

# TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
3.16 <u>SHOCK SUPPRESSORS (SNUBBERS)</u>	3-63
3.17 <u>REACTOR BUILDING AIR TEMPERATURE</u>	3-80
3.18 <u>FIRE PROTECTION (DELETED)</u>	3-86
3.19 <u>CONTAINMENT SYSTEMS</u>	3-95
3.20 <u>SPECIAL TEST EXCEPTIONS (DELETED)</u>	3-95a
3.21 <u>RADIOACTIVE EFFLUENT INSTRUMENTATION (DELETED)</u>	3-96
3.21.1 <u>RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION (DELETED)</u>	3-96
3.21.2 <u>RADIOACTIVE GASEOUS PROCESS AND EFFLUENT MONITORING INSTRUMENTATION (DELETED)</u>	3-96
3.22 <u>RADIOACTIVE EFFLUENTS (DELETED)</u>	3-96
3.22.1 <u>LIQUID EFFLUENTS (DELETED)</u>	3-96
3.22.2 <u>GASEOUS EFFLUENTS (DELETED)</u>	3-96
3.22.3 <u>SOLID RADIOACTIVE WASTE (DELETED)</u>	3-96
3.22.4 <u>TOTAL DOSE (DELETED)</u>	3-96
3.23 <u>RADIOLOGICAL ENVIRONMENTAL MONITORING (DELETED)</u>	3-96
3.23.1 <u>MONITORING PROGRAM (DELETED)</u>	3-96
3.23.2 <u>LAND USE CENSUS (DELETED)</u>	3-96
3.23.3 <u>INTERLABORATORY COMPARISON PROGRAM (DELETED)</u>	3-96
3.24 <u>REACTOR VESSEL WATER LEVEL</u>	3-128
 4 <u>SURVEILLANCE STANDARDS</u>	 4-1
4.1 <u>OPERATIONAL SAFETY REVIEW</u>	4-1
4.2 <u>REACTOR COOLANT SYSTEM INSERVICE INSPECTION</u>	4-11
4.3 <u>TESTING FOLLOWING OPENING OF SYSTEM</u>	4-28
4.4 <u>REACTOR BUILDING</u>	4-29
4.4.1 <u>CONTAINMENT LEAKAGE TESTS</u>	4-29
4.4.2 <u>STRUCTURAL INTEGRITY</u>	4-35
4.4.3 <u>DELETED</u>	4-37
4.4.4 <u>HYDROGEN RECOMBINER SYSTEM</u>	4-38
4.5 <u>EMERGENCY LOADING SEQUENCE AND POWER TRANSFER, EMERGENCY CORE COOLING SYSTEM AND REACTOR BUILDING COOLING SYSTEM PERIODIC TESTING</u>	4-39
4.5.1 <u>EMERGENCY LOADING SEQUENCE</u>	4-39
4.5.2 <u>EMERGENCY CORE COOLING SYSTEM</u>	4-41
4.5.3 <u>REACTOR BUILDING COOLING AND ISOLATION SYSTEM</u>	4-43
4.5.4 <u>DECAY HEAT REMOVAL SYSTEM LEAKAGE</u>	4-45
4.6 <u>EMERGENCY POWER SYSTEM PERIODIC TESTS</u>	4-46
4.7 <u>REACTOR CONTROL ROD SYSTEM TESTS</u>	4-48
4.7.1 <u>CONTROL ROD DRIVE SYSTEM FUNCTIONAL TESTS</u>	4-48
4.7.2 <u>CONTROL ROD PROGRAM VERIFICATION</u>	4-50

# TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>	
4.8	<u>MAIN STEAM ISOLATION VALVES</u>	4-51
4.9	<u>DECAY HEAT REMOVAL CAPABILITY - PERIODIC TESTING</u>	4-52
4.9.1	EMERGENCY FEEDWATER SYSTEM - PERIODIC TESTING (REACTOR COOLANT TEMPERATURE GREATER THAN 250°F)	4-52
4.9.2	DECAY HEAT REMOVAL CAPABILITY - PERIODIC TESTING (REACTOR COOLANT TEMPERATURE 250°F OR LESS)	4-52a
4.10	<u>REACTIVITY ANOMALIES</u>	4-53
4.11	<u>REACTOR COOLANT SYSTEM VENTS</u>	4-54
4.12	<u>AIR TREATMENT SYSTEMS</u>	4-55
4.12.1	EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM	4-55
4.12.2	REACTOR BUILDING PURGE AIR TREATMENT SYSTEM	4-55b
4.12.3	AUXILIARY AND FUEL HANDLING BUILDING AIR TREATMENT SYSTEM	4-55d
4.13	<u>RADIOACTIVE MATERIALS SOURCES SURVEILLANCE</u>	4-56
4.14	<u>DELETED</u>	4-56
4.15	<u>MAIN STEAM SYSTEM INSERVICE INSPECTION</u>	4-58
4.16	<u>REACTOR INTERNALS VENT VALVES SURVEILLANCE</u>	4-59
4.17	<u>SHOCK SUPPRESSORS (SNUBBERS)</u>	4-60
4.18	<u>FIRE PROTECTION SYSTEMS (DELETED)</u>	4-72
4.19	<u>OTSG TUBE INSERVICE INSPECTION</u>	4-77
4.19.1	STEAM GENERATOR SAMPLE SELECTION AND INSPECTION METHODS	4-77
4.19.2	STEAM GENERATOR TUBE SAMPLE SELECTION AND INSPECTION	4-77
4.19.3	INSPECTION FREQUENCIES	4-79
4.19.4	ACCEPTANCE CRITERIA	4-80
4.19.5	REPORTS	4-81
4.20	<u>REACTOR BUILDING AIR TEMPERATURE</u>	4-86
4.21	<u>RADIOACTIVE EFFLUENT INSTRUMENTATION (DELETED)</u>	4-87
4.21.1	RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION (DELETED)	4-87
4.21.2	RADIOACTIVE GASEOUS PROCESS AND EFFLUENT MONITORING MONITORING INSTRUMENTATION (DELETED)	4-87
4.22	<u>RADIOACTIVE EFFLUENTS (DELETED)</u>	4-87
4.22.1	LIQUID EFFLUENTS (DELETED)	4-87
4.22.2	GASEOUS EFFLUENTS (DELETED)	4-87
4.22.3	SOLID RADIOACTIVE WASTE (DELETED)	4-87
4.22.4	TOTAL DOSE (DELETED)	4-87
4.23.1	MONITORING PROGRAM (DELETED)	4-87
4.23.2	LAND USE CENSUS (DELETED)	4-87
4.23.3	INTERLABORATORY COMPARISON PROGRAM (DELETED)	4-87

# LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
1.2	Frequency Notation	1-8
2.3-1	Reactor Protection System Trip Setting Limits	2-9
3.1.6.1	Pressure Isolation Check Valves Between the Primary Coolant System and LPIS	3-15a
3.5-1	Instruments Operating Conditions	3-29
3.5-1A	DELETED	
3.5-2	Accident Monitoring Instruments	3-40c
3.5-3	Post Accident Monitoring Instrumentation	3-40d
3.21-1	DELETED	
3.21-2	DELETED	
3.23-1	DELETED	
3.23-2	DELETED	
4.1-1	Instrument Surveillance Requirements	4-3
4.1-2	Minimum Equipment Test Frequency	4-8
4.1-3	Minimum Sampling Frequency	4-9
4.1-4	Post Accident Monitoring Instrumentation	4-10a
4.19-1	Minimum Number of Steam Generators to be Inspected During Inservice Inspection	4-84
4.19-2	Steam Generator Tube Inspection	4-85
4.21-1	DELETED	
4.21-2	DELETED	
4.22-1	DELETED	
4.22-2	DELETED	
4.23-1	DELETED	

## 1.9 DELETED

## 1.10 DELETED

## 1.11 DELETED

## 1.12 DOSE EQUIVALENT I-131

The DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134 and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID 14844, "Calculation of Distance Factors for Power and Test Reactor Sites". [Or in Table E-7 of NRC Regulatory Guide 1.109, Revision 1, October 1977.]

## 1.13 SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

## 1.14 DELETED

## 1.15 OFFSITE DOSE CALCULATION MANUAL (ODCM)

The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluent, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Radiological Environmental Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Section 6.8.4 and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports required by Specifications 6.9.3 and 6.9.4.

## 1.16 PROCESS CONTROL PROGRAM (PCP)

The PROCESS CONTROL PROGRAM (PCP) shall contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71, State regulations, burial ground requirements, and other requirements governing the disposal of solid radioactive waste.

## 1.17 GASEOUS RADWASTE TREATMENT

The GASEOUS RADWASTE TREATMENT SYSTEM is the system designed and installed to reduce radioactive gaseous effluent by collecting primary coolant system off gases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

### 3.21 RADIOACTIVE EFFLUENT INSTRUMENTATION

Deleted

#### 3.21.1 Radioactive Liquid Effluent Instrumentation

Deleted

#### 3.21.2 Radioactive Gaseous Process and Effluent Monitoring Instrumentation

Deleted

### 3.22 RADIOACTIVE EFFLUENTS

Deleted

#### 3.22.1 Liquid Effluents

Deleted

#### 3.22.2 Gaseous Effluents

Deleted

#### 3.22.3 Solid Radioactive Waste

Deleted

#### 3.22.4 Total Dose

Deleted

### 3.23 RADIOLOGICAL ENVIRONMENTAL MONITORING

Deleted

#### 3.23.1 Monitoring Program

Deleted

#### 3.23.2 Land Use Census

Deleted

#### 3.23.3 Interlaboratory Comparison Program

Deleted

3-96

(3-97 thru 3-127 deleted)

Amendment No. 72, 78, 85, 88, 103, 104, 122, 129, 137, 149, 157, 158, 173,  
177, 180, 182,

TABLE 4.1-1 (Continued)

CHANNEL DESCRIPTION	CHECK	TEST	CALIBRATE	REMARKS
27. Makeup Tank Level Channels	D(1)	NA	F	(1) When Makeup and Purification System is in operation.
28. Radiation Monitoring Systems*				
a. RM-G6 (FH Bridge #1 Aux)	W(1)(2)	M(2)	Q(2)	(1) Using the installed check source when background is less than twice the expected increase in cpm which would result from the check source alone. Background readings greater than this value are sufficient in themselves to show that the monitor is functioning.
b. RM-G7 (FH Bridge #2 Main)	W(1)(2)	M(2)	Q(2)	
c. RM-G9 (FH Bridge-FH Bldg)	W(1)(3)	M(3)	E(3)	
d. RM-A2P (RB Atmosphere particulate)	W(1)(4)	M(4)	E(4)	
e. RM-A2I (RB Atmosphere iodine)	W(1)(4)	M(4)	Q(4)	
f. RM-A2G (RB Atmosphere gas)	W(1)(4)	M(4)	E(4)	
				(2) RM-G6 and RM-G7 operability requirements are given in T.S. 3.8.1. Surveillances are required to be current only when handling irradiated fuel.
				(3) RM-G9 operability requirements are given in T.S. 3.8.1.
				(4) RM-A2 operability requirements are given in T.S. 3.1.6.8.
29. High and Low Pressure Injection Systems: Flow Channels	N/A	N/A	F	

\* Includes only monitors indicated under this item. Other T.S. required radiation monitors are included in specifications 3.5.5.2, 4.1.3, Table 3-5.1 item C.3.f, and Table 4.1-1 item 19e.

#### 4.21 RADIOACTIVE EFFLUENT INSTRUMENTATION

Deleted

##### 4.21.1 Radioactive Liquid Effluent Instrumentation

Deleted

##### 4.21.2 Radioactive Gaseous Process & Effluent Monitoring Instrumentation

Deleted

#### 4.22 RADIOACTIVE EFFLUENTS

Deleted

##### 4.22.1 Liquid Effluents

Deleted

##### 4.22.2 Gaseous Effluents

Deleted

##### 4.22.3 Solid Radioactive Waste

Deleted

##### 4.22.4 Total Dose

Deleted

#### 4.23 RADIOLOGICAL ENVIRONMENTAL MONITORING

Deleted

##### 4.23.1 Monitoring Program

Deleted

##### 4.23.2 Land Use Census

Deleted

##### 4.23.3 Interlaboratory Comparison Program

Deleted

4-87

(4-88 thru 4-122 deleted)

Amendment No. 72, 88, 104, 122, 130, 137, 161, 173, 177,



6.8.4 a. Radiological Environmental Monitoring Program

A program shall be provided to monitor the radiation and radionuclides in the environs of the plant. The program shall provide (1) representative measurements of radioactivity in the highest potential exposure pathways, and (2) verification of the accuracy of the effluent monitoring program and modeling of environmental exposure pathways. The program shall (1) be contained in the ODCM, (2) conform to the guidance of Appendix I to 10 CFR Part 50, and (3) include the following:

- (1) Monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the ODCM,
- (2) A Land Use Census to ensure that changes in the use of areas at and beyond the SITE BOUNDARY are identified and that modifications to the monitoring program are made if required by the results of this census, and
- (3) Participation in an Interlaboratory Comparison Program to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring.

b. Radioactive Effluent Controls Program

A program shall be provided conforming with 10 CFR 50.36a for the control of radioactive effluents and for maintaining the doses to MEMBERS OF THE PUBLIC from radioactive effluents as low as reasonably achievable. The program (1) shall be contained in the ODCM, (2) shall be implemented by operating procedures, and (3) shall include remedial actions to be taken whenever the program limits are exceeded. The program shall include the following elements:

- (1) Limitations on the operability of radioactive liquid and gaseous monitoring instrumentation including surveillance tests and setpoint determination in accordance with the methodology in the ODCM,
- (2) Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas conforming to 10 times the concentrations specified in 10 CFR Part 20.1001 - 20.2402, Appendix B, Table 2, Column 2,
- (3) Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with the methodology and parameters in the ODCM,



b. Radioactive Effluent Controls Program (continued)

- (4) Limitations on the annual and quarterly doses or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released from the unit to the site boundary conforming to Appendix I to 10 CFR Part 50,
- (5) Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCM at least every 31 days,
- (6) Limitations on the operability and use of the liquid and gaseous effluent treatment systems to ensure that the appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a 31-day period would exceed 2 percent of the guidelines for the annual dose or dose commitment conforming to Appendix I to 10 CFR Part 50,
- (7) Limitations on the dose rate resulting from radioactive material released in gaseous effluents to areas at, or beyond, the site boundary. The limits are as follows:
  - (a) For noble gases: less than or equal to 500 mrem/yr to the total body and less than or equal to 3000 mrem/yr to the skin, and
  - (b) For I-131, I-133, tritium and all radionuclides in particulate form with half lives greater than 8 days: less than or equal to 1500 mrem/yr to any organ.
- (8) Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from the unit to areas beyond the site boundary conforming to Appendix I to 10 CFR Part 50,
- (9) Limitations on the annual quarterly doses to a MEMBER OF THE PUBLIC from Iodine-131, Iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released from the unit to areas beyond the site boundary conforming to Appendix I to 10 CFR Part 50, and
- (10) Limitations on the annual dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources conforming to 40 CFR Part 190.

6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.14.1 GPU Nuclear Corporation initiated changes to the ODCM:

1. Shall be submitted to the NRC in the **Annual** Radioactive Effluent Release Report for the period in which the changes were made. This submittal shall contain:
  - a. sufficiently detailed information to justify the changes without benefit of additional or supplemental information;
  - b. a determination that the changes did not reduce the accuracy or reliability of dose calculations or setpoint determinations; and
  - c. documentation that the changes have been reviewed and approved pursuant to 6.8.2.
2. Shall become effective upon review and approval by GPUNC Management.

6.15 DELETED

6.16 POST-ACCIDENT SAMPLING PROGRAMS NUREG 0737 (II.B.3, II.F.1.2)

Program which will ensure the capability to accurately sample and analyze vital areas under accident conditions have been implemented.

The following programs have been established:

1. Iodine and Particulate Sampling
2. Reactor Coolant System
3. Containment Atmosphere Sampling

Each program shall be maintained and shall include the following:

1. Training of personnel,
2. Procedures, and
3. Provisions for maintenance of sampling and analysis equipment.