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Duane Arnold Energy Center
Operated by Nuclear Management Company, LLC

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NG-05-0427
10 CFR 50.55a

U.S. Nuclear Regulatory Commission
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Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49

Inservice Testing Program, Fourth Ten-Year Interval Update

The Duane Arnold Energy Center (DAEC) Inservice Testing (IST) Program third ten-year interval will end on January 31, 2006. In accordance with 10 CFR 50.55a(f), Nuclear Management Company, LLC (NMC) has updated the DAEC IST Program for the fourth ten-year interval. The IST Program for the fourth interval has been developed to the ASME Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition through 2003 Addenda. The updated IST Program is enclosed.

Requests for relief, included in this Program, are submitted for NRC review and approval in accordance with 10 CFR 50.55a. Approval is requested prior to the start of the fourth ten-year interval on February 1, 2006.

Gary Van Middlesworth
Site Vice President, Duane Arnold Energy Center
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, DAEC, USNRC
Resident Inspector, DAEC, USNRC

3277 DAEC Road • Palo, Iowa 52324-9785
Telephone: 319.851.7611

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ENCLOSURE
to NG-05-00427

FOURTH TEN- YEAR INTERVAL PUMP AND VALVE

INSERVICE TESTING PROGRAM

FOR

Duane Arnold Energy Center
Commercial Service Date: February 1, 1975
(Docket no. 50-331)
3277 DAEC Road
Palo, Iowa 52324

1.0 INSERVICE TESTING PROGRAM PREPARATION AND APPROVAL

Prepared By: _____ **Date:** 7/26/05
Inservice Testing Engineer/Specialist

Reviewed By: _____ **Date:** 7-26-05
Supervisor Inspection and Materials

Reviewed By: _____ **Date:** 7/26/05
Manager, Program Engineering

Concurred By: _____ for **Date:** 7/28/05
Operations Committee

Approved By: Paul Hansen for **Date:** 7.29.2005
Plant Manager, Nuclear

2.0 TABLE OF CONTENTS

Section Number And Description

3.0 REVISION SUMMARY SHEET

Section	Effected Pages	Revision	Date
1		0	
2		0	
3		0	
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7		0	
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17		0	

4.0 INTRODUCTION AND PROGRAM DESCRIPTION

4.1 Introduction

Under the provisions of 10 CFR 50.55a, inservice testing of safety related pumps and valves will be performed in accordance with the ASME Code for Operation and Maintenance of Nuclear Power Plants. As specified in 10 CFR 50.55a(b) (10-1-04 edition), the effective edition of OM Code with regard to this program is the 2001 Edition through 2003 addendum. This program identifies the pump and valve inservice testing that will be performed at Duane Arnold Energy Center to comply with the requirements of 10 CFR 50.55a.

This program applies to the IST Fourth Ten Year Interval beginning February 1, 2006 and ends on January 31, 2016. Note the Duane Arnold Energy Center's ISI program Third Ten Year Interval began on November 1, 1996 and will end on October 31, 2006.

4.2 Relationship with Technical Specifications

Based on technical specification requirements, in the event of any conflicts between ASME OM requirements and the requirements of technical specifications, the plant technical specifications shall govern if more conservative. Duane Arnold Energy Center will meet all requirements of both ASME OM and plant technical specifications unless there is a specific conflict between the two. If any requirements of ASME OM cannot be met due to technical specification limitations, relief will be requested, or appropriate technical specification changes will be prepared.

4.3 Qualification of Test Personnel

Personnel performing pump and valve testing per ASME OM, will be qualified in accordance with the Duane Arnold Energy Center's Quality Assurance Program.

4.4 Program Development

Inservice testing (IST) of Class 1, 2, and 3 components is performed at Duane Arnold Energy Center in accordance with the provisions of 10 CFR 50.55a, "Codes and Standards". Where possible, testing is performed which at a minimum meets the requirements of the latest Code edition and addenda adopted in 10 CFR one year prior to the start of the current interval.

The scope of the program is that defined by subsection ISTA-1100(a) and ISTA-1100(b) of 2001 Edition through 2003 addendum of ASME OM code. ISTA(c) which, covers dynamic restraints (snubbers) will not be included in the IST program. 10 CFR50.55a required the use of the previously mentioned ASME OM edition and addenda, which will here-in be referred to as the Code.

In accordance with the Code, the following are required to be included in the testing program:

- Pumps and Valves that are required to perform a specific function in:
  1) Shutting down the reactor to the cold shutdown condition;
  2) Maintaining the cold shutdown condition; or
  3) Mitigating the consequences of an accident.
- Pressure relief devices that protect systems or portions of systems which perform one or more required function in:
  1) Shutting down the reactor to the cold shutdown condition;

2) Maintaining the cold shutdown condition; or

3) Mitigating the consequences of an accident.

In addition to the general Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions as listed in Section 4, References.

4.5 Initial Program Scope

In the course of developing the Program scope, each of the significant safety systems (included within the ISI-class boundaries) were evaluated with respect to the function of each component and the need for its operability as it relates to the scope of the OM Code. Supporting documents used include,

Final Safety Analysis Report (FSAR);

Technical Specifications;

Past program correspondence;

Operating Procedures (Normal, Emergency and Off-Normal); and

Plant System Descriptions.

The sequence followed during the development effort was as follows:

1. Each of the plant systems was subjected to an overview to determine any potential active safety function as described in the scope statement. Those systems with no obvious safety functions were then excluded from further consideration. Plant documents as well as operating staff inputs were utilized in this phase.
2. For the remaining systems, flow diagrams were studied and any component that could possibly have an active or passive safety function (other than simply maintaining the pressure boundary) were identified for further evaluation.
3. The function of each component identified in 2, above, was determined based on available documentation, staff input or general experience of the evaluator. Testing requirements were derived based on the component function(s) and the applicable rule(s).
4. Available documents were reviewed and specific or implied component operational requirements were compared to the information derived in 3, above.
5. The results of Steps 1 through 4, above, were reviewed by several knowledgeable members of the plant staff and evaluated for accuracy and consistency. Based on this review, the final program scope was derived and the IST Program Plan developed.

4.6 Program Update

During the fouth 10-year interval it is expected that the scope of the Program will occasionally be modified in response to unrelated activities including, but not limited to:

1) Plant design changes;
2) Changes in operating conditions (e.g. normal valve lineup);
3) Changes in accident mitigating procedures philosophy.

As a result, it is expected that the IST Program may be revised to ensure continued compliance with the Code requirements relating to the scope of the test program.

The procedures controlling the plant design change development process contain requirements to conduct a review for determination of potential impact on the IST Program. If the results of that review indicate the potential for impact on the IST Program, the change

package shall be submitted to IST Engineer/Specialist for review. Additionally, the plant administrative procedures which control changes to plant documents, including procedures, require that changes potentially effecting the IST Program be reviewed by the IST Engineer/Specialist. Should a change require a program revision, the IST Engineer/Specialist would then implement the change to the program plan and the appropriate test procedure(s) in a timely manner.

5.0 PUMP TESTING PROGRAM DESCRIPTION

5.1 Code Compliance

This IST Program for pumps meets the requirements of Reference 12.8, subsection ISTB and any applicable interpretations or additional requirements imposed by Reference 12.9. Paragraph and table references in this section refer to specific paragraphs and tables in Reference 12.8. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50.55a(f)(5)(iii) and 12.9 (See Section 6).

The 10 CFR 50.55a specification of Class 1, 2, and 3 components has been used as criteria for including pumps in this program. Non-class pumps judged important to safety are also listed. Testing of non-class pumps will be performed in accordance with Reference 12.8, subsection ISTB to the extent practical. Relief requests will not be submitted for non-class pumps if the Code requirements cannot be met.

5.2 Allowable Ranges of Test Quantities

The allowable ranges for test parameters as specified in Reference 12.8, subsection ISTB, Table ISTB-3500-1 will be used for all measurements of pressure, flow, and vibration except as provided for in specific relief requests for Class 1, 2, and 3 pumps. Allowable ranges for test parameters of non-class pumps will be as specified in Reference 12.8, subsection ISTB, Table ISTB-3500-1 to the extent practical.

5.3 Testing Intervals

The test frequency for pumps included in the Program will be as set forth in Reference 12.8, subsection ISTB-3400, Reference 12.9, Paragraph 5.1.2, and related relief requests. An allowable extension, not to exceed +25 percent of the surveillance interval, may be applied to a test schedule as allowed by the Duane Arnold Energy Center Technical Specifications to provide operational flexibility. Note the +25 percent surveillance interval may be applied to testing frequencies doubled as required by Reference 12.8, subsection ISTB-6200, to also provide operational flexibility, as this surveillance interval was added to DAEC's improved technical specifications.

5.4 Pump Program Tables

Section 6 lists those pumps included in the IST Program with references to parameters to be measured and applicable requests for relief. The drawing coordinate column contains 4 digit alphanumeric codes, which help locate the component on the flow diagram. The first number is the vertical column the component is illustrated in. The second number represents a further subdivision of that column by 10. The third digit is a letter representing the horizontal column. The fourth digit subdivides that column by 10. Thus 65A6 would be 5/10's into vertical column 6 and 6/10's into horizontal column 'A'.

5.5 Relief Requests for Pump Testing

Relief requests are initiated per 10 CFR 50.55a where appropriate and are included in Section 7.

6.0 INSERVICE TESTING PROGRAM PUMP LIST

						Parameters					
Pump	Name	*P&ID*	Coord	Group	Safety Class	S	P	dP	F	V	Notes
1P022A	RHR SERVICE WATER PUMP	*146*	86A1	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P022B	RHR SERVICE WATER PUMP	*146*	61A1	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P022C	RHR SERVICE WATER PUMP	*146*	80A1	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P022D	RHR SERVICE WATER PUMP	*146*	56A1	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P099A	EMERGENCY SERVICE WATER PUMP	*146*	73A1	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P099B	EMERGENCY SERVICE WATER PUMP	*146*	68A1	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P117A	RIVER WATER SUPPLY PUMP	*129*	74C3	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P117B	RIVER WATER SUPPLY PUMP	*129*	47C3	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P117C	RIVER WATER SUPPLY PUMP	*129*	64C3	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P117D	RIVER WATER SUPPLY PUMP	*129*	37C3	A	3	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1, 2
1P211A	CORE SPRAY PUMP	*121*	35C1	B	2	N/A	N/A	Q/2Y	Q/2Y	2Y	1
1P211B	CORE SPRAY PUMP	*121*	49C1	B	2	N/A	N/A	Q/2Y	Q/2Y	2Y	1
1P216	HPCI PUMP	*123*	24D0	B	2	Q/2Y	N/A	Q/2Y	Q/2Y	2Y PR-01	
1P226	RCIC PUMP	*125*	47C8	B	N	Q/2Y	N/A	Q/2Y	Q/2Y	2Y	3
1P229A	RHR PUMP	*120*	42A7	A	2	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1
1P229B	RHR PUMP	*119*	68A6	A	2	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1
1P229C	RHR PUMP	*120*	29A9	A	2	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1
1P229D	RHR PUMP	*119*	82A6	A	2	N/A	N/A	Q/2Y	Q/2Y	Q/2Y	1
1P230A	SBLC INJECTION PUMP	*126*	54C1	B	2	N/A	Q/2Y	N/A	Q/2Y	2Y PR-02	1

Pump	Name	*P&ID*	Coord	Group	Safety Class	Parameters S	P	dP	F	V	Notes
1P230B	SBLC INJECTION PUMP	*126*	53B3	B	2	N/A	Q/2Y	N/A	Q/2Y	2Y PR-02	1

LEGEND FOR PUMP TABLES

PUMP NO / NAME	Pump name indicated on the respective flow diagram, and description.
P&ID	Pump Drawing Number
Dwg Coor	Flow Diagram drawing coordinates for the pump. See Section 5.4 for further information on how to interpret the 4 alphanumeric characters.
Group	Group classification of each pump.
Safety Class	ISI Classification of the pump.
Parameters	The table indicates whether a test parameter is measured and at what frequency as well as any applicable Relief Requests. The abbreviations refer as follows: **S** – Speed **P** – Discharge Pressure **dP** - Differential Pressure **F** - Flow Rate **V** – Vibration **N/A** - Not applicable, or not obtained **Q** – quarterly **2Y** – once every two years
Notes	1. This pump is driven by a squirrel-cage induction motor operating at essentially constant speed; therefore, speed measurements are not required. 2. The value of suction pressure used to calculate pump differential pressure is derived indirectly from a measurement of pump submergence beneath the surface of liquid in a pit or tank. 3. This pump is located outside of the ISI-code boundaries. Testing of this pump will be performed in accordance with the Code to the extent practical. Relief requests will not be submitted for this pump if the Code requirements cannot be met.

7.0 PUMP RELIEF REQUESTS

Pump Relief Request – PR-01

Proposed Alternative Limits for HPCI Pump Vibration

In Accordance with 10 CFR 50.55a(a)(3)(ii)

Systems: High Pressure Coolant Injection

PUMP: 1P216 HIGH PRESSURE COOLANT INJECTION PUMP

Class: 2

Function: Injects Coolant into the reactor vessel independent of AC power.

Test Requirement : Table ISTB-5100-1; Comprehensive pump test vibration alert limit of 0.325 in/sec

Bases for Relief:

The HPCI pump consists of a centrifugal main pump, a separate centrifugal booster pump, a speed reducing gear for the booster pump, and a Terry drive train. Therefore , there are four independently balanced and aligned rotating assemblies that are coupled together. As a result, the normal (baseline) vibration readings in the horizontal direction on the main pump is approximately 0.4 in/sec. Application of a 0.325 in/sec alert limit would require DAEC to enter accelerated test frequency each time the pump was tested because one or more of these points measured would exceed this limit.

Prior to the fourth ten-year interval, pump vibration was measured in displacement instead of velocity. DAEC has determined measuring pump vibration in velocity for this pump train will provide improved ability to detect degradation, since the normal pump speed is approximately 3600 rpm. DAEC has many years of in-service test data showing that baseline vibrations of 0.4 in/sec represent acceptable pump operation and that vibration levels have not been trending up. DAEC has had these vibration levels analyzed by an Engineering consultant that specialized in vibration analysis. Their analysis shows that this pump can operate at vibration levels up to 0.700 in/sec.

Implementing the alert limit of 0.325 in/sec would require DAEC to constantly have the HPCI pump on accelerated test frequency. The intent of increased test frequency is to closely monitor a pump that is deteriorating from its baseline values. In this case, the pump would be operating at its normal vibration range and no change would be seen. The additional annual test would require a significant amount of time and resources and only create additional maintenance due to normal wear of the system. Modifications to try and reduce the vibration levels, such as installing new shafts and impellers, are extremely expensive and may not reduce the vibration levels. Therefore, requiring an alert limit of 0.325 in/sec on the HPCI pump is an extreme hardship without a compensating increase in public safety. An appropriate alert limit for these vibration data points is 0.500 in/sec. This is based on previous test history, a review of industry data and at the vibration analysis performed.

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii). Compliance with the specified code requirements of the listed sections would result in a hardship without a corresponding increase in the level of quality or safety.

Alternative Testing:

A vibration alert limit of 0.500 in/sec will be used for the pump horizontal vibration data points. Table ISTB-5100-1 required action limit of 0.700 in/sec would be adhered to.

Status:

This is a new relief Request for DAEC. Monticello has a similar relief previously granted by the NRC.

Pump Relief Request – PR-02

Proposed Alternative for SBLC Pump Vibration Instruments
In Accordance with 10 CFR 50.55a(a)(3)(i)

Systems: Standby Liquid Injection

PUMP: 1P230A AND 1P230B STANDBY LIQUID CONTROL INJECTION PUMPS

Class: 2

Function: To inject liquid poison into the reactor.

Test Requirement : ISTB-3510(e); General, Frequency Response Range; The frequency response range of the vibration measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1000 Hz.

Bases for Relief:

The nominal shaft rotational speed of these pumps is 242 RPM which is equivalent to approximately 4 Hz. Based on this frequency and Part 6, Para. 4.6.1.6, the required frequency response range of instruments used for measuring pump vibration is 1.33 to 1000 Hz. Procurement and calibration of instruments to cover this range to the lower extreme (1.33 Hz) is impractical due to the limited number of vendors supplying such equipment and the level of sophistication and cost of the equipment.

These are of a simplified reciprocating (piston) positive displacement design with rolling element bearings, Model Number TD-60, manufactured by Union Pump Corporation. Union Pump Corp. has performed an evaluation of the pump design and has determined that there are no probable sub-synchronous failure modes associated with these pumps under normal operating conditions. Furthermore, there are no known failure mechanisms that would be revealed by vibration at frequencies below that related to shaft speed (4 Hz); thus no useful information is obtained below this frequency nor will indication of pump degradation be masked by instrumentation unable to collect data below this frequency.

The requirement to measure vibration with instruments with response to 1/3 shaft speed stems from the need to detect oil whip or oil whirl associated with journal bearings. In the case of these pumps, there are no journal bearings to create these phenomena, thus satisfying the frequency response range criteria would serve no significant purpose. The significant modes of vibration with respect to equipment monitoring are as follows:

* 1-Times Crankshaft Speed - An increase in vibration at this frequency may be an indication of rubbing between a single crankshaft cheek and rod end, cavitation at a single valve, or coupling misalignment.

* 2-Times Crankshaft Speed - An increase in vibration at this frequency may be an indication of looseness at a single rod bearing or crosshead pin, a loose valve seat in the fluid cylinder, a loose plunger/crosshead stub connection, or coupling misalignment.

* Other Multiples of Shaft Speed - An increase in vibration at other frequencies may be indications of cavitation at several valves, looseness at multiple locations, or bearing degradation.

Based on the foregoing discussion, it is clear that monitoring pump vibration within the frequency range of 4 to 1000 Hz will provide adequate information for evaluating pump condition and ensuring continued reliability with respect to the pumps' function. Compliance with the Code requirement would result in a significant hardship and cost without any compensating increase in pump performance or plant safety.

Alternative Testing:

Vibration levels of the Standby Liquid Control Pumps will be measured in accordance with the applicable portions of Part 6, Paragraph 4.6 with the exception of the lower frequency response limit for the instrumentation (Para. 4.6.1.6). In this case the lower response limit of the vibration measuring equipment will be 4.03 Hz or less.

Status:

Approval of similar relief was previously granted to DAEC by the NRC in May 29,1997.

8.0 VALVE TESTING PROGRAM DESCRIPTON

8.1 Code Compliance

This IST Program for valves meets the requirements of Reference 12.8, subsection ISTC, Mandatory Appendix 1 and any appropriate interpretations or additional requirements imposed by Reference 12.9. Paragraph and table references in this section refer to specific paragraphs and tables in Reference 12.8. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50.55a(f)(5)(iii) and Reference 12.9.

Non-class valves judged important to safety are also listed. Testing of non-class valves will be performed in accordance with Reference 12.8, subsection ISTC and Mandatory Appendix 1, to the extent practical. Relief requests will not be submitted for non-class valves if Code requirements cannot be met.

8.2 Stroke Time Acceptance Criteria

When required, the acceptance criteria for the stroke times of power-operated valves will be as set forth in Reference 12.8 subsection ISTC.

8.3 Check Valve Testing

Where required, full-stroke exercising of check valves to the open position using system flow requires that a test be performed whereby the predicted full accident condition flow through the valve be verified and measured or full stroke of the obturator is verified by appropriate methods as discussed in ISTC-5220.

8.4 Testing Intervals

The test frequency for valves included in the Program will be as set forth in Reference 12.8, subsection ISTC-3510 and Mandatory Appendix 1. An allowable extension, not to exceed +25 percent of the surveillance interval, may be applied to the test schedule as allowed by the Duane Arnold Energy Center Technical Specifications to provide operational flexibility, except for the relief valve sample testing schedules discussed in Mandatory Appendix 1 of Reference 12.8.

8.5 Valve Program Tables

Section 10 lists those valves included in the IST Program along with references to ISI Class, required testing, respective test intervals, applicable requests for relief as well as other relevant information. A table legend at the end of Section 9 provides information on how to use the drawing coordinates to help locate valves on flow diagrams.

8.6 Deferred Testing

Where quarterly testing of valves is impractical or otherwise undesirable, testing may be deferred and performed during cold shutdown or refueling periods as permitted by Reference 12.8, subsections ISTC-3521 and ISTC-3522. The valve program table identifies those valves to which deferred testing applies and the respective deferred test justification for each is provided in Section 12.

8.7 Relief Requests for Valve Testing

Relief Request VR-01 associated with valve testing is provided in Section 10.

9.0 DAEC UNIT 1 INSERVICE TESTING PLAN - VALVE TABLES

Drawing: 103 *Sheet #: 1* *Description: Main Steam Turbine Stop and Control Valves*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV1064	45F4	2	B	2	GL	AO	C/FO	A	O	BTO	CS		DTJ-01	
										FST	CS		DTJ-01	
										PIT	2Y			
MAIN STEAM DRAIN ISOLATION TO CONDENSER														
MO1043	86E0	2	B	3	GL	MO	C	A	O	BTO	CS		DTJ-01	
										PIT	2Y			
MAIN STEAM DRAIN LINE ISOLATION														
MO1044	83A4	Y	B	3	GL	MO	C	A	O	BTO	CS		DTJ-01	3
										PIT	2Y			3
DRYWELL STEAM LINE DRAINS CONDENSER ISOLATION														
MO1054	81F9	2	B	6	GA	MO	O	A	C	BTC	CS		DTJ-03	
										PIT	2Y			
MSR 1E-18B 2ND STAGE REHEAT STEAM SUPPLY														
MO1055	83F7	2	B	6	GA	MO	O	A	C	BTC	CS		DTJ-03	
										PIT	2Y			
MSR 1E-18A 2ND STAGE REHEAT STEAM SUPPLY														
MO1362A	71E9	2	B	3	GA	MO	O	A	C	BTC	CS		DTJ-04	
										PIT	2Y			
MSL"A" SUPPLY TO OFFGAS AND SJAE														
MO1362B	70E5	2	B	3	GA	MO	O	A	C	BTC	CS		DTJ-04	
										PIT	2Y			
MSL"B" SUPPLY TO OFFGAS AND SJAE														

Drawing: 104 *Sheet #: 1* *Description: Turbine Steam Seals*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO1169	69C1	2	B	3	GA	MO	O	A	C	BTC	CS		DTJ-02	
										PIT	2Y			
TURBINE STEAM SEAL MAIN STEAM SUPPLY ISOLATION														
MO1170	72C2	2	B	3	GA	MO	C	A	C	BTC	CS		DTJ-02	
										PIT	2Y			
TURBINE STEAM SEAL PRESS REGULATOR BYPASS VALVE														

Drawing: 109 *Sheet #: 1* *Description: Condensate and Demineralized Water System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V09-0065 DEMIN WATER SUPPLY TO DRYWELL	33E9	2	A	1	GA	M	LC	P	C	AT-1	AJ			
V09-0111 DRYWELL DEMIN WATER SUPPLY HDR ISOLATION	27E9	2	A	1	GA	M	LC	P	C	AT-1	AJ			

Drawing: 112 *Sheet #: 1* *Description: Reactor Building Cooling Water System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO4841A	38D6	2	A	4	GA	MO	O	A	C	AT-1	AJ			
										BTC	CS		DTJ-07	
										PIT	2Y			
DRYWELL RBCCW RETURN HEADER ISOLATION														
MO4841B	38D7	2	A	4	GA	MO	O	A	C	AT-1	AJ			
										BTC	CS		DTJ-07	
										PIT	2Y			
DRYWELL RBCCW SUPPLY HEADER ISOLATION														
PSV4842	24E5	N	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16,3
DW EQUIP DRAIN SUMP HX 1E-34 TUBE SIDE RELIEF														

Drawing: 113 *Sheet #: 1* *Description: RHR Service Water & Emergency Service Water System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV1956A	31E9	3	B	4	GA	AO	C/FO	A	O	BTO	Q			12
										FST	Q			1
CB CHILLER 1V-CH-1A DISCH TO ESW ISOLATION														
CV1956B	17E9	3	B	4	GA	AO	C/FO	A	O	BTO	Q			12
										FST	Q			1
CB CHILLER 1V-CH-1B DISCH TO ESW ISOLATION														
CV2080	57F3	3	B	6	GL	AO	C/FO	A	O	BTO	Q			12
										FST	Q			1
SBDG 1G-31 COOLER 1E-53A ESW SUPPLY ISOLATION														
CV2081	59E7	3	B	6	GL	AO	C/FO	A	O	BTO	Q			12
										FST	Q			1
SBDG 1G-21 COOLER 1E-53B ESW SUPPLY ISOLATION														
MO1942	85D9	2	B	12	GA	MO	C	P	C	PIT	2Y			
RHR SERVICE WATER CROSS- TIE TO RHR SYSTEM														
MO1943A	85E9	3	B	12	GA	MO	C/KL	P	C	PIT	2Y			
RHRSW PUMPS 1P-22A/C CROSS-TIE TO RHR														
MO1943B	79F1	3	B	12	GA	MO	C/KL	P	C	PIT	2Y			
RHRSW PUMPS 1P-22B/D CROSS-TIE TO RHR														
MO1947	69C0	3	B	16	GA	MO	C	A	O	BTO	Q			
										PIT	2Y			
RHR HX 1E-201B SERVICE WATER OUTLET ISOLATION														
MO1998A	71A8	3	B	16	BTF	MO	O	P	O	PIT	2Y			
ESW/RHRSW A LOOPS RETURN TO COOLING TOWERS														
MO1998B	71B4	3	B	16	BTF	MO	O	P	O	PIT	2Y			
ESW/RHRSW B LOOPS RETURN TO COOLING TOWERS														
MO2039A	42F6	3	B	4	GA	MO	O	A	C	BTC	Q			
										PIT	2Y			
CB CHILLER 1V-CH-1A WELL WATER SUPPLY ISOLATION														

Drawing: 113 *Sheet #: 1* *Description: RHR Service Water & Emergency Service Water System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2039B	27F6	3	B	4	GA	MO	O	A	C	BTC	Q			
										PIT	2Y			
CB CHILLER 1V-CH-1B WELL WATER SUPPLY ISOLATION														
MO2046	57C3	3	B	16	GA	MO	C	A	O	BTO	Q			
										PIT	2Y			
RHR HX 1E-201A SERVICE WATER OUTLET ISOLATION														
MO2077	33F6	3	B	4	GA	MO	O	A	C	BTC	Q			
										PIT	2Y			
CHILLER 1V-CH-1A DISCH TO WELL WTR ISOLATION														
MO2078	18F6	3	B	4	GA	MO	O	A	C	BTC	Q			
										PIT	2Y			
CHILLER 1V-CH-1B DISCH TO WELL WTR ISOLATION														
PSV1988	73C9	3	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR HX 1E-201B TUBE SIDE (RHRSW) PRESSURE RELIE														
PSV2068	62D2	3	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR HX 1E-201A TUBE SIDE (RHRSW) PRESS RELIEF														
V13-0036	29F1	3	C	4	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
1V-CH-1B ESW SUPPLY HEADER CHECK VALVE														
V13-0051	44F1	3	C	4	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
1V-CH-1A ESW SUPPLY HEADER CHECK VALVE														
V13-0121	27F1	3	C	1	CK	SA	SYS	A	O	DSBY	R1		DTJ-19	
AIR COMP 1K-4/1K-3 'B' ESW/WW INLET CHECK VALVE														
V13-0126	42F1	3	C	1	CK	SA	SYS	A	O	DSBY	R1		DTJ-19	
AIR COMP 1K-3/1K-4 'A' ESW/WW INLET CHECK VALVE														

Drawing: 114 *Sheet #: 1* *Description: Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4412	32E0	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"A" MAIN STEAM LINE INBOARD ISOLATION														
CV4413	25E0	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"A" MAIN STEAM LINE OUTBOARD ISOLATION														
CV4415	74C1	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"B" MAIN STEAM LINE INBOARD ISOLATION														
CV4416	82C1	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"B" MAIN STEAM LINE OUTBOARD ISOLATION														
CV4418	31C2	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"C" MAIN STEAM LINE INBOARD ISOLATION														
CV4419	24C2	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"C" MAIN STEAM LINE OUTBOARD ISOLATION														

Drawing: 114 *Sheet #: 1* *Description: Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4420	74D8	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"D" MAIN STEAM LINE INBOARD ISOLATION														
CV4421	82D8	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q/R		DTJ-05	
										PIT	2Y			
"D" MAIN STEAM LINE OUTBOARD ISOLATION														
CV4428	64F2	1	B	0.5	GL	AO	C	P	C	PIT	2Y			
REACTOR VESSEL HEAD VENT ISOLATION														
CV4429	71F2	1	B	0.5	GL	AO	C	P	C	PIT	2Y			
REACTOR VESSEL HEAD VENT ISOLATION														
MO4423	37A8	1	A	3	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
MAIN STEAM LINE DRAIN INBOARD ISOLATION														
MO4424	34A8	1	A	3	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
MAIN STEAM LINE DRAIN OUTBOARD ISOLATION														
MO4441	34A5	1	A/C	16	SCK	MO	O/KL	A	C	AT-1	AJ			6
										BTC	CS		DTJ-27	
										CT-CC	R		DTJ-27	
										CT-CO	R*		DTJ-27	4
										PIT	2Y			
RX FEEDWATER LOOP A INLET STOP CHECK														

Drawing: 114 *Sheet #: 1* *Description: Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO4442	72B1	1	A/C	16	SCK	MO	O/KL	A	C	AT-1	AJ			6
										BTC	CS		DTJ-27	
										CT-CC	R		DTJ-27	
										CT-CO	R*		DTJ-27	4
										PIT	2Y			
RX FEEDWATER LOOP B INLET STOP CHECK														
PSV4400	47E1	1	B/C	6	RV	SAP	C/KL	A	O/C	CT-SP	5Y			14
MAIN STEAM LINE A ADS RELIEF VALVE														
PSV4401	42E1	1	B/C	6	RV	SAP	C/KL	A	O/C	CT-SP	5Y			14
MAIN STEAM LINE A LLS RELIEF VALVE														
PSV4402	62C2	1	B/C	6	RV	SAP	C/KL	A	O/C	CT-SP	5Y			14
MAIN STEAM LINE B ADS RELIEF VALVE														
PSV4403	66C2	1	C	6	SV	SA	C	A	O/C	CT-SP	5Y			
MAIN STEAM LINE B SAFETY RELIEF VALVE														
PSV4404	47C3	1	C	6	SV	SA	C	A	O/C	CT-SP	5Y			
MAIN STEAM LINE C SAFETY RELIEF VALVE														
PSV4405	43C4	1	B/C	6	RV	SAP	C/KL	A	O/C	CT-SP	5Y			14
MAIN STEAM LINE C ADS RELIEF VALVE														
PSV4406	62E0	1	B/C	6	RV	SAP	C/KL	A	O/C	CT-SP	5Y			14
MAIN STEAM LINE D ADS RELIEF VALVE														
PSV4407	67E0	1	B/C	6	RV	SAP	C/KL	A	O/C	CT-SP	5Y			14
MAIN STEAM LINE D LLS RELIEF VALVE														
PSV4439A	47B0	3	C	6	RV	SA	C	A	O/C	CT-VSP	10Y			
SRV PSV-4400 RELIEF LINE VACUUM BREAKER														
PSV4439B	47A9	3	C	6	RV	SA	C	A	O/C	CT-VSP	10Y			
SRV PSV-4401 RELIEF LINE VACUUM BREAKER														
PSV4439C	51A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	10Y			

Drawing: 114 *Sheet #: 1* *Description: Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
PSV4439D	47A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	10Y			
PSV4439E	50A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	10Y			
SRV PSV-4407 RELIEF LINE VACUUM BREAKER														
PSV4439F	49A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	10Y			
SRV PSV-4406 RELIEF LINE VACUUM BREAKER														
V14-0001	67B1	1	A/C	16	CK	SA	SYS	A	O/C	AT-1	AJ			
										CT-CC	R		DTJ-27	
										CT-CO	R*		DTJ-27	4
FEEDWATER CHECK VALVE														
V14-0003	41B1	1	A/C	16	CK	SA	SYS	A	O/C	AT-1	AJ			
										CT-CC	R		DTJ-27	
										CT-CO	R*		DTJ-27	4
FEEDWATER CHECK VALVE														
V14-0009	60E7	Y	C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-14	2,3
										CT-CO	R*		DTJ-14	2,3,4
VALVE,CK,N2 SUPPLY TO SV4406 AND 7														
V14-0014	70C9	Y	C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-14	2,3
										CT-CO	R*		DTJ-14	2,3,4
VALVE,CK,N2 SUPPLY TO SV4402														
V14-0015	48E9	Y	C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-14	2,3
										CT-CO	R*		DTJ-14	2,3,4
VALVE,CK,N2 SUPPLY TO SV4400 & 01														

Drawing: 114 *Sheet #: 1* *Description: Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V14-0016	39C7	Y	C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-14	2,3
										CT-CO	R*		DTJ-14	2,3,4
VALVE,CK,N2 SUPPLY TO SV4405														
V14-0032	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DJT-13	2,3
										CT-CO	R*		DJT-13	2,3,4
CHECK VALVE FOR N2 SUPPLY TO ACCUM 1R002A														
V14-0100	29E9	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DJT-13	2,3
										CT-CO	R*		DJT-13	2,3,4
CHECK VALVE FOR N2 SUPPLY TO ACCUM 1R001B														
V14-0104	69F8	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-13	2,3
										CT-CO	R*		DTJ-13	2,3,4
VALVE,CHK, NITROGEN TO ACCUM 1R001A, MSIV CV441														
V14-0108	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-13	2,3
										CT-CO	R*		DTJ-13	2,3,4
VALVE,CHK, NITROGEN TO ACCUM 1R002B, MSIV CV441														
V14-0112	69F8	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-13	2,3
										CT-CO	R*		DTJ-13	2,3,4
VALVE,CHK, NITROGEN TO ACCUM 1R001C, MSIV CV441														
V14-0116	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-13	2,3
										CT-CO	R*		DTJ-13	2,3,4
VALVE,CHK, NITROGEN TO ACCUM 1R002C, MSIV CV441														

Drawing: 114 *Sheet #: 1* *Description: Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V14-0120	69F8	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-13	2,3
										CT-CO	R*		DTJ-13	2,3,4
VALVE,CHK, NITROGEN TO ACCUM 1R001D, MSIV CV442														
V14-0124	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
										CT-CC	R		DTJ-13	2,3
										CT-CO	R*		DTJ-13	2,3,4
VALVE,CHK, NITROGEN TO ACCUM 1R002D, MSIV CV442														
XFV4453A	30D5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
MN STM LINE A INST LINE EXCESS FLOW CHECK VALVE														
XFV4453B	30D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
MN STM LINE A INST LINE EXCESS FLOW CHECK VALVE														
XFV4454A	31D4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4432C/D LP LINE ISOLATION (MSL A FLOW)														
XFV4454B	31D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4432C/D HP LINE ISOLATION (MSL A FLOW)														

Drawing: *114* *Sheet #:* *1* *Description:* *Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4455A	31B8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4436C/D LP LINE ISOLATION (MSL C FLOW)														
XFV4455B	30B3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4436C/D HP LINE ISOLATION (MSL C FLOW)														
XFV4456A	32B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
MN STM LINE C INST LINE EXCESS FLOW CHECK VALVE														
XFV4456B	31B4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
MN STM LINE C INST LINE EXCESS FLOW CHECK VALVE														
XFV4457A	76D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
MN STM LINE D INST LINE EXCESS FLOW CHECK VALVE														
XFV4457B	77D0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
MN STM LINE D INST LINE EXCESS FLOW CHECK VALVE														

Drawing: *114* *Sheet #:* *1* *Description:* *Nuclear Boiler System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4458A	77D4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4438C/D LP LINE ISOLATION (MSL D FLOW)														
XFV4458B	76D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4438C/D HP LINE ISOLATION (MSL D FLOW)														
XFV4459A	77B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4434A/B LP LINE ISOLATION (MSL B FLOW)														
XFV4459B	77B3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4434A/B HP LINE ISOLATION (MSL B FLOW)														
XFV4460A	76B6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4434C/D LP LINE ISOLATION (MSL B FLOW)														
XFV4460B	76B4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4434C/D HP LINE ISOLATION (MSL B FLOW)														

Drawing: *115* *Sheet #:* *1* *Description:* *Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV4594A	39C4	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
LOOP A JET PUMP SAMPLE LINE INBOARD ISOLATION														
SV4594B	67C3	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
LOOP B JET PUMP SAMPLE LINE INBOARD ISOLATION														
SV4595A	36C4	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
LOOP A JET PUMP SAMPLE LINE OUTBOARD ISOLATION														
SV4595B	70C3	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
LOOP B JET PUMP SAMPLE LINE OUTBOARD ISOLATION														
XFV4501A	40D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 9 FLOW LP CAL LINE ISOLATION														
XFV4501B	40D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 13 FLOW LP CAL ISOLATION														

Drawing: *115* *Sheet #:* *1* *Description:* *Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4503	40D0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 10 FLOW LP LINE ISOLATION (TO FT-4503)														
XFV4504	66D0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 2 FLOW LP LINE ISOLATION (TO FT-4504)														
XFV4505	24B8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
VALVE,CHK,FLOW,EXCESS,RX RECIRC														
XFV4506	24B8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 3 FLOW LP LINE ISOLATION (TO FT-4506)														
XFV4507	24B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 12 FLOW LP LINE ISOLATION (TO FT-4507)														
XFV4508	24B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 4 FLOW LP LINE ISOLATION (TO FT-4508)														

Drawing: 115 *Sheet #: 1* *Description: Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4510A	66D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 5 FLOW CAL LP LINE ISOLATION														
XFV4510B	67D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 1 FLOW CAL LP LINE ISOLATION														
XFV4511	24B6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 14 FLOW LP LINE ISOLATION (TO FT-4511)														
XFV4512	24B5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 6 FLOW LP LINE ISOLATION (TO FT-4512)														
XFV4513	24B5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 15 FLOW LP LINE ISOLATION (TO FT-4513)														
XFV4514	24B4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 7 FLOW LP LINE ISOLATION (TO FT-4514)														

Drawing: *115* *Sheet #:* *1* *Description:* *Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4515	24B5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 16 FLOW LP LINE ISOLATION (TO FT-4515)														
XFV4516	24B3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 8 FLOW LP LINE ISOLATION (TO FT-4516)														
XFV4518	67C5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 1 FLOW HP CAL LINE ISOLATION														
XFV4519	38C5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 13 FLOW HP CAL ISOLATION														
XFV4528	66C4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PRESS ABOVE CORE PLATE SENSING LINE ISOLATION														
XFV4562	40D7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL NR VAR LEG SENSING LINE ISOL														

Drawing: *115* *Sheet #:* *1* *Description:* *Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4578	66E8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL WR FLOODUP REF LEG SENSING LINE														
XFV4579	66E5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX PRESS/LEVEL WR YARWAY REF LEG SENSING LINE														
XFV4580	66E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL WR YARWAY VAR LEG SENSING LINE														
XFV4581	66E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL NR REF LEG SENSING LINE ISOL														
XFV4582	66D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX LEVEL NR VAR LEG & FLOODUP VAR LEG LINE														
XFV4583	66D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX PRESSURE SENSING LINE ISOLATION														

Drawing: 115 *Sheet #: 1* *Description: Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4584	66C6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 5 FLOW HP CAL LINE ISOLATION														
XFV4585	66C3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PRESS BELOW CORE PLATE SENSING LINE ISOLATION														
XFV4586	40E5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL WR YARWAY REF LEG SENSING LINE														
XFV4587	40E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL WR YARWAY VAR LEG SENSING LINE														
XFV4588	40E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-4566\4588 SENSING LINE ISOL (RX PRESS)														
XFV4589	40D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RX WTR LEVEL NR REF LEG SENSING LINE ISOL														

Drawing: 115 *Sheet #: 1* *Description: Reactor Vessel Instrumentation*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4590	40C6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
JET PUMP 9 FLOW HP LINE ISOLATION														
XFV4591	40C4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PRESS BELOW CORE PLATE SENSING LINE ISOLATION														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4639	68E1	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
RECIRC SAMPLE LINE INBOARD ISOLATION														
CV4640	70E2	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
RX RECIRC SYSTEM SAMPLE LINE OUTBOARD ISOLATION														
MO4627	27B8	1	B	22	GA	MO	O	A	C	BTC	CS		DTJ-09	
										PIT	2Y			
RX RECIRC PUMP 1P-201A DISCHARGE ISOLATION														
MO4628	86B8	1	B	22	GA	MO	O	A	C	BTC	CS		DTJ-09	
										PIT	2Y			
RX RECIRC PUMP 1P-201B DISCHARGE ISOLATION														
XFV4607	56A4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RECIRC PP A SEAL 1 PRESS (PT-4607/PI-4609 ISOL)														
XFV4608	57A4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RECIRC PP B SEAL 1 PRESS (PT-4608/PI-4610 ISOL)														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4611	56A3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RECIRC PP A SEAL 2 PRESS (PT-4611/PI-4613 ISOL)														
XFV4612	57A4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RECIRC PP B SEAL 2 PRESS (PT-4612/PI-4614 ISOL)														
XFV4637	66D7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RECIRC PP B SUCT PRESS (PS-4637 ISOLATION)														
XFV4638	66D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
RECIRC PP B SUCT PRESS (PS-4638 ISOLATION)														
XFV4641A	71F4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4641 SENSING LINE FROM JET PUMP 1/2 RISER														
XFV4641B	41F7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4641 SENSING LINE FROM JET PP 15/16 RISER														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4642A	71F1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4642 SENSING LINE FROM JET PUMP 3/4 RISER														
XFV4642B	41F3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4642 SENSING LINE FROM JET PP 13/14 RISER														
XFV4643A	71F0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4643 SENSING LINE FROM JET PUMP 5/6 RISER														
XFV4643B	41F0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4643 SENSING LINE FROM JET PP 11/12 RISER														
XFV4644A	71E8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4644 SENSING LINE FROM JET PUMP 7/8 RISER														
XFV4644B	41E8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4644 SENSING LINE FROM JET PUMP 9/10 RISER														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4663	44E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631A LP LINE ISOL (1P-201A DISCH FLOW)														
XFV4664	45E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631A HP LINE ISOL (1P-201A DISCH FLOW)														
XFV4665	42D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632C LP LINE ISOL (1P-201B DISCH FLOW)														
XFV4666	47C9	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632C HP LINE ISOL (1P-201B DISCH FLOW)														
XFV4667	46E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631B LP LINE ISOL (1P-201A DISCH FLOW)														
XFV4668	48E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631B HP LINE ISOL (1P-201A DISCH FLOW)														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4669	43D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632B HP LINE ISOL (1P-201B DISCH FLOW)														
XFV4670	45D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632B LP LINE ISOL (1P-201B DISCH FLOW)														
XFV4671	43D4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631C LP LINE ISOL (1P-201A DISCH FLOW)														
XFV4672	44D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631C HP LINE ISOL (1P-201A DISCH FLOW)														
XFV4673	44E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632A LP LINE ISOL (1P-201B DISCH FLOW)														
XFV4674	45E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632A HP LINE ISOL (1P-201B DISCH FLOW)														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4675	45C8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631D LP LINE ISOL (1P-201A DISCH FLOW)														
XFV4676	44C8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4631D HP LINE ISOL (1P-201A DISCH FLOW)														
XFV4677	45C6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632D HP LINE ISOL (1P-201B DISCH FLOW)														
XFV4678	43C7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
FT-4632D LP LINE ISOL (1P-201B DISCH FLOW)														
XFV4679	76A7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4626A-D & PDT-4624 HP SENSING LINE ISOL														
XFV4680	76A3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4626A-D & PDT-4624 LP SENSING LINE ISOL														

Drawing: 116 *Sheet #: 1* *Description: Reactor Recirculation System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV4681	37A8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4625A-D & PDT-4623 HP SENSING LINE ISOL														
XFV4682	37A3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-4625A-D & PDT-4623 LP SENSING LINE ISOL														

Drawing: 117 *Sheet #: 1* *Description: Control Rod Drive Hydraulic System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV1804A	62A4	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
"A" RECIRC PUMP MINI- PURGE SUPPLY ISOLATION														
CV1804B	49A4	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
"B" RECIRC PUMP MINI- PURGE SUPPLY ISOLATION														
V17-0052	29D8	1	A	3	CK	SA	SYS	A	C	AT-1	R			
										CT-CC	R		DTJ-17	
										CT-CO	R*		DTJ-17	4
CRD-TO-VESSEL RETURN HDR UPSTREAM CHECK VALVE														
V17-0053	25D8	1	A	3	CK	SA	SYS	A	C	AT-1	R			
										CT-CC	R		DTJ-17	
										CT-CO	R*		DTJ-17	4
CRD-TO-VESSEL RETURN HDR DOWNSTREAM CHECK VALVE														
V17-0083	44A2	1	A/C	1	CK	SA	SYS	A	C	AT-1	R			
										CT-CC	R		DTJ-08	
										CT-CO	R*		DTJ-08	4
VALVE,CHK,RX RECIRC														
V17-0096	67A3	1	A/C	1	CK	SA	SYS	A	C	AT-1	R			
										CT-CC	R		DTJ-08	
										CT-CO	R*		DTJ-08	4
VALVE,CHK,RX RECIRC														

Drawing: 118 *Sheet #: 1* *Description: Control Rod Drive Hydraulic System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV1849(##-#	81C5	2	B	0.75	GL	AO	C	A	O	NA	NA			S4, 5
SCRAM INLET VALVE														
CV1850(##-#	66C5	2	B	0.75	GL	AO	C	A	O	NA	NA			S4, 5
SCRAM OUTLET VALVE														
CV1859A	40F5	N	B	1	GL	AO	O/FC	A	C	BTC	Q			3
										FST	CS		DTJ-16	3
										PIT	2Y			3
SCRAM DISCHARGE VOLUME VENT VALVE														
CV1859B	40F2	2	B	1	GL	AO	O/FC	A	C	BTC	Q			
										FST	CS		DTJ-16	
										PIT	2Y			
SCRAM DISCHARGE VOLUME VENT VALVE														
CV1867A	55C9	N	B	2	GL	AO	O/FC	A	C	BTC	Q			3
										FST	CS		DTJ-16	3
										PIT	2Y			3
SCRAM DISCHARGE VOLUME DRAIN OUTBOARD ISOLATION														
CV1867B	55D0	2	B	2	GL	AO	O/FC	A	C	BTC	Q			
										FST	CS		DTJ-16	
										PIT	2Y			
SCRAM DISCHARGE VOLUME DRAIN INBOARD ISOLATION														
V18-0118(##-	82B3	2	A/C	0.5	CK	SA	SYS	A	C	NA	NA			S1, 5
CHECK VLV, CHARGING WTR RISER														
V18-0919(##-	80D0	2	C	0.5	CK	SA	SYS	A	C	NA	NA			S2, 5
CHECK VLV, COOLING WTR HDR														
V18-1453(##-	64C6	2	C	0.75	CK	SA	SYS	A	O	NA	NA			S3, 5
CHECH VLV, SCRAM DISCH RISER														

Drawing: 119 *Sheet #: 1* *Description: Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO1902	81E9	2	A	10	GA	MO	C/KL	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
RHR LOOP B INBOARD DRYWELL SPRAY ISOLATION														
MO1903	67E9	2	B	10	GL	MO	C/KL	A	C	BTC	Q			
										PIT	2Y			
RHR LOOP B DRYWELL SPRAY HDR OUTBOARD ISOLATION														
MO1904	62D7	2	B	20	ANG	MO	O	A	O	BTO	Q			
										PIT	2Y			
RHR LOOP B LPCI OUTBOARD INJECTION ISOLATION														
MO1905	67E0	1	A	20	GA	MO	C	A	O/C	AT-5	2Y			
										BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP B LPCI INBOARD INJECTION ISOLATION														
MO1908	85D8	1	A	18	GA	MO	C	P	C	AT-5	2Y			
										PIT	2Y			
RHR SHUTDOWN COOLING SUCTION ISOLATION														
MO1909	85D5	1	A	18	GA	MO	C	P	C	AT-5	2Y			
										PIT	2Y			
RHR SHUTDOWN COOLING OUTBOARD SUCTION ISOL														
MO1912	72B8	2	B	14	GA	MO	C/KL	P	C	PIT	2Y			
RHR PP 1P-229B S/D CLNG & FUEL POOL CLNG SUCTIO														
MO1913	77B8	2	B	14	GA	MO	O/KL	P	O	PIT	2Y			
RHR PUMP 1P-229B TORUS SUCTION ISOLATION														
MO1920	84C9	2	B	14	GA	MO	C/KL	P	C	PIT	2Y			
RHR PP 1P-229D S/D CLNG & FUEL POOL CLNG SUCTIO														
MO1921	79B8	2	B	14	GA	MO	O/KL	P	O	PIT	2Y			
RHR PUMP 1P-229D TORUS SUCTION ISOLATION														

Drawing: 119 *Sheet #: 1* *Description: Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO1932	57E6	2	B	12	GA	MO	C/KL	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP B TORUS SPRAY & COOLING SUPPLY HDR ISO														
MO1933	56E4	2	A	4	GL	MO	C	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP B TORUS SPRAY HEADER ISOLATION														
MO1934	54E0	2	B	12	GL	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP B TORUS COOLING & TEST RETURN HDR ISOL														
MO1935	56B8	2	B	3	GA	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR PUMPS 1P-229B/D MINIMUM FLOW BYPASS														
MO1936	61D0	N	B	4	GA	MO	C	P	C	PIT	2Y			3
RHR DRAIN TO WASTE SURGE TANK OUTBOARD ISOLATION														
MO1937	64D0	2	B	4	GA	MO	C	P	C	PIT	2Y			
RHR DRAIN TO WASTE SURGE TANK INBOARD ISOLATION														
MO1939	45C8	2	B	12	GA	MO	O	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR HX 1E-201B INLET THROTTLE VALVE														
MO1940	46D4	2	B	18	GL	MO	O	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR HX 1E-201B BYPASS VALVE														

Drawing: 119 *Sheet #: 1* *Description: Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO1941	29D4	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
RHR HX 1E-201B OUTLET ISOLATION														
MO1949B	42C1	2	B	1	GL	MO	C	P	C	PIT	2Y			
RHR HX 1E-201B SHELL SIDE INBOARD VENT														
MO1989	77C8	2	B	24	GA	MO	O/KL	P	O	PIT	2Y			
RHR LOOP B TORUS SUCTION ISOLATION														
PSV1911	84D1	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR SHUTDOWN CLG SUCTION HEADER PRESSURE RELIEF														
PSV1919	69C2	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR PUMP 1P-229B SUCTION PRESSURE RELIEF														
PSV1927	88C4	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR PUMP 1P-229D SUCTION PRESSURE RELIEF														
PSV1953	32C1	2	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR HX 1E-201B SHELL SIDE PRESSURE RELIEF														
PSV1975	38F0	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR HX 1E-201B DISCHARGE HEADER PRESSURE RELIEF														
SV1972	22C5	2	B	1	GL	SO	C/KL	P	C	BTC	Q			
										FST	Q			4
										PIT	2Y			
RHR HX 1E-201B PASS SAMP LINE INBOARD ISOLATION														
SV1973	17C5	N	B	1	GL	SO	C/KL	P	C	BTC	Q			
										FST	Q			4
										PIT	2Y			
RHR HX 1E-201B PASS SAMP LINE OUTBOARD ISOLATIO														
V19-0001	78A7	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,RHR,PUMP 1P229D DISCH														

Drawing: 119 *Sheet #: 1* *Description: Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V19-0003	53A7	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,RHR,PUMP 1P229B DISCH														
V19-0014	82A9	2	C	3	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-20	
VALVE,CHK,RHR,1P229D DISCH,BYP LINE														
V19-0016	56A9	2	C	3	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-20	
VALVE,CHK,RHR,1P229B DISCH,BYP LINE														
V19-0020	64B2	2	C	1	SCK	SA	SYS/LO	A	C	DSBY	R1		DTJ-28	
"B" RHR LOOP KEEP FILL SUPPLY LINE STOP CHECK														
V19-0022	66B5	2	C	1	CK	SA	SYS	A	C	DSBY	R1		DTJ-28	
RHR/CORE FILL PUMP 1P-70 CORE SPRAY CHECK VALVE														
V19-0023	68B5	2	C	1	SCK	SA	SYS/LO	A	C	CT-CC	Q			
										CT-CO	Q			
"B" CORE SPRAY KEEP FILL SUPPLY LINE STOP CHECK														
V19-0024	66B8	2	C	1	CK	SA	SYS	A	C	DSBY	R1		DTJ-28	
RHR FILL PUMP 1P-70 TO PUMP A,C CHECK VALVE														
V19-0048	47E4	2	B	18	GA	M	O	P	O	PIT	2Y			
RHR LOOP CROSSTIE														
V19-0124	67B7	2	C	0.75	CK	SA	SYS	A	C	DSBY	R1		DTJ-28	
"A" RHR LOOP KEEP FILL SUPPLY LINE STOP CHECK														
V19-0128	68B3	2	C	1	SCK	SA	SYS/LO	A	C	CT-CC	Q			
										CT-CO	Q			
"A" CORE SPRAY KEEP FILL SUPPLY LINE STOP CHECK														
V19-0147	78D9	1	B	20	GA	M	O	P	O	PIT	2Y			
"B" LPCI SUPPLY LINE MANUAL ISOLATION														
V19-0149	77D8	1	A	20	CK	SA	SYS	A	O/C	AT-5	2Y			
										CT-CC	R		DTJ-29	
										CT-CO	R*		DTJ-29	16
VALVE, CHECK, RHR, LPCI, INJECT LOOP B														

Drawing: *119* *Sheet #:* *1* *Description:* *Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V19-0195	87D8	1	A	0.5	CK	SA	C	A	O/C	AT-5	2Y			
										CT-CC	R		DTJ-30	
										CT-CO	R*		DTJ-30	16
MO-1908 BYPASS CHECK VALVE														

Drawing: 120 *Sheet #: 1* *Description: Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2000	30E9	2	A	10	GA	MO	C/KL	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
RHR LOOP A INBOARD DRYWELL SPRAY VALVE														
MO2001	44E9	2	B	10	GL	MO	C/KL	A	C	BTC	Q			
										PIT	2Y			
RHR LOOP A DRYWELL SPRAY HDR OUTBAORD ISOLATION														
MO2003	43D9	1	A	20	GA	MO	C	A	O/C	AT-5	2Y			
										BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP A LPCI INBOARD INJECTION ISOLATION														
MO2004	48D6	2	B	20	ANG	MO	O	A	O	BTO	Q			
										PIT	2Y			
RHR LOOP A LPCI OUTBOARD INJECTION ISOLATION														
MO2005	51E6	2	B	12	GA	MO	C/KL	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP A TORUS SPRAY & COOLING SUPPLY HDR ISO														
MO2006	51E3	2	A	4	GL	MO	C	A	O/C	AT-1	2Y			
										BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP A TORUS SPRAY HEADER ISOLATION														
MO2007	53E1	2	B	12	GL	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR LOOP A TORUS COOLING & TEST RETURN HDR ISOL														

Drawing: *120* *Sheet #:* *1* *Description:* *Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2009	50B9	2	B	3	GA	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR PUMPS 1P-229A/C MINIMUM FLOW BYPASS														
MO2010	54C7	2	B	18	GA	MO	O/KL	P	O	PIT	2Y			
RHR LOOPS A/B CROSS-TIE HEADER ISOLATION														
MO2011	39C0	2	B	14	GA	MO	C/KL	P	C	PIT	2Y			
RHR PP 1P-229A S/D CLNG & FUEL POOL CLNG SUCTIO														
MO2012	34B9	2	B	14	GA	MO	O/KL	P	O	PIT	2Y			
RHR PUMP 1P-229A TORUS SUCTION ISOLATION														
MO2015	32B9	2	B	14	GA	MO	O/KL	P	O	PIT	2Y			
HR PUMP 1P-229C TORUS SUCTION ISOLATION														
MO2016	28C0	2	B	14	GA	MO	C/KL	P	C	PIT	2Y			
1P-229C SHUTDOWN COOLING & FUEL POOL COOLING SU														
MO2029	61C8	2	B	12	GA	MO	O/KL	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR HX 1E-201A INLET THROTTLE VALVE														
MO2030	60D4	2	B	18	GL	MO	O	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RHR HX 1E-201A BYPASS VALVE														
MO2031	72D3	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
RHR HX 1E-201A OUTLET ISOLATION														
MO2044B	64D2	2	B	1	GL	MO	C	P	C	PIT	2Y			
RHR HX 1E-201A SHELL SIDE INBOARD VENT														
MO2069	34C8	2	B	24	GA	MO	O/KL	P	O	PIT	2Y			
RHR LOOP A TORUS SUCTION ISOLATION														

Drawing: *120* *Sheet #:* *1* *Description:* *Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
PSV2019	42C8	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR PUMP 1P-229A SUCTION PRESSURE RELIEF														
PSV2020	24C4	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR PUMP 1P-229C SUCTION PRESSURE RELIEF														
PSV2042	64C1	2	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR HX 1E-201A SHELL SIDE PRESSURE RELIEF														
PSV2057	70E6	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
RHR HX 1E-201A DISCHARGE HEADER PRESSURE RELIEF														
SV2051	79C5	2	B	1	GL	SO	C/KL	A	C	BTC	Q			
										FST	Q			1
										PIT	2Y			
RHR HX 1E-201A PASS SAMP LINE INBOARD ISOLATION														
SV2052	83C5	N	B	1	GL	SO	C/KL	P	C	BTC	Q			
										FST	Q			1
										PIT	2Y			
RHR HX 1E-201A PASS SAMP LINE OUTBOARD ISOLATIO														
V20-0001	33A7	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,RHR,PUMP 1P229C DISCH														
V20-0003	55A8	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,RHR,PUMP 1P229A DISCH														
V20-0006	50A9	2	C	3	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-20	
1P-229A DISCHARGE BYPASS LINE CHECK VALVE														
V20-0008	27B1	2	C	3	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-20	
VALVE,CHK,RHR,1P229C DISCH,BYP LINE														
V20-0081	29D9	1	B	20	GA	M	O	P	O	PIT	2Y			
"A" LPCI SUPPLY LINE MANUAL ISOLATION														

Drawing: 120 *Sheet #: 1* *Description: Residual Heat Removal System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V20-0082	34E0	1	A	20	CK	SA	SYS	A	O/C	AT-5	2Y			
										CT-CC	R		DTJ-25	
										CT-CO	R*		DTJ-25	
VALVE, CHK, RHR, LPCI INJ LOOP A														

Drawing: 121 *Sheet #: 1* *Description: Core Spray System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2100	52B0	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
CORE SPRAY PUMP 1P-211A OUTBOARD TORUS SUCTION														
MO2104	40C4	2	B	2	GA	MO	O	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
CORE SPRAY PUMP 1P-211A MINIMUM FLOW BYPASS														
MO2112	52E0	2	B	8	GL	MO	C	P	C	PIT	2Y			
CORE SPRAY LOOP A TEST BYPASS VALVE														
MO2115	57E7	2	B	8	GA	MO	O	P	O	PIT	2Y			
CORE SPRAY LOOP A OUTBD INJECTION VALVE														
MO2117	64E7	1	A	8	GA	MO	C	A	O/C	AT-1	2Y			
										AT-5	2Y			
										BTC	Q			
										BTO	Q			
										PIT	2Y			
CORE SPRAY INBOARD INJECTION VALVE														
MO2120	52B3	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
CORE SPRAY PUMP 1P-211B OUTBOARD TORUS SUCTION														
MO2124	43C4	2	B	2	GA	MO	O	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
CORE SPRAY PUMP 1P-211B MINIMUM FLOW BYPASS														
MO2132	53D6	2	B	8	GL	MO	C	P	C	PIT	2Y			
CORE SPRAY LOOP B TEST BYPASS VALVE														
MO2135	58D2	2	B	8	GA	MO	O	P	O	PIT	2Y			
CORE SPRAY LOOP B OUTBD INJECTION VALVE														

Drawing: *121* *Sheet #:* *1* *Description:* *Core Spray System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2137	65D2	1	A	8	GA	MO	C	A	O/C	AT-1	2Y			
										AT-5	2Y			
										BTC	Q			
										BTO	Q			
										PIT	2Y			
CORE SPRAY LOOP B INBD INJECTION VALVE														
MO2146	57B5	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
CORE SPRAY PUMP 1P-211B INBOARD TORUS SUCTION														
MO2147	57B2	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
CORE SPRAY PUMP 1P-211A INBOARD TORUS SUCTION														
PSV2102	33C7	2	C	0.75	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
CORE SPRAY PUMP 1P-211A SUCTION PRESSURE RELIEF														
PSV2109	46E6	2	C	2	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
CORE SPRAY PUMP 1P-211A DISCH HDR PRESS RELIEF														
PSV2122	50B7	2	C	0.75	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
CORE SPRAY PUMP 1P-211B SUCTION PRESSURE RELIEF														
PSV2129	46D3	2	C	2	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
CORE SPRAY PUMP 1P-211B DISCH HDR PRESS RELIEF														
V21-0007	36C3	2	C	10	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
1P-211A DISCHARGE HEADER CHECK VALVE														
V21-0009	38C3	2	C	2	CK	SA	SYS	A	O	DSBY	R1		DTJ-20	
1P-211A MINIMUM FLOW LINE CHECK VALVE														
V21-0010	47C4	2	C	10	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
1P-211B DISCHARGE HEADER CHECK VALVE														
V21-0012	44C3	2	C	2	CK	SA	SYS	A	O	DSBY	R1		DTJ-20	
1P-211B MINIMUM FLOW LINE CHECK VALVE														

Drawing: 121 *Sheet #: 1* *Description: Core Spray System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V21-0042	77E1	1	B	8	GA	M	O	P	O	PIT	2Y			
CS LOOP "A" INJECTION HEADER MANUAL BLOCK														
V21-0043	77D8	1	B	8	GA	M	O	P	O	PIT	2Y			
CS LOOP "B" INJECTION HEADER MANUAL BLOCK														
V21-0072	71E0	1	A/C	8	CK	SA	SYS	A	O/C	AT-5	2Y			
										CT-CC	R		DTJ-21	
										CT-CO	R*		DTJ-21	
VALVE, CHK,LPCS, A														
V21-0073	72D7	1	A/C	8	CK	SA	SYS	A	O/C	AT-5	2Y			
										CT-CC	R		DTJ-21	
										CT-CO	R*		DTJ-21	
VALVE, CHK, LPCS B														
XFV2119	74F1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-2119 SENSING LINE (CORE SPRAY SPARGER DP)														
XFV2139	74F4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PDIS-2139 SENSING LINE (CORE SPRAY SPARGER DP)														

Drawing: 122 *Sheet #: 1* *Description: High Pressure Coolant Injection Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV2211	23C3	2	A	1	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			
										PIT	2Y			
HPCI STM SUP DRAIN LINE UPSTREAM AUTO ISOLATION														
CV2212	19C3	2	A	1	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			
										PIT	2Y			
HPCI STM SUP DRAIN LINE DOWNSTREAM AUTO ISOL														
CV2234	60B7	2	B	1	GA	AO	O/FC	A	C	BTC	Q			
										FST	Q			
										PIT	2Y			
HPCI COND PUMP 1P-219 DISCH TO CRW INBD ISOL														
CV2235	64B7	N	B	1	GA	AO	O/FC	A	C	BTC	Q			3
										FST	Q			3
										PIT	2Y			3
HPCI COND PUMP 1P-219 DISCH TO CRW OUTBD ISOL														
HV2201	33E0	2	B	10	PLG	HO	C	A	O/C	BTC	Q			2
										BTO	Q			2
										PIT	2Y			2
HPCI TURBINE STOP VALVE														
MO2202	31D8	2	B	10	GA	MO	C	A	O	BTO	Q			
										PIT	2Y			
HPCI TURBINE STEAM SUPPLY ISOLATION														
MO2238	69E8	1	A	10	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
HPCI STEAM SUPPLY INBOARD ISOLATION														

Drawing: 122 *Sheet #: 1* *Description: High Pressure Coolant Injection Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2239	60F2	1	A	10	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
HPCI STEAM SUPPLY OUTBOARD ISOLATION														
MO2247	52C2	2	B	2	GL	MO	C	A	O	BTO	Q			
										PIT	2Y			
HPCI CONDENSER/LUBE OIL COOLER CLNG WTR SUPPLY														
MO2290A	86B6	2	A	2	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
HPCI/RCIC TURB STM EXHST VACUUM BREAKER LINE IS														
MO2290B	86B3	2	A	2	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
HPCI/RCIC TURB STM EXHST VACUUM BREAKER LINE IS														
PSE2213	61C6	2	C	16	RPD	SA	C	A	O/C	CT-RDR	5Y			
HPCI TURBINE STEAM EXHST RUPTURE DISC														
PSE2214	61C8	N	C	16	RPD	SA	C	A	O/C	CT-RDR	10Y			3,15
HPCI TURBINE STEAM EXHST RUPTURE DISC														
PSV2223	32C0	N	C	1.25	RV	SA	C	P	C	CT-SP	10Y			3
HPCI CONDENSER 1E-202 PRESSURE RELIEF														
PSV2228	52B5	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
HPCI LO COOLER COOLING WTR INLET PRESS RELIEF														
V22-0016	74B8	2	C	16	CK	SA	SYS	A	O/C	CT-CC	R		DTJ-15	
										CT-CO	R*		DTJ-15	4
VALVE,CHK,HPCI,1S201 EXH LINE														
V22-0017	78B7	2	C	16	SCK	MSA	SYS/LO	A	O/C	CT-CC	R		DTJ-15	
										CT-CO	R*		DTJ-15	4
HPCI TURBINE STEAM EXHAUST LINE ISOLATION														

Drawing: 122 *Sheet #:* 1 *Description:* *High Pressure Coolant Injection Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V22-0021	70B0	2	C	2	CK	SA	SYS	A	C	DSBY	R1		DTJ-18	
HPCI EXHAUST DRAIN POT DRAIN LINE CHECK VALVE														
V22-0022	75B0	2	C	2	SCK	MSA	SYS/LO	A	C	DSBY	R1		DTJ-18	
HPCI TURB STM EXHST COND DRN POT RETURN TO TORUS														
V22-0026	38B1	2	C	1.25	CK	SA	SYS	A	O	DSBY	R1		DTJ-25	
HPCI CONDST PUMP 1P-219 DISCH LINE CHECK VALVE														
V22-0028	44B2	2	C	2	CK	SA	SYS	A	O	DSBY	R1		DTJ-25	
HPCI TURB LUBE OIL CLR 1E-203 CLG WTR EXH LINE														
V22-0029	53B1	2	C	2	CK	SA	SYS	A	O	DSBY	R1		DTJ-25	
VALVE,CHK,HPCI,1P219 EXH LINE														
V22-0063	82B7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1	AJ			
										DSBY	R1		DTJ-25	
VALVE,CHK,HPCI,VAC BREAKER LINE														
V22-0064	84B7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1	AJ			
										DSBY	R1		DTJ-25	
VALVE,CHK,HPCI,VAC BREAKER LINE														
XFV2246A	63E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-2246A SENSING LINE (HPCI STEAM PRESSURE)														
XFV2246B	63E3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-2246B SENSING LINE (HPCI STEAM PRESSURE)														

Drawing: 122 *Sheet #: 1* *Description: High Pressure Coolant Injection Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV2246C	63D8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-2246C SENSING LINE (HPCI STEAM PRESSURE)														
XFV2246D	63D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-2246D SENSING LINE (HPCI STEAM PRESSURE)														

Drawing: 123 *Sheet #: 1* *Description: High Pressure Coolant Injection Water Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV2315	60D5	2	B	8	GL	AO	C/FC	P	C	PIT	2Y			
HPCI CST TEST RETURN LINE ISOLATION														
MO2300	34E8	2	B	14	GA	MO	O	A	C	BTC	Q			
										PIT	2Y			
HPCI PUMP CST SUCTION ISOLATION														
MO2311	58C7	2	B	12	GA	MO	O	P	O	PIT	2Y			
HPCI PUMP DISCHARGE ISOLATION														
MO2312	65C7	1	A	12	GA	MO	C	A	O/C	AT-1	AJ			6
										BTC	Q			
										BTO	Q			
										PIT	2Y			
HPCI FEEDWATER INJECTION ISOLATION														
MO2316	60E1	N	B	8	GA	MO	C	P	C	PIT	2Y			3
HPCI/RCIC TEST RETURN REDUNDANT SHUTOFF VALVE														
MO2318	50C2	2	B	4	GL	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
5PCI PUMP MINIMUM FLOW BYPASS VALVE														
MO2321	69A6	2	B	14	GA	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
HPCI PUMP TORUS SUCTION INBOARD ISOLATION														
MO2322	39E6	2	B	14	GA	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
HPCI PUMP TORUS SUCTION ISOLATION														
PSV2301	29E8	2	C	1.5	RV	SA	SYS	A	O/C	CT-SP	10Y			
HPCI BOOSTER PP SUCTION PRESSURE RELIEF														

Drawing: *123* *Sheet #:* *1* *Description:* *High Pressure Coolant Injection Water Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V23-0001 HPCI TORUS SUPPLY LINE CHECK VALVE	62A5	2	C	14	CK	SA	SYS	A	O	DSBY	R1		DTJ-32	
V23-0004 VALVE,CHK,HPCI,CONDST TK SUP LINE	37E5	2	C	14	CK	SA	SYS	A	O	CT-CC CT-CO	Q Q			
V23-0014 VALVE,CHK,HPCI,MIN FLOW LINE	44C1	2	C	4	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-20	
V23-0049 VALVE,CHECK,HPCI WATER,1P216 EXH LINE	65C6	1	C	12	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-31	

Drawing: 124 *Sheet #: 1* *Description: Reactor Core Isolation Cooling Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV2410	30C6	N	A	1	GA	AO	O/FC	A	C	AT-1	AJ			3
										BTC	Q			3
										FST	Q			1,3
										PIT	2Y			3
RCIC STM SUP DRAIN LINE UPSTREAM AUTO ISOLATION														
CV2411	30C3	N	A	0	GA	AO	O/FC	A	C	AT-1	AJ			3
										BTC	Q			3
										FST	Q			2,3
										PIT	2Y			3
RCIC STM SUP DRAIN LINE DOWNSTREAM AUTO ISOL														
CV2435	55B0	N	B	1	GA	AO	O/C/FC	A	C	BTC	Q			3
										FST	Q			1,3
										PIT	2Y			3
CONDENSATE PUMP 1P-228 DISCHARGE DRAIN TO CRW														
MO2400	69F0	1	A	4	GA	MO	O	A	O/C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
RCIC STEAM SUPPLY INBOARD ISOLATION														
MO2401	61E9	1	A	4	GA	MO	O	A	O/C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
RCIC STEAM SUPPLY OUTBOARD ISOLATION														
MO2404	35E1	N	B	4	GL	MO	C	A	O/C	BTC	Q			3
										BTO	Q			3
										PIT	2Y			3
RCIC TURBINE STEAM SUPPLY ISOLATION														
MO2405	38E0	N	B	3	GA	MO	O	P	O	PIT	2Y			3
RCIC TURBINE STEAM SUPPLY STOP VALVE														

Drawing: 124 *Sheet #: 1* *Description: Reactor Core Isolation Cooling Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2426	57C0	N	B	2	GL	MO	C	A	O	BTO	Q			3
										PIT	2Y			3
RCIC CONDENSER/LUBE OIL COOLER CLNG WTR SUPPLY														
PSE2418	66D0	N	C	10	RPD	SA	SYS	A	O/C	CT-RDR	10Y			3, 15
RCIC TURBINE STEAM EXHST RUPTURE DISC														
PSE2419	66D1	N	C	10	RPD	SA	SYS	A	O/C	CT-RDR	10Y			3, 15
RCIC TURBINE STEAM EXHST RUPTURE DISC														
PSV2430	62C2	N	C	2	RV	SA	C	A	O/C	CT-SP	10Y2			3, 16
RCIC CONDENSER CLNG WTR SUPPLY PRESSURE RELIEF														
PSV2474	35C1	N	C	1.25	RV	SA	C	A	O/C	CT-SP	10Y			3
RCIC CONDENSER 1E-205 PRESSURE RELIEF														
V24-0008	81C7	2	A/C	10	SCK	MSA	SYS/LO	A	O/C	AT-1	AJ			
										CT-CC	R		DTJ-24	
										CT-CO	R*			
RCIC TURBINE STEAM EXH TO TORUS STOP-CHECK														
V24-0010	43B6	N	C	1.25	CK	SA	SYS	A	O	DSBY	R1			3
VALVE,CHK,RCIC,GLAND SEAL CNDST PP 1P228														
V24-0012	58B6	N	C	2	CK	SA	SYS	A	O	DSBY	R1			3
VALVE,CHK,RCIC,1P228 EXH LINE														
V24-0023	80C9	2	C	10	CK	SA	SYS	A	O/C	CT-CC	R		DTJ-24	
										CT-CO	R*		DTJ-24	
VALVE,CHK,RCIC,1S203 EXH LINE														
V24-0046	74C7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1	AJ			
										DSBY	R1		DTJ-27	
RCIC TURB LUBE OIL CLR 1S-203 EXH VAC BRKR VALVE														
V24-0047	74C7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1	AJ			
										DSBY	R1		DTJ-27	
VALVE,CHK,RCIC,1S203 EXH VAC BREAKER														

Drawing: 124 *Sheet #: 1* *Description: Reactor Core Isolation Cooling Steam Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
XFV2443A	59E3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-1		
										PIT	10Y1	VR-01		
PS-2443A SENSING LINE (RCIC STEAM PRESSURE)														
XFV2443B	59E4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-2443B SENSING LINE (RCIC STEAM PRESSURE)														
XFV2443C	59E1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-1		
										PIT	10Y1	VR-01		
PS-2443C SENSING LINE (RCIC STEAM PRESSURE)														
XFV2443D	59E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
										CT-CC	10Y1	VR-01		
										CT-CO	10Y1	VR-01		
										PIT	10Y1	VR-01		
PS-2443D SENSING LINE (RCIC STEAM PRESSURE)														

Drawing: 125 *Sheet #:* 1 *Description:* *Reactor Core Isolation Cooling Water Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2500	44E7	Y	B	6	GA	MO	O	A	C	BTC	Q			3
										PIT	2Y			3
RCIC PUMP CST SUCTION ISOLATION														
MO2510	50B9	2	B	2	GL	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
RCIC PUMP MINIMUM FLOW BYPASS VALVE														
MO2511	54C6	N	B	4	GA	MO	O	P	O	PIT	2Y			3
RCIC PUMP DISCHARGE ISOLATION														
MO2512	60C6	1	A	4	GA	MO	C	A	O/C	AT-1	AJ			6
										BTC	Q			
										BTO	Q			
										PIT	2Y			
RCIC INJECTION HEADER ISOLATION														
MO2515	56D6	N	B	4	GL	MO	C	P	C	PIT	2Y			3
RCIC PUMP DISCHARGE TEST LINE ISOLATION														
MO2516	57B0	2	B	6	GA	MO	C	A	O	BTO	Q			
										PIT	2Y			
RCIC PUMP TORUS SUCTION INBOARD ISOLATION														
MO2517	48E4	2	B	6	GA	MO	C	A	O	BTO	Q			
										PIT	2Y			
RCIC PUMP TORUS SUCTION OUTBOARD ISOLATION														
PSV2501	45D9	N	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			3, 16
RCIC PUMP 1P-226 SUCTION PRESSURE RELIEF														
V25-0001	53A8	2	C	6	CK	SA	SYS	A	O	DSBY	R1		DTJ-32	
VALVE,CHK,RCIC,TORUS WTR SUCT LINE														
V25-0003	46E6	N	C	6	CK	SA	SYS	A	O	CT-CC	R*			3
										CT-CO	Q			3
VALVE,CHK,RCIC,CNDST STRG TK LINE														

Drawing: 125 *Sheet #:* 1 *Description:* *Reactor Core Isolation Cooling Water Side*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V25-0006	45B7	N	C	2	CK	SA	SYS	A	O	DSBY	R1		DTJ-20	3
RCIC MIN FLOW LINE CHECK VALVE														
V25-0036	62C5	1	C	4	CK	SA	SYS	A	O	CTCME	R		DTJ-28	
										CTOME	R		DTJ-28	
VALVE, CHK, FDWTR, 1P226,EXH LINE														

Drawing: 126 *Sheet #: 1* *Description: Standby Liquid Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
PSV2607	53D2	2	C	1	RV	SA	SYS	A	O/C	CT-SP	10Y			
SBLC ACCUMULATOR 1T-219A OVER PRESSURE RELIEF														
PSV2609	53B3	2	C	1	RV	SA	SYS	A	O/C	CT-SP	10Y			
SBLC ACCUMULATOR 1T-219B OVER PRESSURE RELIEF														
V26-0004	57C3	2	C	1.5	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-22	
VALVE,CHK,SBLC,PUMP 1P230A OUTLET														
V26-0006	56B6	2	C	1.5	CK	SA	SYS	A	O/C	DSBY	R1		DTJ-22	
SBLC INJECTION PUMP 1P-230B OUTLET CHECK VALVE														
V26-0008	77E3	1	A/C	1.5	CK	SA	SYS	A	O/C	AT-1	R			
										CT-CC	R		DTJ-23	
										CT-CO	R		DTJ-23	
VALVE,CHK,SBLC OUTBOARD														
V26-0009	85C7	1	A/C	1.5	CK	SA	SYS	A	O/C	AT-1	R			
										CT-CC	R		DTJ-23	
										CT-CO	R		DTJ-23	
VALVE,CHK,SBLC INBOARD														
V26-0032	87C3	1	B	1.5	GA	M	O	P	O	PIT	2Y			
SBLC INJECTION LINE MANUAL ISOLATION														
XS2618A	67E6	2	D	1.5	GA	EXP	C/KL	A	O	DT-E	.2/2Y			
										DT-REC	2Y			
SBLC SQUIB VALVE														
XS2618B	67E6	2	D	1.5	GA	EXP	C/KL	A	O	DT-E	.2/2Y			
										DT-REC	2Y			
SBLC SQUIB VALVE														

Drawing: *127* *Sheet #:* *1* *Description:* *Reactor Water Cleanup System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO2700	84E3	1	A	4	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
RWCU INLET INBOARD ISOLATION														
MO2701	78E3	1	A	4	GA	MO	O	A	C	AT-1	AJ			
										BTC	Q			
										PIT	2Y			
RWCU SUCTION OUTBOARD ISOLATION														
MO2740	46F0	1	A	4	GL	MO	O	A	C	AT-1	AJ			6
										BTC	Q			
										PIT	2Y			
RWCU RETURN HEADER OUTBOARD ISOLATION														

Drawing: 129 *Sheet #: 1* *Description: River Water Supply System Intake Structure*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
AV2909A	62C5	3	C	3	AV	SA	SYS	A	C	CT-CC	Q			
										CT-CO	Q			
1P-117A DISCHARGE AUTO VENT														
AV2909B	49C6	3	C	3	AV	SA	SYS	A	C	CT-CC	Q			
										CT-CO	Q			
1P-117B DISCHARGE AUTO VENT														
AV2909C	62C5	3	C	3	AV	SA	SYS	A	C	CT-CC	Q			
										CT-CO	Q			
1P-117C DISCHARGE AUTO VENT														
AV2909D	29C5	3	C	3	AV	SA	SYS	A	C	CT-CC	Q			
										CT-CO	Q			
1P-117D DISCHARGE AUTO VENT														
AV2909E	59F5	N	C	3	AV	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
1P-117A/C DISCHARGE AUTO VENT														
AV2909F	50E9	N	C	3	AV	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
1P-117B/D DISCHARGE AUTO VENT														
V29-0001	71C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RIVER WATER PUMP 1P-117A DISCHARGE CHECK VALVE														
V29-0003	60C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RIVER WATER PUMP 1P-117C DISCHARGE CHECK VALVE														
V29-0005	51C6	3	C	18	CK	SA	SYS	A	O/C					
										CT-CC	Q			
										CT-CO	Q			
RIVER WATER PUMP 1P-117B DISCHARGE CHECK VALVE														

Drawing: *129* *Sheet #:* *1* *Description:* *River Water Supply System Intake Structure*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V29-0007	40C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RIVER WATER PUMP 1P-117D DISCHARGE CHECK VALVE														

Drawing: *130* *Sheet #:* *9* *Description:* *Service Air System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V30-0287	67C4	2	A	1	GA	M	LC	P	C	AT-1	AJ			
DRYWELL BREATHING AIR SUPPLY OUTBOARD ISOL														

Drawing: 132 *Sheet #:* 1 *Description:* Diesel Generator Systems

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
PSV3221A	87F4	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1T-115A PRESSURE RELIEF VALVE														
PSV3221B	87B7	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1T-115B PRESSURE RELIEF VALVE														
PSV3222A	78F2	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1T-116A PRESSURE RELIEF VALVE														
PSV3222B	78B7	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1T-116B PRESSURE RELIEF VALVE														
PSV3223A	72F2	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1T-117A PRESSURE RELIEF VALVE														
PSV3223B	72B7	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1T-117B PRESSURE RELIEF VALVE														
V32-0005	36B2	Y	C	1.5	CK	SA	SYS	A	O	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,DIESEL FUEL OIL,1P044B DISCHARGE														
V32-0010	25B3	Y	C	1.5	CK	SA	SYS	A	O	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,DIESEL FUEL OIL,1P044A DISCHARGE														
V32-0019	49C1	N	C	1.5	CK	SA	SYS	A	O/C	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,DIESEL OIL,1T037B FOOT VALVE														
V32-0021	49F4	N	C	1.5	CK	SA	SYS	A	O/C	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,DIESEL OIL,1T037A FOOT VALVE														
V32-0032	81H2	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
										CT-CC	Q			3
										CT-CO	Q			3
1K-10C DISCHARGE CHECK VALVE														

Drawing: 132 *Sheet #: 1* *Description: Diesel Generator Systems*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V32-0034	82D2	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
										CT-CC	Q			3
										CT-CO	Q			3
1K-10D DISCHARGE CHECK VALVE														
V32-0036	86E9	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
										CT-CC	Q			3
										CT-CO	Q			3
1K-10A DISCHARGE CHECK VALVE TO 1T-115A														
V32-0039	79E9	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
										CT-CC	Q			3
										CT-CO	Q			3
1K-10A DISCHARGE CHECK VALVE TO 1T-116A														
V32-0043	85F3	N	C	2	CK	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
AIR RECEIVER 1T-115A OUTLET CHECK VALVE														
V32-0045	80F3	N	C	2	CK	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
AIR RECEIVER 1T-116A OUTLET CHECK VALVE														
V32-0047	86B4	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
										CT-CC	Q			3
										CT-CO	Q			3
1K-10B DISCHARGE CHECK VALVE TO 1T-115B														
V32-0048	79B4	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
										CT-CC	Q			3
										CT-CO	Q			3
1K-10B DISCHARGE CHECK VALVE TO 1T-116B														
V32-0052	85B8	N	C	2	CK	SA	SYS	A	O/C	CT-CC	Q			3
										CT-CO	Q			3
AIR RECEIVER 1T-115B OUTLET CHECK VALVE														

Drawing: 132 *Sheet #: 1* *Description: Diesel Generator Systems*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V32-0054	80B8	N	C	2	CK	SA	SYS	A	O/C	CT-CC	Q			3
										CT-CO	Q			3
AIR RECEIVER 1T-116B OUTLET CHECK VALVE														

Drawing: 132 *Sheet #: 2* *Description: Diesel Generator Systems*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV3261A SBDG 1G-31 EMERG START AIR SUPPLY ISOLATION	19C8	N	B	1.5	2WY	SO	C	A	O	NA	NA			2, S5
SV3261B SBDG 1G-31 NORMAL START AIR SUPPLY ISOLATION	19C4	N	B	1.5	2WY	SO	C	A	O	NA	NA			2, S5
SV3261C SBDG 1G-31 STARTING AIR SUPPLY LINE VENT	15C5	N	B	1.5	2WY	SO	C	A	O	NA	NA			2, S5
SV3262A SBDG 1G-21 EMERG START AIR SUPPLY ISOLATION	19C8	N	B	1.5	2WY	SO	C	A	O	NA	NA			2, S5
SV3262B SBDG 1G-21 NORMAL START AIR SUPPLY ISOLATION	19C4	N	B	1.5	2WY	SO	C	A	O	NA	NA			2, S5
SV3262C SBDG 1G-21 STARTING AIR SUPPLY LINE VENT	15C5	N	B	1.5	2WY	SO	C	A	O	NA	NA			2, S5

Drawing: 137 *Sheet #: 1* *Description: Radwaste Sump System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV3704	75F8	2	A	3	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
DRYWELL FLOOR DRAIN SUMP INBOARD ISOLATION														
CV3705	71F8	2	A	3	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
DRYWELL FLOOR DRAIN SUMP OUTBOARD ISOLATION														
CV3728	70D1	2	A	3	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
DRYWELL EQUIP DRAIN SUMP INBOARD ISOLATION														
CV3729	67D1	N	A	3	GA	AO	O/FC	A	C	AT-1	AJ			3
										BTC	Q			3
										FST	Q			2, 3
										PIT	2Y			3
DRYWELL EQUIP DRAIN SUMP OUTBOARD ISOLATION														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
1S260A-BAL	68C5	2	A	0.375	BAL	SO	C	A	C	AT-1	AJ			
										BTC	Q			2
										FST	Q			
										PIT	2Y			
TIP DRIVE 1S-218A BALL VALVE														
1S260A-SHE	68C4	2	D	0.375	SH	EXP	O/KL	A	C	DT-E	.2/2Y			
										DT-REC	2Y			
TIP DRIVE 1S-218A SHEAR VALVE														
1S260B-BAL	75C5	2	A	0.375	BAL	SO	C	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
TIP DRIVE 1S-218B BALL VALVE														
1S260B-SHE	75C4	2	D	0.375	SH	EXP	O/KL	A	C	DT-E	.2/2Y			
										DT-REC	2Y			
TIP DRIVE 1S-218B SHEAR VALVE														
1S260C-BAL	72C5	2	A	0.375	BAL	SO	C	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
TIP DRIVE 1S-218C BALL VALVE														
1S260C-SHE	72C4	2	D	0.375	SH	EXP	O/KL	A	C	DT-E	.2/2Y			
										DT-REC	2Y			
TIP DRIVE 1S-218C SHEAR VALVE														
CV4300	77C1	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
TORUS VENT LINE INBOARD ISOLATION														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4301	83C1	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
TORUS VENT LINE OUTBOARD ISOLATION														
CV4302	73D0	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
DRYWELL VENT LINE INBOARD VENT														
CV4303	80D0	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
DRYWELL VENT LINE OUTBOARD ISOLATION														
CV4304	77A8	2	A	20	BTF	AO	C/FO	A	O	AT-1	AJ			6
										BTC	Q			
										BTO	Q			
										BT-VOP	R			
										FST	Q			1
										PIT	2Y			
TORUS VACUUM BREAKER V-43-169 ISOLATION														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4305	78A8	2	A	20	BTF	AO	C/FO	A	O	AT-1	AJ			6
										BTC	Q			
										BTO	Q			
										BT-VOP	R			
										FST	Q			1
										PIT	2Y			
TORUS VACUUM BREAKER V-43-168 ISOLATION														
CV4306	21C4	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
CONTAINMENT PURGE SUPPLY ISOLATION VALVE														
CV4307	29C4	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
DRYWELL PURGE INLET ISOLATION VALVE														
CV4308	29B8	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
										AT-7	Q			
										BTC	Q			8
										FST	Q			1
										PIT	2Y			
TORUS PURGE INLET ISOLATION VALVE														
CV4309	78C0	2	A	2	BTF	AO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
INBD TORUS VENT BYPASS LINE ISOLATION														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4310	72C9	2	A	2	GA	AO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
INBOARD DW VENT CV-4302 BYPASS														
CV4311	33D1	2	A	6	GA	AO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
CONTAINMENT N2 MAKEUP SUPPLY ISOLATION														
CV4312	37C7	2	A	6	GA	AO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
DRYWELL NITROGEN MAKEUP INLET ISOLATION														
CV4313	33C8	2	A	6	GA	AO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
TORUS NITROGEN MAKEUP INLET ISOLATION														
CV4327A	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4327B	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														
CV4327C	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														
CV4327D	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														
CV4327F	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														
CV4327G	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4327H	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
										CT-CC	Q			
										CT-CO	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER														
CV4357	85B8	2	A	8	BTF	AO	C/KL	A	C	AT-1	AJ			6
										AT-7	R			
										BTC	R		DTJ-10	
										FST	R		DTJ-10	
										PIT	2Y			
TORUS HARD PIPE VENT LINE ISOLATION														
CV4371A	51E1	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
DW VALVES N2 SUPPLY ISOLATION (FROM 1T-128)														
CV4371C	69E2	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
TORUS/DW VACUUM BKR N2 SUPPLY ISOLATION														
CV4378A	56D0	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
N2 COMPRESSOR 1K-14 DW SUCTION ISOLATION														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4378B	54D0	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
										BTC	Q			
										FST	Q			1
										PIT	2Y			
N2 COMPRESSOR 1K-14 DW SUCTION ISOLATION														
PSE4357	87B8	N	A	8	RPD	SA	C	A	C	AT-7	2Y			3
TORUS HARD PIPE VENT LINE RUPTURE DISC														
V43-0032	32B0	N	C	0.5	CK	SA	SYS	A	O	NA	NA			2
VALVE,CHK,VAC BRK,CV4305,AIRSUPPLY														
V43-0035	59B0	N	C	0.5	CK	SA	SYS	A	O	NA	NA			2
VALVE,CHK,VAC BRK,CV4305,AIRSUPPLY														
V43-0168	78A2	2	A/C	20	CK	SA	SYS	A	O/C	AT-1	AJ			6
										CTCME	Q			
										CTOME	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/RB VACUUM BREAKER														
V43-0169	77A2	2	A/C	20	CK	SA	SYS	A	O/C	AT-1	AJ			6
										CTCME	Q			
										CTOME	Q			
										CT-VSP	R			
										PIT	2Y			
VALVE,CHK,VAC BRK,TORUS/RB VACUUM BREAKER														
V43-0441	85C6	N	A/C	0.5	CK	SA	C	A	O/C	AT-6	2Y			3
										CT-CC	R			3
										CT-CO	R*			3, 4
VALVE,CHK,TORUS WXH,CV4300 AND CV4357,A/S														

Drawing: 143 *Sheet #: 1* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V43-0503	59E0	2	A	0.375	CK	SA	SYS	A	C	AT-1	R			
										CT-CC	R		DTJ-12	
										CT-CO	R*		DTJ-12	4
TIP INDEXER N2 PURGE SUPPLY CHECK VALVE														

Drawing: 143 *Sheet #: 3* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
MO4320A	37D6	N	B	2	GA	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
CAD N2 SUPPLY REGULATOR PCV-4320A OUTLET ISOL														
MO4320B	37E6	N	B	2	GA	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
CAD N2 SUPPLY REGULATOR PCV-4320B OUTLET ISOL														
MO4323A	47D6	N	B	2	GL	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
VALVE,ISOL,CAD,1T007A-H,CAD N2 FLOW														
MO4323B	47E2	N	B	2	GL	MO	C	A	O/C	BTC	Q			
										BTO	Q			
										PIT	2Y			
VALVE,ISOL,CAD,1T007A-H,CAD N2 FLOW														
PSV4336	54D8	N	C	2	RV	SA	C	A	O	CT-SP	10Y			3
SV4331A	41B3	2	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
LOWER DRYWELL SPRAY CAD N2 INBOARD ISOLATION														
SV4331B	38B2	N	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
LOWER DRYWELL SPRAY CAD N2 OUTBOARD ISOLATION														

Drawing: 143 *Sheet #: 3* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV4332A	41B9	2	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
UPPER DRYWELL SPRAY CAD N2 INBOARD ISOLATION														
SV4332B	38B9	N	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
UPPER DRYWELL SPRAY CAD N2 OUTBOARD ISOLATION														
SV4333A	31C5	2	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
WEST TORUS SPRAY HDR CAD N2 SUPPLY INBOARD ISOL														
SV4333B	38C5	N	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
WEST TORUS SPRAY HDR CAD N2 SUPPLY OUTBOARD ISO														
SV4334A	41D0	2	A	2	GA	SO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
NORTH TORUS SPRAY HEADER CAD N2 SUPPLY INBD ISO														

Drawing: 143 *Sheet #: 3* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV4334B	38D0	N	A	2	GA	SO	C/FC	A	C	AT-1	AJ			
										BTC	Q			
										BTO	Q			
										FST	Q			1
										PIT	2Y			
NORTH TORUS SPRAY HEADER CAD N2 SUPPLY OUTBD IS														
V43-0082	36B4	N	C	2	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,CAD,SV4331B,CNTMT SPRAY HDR														
V43-0084	35C0	N	C	2	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,CAD,SV4332B,CNTMT SPRAY HDR														
V43-0086	35C6	N	C	2	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,CAD,SV4333B,TORUS SPRAY HDR														
V43-0088	35D1	N	C	2	CK	SA	SYS	A	O	CT-CC	Q			
										CT-CO	Q			
VALVE,CHK,CAD,SV4334B,TORUS SPRAY HDR														

Drawing: 143 *Sheet #: 4* *Description: Containment Atmosphere Control System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V43-0214	59E4	2	A	2	SCK	MSA	C/LO	A	C	AT-1	R			
										CT-CC	R			
										CT-CO	R			
DRYWELL NITROGEN SUPPLY HEADER ISOLATION														

Drawing: 146 *Sheet #: 1* *Description: Service Water System Pumphouse*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV4909	63F5	3	B	24	BTF	AO	C/O/FC	A	C	BTC	Q			
										FST	Q			1
										PIT	2Y			
RIVER WATER RADWASTE DILUTION LINE ISOLATION														
CV4910A	72F4	3	B	24	BTF	AO	O/FC	A	C	BTC	Q			
										FST	Q			1
										PIT	2Y			
RADWASTE DILUTION LINE ISOLATION FROM RW SYS A														
CV4910B	72F5	3	B	24	BTF	AO	O/FC	A	C	BTC	Q			
										FST	Q			1
										PIT	2Y			
RADWASTE DILUTION LINE ISOLATION FROM RW SYS B														
CV4914	67E1	3	B	20	BTF	AO	O/FO	A	O	BTO	Q			
										FST	Q			1
										PIT	2Y			
1P-117B/D INLET TO STILLING BASIN														
CV4915	70E0	3	B	20	BTF	AO	O/FO	A	O	BTO	Q			
										FST	Q			1
										PIT	2Y			
1P-117A/C INLET TO STILLING BASIN														
V46-0011	53B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RHRSW PUMP 1P-22D DISCHARGE CHECK VALVE														
V46-0013	59B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RHRSW PUMP 1P-22B DISCHARGE CHECK VALVE														
V46-0018	65B2	3	C	8	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
1P-99B DISCHARGE CHECK VALVE														

Drawing: 146 *Sheet #: 1* *Description: Service Water System Pumphouse*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
V46-0021	71B2	3	C	8	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
1P-99A DISCHARGE CHECK VALVE														
V46-0026	77B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RHRSW PUMP 1P-22C DISCHARGE CHECK VALVE														
V46-0030	83B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
										CT-CO	Q			
RHRSW PUMP 1P-22A DISCHARGE CHECK VALVE														

Drawing: 157 *Sheet #:* 1 *Description:* Drywell Cooling Water System

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
CV5704A	64F4	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
										BTC	CS		DTJ-06	
										PIT	2Y			
DRYWELL COOLING LOOP A WELL WATER RETURN ISOL														
CV5704B	61F4	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
										BTC	CS		DTJ-06	
										PIT	2Y			
DRYWELL COOLING LOOP B WELL WATER RETURN ISOL														
CV5718A	84B1	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
										BTC	CS		DTJ-06	
										PIT	2Y			
DRYWELL COOLING LOOP A WELL WATER SUPPLY ISOL														
CV5718B	82B2	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
										BTC	CS		DTJ-06	
										PIT	2Y			
DRYWELL COOLING LOOP B WELL WATER SUPPLY ISOL														
V57-0075	69F1	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6
DW CLNG LOOP A BACKWASH SUPPLY DOWNSTREAM ISOL														
V57-0076	70E6	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6
DW CLNG LOOP B BACKWASH SUPPLY DOWNSTREAM ISOL														
V57-0077	81A9	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6
DW CLNG LOOP A BACKWASH RETURN TO EQUIP DRN SUMP														
V57-0078	81A5	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6
DW CLNG LOOP B BACKWASH RETURN TO EQUIP DRN SUMP														

Drawing: 173 *Sheet #: 1* *Description: Standby Filter Unit Control Building*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
PSV7333A	58A8	N	C	1	RV	SA	C	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1V-S-12 OVER PRESSURE RELIEF														
PSV7333B	74A8	N	C	1	RV	SA	C	A	O/C	CT-SP	10Y			3
AIR RECEIVER 1V-S-13 OVER PRESSURE RELIEF														
V73-0006	63B1	N	A/C	1	CK	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1VS012 PLT INSTRU AIR SUP														
V73-0007	63B1	N	C	1	CK	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1VS012 PLT INSTRU AIR SUP														
V73-0016	81B1	N	C	1	CK	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1VS013 PLT INSTRU AIR SUP														
V73-0017	81B0	N	C	1	CK	SA	SYS	A	C	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1VS013 PLT INSTRU AIR SUP														
V73-0032	81A7	N	C	1	CK	SA	SYS	A	O	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1K004 AIR EXH LINE														
V73-0033	81A7	N	C	1	CK	SA	SYS	A	O	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1K004 AIR EXH LINE														
V73-0034	63A7	N	C	1	CK	SA	SYS	A	O	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1K003 AIR EXH LINE														
V73-0035	63A7	N	C	1	CK	SA	SYS	A	O	CT-CC	Q			3
										CT-CO	Q			3
VALVE,CHK,CB H&V,1K003 AIR EXH LINE														

Drawing: 181 *Sheet #: 1* *Description: Containment Atmosphere Monitoring System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV8101A	54D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #1 SAMPLE LINE ISOLATION														
SV8101B	47D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #1 SAMPLE LINE ISOLATION														
SV8102A	57D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #1 SAMPLE LINE ISOLATION														
SV8102B	44D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #1 SAMPLE LINE ISOLATION														
SV8103A	54D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #2 SAMPLE LINE ISOLATION														
SV8103B	46D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #2 SAMPLE LINE ISOLATION														
SV8104A	56D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #2 SAMPLE LINE ISOLATION														

Drawing: 181 *Sheet #: 1* *Description: Containment Atmosphere Monitoring System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV8104B	44D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL #2 SAMPLE LINE ISOLATION														
SV8105A	53D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL SAMPLE RETURN LINE ISOLATION														
SV8105B	46D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL SAMPLE RETURN LINE ISOLATION														
SV8106A	56D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL SAMPLE RETURN LINE ISOLATION														
SV8106B	44D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
DRYWELL SAMPLE RETURN LINE ISOLATION														
SV8107A	45C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM A TORUS RETURN LINE INBOARD ISOLATION														
SV8107B	45C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM B TORUS RETURN LINE INBOARD ISOLATION														

Drawing: 181 *Sheet #: 1* *Description: Containment Atmosphere Monitoring System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV8108A	56C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM A TORUS RETURN LINE OUTBOARD ISOL														
SV8108B	43C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM B TORUS RETURN LINE OUTBOARD ISOL														
SV8109A	53C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM A TORUS SAMPLE LINE INBOARD ISOLATION														
SV8109B	47C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYS B TORUS SAMPLE LINE INBOARD ISOLATION														
SV8110A	57C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM A TORUS SAMPLE LINE OUTBOARD ISOL														
SV8110B	43C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
										BTC	Q			12
										FST	Q			1
CAM SYSTEM B TORUS SAMPLE LINE OUTBOARD ISOL														

Drawing: *187* *Sheet #:* *1* *Description:* *Post Accident Sampling System*

Valve Valve Description	Dwg Coor	Safety Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DJT	Remarks
SV8772A	84B7	2	A	1	GL	SO	C/FC	P	C	AT-1	AJ			
										FST	Q	.		1
										PIT	2Y			
PASS LIQ SAMPLE RETURN TO TORUS INBD ISOLATION														
SV8772B	85B7	N	A	1	GL	SO	C/FC	P	C	AT-1	AJ			
										FST	Q			1
										PIT	2Y			
PASS LIQ SAMPLE RETURN TO TORUS OUTBD ISOLATION														

LEGEND FOR VALVE TABLES

Valve No.	Valve name indicated on the respective flow diagram.
Dwg Coor	Flow Diagram drawing coordinates for the valve. See Section 5.4 for further information on how to interpret the 4 alphanumeric characters.
Safety Class	ISI Classification of the valve. The classification will be 1, 2, 3, Y, or N. Y or N designates non-class components, where Y is augmented ISI.
Cat.	Valve category per ISTC-1300
Size	Valve's nominal size in inches.
A/P	Indicates whether valve is Active (A) or Passive (P).
Vlv Type	Valve Types as follows:

ANG	Angle	**AV**	Auto-Vent	**BAL**	Ball	**BTF**	Butterfly
CK	Check	**GA**	Gate	**GL**	Globe	**PLG**	Plug
RPD	Rupture Diaphragm	**RV**	Relief	**SCK**	Stop Check	**SH**	Explosive shear
SV	Safety	**XFC**	Excess Flow Check	**2WY**	Two-way	**3WY**	Three-way
4WY	Four-way						

Act Type	Valve actuator type as follows:		
AO	Air operated	**AP**	Air pilot operated
EXP	Explosively actuated	**HO**	Hydraulic
M	Manual	**MSA**	Self and Manual Actuated
MO	Electric motor operated	**SA**	Self actuated
SAP	Self actuated, Pilot Operated	**SO**	Solenoid operated

Norm Pos	Normal position of the valve during plant operation at power. Abbreviations are as follows:				
C	Closed	**FC**	Closed, fails closed	**FO**	Fails open
KL	Key locked, main panel or at the valve.	**LC**	Locked closed	**LO**	Locked open
NE	Normally Energized	**ND**	Normally De-energized		
O	Open	**SYS**	Position dependent		

Exam Type	Identifies the test requirements for a valve as follows:
AT-1	Appendix J Test
AT-2	Excess Flow Check Valve Test
AT-4	Torus/Drywell Vacuum Breaker Leaktest
AT-5	Pressure Isolation Valve Leak Test
AT-6	Accumulator Check Valve Leak Test
AT-7	Purge/Vent Pressure Decay Test
BTD	Full-stroke exercise test to DE-ENERGIZED
BTE	Full-stroke exercise test to ENERGIZED
BTO	Full-stroke exercise time test to OPEN Position
BTC	Full-stroke exercise time test to CLOSE Position
BT-VOP	Vacuum breaker operational test (Part 1, 1.3.4.3)
CTCME	Check valve mechanical exercise-CLOSED
CTOME	Check valve mechanical exercise-OPEN
CT-CC	Check valve exercise test to the CLOSED Position
CT-CO	Check valve exercise test to the OPEN Position
CT-RDI	Rupture diaphragm inspection
CT-RDR	Rupture diaphragm replacement
CT-SP	Safety/Relief Valve Setpoint Verification Test
CT-VSP	Check Valve/Vacuum Breaker Setpoint Test
DSBY	Check valve disassembly/inspection
DT-E	Explosive Valve Test
DT-REC	Record verification for explosive valves
FST	Fail-safe Test
NA	Components is skid mounted and no IST testing requirements are applicable.
PIT	Remote Position Indication Verification Test
Freq	The required test interval as defined below:
AJ	Test frequency is determined by the Appendix J program, as allowed by ISTC-3620.
CS	Cold shutdown, as clarified by NUREG 1482 section 2.4.5. Note: Cold shutdown is a frequency, not a plant condition.
Q	Quarterly - every 92 days (during plant operation).
R	Each reactor refueling outage (cycle). For valves for which disassemblies are governed by relief requests, only one in each group may be affected each outage. To determine the actual frequency, review valve relief requests, if one is referenced.
R*	Check valve exercise open test or exercise close test that is not refueling outage dependent and may be performed more frequently than once a refueling interval.
R1	Valve will be grouped with other valves in-accordance with ISTC-5221 (c) , with at least one valve dissassembled each refueling outage in-accordance with ISTC-5221 (c) .
R2	50% of Main Steam and Safety Valves are tested during successive refueling outages.
2Y	Every 2 years
.2/2Y	Explosive valves require at least 20 % replacement every two years per ISTC-5260.
5Y	5 Year replacement of non-reclosing pressure relief devices per Appendix 1 of ASME OM Code 2001 Edition through 2003 addendum.
6M	Semi-annually (every 6 months).
10Y	Safety/relief valves are tested on a sampling basis in accordance with Appendix 1 of ASME OM Code 2001 Edition through 2003 addendum.
10Y1	Excess Flow Check Valve Test scheduled per Relief Request VR-01.
10Y2	Thermal relief valves are tested once every 10 years in accordance with ASME OM Code 2001 Appendix 1.
Relief Req No	Refers to the specific relief request associated with the indicated test requirement.
Defer Test	Refers to the specific justification for deferred testing (cold shutdown or refueling)

	associated with the indicated test requirement.
Notes	Important items not covered under other documentation as to valve construction and testing.

TABLE NOTES

Notes preceded with an "S" indicate that the component is considered skid mounted.

1. Normal stroke to safety position satisfies fail safe testing requirement.
2. Component is considered skid mounted. Pumps and valves integral to or that support operation of major components, even though these pumps and valves may not be located directly on the skid.
3. Valve is not within the ISI-code boundaries. Testing of this valve will be performed in accordance with the Code to the extent practical. Relief requests will not be submitted for this valve if the Code requirements cannot be met. Also cold shutdown or refueling justifications will not be provided for this valve, in this document.
4. Check valve exercise open test or exercise close test that is not refueling outage dependent and may be performed more frequently than once a refueling interval.
5. There are 89 individual CRD hydraulic control units (HCU's) with each unit provided with one of these valves. The valve number listed is typical of all 89 like valves. All 89 valves will be tested as specified for the typical valve.
6. Due to a restrictive plant configuration, the type C leaktest procedures for these valves yield test results related to the combined leakage of several valves tested as a group and not a valve-specific seat leakage. The leakrate acceptance criteria assigned to these valves is the limit for the entire group of valves being tested.
7. Reserved
8. The "full" stroke of this 1/4-turn Butterfly valve is restricted by physical modifications to a range from fully closed to 30 degrees open.
9. These valves are exercised (tested) during normal control rod exercising routines.
10. Reserved
11. This solenoid valve operates under accident or emergency conditions. During exercise of this valve the stroke time of the associated main valve is measured and evaluated.
12. Valve has no remote position indication.
13. There are 89 individual CRD hydraulic control units (HCU's) with each unit provided with one of these solenoids. The two scram pilot solenoids are contained in the same valve for each HCU. The solenoid number listed is typical of all 89 like solenoids. All 89 solenoids will be tested as specified for the typical solenoid.
14. Category 'B' Safety Relief valves are exempt from stroke timing and position indication testing.per ISTC-1200.
15. Rupture disc does not see pressure during operation,and therefore does not experience wear. Valve is outside of Code boundary. Disc will be replaced per vendor recommendation every 10 years.
16. Relief valve is classified as a thermal relief according to design documentation.

S1 These valves are supplied with the HCU. The safety function of these check valves to close is verified by depressurizing the supply water charging header and verifying that the scram accumulator

maintains pressure. Scram accumulator pressure is also verified once every seven days per Tech Spec. surveillance requirement SR 3.1.5.1.

S2 These valves are supplied with the HCU. Per NUREG 1472, industry experience has shown that normal control rod motion may verify the cooling water header check valve moving to its safety function position, which can be demonstrated because the control rod motion may not occur if the valve were to fail in the open position. Motion of each fully withdrawn control rod is verified every seven days by TS SR 3.1.3.2 and each partially withdrawn control rod every 31 days by TS SR 3.1.3.3.

S3 These valves are supplied with the HCU. The safety function to open of these valves is verified during TS required scram insertion time testing per SRs 3.1.4.1 and 3.1.4.2. Failure of these check valves to open will result in failure to meet the required insertion time for associated control rod.

S4 These valves are supplied with the HCU and are considered to be skid mounted. CV1849(##-##) opens to provide a flow path for CRD drive water to the CRD housing. CV1850(##-##) opens to provide a flow path from the CRD housing to the scram discharge volume. The safety function of these valves is adequately tested during TS required scram time testing. Failure of either of the these valves for a given control rod will result in a failure to meet the required scram insertion time.

S5 These valves are integral to the operation of the EDG air start system and are adequately tested during testing EDG.

10.0 VALVE RELIEF REQUESTS

Valve Relief Request – VR-01

Proposed Alternative Test for Excess Flow Check Valves
In Accordance with 10 CFR 50.55a(a)(3)(i)

Systems:
Feedwater Control (45.02)
Residual Heat Removal (49.00)
Core Spray (51.00)
Nuclear Steam Supply Shutoff (58.02)
Reactor Vessel Recirculation (64.01)
Neutron Monitoring (78.01)
Reactor Non-Nuclear Instrumentation (80.00)

Valves:

XFV2119	XFV4457B	XFV4513	XFV4590	XFV4668
XFV2139	XFV4458A	XFV4514	XFV4591	XFV4669
XFV2246A	XFV4458B	XFV4515	XFV4607	XFV4670
XFV2246B	XFV4459A	XFV4516	XFV4608	XFV4671
XFV2246C	XFV4459B	XFV4518	XFV4611	XFV4672
XFV2246D	XFV4460A	XFV4519	XFV4612	XFV4673
XFV2443A	XFV4460B	XFV4528	XFV4637	XFV4674
XFV2443B	XFV4501A	XFV4562	XFV4638	XFV4675
XFV2443C	XFV4501B	XFV4578	XFV4641A	XFV4676
XFV2443D	XFV4503	XFV4579	XFV4641B	XFV4677
XFV4453A	XFV4504	XFV4580	XFV4642A	XFV4678
XFV4453B	XFV4505	XFV4581	XFV4642B	XFV4679
XFV4454A	XFV4506	XFV4582	XFV4643A	XFV4680
XFV4454B	XFV4507	XFV4583	XFV4643B	XFV4681
XFV4455A	XFV4508	XFV4584	XFV4644A	XFV4682
XFV4455B	XFV4510A	XFV4585	XFV4644B	XFV4666
XFV4456A	XFV4510B	XFV4586	XFV4663	XFV4667
XFV4456B	XFV4511	XFV4587	XFV4664	XFV4589
XFV4457A	XFV4512	XFV4588	XFV4665	

Category: C

Class: 1

Function:

Excess flow check valves (EFCVS) specifically designed, by Marotta Scientific Controls Inc., for the DAEC are provided in each instrument process line that penetrates the drywell and is part of the reactor coolant pressure boundary. The excess flow check valve is designed so that it will not close accidentally during normal operation, will close if a

rupture of the instrument line is indicated downstream of the valve, can be reopened when appropriate, and has its status indicated in the control room.

An orifice is installed just inside the drywell on each of these instrument lines. The orifice limits leakage to a level where the integrity and functional performance of secondary containment and associated safety systems are maintained, the coolant loss is within the capability of the reactor coolant makeup system, and the potential offsite exposure is substantially below the guidelines of 10 CFR 100. Regulatory Guide 1.11 requested that an additional isolation valve capable of automatic operation be located outside containment on these instrument process lines. At the DAEC, these are the excess flow check valves.

Test Requirement:

2001 Edition and the 2002 and 2003 Addenda of the ASME OM Code.

ISTC-3510 Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3560, ISTC-5221 and ISTC-5222. Power-operated relief valves shall be exercise tested once per fuel cycle.

Basis for Relief:

The excess flow check valve is a simple device: the major components are a poppet and spring. The spring holds the poppet open under static conditions. The valve will close upon sufficient differential pressure across the poppet. Functional testing of the valve is accomplished by venting the instrument side of the tube. The resultant increase in flow imposes a differential pressure across the poppet, which compresses the spring and decreases flow through the valve.

Excess flow check valves have been extremely reliable throughout the industry. In the first 30 years of operation at the DAEC, no excess flow check valve has failed to close due to actual valve failure (i.e., not related to test methodology). The DAEC Technical Specifications (TS) detail what frequency is required to maintain a high degree of reliability and availability, and provide an acceptable level of quality and safety. In the NRC's Safety Evaluation, which approved the associated TS amendment, the Staff concluded, "Based on the acceptability of the methods applied to estimate the release frequency, a relatively low release frequency estimate in conjunction with unlikely impact on core damage and negligible consequence of a release in the reactor building, we conclude that the increase in risk associated with the licensee's request for relaxation of EFCV surveillance testing to be sufficiently low and acceptable." DAEC requested this relief pursuant to 10CFR50.55a(a)(3)(i) to exercise excess flow check valves at the frequency specified in amended DAEC TS Surveillance Requirement (SR) 3.6.1.3.7.

Proposed Alternative Test:

Excess flow check valves will be exercised at the frequency specified in the amended DAEC TS Surveillance Requirement (SR) 3.6.1.3.7. The surveillance requirement is to test a representative

sample of Excess Flow Check Valves so that each Excess Flow Check Valve is tested at least once every 10 years.

The Excess Flow Check Valves have position indication in the control room. Check valve remote position indication is excluded from Regulatory Guide 1.97 as a required parameter for evaluating containment isolation. The remote position indication will be verified in the closed direction at the same frequency as the exercise test, which will be performed at the frequency prescribed in the amended DAEC TS Surveillance Requirement (SR) 3.6.1.3.7. After the close position test, the valves will be reset, and the remote open position indication will be verified. Although inadvertent actuation of an EFCV during operation is highly unlikely due to the spring-poppet design, the DAEC will verify the EFCVs indicate open in the control room at a frequency greater than once every 2 years.

Reference:

- DAEC Technical Specification Amendment 230 approved by the NRC on December 29, 1999
- Safety Evaluation by the Office of Nuclear Reactor Regulation of the third 10-year interval inservice inspection plan request for relief regarding excess flow check valve surveillance requirements, Duane Arnold Energy Center, Docket No. 50-331, dated March 28,2000.

11.0 DEFERRED TEST JUSTIFICATIONS - VALVES

Deferred Test Justification DTJ-01

SYSTEM:	**MAIN STEAM TURBINE STOP AND CONTROL VALVES**	
VALVES:	**CV1064**	**Main Steam Drain Isolation to Condenser**
	MO1043	**Main Steam Drain Isolation**
	MO1044	**Drywell Steam Line Drains Condenser Isolation**
FUNCTION:	These normally closed valves open to provide a flow path for Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.	
TEST REQUIREMENTS:	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.	
BASIS:	These valves open to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. These valves are remote manually opened following isolation of the MSIVs as part of MSIV leakage treatment system. Since the function of these valves is to operate after the MSIVs close, the valves do not cycle with main steam line pressure in the line during accident conditions. These valves were not designed to be routinely operated during full power operation with full main steam line pressure. Quarterly full or partial cycling would result in increased wear, resulting in increased packing leakage, etc. while subject to pressures far greater than the valves will experience during accident conditions for the MSIV leakage treatment system.	
Alternate Testing:	Exercise valves during cold shutdown.	

Deferred Test Justification DTJ-02

SYSTEM: **MAIN STEAM TURBINE STOP AND CONTROL VALVES**

VALVES: **MO1169 Turbine Steam Seal Main Steam Supply Isolation**

MO1170 Turbine Steam Seal Press Regulator Bypass

FUNCTION: The normally open valve MO1169 and the normally closed valve MO1170 close to divert Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.

TEST REQUIREMENTS: ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS: These valves close to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs.

The turbine steam seal system provides steam to the turbine glands to control air leakage into the turbine. The system is essential for turbine operation, and was not designed for full or partial valve cycling while the turbine is online. Operating Instruction OI 692 Precaution and limitation #3 states: "If MO1170 regulator bypass is opened further than necessary, it is possible to lift PSV1173 A/B/C due to high pressure/flow even though seal pressure at PI1167A at 1C07 indicates <6 Psig (lift setpoint) (a). Adjustments to steam seal pressure should normally be made using PC1175. (b). MO1170 regulator bypass and MO1171 manual unloader should not be used to adjust seal pressure, except in the case of a regulator failure." It would be very difficult to transition to the bypass without lifting the reliefs or getting a low steam seal pressure alarm. The turbine steam seal system provides steam to the turbine glands to control air leakage into the turbine. The system is essential for turbine operation, and was not designed for full or partial valve cycling while the turbine is online. Full or partial valve cycling should not be performed during plant operation to avoid unnecessary pressure transients on the steam seal system.

These valves are remote manually opened following isolation of the MSIVs as part of MSIV leakage treatment system. Since the function of these valves is to operate after the MSIVs close, the valves do not cycle with main steam line pressure in the line during accident conditions. These valves were not designed to be routinely operated during full power operation with full main steam line pressure. Quarterly full or partial cycling would result in increased wear, such as increased packing leakage, etc. while subject to pressures far greater than the valves will

experience during accident conditions for the MSIV leakage treatment system

Alternate Testing: Exercise valves during cold shutdown.

Deferred Test Justification DTJ-03

SYSTEM:	**MAIN STEAM TURBINE STOP AND CONTROL VALVES**
VALVES:	**MO1054 MSR 1E-18B 2nd Stage Reheat Steam Supply**
	MO1055 MSR 1E-18A 2nd Stage Reheat Steam Supply
FUNCTION:	These normally open valves close to divert Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.
TEST REQUIREMENTS:	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.
BASIS:	These valves open to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. The safety function of these valves is to be remote manually closed following isolation of the MSIVs. These valves are normally open to allow 2nd Stage Reheat Steam to be supplied to feedwater heaters. These valves do not have a mechanism to equalize pressure across the valve after they are isolated, and should not be fully or partially stroked with main steam pressure in the line to avoid requiring the plant to enter cold shutdown in-order to re-open the valves.
Alternate Testing:	Exercise valves during cold shutdown.

Deferred Test Justification DTJ-04

SYSTEM:	**MAIN STEAM TURBINE STOP AND CONTROL VALVES**	
VALVES:	**MO1362A**	**MSL"A" Supply to Offgas and SJAE**
	MO1362B	**MSL"B" Supply to Offgas and SJAE**
FUNCTION:	These normally open valves close to divert Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.	
TEST REQUIREMENTS:	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.	
BASIS:	These valves close to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. These motor-operated valves provide steam to the Steam Jet Air Ejectors. These valves are remote manually closed following isolation of the MSIVs as part of the MSIV leakage treatment system. Since the function of these valves is to operate after the MSIVs close, the valves do not cycle with main steam line pressure in the line during accident conditions. These valves were not designed to be routinely operated during full power operation with full main steam line pressure. Quarterly cycling would result in increased wear, such as increased packing leakage, etc. at pressures far greater than the valves will experience during the accident conditions for the MSIV leakage treatment system.	
Alternate Testing:	Exercise valves during cold shutdown.	

Deferred Test Justification DTJ-05

SYSTEM:	**MAIN STEAM**	
VALVES:	**CV4412**	**"A" Main Steam Line Inboard Isolation**
	CV4413	**"A" Main Steam Line Outboard Isolation**
	CV4415	**"B" Main Steam Line Inboard Isolation**
	CV4417	**"B" Main Steam Line Outboard Isolation**
	CV4418	**"C" Main Steam Line Inboard Isolation**
	CV4419	**"C" Main Steam Line Outboard Isolation**
	CV4420	**"D" Main Steam Line Inboard Isolation**
	CV4421	**"D" Main Steam Line Outboard Isolation**

FUNCTION: These normally open valves close for reactor vessel and containment isolation.

TEST REQUIREMENTS: ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS: These valves have two fail-safe modes. One is loss of electric power. This mode is tested on-line (quarterly) by normal closure of each valve where the closure signal de-energizes the solenoid valves which control the actuator pilot valves.

The second mode is loss of nitrogen gas pressure to the actuator. In this case the nitrogen pressure on the underside of the actuator piston, which keeps the valve open, is exhausted to atmosphere upon the failure of the supply system. The closure time is 3 to 5 seconds, after the nitrogen pressure has decayed to the point at which the air-valves reposition (internal spring force overcomes the pneumatic force). Exercising the MSIV's by closing utilizing spring force only complies with the recommendations of General Electric Service Information Letter 477. During refueling shutdowns, the MSIV's are also cycled utilizing the accumulators only (non-safety grade nitrogen makeup is isolated) in accordance with NRC Information Notice 85-84, Inadequate Inservice Testing of Main Steam Isolation Valves. Both of these tests require access to the drywell and a considerable expenditure of plant staff resources. Thus, the scope of these tests precludes testing during cold shutdown periods.

Alternate Testing: Exercise fail-safe capability of the valves during Refueling Outages.

Deferred Test Justification DTJ-06

SYSTEM:	**DRYWELL COOLING**	
VALVES:	**CV5704A ISOL**	**DRYWELL COOLING LOOP A RETURN**
	CV5704B ISO	**DRYWELL COOLING LOOP B RETURN**
	CV5718A ISO	**DRYWELL COOLING LOOP A SUPPLY**
	CV5718B ISO	**DRYWELL COOLING LOOP B SUPPLY**
FUNCTION:	These normally open valves close to provide containment isolation.	
TEST REQUIREMENTS:	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.	
BASIS:	These valves isolate drywell cooling when closed. Partially or fully cycling the drywell cooling isolation valves quarterly may cause pressure spikes in the system that could potentially cause drywell coolers to leak, damaging the drywell coolers. Significant drywell cooler leakage can cause the plant to shutdown to repair this unidentified leakage source in the drywell. Potential equipment damage is adequate reason for cold shutdown testing according to NUREG 1482 Rev.1.	
Alternate Testing:	Exercise valves during cold shutdown.	

Deferred Test Justification DTJ-07

SYSTEM:	**REACTOR BUILDING CLOSED COOLING WATER**
VALVES:	**MO4841A Drywell RBCCW Return Header Isolation** **MO4841B Drywell RBCCW Supply Header Isolation**
FUNCTION:	These normally open valves close to provide primary containment isolation.
TEST REQUIREMENTS:	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.
BASIS:	During plant operation, these valves are open to supply and return cooling water to and from reactor recirculation pump components inside the drywell. These include the pump motor windings, seal water coolers and lube oil coolers. Closing or partially closing either of these valves interrupts cooling water flow and could result in damage to pump and motor components.
Alternate Testing:	Exercise valves during cold shutdown.

Deferred Test Justification DTJ-08

SYSTEM:	**Control Rod Drive**
VALVES:	**V17-0083 Reactor Recirculation Mini Purge Check Valve** **V17-0096 Reactor Recirculation Mini Purge Check Valve**
FUNCTION:	These check valves close to provide primary containment isolation.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refueling outages.
BASIS:	These are simple check valves with no positive means of determining valve disk position, thus the only means of determining closure of these valves is by performing leak tests. Such testing requires drywell entry plus extensive system preparations. Performance of these leak tests is impossible during plant operation due to the inaccessibility of the drywell and impractical at cold shutdown due to the testing requires de-inerting the drywell.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-09

SYSTEM:	**DRYWELL COOLING**
VALVES:	**MO4627 Isolation** — **RX Recirc Pump 1P-201A Discharge** **MO4628 Isolation** — **RX Recirc Pump 1P-201B Discharge**
FUNCTION:	These normally open valves close to divert MSIV leakage to the main condenser following an accident.
TEST REQUIREMENTS:	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.
BASIS:	Closing either of these valves during plant operation places the recirculation system in a "single loop" configuration. Although single-loop operation is possible, routinely entering into this configuration is undesirable and contrary to the prudent and safe operation of the reactor plant. In addition, operation in a single loop configuration requires a severe power reduction.
Alternate Testing:	Exercise valves during cold shutdown.

Deferred Test Justification DTJ-10

SYSTEM:	**CONTAINMENT ATMOSPHERE CONTROL**
VALVES:	**CV4357 - Containment Hard Vent Valve**
FUNCTION:	The containment hard vent system was installed as requested in Generic Letter 89-16 to provide a means of venting primary containment irrespective of the release of radioactivity to the environment. This system will be utilized only when plant conditions have degraded beyond design conditions considered in the DAEC Final Safety Analysis Report.
TEST REQUIREMENTS:	ISTC-3521(d) if exercising is not practicable during operation at power or cold shutdown, it may be limited to full stroke during refueling outages.
BASIS:	Because the hard vent system is not intended to be used to mitigate events considered in the Final Safety Analysis Report, components other than those provided for primary containment isolation are not within the scope of the Inservice Test (IST) Program, as discussed in ISTA-1100. These components have been added to the IST Program for testing on an augmented basis. The intent of including these components in the Program is to provide a reasonable level of operational readiness for the hard vent system and testing at a refueling frequency satisfies this.
Alternate Testing:	Exercise valve during refueling outages.

Deferred Test Justification DTJ-11

SYSTEM:	**CONTAINMENT ATMOSPHERE CONTROL**
COMPONENT:	**V43-0214 - Drywell Instrument Nitrogen Header Supply Stop check valve**
FUNCTION:	This check valve closes for containment isolation.
TEST REQUIREMENTS:	ISTC-3522(C) if exercising is not practicable during operation at power or cold shutdown, it shall be performed during refueling outages.
BASIS:	This is a simple check valve with no positive means of determining valve disk position, thus the only practical means of determining closure is by performing a leak test. Performing a leak test of this valve requires containment access, isolation of nitrogen to the containment, and an extensive valve re-alignment. The resources and time required to complete such a test places an undue burden on the plant staff and is not justified by the little gain in plant safety afforded by the test.
Alternate Testing:	Exercise valve during refueling outages.

Deferred Test Justification DTJ-12

SYSTEM:	**NEUTRON MONITORING**
COMPONENT:	**V43-0503 - Tip System Purge Check Valve**
FUNCTION:	This valve provides containment isolation for the TIP system nitrogen purge line.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power or cold shutdown, it may be limited to full stroke during refueling outages.
BASIS:	This is a simple check valve with no disk position indication and the only practical method of verifying closure is by performing a leak test. The method of leak testing for this valve requires separation of the containment penetration flange which constitutes a breach of primary containment integrity and thus not practical during plant operation. Furthermore, the testing requires approximately 20 man-hours to complete. Taking into account the typical general area radiation dose rate of 200 mR/hour in the vicinity of this valve at cold shutdown, the estimated total exposure per test is approximately 4 man-Rem. Based on the foregoing discussion, the costs and burden on the plant staff associated with cold shutdown testing of this valve is not justified by the little potential gain in plant safety afforded by the test. The use of a seat leakage test to confirm obturator closure when no other means are practical is endorsed in NUREG-1482 rev. 1, Part 4.1.6.
Alternate Testing:	Exercise valve during refueling outages.

Deferred Test Justification DTJ-13

SYSTEM:	**NUCLEAR BOILER**
COMPONENT:	**V14-0032 - Check Valve For N2 Supply To Accum 1R002A**
	V14-0100 - Check Valve For N2 Supply To Accum 1R001B
	V14-0104 - Check Valve For N2 Supply To Accum 1R001A
	V14-0108 - Check Valve For N2 Supply To Accum 1R002B
	V14-0112 - Check Valve For N2 Supply To Accum 1R001C
	V14-0116 - Check Valve For N2 Supply To Accum 1R002C
	V14-0120 - Check Valve For N2 Supply To Accum 1R001D
	V14-0124 - Check Valve For N2 Supply To Accum 1R002D
FUNCTION:	These valves provide isolation for the safety related MSIV nitrogen accumulators. These check valves close to maintain pressure in the accumulator on a loss of nitrogen supply.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refueling outages.
BASIS:	These are simple check valves with no disk position indication and the only practical method of verifying closure is by performing a leak test. The method of leak testing for these valves requires entering the drywell and thus not practical during plant operation. This would require de-inerting the drywell. Based on the foregoing discussion, the cost and burden on the plant staff associated with cold shutdown testing of these valves is not justified by the little potential gain in plant safety afforded by the test.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-14

SYSTEM:	**Main Steam**
COMPONENT:	**V14-0009 - Check Valve For N2 Supply To PSV4406 and PSV4407** **V14-0014 - Check Valve For N2 Supply To PSV4402** **V14-0015 - Check Valve For N2 Supply To PSV4400 and PSV4401** **V14-0016 - Check Valve For N2 Supply To PSV4405**
FUNCTION:	These valves provide isolation for the safety related Main Steam Relief Valve actuator nitrogen supply. These check valves close to maintain pressure in the accumulator on a loss of nitrogen supply.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refueling outages.
BASIS:	These are simple check valve with no disk position indication. The only practical method of verifying closure is by performing a leak test. The method of leak testing for these valves requires entering the drywell and thus not practical during plant operation. This would require de-inerting the drywell. Based on the foregoing discussion, the cost and burden on the plant staff associated with cold shutdown testing of these valves is not justified by the little potential gain in plant safety afforded by the test.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-15

SYSTEM:	**Main Steam**
COMPONENT:	**V22-0016 - Valve Check HPCI 1S201 Exhaust Line**
	V22-0017 - HPCI Turbine Steam Exhaust Line Isolation
FUNCTION:	These check valves open to provide a flow path for exhaust steam from the HPCI turbine to the Torus. They close for containment isolation.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power or cold shutdown, it shall be performed during refueling outages.
BASIS:	During plant operation these valves must be capable of opening to allow turbine exhaust steam to exit into the suppression chamber. Testing of these valves to the closed position requires downstream valves to be closed when air is used to verify valve closure. While the tests are in progress, the respective pump is inoperable since there is no path for turbine exhaust steam. There are no local or remote indicators of obturator position, nor are system parameters indicative of closure. The closure test method is analogous to a leak test (without quantifying leakage). The NRC has determined, in NUREG 1482 rev. 1 section 4.1.6, that the need to set up test equipment is adequate justification to defer reverse flow testing of a check valve until a refueling outage.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-16

SYSTEM:	**CONTROL ROD DRIVE**
COMPONENTS:	**CV1859B - CRD Scram Discharge Header Vent Valves** **CV1867B - CRD Scram Discharge Header Drain Valves** **V1859A and CV1867B***
FUNCTION:	In the event of a scram these valves close when solenoids SV1868A, SV1868B, SV1869A, and SV1869B de-energize. Closure isolates the scram discharge headers and reactor coolant from the reactor building.
TEST REQUIREMENT:	ISTC-3521(d) if exercising is not practicable during operation at power or cold shutdown, it may be limited to full stroke during refueling outages.
BASIS:	Actuating the CRD scram discharge header vent and drain valves utilizing SV1868A, SV1868B, SV1869A, and SV1869B requires initiation of a full SCRAM signal. These solenoids are tied to the RPS system and de-energize to vent air from the valve actuator. The vent and drain valves are equipped with test solenoids that allow for quarterly exercising; the vent and drain valves are verified to close on a loss of air. The appropriate method of fail-safe testing these valves is to use the safety-related logic and solenoids. This is not practical quarterly: such testing could result in a plant trip.
Alternate Testing:	Exercise valves using the fail-safe solenoids during cold shutdowns.

* These valves are not Class 1, 2 or 3 and are listed in this justification for completeness reasons only.

Deferred Test Justification DTJ-17

SYSTEM:	**CONTROL ROD DRIVE**
COMPONENTS:	**V17-0052 - CRD Return To Reactor Vessel Check Valves**
	V17-0053 - CRD Return To Reactor Vessel Check Valves
FUNCTION:	These valves close for containment isolation.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power or cold shutdown, it shall be performed during refueling outages.
BASIS:	These are simple check valves with no positive indication of disk position thus the only means of determining closure of these valves is by performing leak tests. Such testing requires drywell entry plus extensive system preparations. Performance of these leak tests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff. The NRC has determined, in NUREG 1482 rev. 1 section 4.1.6, that the need to set up test equipment is adequate justification to defer reverse flow testing of a check valve until a refueling outage. Note that this line is normally isolated and valve degradation during operation is unlikely.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-18

SYSTEM:	**HIGH PRESSURE COOLANT INJECTION (HPCI)**
COMPONENTS:	**V22-0021 - HPCI Condensate Drain Valve** **V22-0022 - HPCI Condensate Drain Valve**
FUNCTION:	During HPCI operation these valves open to provide a flowpath for discharging condensate from the HPCI turbine exhaust drain pot to the torus. They close for containment isolation.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages. ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement. ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	V22-0021 and V22-0022 are in series and the only practical method of verifying full stroke (open) is by measuring full accident flow through the line. However, there is no installed flow measurement instrumentation.
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-19

SYSTEM:	**Emergency Service Water (ESW)**
COMPONENTS:	**V13-0121 – 1K003/4 Cooling Water Inlet Check Valve**
	V13-0126 - 1K003/4 Cooling Water Inlet Check Valve
FUNCTION:	These check valves open to provide a flow path for emergency service water to the HVAC instrument air compressors 1K003 and 1K004.
TEST REQUIREMENTS:	ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement.
	ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	These are simple check valves with no means of mechanical exercising or positive indication of disc position, the only practical method of verifying full stroke (open) is by measuring full accident flow through the line. There is no installed flow instrumentation on the associated branch lines thus flow measurements are not practical.
	Since these valves are identical seeing essentially identical service, they qualify for sample disassembly as set forth in ISTC-5221(c).
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-20

SYSTEM:	**Core Spray** **Residual Heat Removal** **High Pressure Coolant Injection** **Reactor Core Isolation Cooling**
COMPONENTS:	**V21-0009 - 1P-211A Minimum Flow Line Check Valve** **V21-0012 - 1P-211B Minimum Flow Line Check Valve** **V19-0014 – 1P229D Minimum Flow Line Check Valve** **V19-0016 – 1P229B Minimum Flow Line Check Valve** **V20-0006 – 1P229A Minimum Flow Line Check Valve** **V20-0008 – 1P229C Minimum Flow Line Check Valve** **V23-0014 – 1P216 Minimum Flow Line Check Valve** **V25-0006 – 1P226 Minimum Flow Line Check Valve**
FUNCTION:	These swing check valves open during pump operation to provide recirculation flowpaths to the torus in order to prevent pump damage due to heatup as a result of operation under shutoff or minimal flow conditions.
TEST REQUIREMENTS:	ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement. ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	These are simple check valves with no means of mechanical exercising or positive indication of disc position, thus the only practical method of exercising them is with system flow. Due to the lack of appropriate flow instrumentation in the associated lines, verification of accident flow is not practical.
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve in each group will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-21

SYSTEM:	**CORE SPRAY**
COMPONENTS:	**V21-0072 - Core Spray Injection Check Valve**
	V21-0073 - Core Spray Injection Check Valve
FUNCTION:	These check valves provide a flow path for low pressure core spray to the reactor vessel and prevent backflow from the reactor vessel to the low pressure core spray system.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power or cold shutdown, it shall be performed during refueling outages.
BASIS:	The only means of determining closure of these valves is by performing a leak test. Such a test requires drywell entry plus extensive preparations. Performance of these leaktests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff. In order to gain personnel access to the drywell, the nitrogen used to inert the drywell must be de-inerted. De-inerting the drywell solely for the purpose of valve testing is excessively burdensome and a sound basis for test deferral to refueling as described in NUREG-1482 rev. 1, Section 4.1.6.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-22

SYSTEM:	**Standby Liquid Control (SBLC)**
COMPONENTS:	**V26-0004 - SBLC Pump Discharge Check Valve**
	V26-0006 - SBLC Pump Discharge Check Valve
FUNCTION:	These check valves open during standby liquid control pump operation to provide flowpaths to the SBLC header and thence to the reactor vessel. They close to prevent backleakage through an idle pump or failed safety valve.
TEST REQUIREMENTS:	ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement.
	ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	These are simple check valves with no means of mechanical exercising or positive indication of disc position, thus the only practical method of verifying closure is by performing a backleakage test. Performance of such a backleakage test is not practical due to the lack of appropriate test connections.
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-23

SYSTEM: STANDBY LIQUID CONTROL (SBLC)

COMPONENTS:	**V26-0008 - Standby Liquid Control Injection Check Valve**
	V26-0009 - Standby Liquid Control Injection Check Valve
FUNCTION:	These check valves provide a flowpath for borated water from the standby liquid control injection header to the reactor vessel. They close for containment isolation.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages.
BASIS:	Full-stroke or partial open exercising of the SBLC injection check valves quarterly during operation or cold-shutdowns is impractical due to the extensive test set-up and system restoration. The performance of a partial open exercise requires drywell entry to isolate the test volume from the reactor by closing normally locked open manual valve V26-0032. This is required to develop conclusive flow rates through the check valves using a highly pure water source to pressurize the piping. The drywell is inerted during reactor operation and is inaccessible. The only practical means of exercising these valves to the open position is during a refueling outage by operation of the SBLC pumps and discharging into the reactor vessel. This cannot be done during normal operation or cold shutdown since the SBLC system must be drained and flushed to prevent contamination of the reactor coolant with sodium pentaborate. In addition, extensive testing and maintenance is required to replace the explosive charges in the isolation valves.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-24

SYSTEM:	**REACTOR CORE ISOLATION COOLING (RCIC)**
COMPONENTS:	**V24-0008 - RCIC Turbine Steam Exhaust Check Valve**
	V24-0023 - RCIC Turbine Exhaust Check Valve
FUNCTION:	These check valves provide a flowpath for exhaust steam from the RCIC turbine to the torus. They close for containment isolation.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages.
BASIS:	During plant operation these valves must be capable of opening to allow turbine exhaust steam to exit into the suppression chamber. Testing of these valves to the closed position requires downstream valves to be closed when air is used to verify valve closure. While the tests are in progress, the respective pump is inoperable since there is no path for turbine exhaust steam. There are no local or remote indicators of obturator position, nor are system parameters indicative of closure. The closure test method is analogous to a leak test (without quantifying leakage). The NRC has determined, in NUREG 1482 rev. 1 section 4.1.6, that the need to set up test equipment is adequate justification to defer reverse flow testing of a check valve until a refueling outage.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-25

SYSTEM:	**Reactor Core Isolation Cooling (RCIC)** **High Pressure Coolant Injection (HPCI)**
COMPONENTS:	**V24-0046 and V24-0047 - RCIC Turbine Exhaust Vacuum Breakers** **V22-0063 and V22-0064 - HPCI Turbine Exhaust Vacuum Breakers** **V22-0026 and V22-0029 - HPCI Condensate Pump Discharge Line Check Valves** **V22-0028 - HPCI Turbine Lube Oil Cooler Cooling Water Exhaust line.**
FUNCTIONS:	Following RCIC or HPCI operation the turbine exhaust vacuum breaker valves open to prevent a vacuum buildup in the exhaust lines and subsequent filling of the turbine exhaust piping from the torus. They close for containment isolation. V22-0026 Barometric condenser condensate pump discharge check valve, supports operation of HPCI in the open and closed positions. V22-0028 and V22-0029 open to provide a flow path for HPCI lube oil cooling and/or Gland Seal condensate pump discharge. With the pumps in standby, these check valves prevent barometric condenser in-leakage.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages. ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement. ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	These are simple check valves with no means of mechanical exercising or positive indication of disc position; thus the only practical method of exercising them is with system flow. Due to the lack of appropriate flow instrumentation in the associated lines, verification of accident flow is not practical.
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve in a group will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-26

SYSTEM:	**REACTOR CORE ISOLATION (RCIC)**
COMPONENTS:	**V25-0036 - RCIC Pump Discharge Check Valve**
FUNCTION:	This valve opens to provide a flowpath for RCIC to the reactor vessel via the reactor feedwater piping.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages. ISTC-5221(b) If a mechanical exerciser is used to exercise the valve, the force(s) or torque(s) required to move the obturator and fulfill its safety function shall meet the acceptance criteria specified by the Owner.
BASIS:	Opening this valve quarterly with RCIC system flow is not practical during plant operation due to the potential for severe reactor vessel water level and temperature transients as well as possible contamination of reactor feedwater. This valve is provided with the capability to be mechanically exercised and opening torque measured; however, the location of the valve in the steam tunnel makes it inaccessible during power operation. To ensure repeatable data for comparison to reference value torque, the piping is drained to equalize pressure across the obturator. This evolution requires reactor drywell entry to manually isolate V25-0036 from the reactor.
Alternate Testing:	Exercise valve during refueling outages.

Deferred Test Justification DTJ-27

SYSTEM:	**FEEDWATER**
COMPONENTS:	**V14-0001 and V14-0002 - Feedwater Inboard Isolation**
	MO4441, and MO4442 - Feedwater Outboard Isolation
FUNCTION:	These valves close for reactor vessel and containment isolation.
	V14-0001 and V14-0002 open to allow HPCI or RCIC inject, while MO4441 and MO4442 prevent diversion of HPCI and RCIC flow to the main feedwater system.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages for check valves V14-0001, V14-0002, MO4441 and MO4442.
	ISTC-3521(c) if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns for power-operated function of MO4441 and MO4442.
BASIS:	During plant operation at power, reactor feedwater must be supplied through these valves to maintain reactor coolant inventory and reactor vessel water level. Closing either feedwater loop will isolate two of the four supplies of feedwater into the reactor vessel. This could result in thermal shock to the reactor vessel feedwater nozzles and spargers upon resumption of flow and a plant trip due to the potential for severe reactor vessel water level and power transients
	For testing MO4441 and MO4442 stop check valve capability, a leak test is required. V14-0001 and V14-0003 are simple swing check valves with no positive indication of disk position with the only means of determining closure of these valves are by performing leak tests. Such a test requires drywell and steam tunnel entry plus extensive preparations of the feedwater system including draining approximately 2000 gallons of water. Furthermore, testing of V14-0001 requires shutdown of the cleanup system that is undesirable during power operation or cold shutdown.
	Performance of these leaktests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff.
Alternate Testing:	Exercise check valves during refueling outages, exercise motor operator valves at a cold shutdown frequency.

Deferred Test Justification DTJ-28

SYSTEM:	**Residual Heat Removal/ Core Spray (RHR/CS)**
COMPONENTS:	**V19-0022 and V19-0024 – RHR/CS KEEP FILL CHECK VALVES**
	V19-0020 and V19-0124 – RHR/CS KEEP FILL CHECK VALVES
FUNCTIONS:	These valves close to isolate residual heat removal system or core spray from the torus. They open during standby mode to maintain pressure in those systems.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages.
	ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement.
	ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	V19-022 and V19-024 are simple check valves with no means of mechanical exercising or positive indication of disc position; and there is no practical method of exercising them is with a leak test.
	V19-020 and V19-124 are stop check valves that have no remote manual isolation capability. There is no method to verify closure without using the installed manual hand-wheel to verify closure.
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve in a group will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-29

SYSTEM:	**Residual Heat Removal**
COMPONENTS:	**V19-0149 – B RHR INJECT CHECK VALVE**
	V20-0082 – A RHR INJECT CHECK VALVE
FUNCTIONS:	These check valves close to isolate the reactor vessel from the residual heat removal system. They open to supply low pressure coolant injection to the vessel during an accident..
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power or cold shutdown, it shall be performed during refueling outages.
BASIS:	The only means of determining closure of these valves is by performing a leak test. Such a test requires drywell entry plus extensive preparations. Performance of these leaktests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff. In order to gain personnel access to the drywell, the nitrogen used to inert the drywell must be de-inerted. De-inerting the drywell solely for the purpose of valve testing is excessively burdensome and a sound basis for test deferral to refueling as described in NUREG-1482 rev. 1, Section 4.1.6.
Alternate Testing:	Exercise valves during refueling outages.

Deferred Test Justification DTJ-30

SYSTEM:	**Residual Heat Removal**
COMPONENTS:	**V19-0195 – MO1908 BYPASS CHECK VALVE**
FUNCTIONS:	This check valve closes to isolate the reactor vessel from the residual heat removal system. The valve opens to reduce/relieve pressure between MO1908 and MO1909 to avoid pressure locking and thermal binding issues.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power or cold shutdown, it shall be performed during refueling outages.
BASIS:	The only means of determining closure of this valve is by performing a leak test. Such a test requires drywell entry plus extensive preparations. Performance of these leaktests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff. In order to gain personnel access to the drywell, the nitrogen used to inert the drywell must be removed. De-inerting the drywell solely for the purpose of valve testing is excessively burdensome and a sound basis for test deferral to refueling as described in NUREG-1482 rev. 1, Section 4.1.6.
Alternate Testing:	Exercise valve during a refueling outage.

Deferred Test Justification DTJ-31

SYSTEM:	**High Pressure Coolant Injection**
COMPONENTS:	**V23-0049 - HPCI Pump Discharge Check Valve**
FUNCTION:	V23-0049 opens to allow ECCS injection into the vessel.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages. ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement. ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	This check valve has no positive means of determining valve disk position, thus, the only practical method of verifying full stroke (open) is by measuring full accident flow through the line. However, opening this valve quarterly with HPCI system flow is not practical during plant operation due to the potential for severe reactor vessel water level and temperature transients as well as possible contamination of reactor feedwater. At cold shutdown steam is not available for pump operation.
Alternate Testing:	This valve will be grouped and examined in-accordance with ISTC-5221(c). At least one valve in a group will be disassembled and examined each refueling outage.

Deferred Test Justification DTJ-32

SYSTEM:	**High Pressure Coolant Injection**
	Reactor Core Isolation Cooling
COMPONENTS:	**V23-0001 - HPCI Pump Torus Supply Check Valve**
	V25-0001 - RCIC Pump Torus Supply Check Valve
FUNCTION:	These check valves open to provide a flowpath from the torus to the HPCI and RCIC pumps.
TEST REQUIREMENTS:	ISTC-3522(c) if exercising is not practicable during operation at power and cold shutdown, it shall be performed during refuel outages.
	ISTC-5221(c) If the test methods in ISTC-5221(a) and ISTC-5221(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement.
	ISTC-5221(c)(3) At least one valve from each group shall be disassembled and examined at each refuel outage; all valves in each group shall be disassembled and examined at least once every 8 years.
BASIS:	Both the HPCI and RCIC systems inject into the feedwater lines. Operation of the RCIC or HPCI pumps from the torus is not practical due to reactor water chemistry concerns.
Alternate Testing:	These valves will be grouped and examined in-accordance with ISTC-5221(c). At least one valve in a group will be disassembled and examined each refueling outage.

12.0REFERENCE DOCUMENTS

This Program Plan was developed per the requirements and guidance provided by the following documents:

12.1 Title 10, Code of Federal Regulations, Part 50.55a (10-1-04 Ed.).

12.2 NRC Regulatory Guides - Division 1

12.3 Standard Review Plan 3.9.6, "Inservice Testing of Pumps and Valves"

12.4 Updated Final Safety Analysis Report, Duane Arnold Energy Center

12.5 Duane Arnold Energy Center Technical Specifications

12.6 ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, No Addenda

12.7 NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"

12.8 ASME OM Code-2001 through 2003 addendum "Code for Operation and Maintenance of Nuclear Power Plants".

12.9 NUREG-1482 rev. 1, Guidelines for Inservice Testing at Nuclear Power Plants

12.10 OI-692 "Turbine Steam Seal System" Operating Instructions

12.11 General Electric Service Information Letter 477

12.12 NRC Information Notice 85-84 "Inadequate Inservice Testing of Main Steam Isolation Valves"

12.13 NRC Generic Letter 89-16 "Installation of a Hardened Wetwell Vent"

12.14 10CFR50 Appendix J