV*PNL16A1
*PNL2C1

Display Range: 10^{-7} to 10^{5} μCi/cc
(See Note #1)

Display Type: LED digital

Vendor Model No.: GA Tech RM-23

EQUIPMENT QUALIFICATION

Operability Time: 100 days
Environmental Zone(s): AB-170-1, FB-148-G
Instrument Accuracy: +100% of reading
-50%
+32% of reading (1RMS-RE6A only)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

NOTES

(1) The vent flow rates are displayed via pushbutton and LED readout. The display ranges are as follows:

Sensor	Flow Rate Range (SCFM)	Nominal (SCFM)
1RMS*FE5A	9,000 - 10,000	10,000
*FE125	98,800 - 123,000	105,800
-FE6A	80,400	80,400

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	Full	(3)
2. Redundancy	NA	
3. Power Source	Full	
4. Channel Availability	Full	
5. Quality Assurance	Full	(1)
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	None	(2)
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) RBS fully complies with 10CFR50 Appendix B quality assurance (QA) requirements and has in place a graded QA program which meets or exceeds the intent of the guide QA provisions for Category 2 instrumentation.

(2) See Appendix D for justification.

(3) The sensor 1RMS-RE6A is located in the Radwaste Building where the accident environment is mild. Hence, this commercial grade instrument is considered to be environmentally qualified for its intended use based on its location.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Particulates and Halogens

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 2

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: 1H13*P878
*P879

Power Supply: 1SCV*PNL2C1
*PNL16A1

Display Range: 10^{-11} to 10^{-2} μCi/cc

Display Type: LED digital

Vendor Model No.: GA Tech RM-23

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 247.250

NOTES

(1) RBS furnishes on-line sensing for particulates and halogens being emitted from the following buildings/structures:

Building	Sensor
FUEL	1RMS*RE5B
RADWASTE	-RE6B
MAIN PLT EXHAUST	-RE126
AUXILIARY	-RE110
TURBINE	-RE118
OFFGAS	-RE124

(2) Consult FSAR Section 11.5 for additional information.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	NA	
9. Interfaces	NA	

10.	Servicing, Testing and Calibration	Full
11.	Human Factors	Full
12.	Direct Measurement	Full

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Airborne Radiohalogens and Particulates (portable sampling with onsite analysis capability)

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: Services Bldg
2nd Floor
Chemistry Lab

Power Supply: 1SCA-PNL9C2
1SCI-PNL9H3

Display Range: (See Note #2)

Display Type: CRT

Vendor Model No.: Canberra Series 90 MCA/Gamma Spectrometer

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Station Operating Procedure: COP-1030

NOTES

(1) An HpGe type detector is utilized at RBS.

(2) This variable is measured by laboratory instrumentation whose range is calibration dependent.

(3) Consult FSAR Section 13.3.6.3.2 for a description of offsite sampling capabilities.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Plant and Environs Radiation (portable instrumentation)

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Range: (See Note #1)

Display Location: Portable

Display Type: Meter

Power Supply: Battery

Vendor Model No.: Eberline R07 (typical)

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: NA
Elementary Diagram: NA

Piping and Instrument Diagram: NA
Loop Calibration Report: NA

NOTES

(1) Consult FSAR Section 13.3 for details.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Plant and Environs Radioactivity (portable instrumentation)

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: (See Note #1)

Display Location: Services Bldg
2nd Floor
Chemistry Lab

Power Supply: 1SCA-PNL9C2
1SCI-PNL9H3

Display Range: (See Note #2) Display Type: CRT

Vendor Model No.: Canberra Series 90 MCA

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

Station Operating Procedure: COP-1030
-1033

NOTES

(1) Instrument is high quality commercial Series 90 Canberra multichannel analyzer with HpGe detector.

(2) Isotopic analysis is performed.

(3) Consult FSAR Section 13.3 for additional monitoring instrumentation.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	NA	
6. Display and Recording	NA	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	NA	
12. Direct Measurement	NA	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Wind Direction

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1MMS-ZY3A,B
-ZY4A,B

Display Location: IMMS-XR160
(See Note #1)

Power Supply: Offsite (local)

Display Range: 0-360^{O}

Display Type: Line printer

Vendor Model No.: Esterline Angus
Teledyne
Applied Meteorology, Inc. AMI-80 DAS

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: (See Note #2)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 229.200

NOTES

(1) A microcomputer system which is located at the meteorological tower analyzes the subject variable and sends the control room data via a modem link. The data is printed at regular intervals in the main control room for operator information. Further, the subject sensors drive chart recorders at the meteorological tower for additional data storage.

(2) Consult FSAR Section 2.3.3 for instrument accuracy data.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	(1)
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) The meteorological tower is furnished with a backup, propane-powered generator to automatically furnish electric power in the event of a loss of power to the meteorological system.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Wind Speed

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: 1MMS-SY1A,B
-SY2A,B

Display Location: IMMS-XR160
(See Note #1)

Power Supply: Offsite (local)

Display Range: 0-100 mph

Display Type: Line Printer

Vendor Model No.: Esterline Angus
Teledyne
Applied Meteorology, Inc. AMI-80 DAS

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: (See Note #2)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 229.200

NOTES

(1) A microcomputer system which is located at the meteorological tower analyzes the subject variable and sends the control room data via a modem link. The data is printed at regular intervals in the main control room for operator information. Further, the subject sensors drive chart recorders at the meteorological tower for additional data storage.

(2) Consult FSAR Section 2.3.3 for instrument accuracy data.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	(1)
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) The meteorological tower is furnished with a backup, propane-powered generator to automatically furnish electric power in the event of a loss of power to the meteorological system.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Estimation of Atomspheric Stability

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: IMMS-TT5,6

Display Location: IMMS-XR160 (See Note #1)

Power Supply: Offsite (local)

Display Range: -10^{O} to $+20^{O}F$

Display Type: Line printer

Vendor Model No.: Esterline Angus
Teledyne
Applied Meteorology, Inc. AMI-80 DAS

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: (See Note #2)

REFERENCE DRAWINGS/SPECIFICATIONS

Purchase Specification: 229.200

NOTES

(1) A microcomputer system which is located at the meteorological tower analyzes the subject variable and sends the control room data via a modem link. The data is printed at regular intervals in the main control room for operator information. Further, the subject sensors drive chart recorders at the meteorological tower for additional data storage.

(2) Consult FSAR Section 2.3.3 for instrument accuracy data.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	(1)
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

(1) The meteorological tower is furnished with a backup, propane-powered generator to automatically furnish electric power in the event of a loss of power to the meteorological system.

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Primary Coolant and Sump

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: NA

Display Location: Services Bldg
2nd Floor
Chemistry Lab

Power Supply: 1SCA-PNL9C2
1SCI-PNL9H3

Display Range: (See Note #1)

Display Type: Meter
LED readout

Vendor Model No.: Canberra Sodium Iodide Detector No. 805
Canberra SCA No. 2030

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

(See Note #2)

NOTES

(1) The subject parameters are measured by laboratory instrumentation whose range is calibration dependent. Consult FSAR Section 9.3.2 for additional information.

(2) The RBS Station Operating Manual contains the chemistry procedures necessary to implement the provisions of Table 2 for this variable. The procedures are identified as a COP-1000 series in Volume IV of the chemistry operating procedures.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	Full	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

River Bend Station Unit 1
RG 1.97 Rev. 3 Compliance Report
Variable Data Sheet

GENERAL DATA

Measured Variable: Containment Air (See Note #1)

Variable Type(s): E
RG 1.97 Category: 3
RBS Category: 3

SPDS Input: No
Installation/Upgrade Schedule: Group 1

INSTRUMENT DATA

Sensor: NA

Display Location: Services Bldg
2nd Floor
Chemistry Lab

Power Supply: 1SCA-PNL9C2
1SCI-PNL9H3

Display Range: (See Note #2) Display Type: CRT

Vendor Model No.: Fisher Gas Chromatograph
Canberra MCA Series Gamma Spectrometer

EQUIPMENT QUALIFICATION

Operability Time: NA
Environmental Zone(s): NA
Instrument Accuracy: NA

REFERENCE DRAWINGS/SPECIFICATIONS

(See Note #3)

NOTES

(1) Consult FSAR Sections 9.3.2/11.5 for further details.

(2) This variable is measured by laboratory instrumentation whose range is calibration dependent.

(3) The RBS Station Operating Manual contains the necessary chemistry procedures to implement the provisions of Table 2 for this variable. The procedures are identified as a COP-1000 series in Volume IV of the chemistry operating procedures.

TABLE 1 COMPLIANCE STATEMENT

DESCRIPTION	COMPLIANCE	TECHNICAL COMMENTS
1. Equipment Qualification	NA	
2. Redundancy	NA	
3. Power Source	NA	
4. Channel Availability	NA	
5. Quality Assurance	Full	
6. Display and Recording	Full	
7. Range	NA	
8. Equipment Identification	NA	
9. Interfaces	NA	
10. Servicing, Testing and Calibration	Full	
11. Human Factors	Full	
12. Direct Measurement	Full	

TECHNICAL COMMENTS

None

APPENDIX A

Technical Justification for Neutron Monitoring System Deviations from RG 1.97 Revision 3 Regulatory Position

APPENDIX A

Technical Justification for Neutron Monitoring System
Deviations from RG 1.97 Revision 3 Regulatory Position

GENERAL DISCUSSION

The NRC Staff identifies neutron flux as the key variable to be monitored for determining reactivity control. This assumption in conjunction with the principles set forth in RG 1.97 imply that the subject variable be implemented as a Category 1 instrument system. River Bend Station notes the following considerations:

1) GSU has not identified any transient/accident scenario which would require the use of the neutron monitoring system (NMS) at a time when it could be rendered incapable of performing its intended function because of the scenario.

2) There exists at RBS diverse backup instrumentation to ascertain core power level within five percent of the station full power rating.

3) The implementation of the ATWS rule which is promulgamated as 10CFR50.62 at RBS will significantly reduce an already low probability of occurrence for an ATWS event. Therefore, the actual need for a Category 1 NMS to detect this event is thereby diminished further.

TECHNICAL DISCUSSION

The following technical discussions amplify the preceding considerations in the order in which they appear:

1) The dominating sequence in which the NMS would yield useful and time-relative information is an anticipated transient event without subsequent reactor scram (ATWS). The ATWS rule implemented as 10 CFR Part 50.62 does not require the licensee to consider an ATWS event coincidental with a loss of coolant (LOCA) event. These two events will not render the NMS immediately inoperative even if a loss of offsite power (LOOP) is postulated to occur in coincidence with the ATWS event. This is a valid statement for RBS because those portions of the NMS which are used to verify that the reactor is at less than five percent power immediately following a scram derive or can derive their power from Class 1E buses.

   During a LOCA event the NMS is needed only during the initial stage to determine that the reactor has shutdown in response to abnormal plant conditions.

The NMS is powered from preferred station offsite sources with redundant Class 1E power as backup being manually available via switch transfer in the main control room.

The SRM and IRM detectors are stored below the core support plate during full power operation but are still able to trend flux levels from high power conditions even though they may not be inserted into the core.

2) The safety relief valve flow rate(s) give a direct indication of core power level as shown by Reference 3. Therefore, if all NMS indication is lost the operator still has this Class 1E instrument system upon which to determine whether the core is shutdown within the limits of the ECCS to perform its intended safety function.

3) The further reduction of the probability of occurrence of an ATWS event at RBS serves only to reduce the necessity of furnishing a Category 1 NMS with strict adherence to the regulatory position provisions of Table 1.

CONCLUSIONS

RBS finds that the existing design of its NMS meets the safety intent of the regulatory guide provisions for full power operation.

Further, only an ATWS event appears to pose a possible threat to the NMS insofar as rendering it inoperable when its information might be required. Because backup instrumentation is available as mentioned above and the probability of occurrence of an ATWS event so small, RBS will not upgrade the existing NMS design for the present time.

APPENDIX B

Technical Justification for Not Implementing Instrumentation to Measure Radiation Levels in the Circulating Primary Coolant

APPENDIX B

Technical Justification for Not Implementing
Instrumentation to Measure Radiation Levels
in the Circulating Primary Coolant

GENERAL DISCUSSION

The usefulness of the information obtained by monitoring the radioactivity concentration or radiation level in the circulating primary coolant, insofar as helping the operator in his efforts to prevent and mitigate accidents, has not been substantiated. The critical actions that an RBS operator must take to prevent and mitigate a gross breach of fuel cladding are (1) shutdown the reactor and (2) maintain water level. Monitoring the subject variable will have no influence on either of these actions. Further, the methodologies of Reference 2 have failed to substantiate the need for on-line monitoring of this variable.

Fuel clad failure is detected by radiation monitors located in the off gas and reactor protection systems. The off gas monitor examines the condenser off gas effluents for abnormal concentrations of radioisotopes. The reactor protection system detectors view the main steam lines for higher than normal radiation levels which are an indication of fuel clad breach. If the containment should become isolated then monitoring of primary containment radiation and hydrogen levels will provide information to the main control room operator as to the status of the fuel cladding. Additionally, manual use of the RBS post accident sampling system (PASS) will provide for an accurate assessment of the circulating primary coolant radiation level and hence cladding status.

CONCLUSION

RBS has no present or future design plan to implement on-line monitoring of the subject variable owing to the aforementioned discussions.

APPENDIX C

Methodology for Verifying Acceptable Loop Readout Accuracy for RG 1.97 Instrumentation

APPENDIX C

Methodology for Verifying Acceptable
Loop Readout Accuracy for RG 1.97
Instrumentation

Accident environments at RBS tend to decrease the accuracy of those instrument channels used for post accident monitoring (PAM) when compared to the loop accuracy available during normal operation. Consequently, PAM instrument channels were analyzed to determine operator needs for accuracy of the channel readout to avoid unrealistic requirements being imposed on channel accuracy following an accident. The following methodology was applied by RBS in verifying the adequacy of instrument channel accuracy:

1) All Category 1 and 2 instrument channels were analyzed for maximum readout error.

2) The error was evaluated in light of operator information needs using the abnormal and emergency operating procedures as a basis in conjuction with engineering and operator judgement.

   Instrument loop readout inaccuracies which were found to be excessive for operator use will be redesigned in accordance with the installation/upgrade schedule of this report to establish readout accuracy within the prescribed limit defined on the variable data sheets.

APPENDIX D

Technical Justification for Equipment Identification Deviation from RG 1.97 Table 1 Provision

APPENDIX D

Technical Justification for Equipment Identification
Deviation from RG 1.97 Table 1 Provision

GENERAL DISCUSSION

One of the main activities of the RBS Detailed Control Room Design Review (DCRDR) was to perform a systems review and task analysis. The purpose of this activity was to determine the input and output requirements of the main control room operators for emergency operation and to ensure that required systems could be efficiently and reliably operated by available personnel. This was accomplished by performing an analysis of tasks contained in the RBS Emergency Operating Procedures (EOP's).

The task analysis was performed on fifteen (15) emergency scenarios which were designed to exercise all of the BWR Owners' Group Emergency Procedure Guideline (EPG) elements and all RBS EOP steps. These scenarios were run on the RBS simulator and each of the instrumentation and control (I&C) systems used by the operators was documented. The resultant listing represented a majority of the I&C systems available in the RBS main control room. This is best illustrated by Figures 1-41 and 1-42 of the RBS DCRDR Summary (Reference 5). These dot matrix diagrams illustrate the safety and nonsafety-related systems that were exercised by the emergency scenarios. It is clear that all safety-related systems and most of the nonsafety-related systems were exercised at least once. Therefore, since a majority of the RG 1.97 Category 1 and 2 instruments would have to be designated as "intended for use under accident conditions", GSU has taken different steps believed to be more beneficial to improve the main control room/operator interface.

As a result of the DCRDR, extensive human factors enhancements (labels, mimics, changes, lines of demarcation) are being made to the main control panels. The resultant changes to the main control room and the RBS simulator will greatly improve the operability of the control room panels under both normal and emergency conditions.

The RBS simulator is an extremely useful tool in training operators to properly respond to emergency conditions. In conjunction with classroom training, RBS operators are well familiarized with the particular I&C systems required for use under accident conditions.

To upgrade the emergency operating procedures, RBS has implemented an EOP verification and validation program. As a result, several major changes have been made to improve their useability including the reduction in the number of EOP's from eleven to five.

CONCLUSION

It is GSU's position that the RBS program of simulator and classroom training, improved control room panels, and upgraded procedures adequately address the need for operators to easily discern Category 1 and 2 instrumentation required under accident conditions. Therefore, no particular demarcations of Types A, B, and instruments designated as Category 1 and 2 are planned for incorporation into the design of RBS at the present time.

APPENDIX E

Technical Justification for Drywell Sump Level Deviations from RG 1.97 Revision 3 Regulatory Position

APPENDIX E

Technical Justification for Drywell Sump Level
Deviations from RG 1.97 Revision 3 Regulatory Position

The RG 1.97 regulatory position considers drywell sump level to be the key variable to be monitored for determining whether the reactor coolant system integrity is being maintained and whether the reactor coolant pressure boundary has been breached. A key variable as outlined in RG 1.97 is "...that single variable (or minimum number of variables) that most directly indicates the accomplishment of a safety function". All such variables will usually utilize Category 1 instrument systems. RBS takes exception to this categorization for the subject variable and shall provide a Category 2 instrument system based on the following considerations.

1) The drywell sumps collect all leakage inside the drywell. This includes leakage other than from the reactor coolant system. Therefore, a rise in the drywell sump level does not necessarily indicate that the reactor coolant system integrity or pressure boundary is or is not being maintained. A more direct indication of whether the reactor coolant system integrity and pressure boundary is being maintained would be drywell pressure or temperature. In both these cases an abnormal pressure or temperature would directly indicate a breach in the coolant system integrity or pressure boundary. High drywell sump level could then be used as verification to this condition. Therefore, since drywell sump level cannot be used as direct indication of the conditions mentioned but only as a backup verification to these conditions it may be a Category 2 variable as specified by RG 1.97 rather than a Category 1. The key variables which indicate whether the reactor coolant system integrity and pressure boundary are being maintained are the drywell temperature and pressure which are Category 1 instrument systems at RBS.

2) The RBS Mark III containment has two drywell drain sumps. One drain is the equipment drain sump which collects identified leakage. The other is the floor drain sump which collects unidentified leakage.

   Although the level of the drain sumps can be a direct indication of breach of the reactor coolant system pressure boundary, the indication is not unambiguous, because there is water in those sumps during normal operation. Other RBS instrumentation that indicates leakage in the drywell is:

   (1) Drywell pressure

   (2) Drywell temperature

(3) Primary containment atmosphere radiation level

(4) Drywell radiation level

While the drywell sump level signal does not automatically initiate safety-related systems, the plant operators will take manual actions based on this variable in accordance with Section 3/4.4.3 of the RBS Technical Specifications. The surveillance requirements of the Technical Specifications are sufficiently stringent to allow the use of a Category 2 device for this application.

The RBS emergency operating procedures use RPV level and drywell pressure as entry conditions for the level control. A small line break will cause the drywell pressure to increase before a noticeable increase in the sump level. Therefore, the drywell sumps will provide a lagging versus early indication of a leak.

CONCLUSIONS

RBS will revise its existing design to comply with Category 2 provisions in accordance with the installation/upgrade schedule of this report. Design revisions will include but not necessarily be limited to qualification of the flow controller devices and replacement of the existing Rosemount 1151 transmitters with 1153B series instruments with radiation-resistant electronics.