ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Wednesday, February 11, 2009 4:24 PM
To: Getachew Tesfaye
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DUNCAN Leslie E (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 104 (1344, 1447,1468, 1475), Supplement 1 <a e>
Attachments: RAI 104 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided responses to 2 of the 4 questions of RAI No. 104 on December 12, 2008. The attached file, "RAI 104 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to Question 14.03-1, Part b and Question 14.03.11-1, as committed, in the revised scheduled e-mailed on January 28, 2009.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 104 Questions 14.03-1, Part b and 14.03.11-1.

The following table indicates the respective pages in the response document, "RAI 104 Supplement 1 US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 104 — 14.03-1, Part b	2	3
RAI 104 — 14.03.11-1	4	6

The schedule for technically correct and complete response to the remaining question is unchanged and provided below:

Question #	**Response Date**
RAI 104 — 14.03-1, Part a	May 22, 2009

Sincerely,

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
An AREVA and Siemens company
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Lynchburg, VA 24506-0935
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From: Pederson Ronda M (AREVA NP INC)
Sent: Wednesday, January 28, 2009 6:55 PM
To: 'Getachew Tesfaye'
Cc: DUNCAN Leslie E (AREVA NP INC); DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC)

Subject: Response to U.S. EPR Design Certification Application RAI No. 104 (1344, 1447,1468, 1475), Supplement 1 Revised Schedule

Getachew,

AREVA NP is unable to provide technically correct and complete responses to the questions that were scheduled to be complete today.

The schedule for technically correct and complete responses has been revised as provided below.

Question #	Response Date
RAI 104 — 14.03-1, Part a	May 22, 2009
RAI 104 — 14.03-1, Part b	February 11, 2009
RAI 104 — 14.03.11-1	February 11, 2009

Sincerely,

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From: Pederson Ronda M (AREVA US)
Sent: Friday, December 12, 2008 4:27 PM
To: 'Getachew Tesfaye'
Cc: DUNCAN Leslie E (AREVA US); DELANO Karen V (AREVA US); BENNETT Kathy A (OFR) (AREVA US)
Subject: Response to U.S. EPR Design Certification Application RAI No. 104 (1344, 1447,1468, 1475), FSAR Ch. 14

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 104 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the 4 questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 104, Question 14.03.11-2.

The following table indicates the respective page(s) in the response document "RAI 104 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 104 — 14.03-1	2	2
RAI 104 — 14.03.11-1	3	3
RAI 104 — 14.03.11-2	4	5
RAI 104 — 14.03.07-1	6	7

A complete answer is not provided for 2 of the 4 questions. The schedule for a technically correct and complete response to each of these questions is provided below.

Question #	Response Date
RAI 104 — 14.03-1, Part a	May 22, 2009
RAI 104 — 14.03-1, Part b	January 28, 2009
RAI 104 — 14.03.11-1	January 28, 2009

Sincerely,

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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, November 14, 2008 2:01 PM
To: ZZ-DL-A-USEPR-DL
Cc: Anne-Marie Grady; Walton Jensen; Nan Chien; Christopher Jackson; Michael Miernicki; Joseph Colaccino; John Rycyna; Prosanta Chowdhury
Subject: U.S. EPR Design Certification Application RAI No. 104 (1344, 1447,1468, 1475), FSAR Ch. 14

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 20, 2008, and discussed with your staff on November 3 and 14, 2008. No change was made to the draft RAI as a result of those discussion. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 208

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Subject: Response to U.S. EPR Design Certification Application RAI No. 104 (1344, 1447,1468, 1475), Supplement 1 <a e>
Sent Date: 2/11/2009 4:23:44 PM
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MESSAGE	5435	2/11/2009 4:23:48 PM
RAI 104 Supplement 1 Response US EPR DC.pdf	260740	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
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Response to

Request for Additional Information No. 104, Supplement 1

11/14/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 14.03 - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.11 - Containment Systems and Severe Accidents - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: FSAR Ch. 14

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

Question 14.03-1:

a. Primary Containment

1. FSAR Section 6.2.1.1 describes possible events which might produce a negative containment pressure. Provide as an ITAAC requirement, verification that the as built containment can withstand the design maximum negative differential pressure across the containment building external wall.

2. The Containment Building is separated into a central portion containing the reactor system and a peripheral lower temperature portion containing equipment. Separation is accomplished by compartment walls, foils, doors, and dampers. The foils are located above the steam generator compartments and are designed to open at a fraction of a psi. The doors and dampers, located at lower elevations, must also open to avoid stratification so that steam flowing to the containment dome can circulate down the containment walls to reach the heat structures and the containment lower elevations. The doors and dampers are designed to open at various pressures from a few psi to greater than 13 psi. Provide as an ITAAC requirement verification that the opening characteristics of the foils, doors and dampers assumed in the analyses will be present for the as-built plant.

3. The size of the vent openings between containment compartments is important in analyses of containment mixing following design basis events as well as in beyond design basis events evaluated for hydrogen control. In addition the vent opening size is important for the evaluation of the short term pressure increase within containment subcompartments. Provide an ITAAC dealing with the flow areas of vent openings which will ensure that the vent openings are consistent with the values assumed in the safety analyses for containment mixing and for short term subcompartment pressure analysis.

4. For the containment subcompartments containing high energy lines for which an overpressure analysis was performed as described FSAR Section 6.2.1.2, provide an ITAAC to verify that the subcompartments were built to withstand pressures up to the design pressures assumed in FSAR Section 6.2.1.2.

b. Accident Response Instrumentation

1. FSAR Table 14.3-7 describes safety-significant containment instrumentation as containment pressure, containment water level, containment hydrogen concentration and containment radiation intensity. Provide justification that this instrumentation is sufficient for operators to deal with design and beyond design basis containment related events and justify that the information provided in Tier 1 adequately describes the test, analysis and acceptance criteria for this equipment for the as-built plant.

Response to Question 14.03-1:

a. A response to Question 14.03-1a will be provided by May 22, 2009, as previously committed.

b. As described in U.S. EPR FSAR Tier 2, Section 14.3.2, information listed in U.S. EPR FSAR Tier 2, Table 14.3-7 is the result of reviewing Three Mile Island action items and high-priority generic safety issues:

> "Three Mile Island (TMI) items from 10 CFR 50.34(f) and high-priority generic safety issues (GSI) items from NUREG-0933, Appendix B were reviewed for safety-significant design features relevant to the U.S. EPR design. The items were then compared to the other Section 14.3 tables for redundancy. Items not already addressed by another Section 14.3 table or not already addressed by other Tier 1 criteria are listed in Table 14.3-7—Licensing (Safety-Significant Features)."

Information in U.S. EPR FSAR Tier 2, Table 14.3-1 through Table 14.3-7 is then used to develop ITAAC in U.S. EPR FSAR Tier 1. Justification of the adequacy of the information in U.S. EPR FSAR Tier 2, Table 14.3-1 through Table 14.3-7 to satisfy regulatory requirements is not provided in U.S. EPR FSAR Tier 2, Section 14.3 or U.S. EPR FSAR Tier 1. Standard Review Plan (SRP) 14.3, Appendix C, page 14.3-25 notes:

> "Severe Accident Features - These features should be described in the design description, and the basic configuration ITAAC should verify that they exist. In general, the capabilities of the features need not be included in the ITAAC. Detailed analyses should be retained in Tier 2."

Instrumentation listed in U.S. EPR FSAR Tier 2, Table 14.3-7 are addressed in U.S. EPR FSAR Tier 1 as follows:

- U.S. EPR FSAR Tier 1, Section 2.2.2 will be revised to add ITAAC for containment water level instrumentation.
- U.S. EPR FSAR Tier 1, Section 2.4.14 addresses the low range hydrogen concentration monitors. U.S. EPR FSAR Tier 1, Table 2.4.14-1 will be revised to include a column for main control room (MCR) and remote shutdown station (RSS) indication. ITAAC for the high range hydrogen concentration monitors is addressed in the Response to Question 14.3.11-1b.
- U.S. EPR FSAR Tier 1, Section 2.6.8 will be revised to add ITAAC for containment pressure instrumentation. U.S. EPR FSAR Tier 2, Table 3.11-1 will be revised to clarify the equipment classifications of the containment pressure sensors (30KLA70CP801, 30KLA70CP802, 30KLA70CP803, and 30KLA70CP804).
- U.S. EPR FSAR Tier 1, Section 2.9.4 will be revised to add ITAAC for ventilation stack radiativity monitoring.
- ITAAC for containment radiation instrumentation was addressed in the Response to RAI 43, Question 14.03.08-1.

FSAR Impact:

a. A response to Question 14.03-1a will be provided by May 22, 2009, as previously committed.

b. U.S. EPR FSAR Tier 1, Section 2.2.2, Section 2.4.14, Section 2.6.8, and Section 2.9.4 will be revised as described in the response and indicated on the enclosed markup. U.S. EPR FSAR Tier 2, Table 3.11-1 will be revised as described in the response and indicated on the enclosed markup.

Question 14.03.11-1:

a. Hydrogen Generation and Control System

1. Expand FSAR Tier 1 Table 2.3.1-2, combustible gas control system (CGCS) ITAAC, to include the number and location of all the rupture and convection foils assumed in the severe accident analysis. Provide as an ITAAC requirement that this equipment will be present for the as-built plant.
2. Complete FSAR Tier 1, Table 2.3.1-1, CGCS Equipment Design to include every passive autocatalytic recombiner (PAR) assumed in the severe accident analysis and the location of each.

b. Hydrogen Monitoring System

1. Provide the high range hydrogen monitoring system (HMS) equipment to Table 2.4.14-1, so that the HMS ITAAC will verify both the low range and the high range HMS equipment.

c. Containment Isolation

1. Review FSAR Tier 2, Table 6.2.4-1, Containment Isolation Valve and Actuator Data, and provide the ITAAC for the required containment isolation valve closure times in the DCA Tier 1 Chapter 2 or Chapter 3.5. Correct any discrepancies in FSAR Tier 1 Table 6.2.4-1.
2. Provide an ITAAC for the containment isolation valves (CIVs) outside containment that would verify that the CIV location does not exceed the maximum allowable distance from the containment wall to the first outside CIV. These distances are expected to be provided in FSAR Tier 2, Table 6.2.4-1. This ITAAC should be provided in the affected sections of FSAR Tier 1, Chapter 2 and FSAR Tier 1 Section 3.5.

Response to Question 14.03.11-1:

a. Expanded CGCS ITAAC were provided in the Response to RAI 69, Question 06.02.05-5.

b. As described in U.S. EPR FSAR Tier 2, Section 14.3.2, the determination of what material in U.S. EPR FSAR Tier 2 is “safety-significant,” and is thus included in U.S. EPR FSAR Tier 1 and have ITAAC, consists of two types of processes. The first process is based on the classification of equipment (e.g., seismic, 1E, etc) and the second process is based on a review of specific analyses. Using these processes, the high range hydrogen monitors are not safety-significant and are not included in U.S. EPR FSAR Tier 1. The low range monitors are included in U.S. EPR FSAR Tier 1, Section 2.4.14 because they are safety-related, IEEE Class 1E, and Seismic Category I. Severe accident hydrogen control is a plant feature requiring no operator action.

c1. U.S. EPR FSAR Tier 2, Table 6.2.4-1 provides design stroke times for valves as a function of valve size in accordance with ANSI 56.2 guidance. ITAAC in U.S. EPR FSAR Tier 1, Table 3.3-1, Item 3.0 and Table 3.5-3, Item 7.2, however, provide the required containment isolation time of 60 seconds that includes other actions such as unloading of electrical busses, starting of the emergency diesel genertors, sequencing of electrical loads, and

valve stroke time as applicable. The Acceptance Criteria column for the following U.S. EPR FSAR Tier 1 tables will be revised to the required containment isolation time of 60 seconds:

- Table 2.2.2-3, Item 7.2.
- Table 2.2.5-3, Item 7.5.
- Table 2.2.6-3, Item 7.3.
- Table 2.2.7-3, Item 7.4.
- Table 2.3.3-3, Item 7.3.
- Table 2.7.1-3, Item 7.9.
- Table 2.7.5-3, Item 7.6.

An editorial change will also be incorporated into U.S. EPR FSAR Tier 1, Table 3.3-1, Item 3.0; the 'shall' in the Commitment Wording column and the Acceptance Criteria column will be replaced with wording consistent with other containment isolation ITAAC.

c2. The distance from the containment wall to the first outside CIV is not a safety-significant value for U.S. EPR FSAR Tier 1. Information in U.S. EPR FSAR Tier 2 is screened, as described in U.S EPR FSAR Tier 2, Section 14.3.2, to determine if it is safety-significant. This screening process involves two approaches using criteria developed from Standard Review Plan (SRP) 14.3, Appendices A and C. The first screening approach uses discipline checklists that include ITAAC criteria based on guidance in SRP 14.3. For example, the discipline checklist for systems provides guidance to create ITAAC for the following features:

- Major safety-related features.
- Equipment that is seismic, EQ, or 1E.
- Safety-related equipment.
- Design features provided for severe accident mitigation, station blackout (SBO), and anticipated transient without scram.
- Significant system features identified in the applicable SRPs for the system.
- Significant safety-related (and non-safety-related) functions derived from those listed in system design requirements documents.

The second screening approach involves an expert review panel that identifies safety-significant features based on assumptions and insights from key safety and integrated plant safety analyses in U.S. EPR FSAR Tier 2, where plant performance is dependent on contributions from multiple systems. This second screening approach is based on guidance in SRP 14.3, page 14.3-21. Results of the expert review panel meetings are provided in U.S. EPR FSAR Tier 2, Tables 14.3-1 through 14.3-7.

Using the criteria established in discipline checklists and after reviewing safety, radiological, fire, flooding, anticipated transient without scram, probabilistic, and severe accident analyses, the distance from the containment wall to the first outside CIV is not a safety-significant item for U.S. EPR FSAR Tier 1. Therefore, ITAAC for the distance from the containment wall to the first outside CIV are not included in the U.S. EPR FSAR.

FSAR Impact:

a. The U.S. EPR FSAR will not be changed as a result of this question.

b. The U.S. EPR FSAR will not be changed as a result of this question.

c. U.S. EPR FSAR Tier 1, Table 2.2.2-3, Table 2.2.5-3, Table 2.2.6-3, Table 2.2.7-3, Table 2.3.3-3, Table 2.7.1-3, Table 2.7.5-3, and Table 3.3-1 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

4.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

4.1 Displays listed in Table 2.2.2-2—IRWSTS Equipment I&C and Electrical Design are retrievable in the main control room (MCR) and the remote shutdown station (RSS) as listed in Table 2.2.2-2.

4.2 The IRWSTS equipment controls are provided in the MCR and the RSS as listed in Table 2.2.2-2.

4.3 ~~Actuators~~ Equipment listed as being controlled by a priority and actuat~~i~~o~~n~~r ~~and~~ control system (PACS) module in Table 2.2.2-2 responds to the state requested by a test signal~~are controlled by a PACS module~~.

4.4 IRWST has level indication. 14.03-1b

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 2.2.2-2 are powered from the Class 1E division as listed in Table 2.2.2-2 in a normal or alternate feed condition.

5.2 Valves listed in Table 2.2.2-2 fail as-is on loss of power.

6.0 Environmental Qualifications

6.1 Equipment listed in Table 2.2.2 -2 for harsh environment can perform the function in Table 2.2.2-1 following exposure to the design basis environments for the time required.

7.0 Equipment and System Performance

7.1 Class 1E valves listed in Table 2.2.2-2 can perform the function listed in Table 2.2.2-1 under system design conditions.

7.2 Containment isolation valves listed in Table 2.2.2-1 close within the containment isolation response time following initiation of a containment isolation signal.

7.3 The IRWST provides a required water volume.

7.4 Post-LOCA pH control is provided for the IRWST with trisodium phosphate (TSP).

7.5 The IRWST suction inlet line for each safety injection system division has a debris screen.

7.6 The IRWST supplies water to the safety injection system (SIS) and to the SAHRS.

7.7 The IRWST provides water to flood the spreading area.

7.8 The IRWST has a retaining basket located directly below each heavy floor opening.

7.9 The IRWST has a trash rack located over each heavy floor opening.

7.10 The IRWST has a weir located around each trash rack at the heavy floor opening.

Table 2.2.2-2—IRWSTS Equipment I&C and Electrical Design (2 Sheets)

Equipment Description	Equipment Tag Number(1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	
IRWST Three-way Isolation Valve for SIS Division 1	30JNK10 AA001	Safeguard Building 1	1^N 2^A	yes	yes	Position/Position	C
IRWST Three-way Isolation Valve for SIS Division 2	30JNK20 AA001	Safeguard Building 2	2^N 1^A	yes	yes	Position/Position	C
IRWST Three-way Isolation valve for SIS Division 3	30JNK30 AA001	Safeguard Building 3	3^N 4^A	yes	yes	Position/Position	C
IRWST Three-way Isolation Valve for SIS Division 4	30JNK40 AA001	Safeguard Building 4	4^N 3^A	yes	yes	Position/Position	C
IRWST Isolation Valve for CVCS	30JNK10 AA009	Safeguard Building 1	1^N 2^A	yes	yes	Position/Position	C
IRWST Isolation Valve for CVCS	30JNK10 AA013	Safeguard Building 1	4^N 3^A	yes	yes	Position/Position	C
IRWST Isolation Valve for SAHRS	30JNK11 AA009	Safeguard Building 4	4^N 3^A	yes	yes	Position/Position	C
IRWST Train 1 and 2	30JNK10 CL050	Reactor Building Annulus	yes	yes	no	Level	
IRWST Train 1 and 2	30JNK10 CL052	Reactor Building Annulus	yes	yes	no	Level	
IRWST Train 3 and 4	30JNK11 CL050	Reactor Building Annulus	yes	yes	no	Level	

14.03-1b

Table 2.2.2-2—IRWSTS Equipment I&C and Electrical Design (2 Sheets)

14.03-1b

Equipment Description	Equipment Tag Number(1)	Equipment Location	IEEE Class 1E (2)	EQ – Harsh Env.	PACS	MCR/RSS Displays
IRWST Train 3 and 4	30JNK11 CL052	Reactor Building Annulus	yes	yes	no	Level

1) Equipment tag numbers are provided for information only and are not part of the certified design.
2) N denotes the division the component is normally powered from. A denotes the division the component is powered
feed is implemented.

Table 2.2.2-3—IRWSTS ~~Inspections, Tests, Analyses, and Acceptance Criteria~~ ITAAC (~~5~~ 7 Sheets)

Commitment Wording		Inspections, Tests, ~~or Analysis~~Analyses	Acceptance Criteria
4.2	Controls exist in the MCR and the RSS as identified in Table 2.2.2-2.	Tests will be performed for the existence of control signals from the MCR and the RSS to the equipment listed in Table 2.2.2-2.	a. The controls listed in Table 2.2.2-2 as being in the MCR exist in the MCR. b. The controls listed in Table 2.2.2-2 as being in the RSS exist in the RSS.
4.3	~~Actuators~~ Equipment listed as being controlled by a PACS module in Table 2.2.2-2 responds to the state requested by a test signal~~are controlled by a PACS module~~.	A~~n operational~~ test will be performed using test signals ~~for the actuators being controlled by a PACS module as listed in Table 2.2.2-2. An inspection will be performed on the actuation of the actuator~~.	~~The actuators~~Equipment listed as being controlled by a PACS module in Table 2.2.2-2 ~~actuate~~ responds to the state requested by the signal. 14.03-1b
4.4	IRWST has level indication.	A test will be performed.	a. IRWST level instruments included in Table 2.2.2-2 provide level indication in the MCR. b. IRWST level instruments included in Table 2.2.2-2 provide level indication in the RSS.
5.1	The components designated as Class 1E in Table 2.2.2-2 are powered from the Class 1E division as listed in Table 2.2.2-2 in a normal or alternate feed condition.	a. Testing will be performed for components designated as Class 1E in Table 2.2.2-2 by providing a test signal in each normally aligned division. b. Testing will be performed for components designated as Class 1E in Table 2.2.2-2 by providing a test signal in each division with the alternate feed aligned to the divisional pair.	a. The test signal provided in the normally aligned division is present at the respective Class 1E component identified in Table 2.2.2-2. b. The test signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E component identified in Table 2.2.2-2.
5.2	Valves listed in Table 2.2.2-2 fail as-is on loss of power.	Testing will be performed for the valves listed in Table 2.2.2-2 to fail as-is on loss of power.	Following loss of power, the valves listed in Table 2.2.2-2 fail as-is.

Table 2.2.2-3—IRWSTS Inspections, Tests, Analyses, and Acceptance Criteria (~~5~~ 8 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.2	Containment isolation valves listed in Table 2.2.2-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.2.2-1 to close within the containment isolation response time following initiation of a containment isolation signal. 14.03.11-1, c1	~~The c~~Containment isolation valves listed in Table 2.2.2-1 close within ~~the required times~~60 seconds following initiation of a containment isolation signal~~:~~. ~~30JNK10 AA009 ≤ 30 seconds~~ ~~30JNK10 AA013 ≤ 30 seconds~~ ~~30JNK11 AA009 ≤ 60 seconds~~
7.3	The IRWST provides a required water volume.	An inspection will be performed of the IRWST required water volume.	The IRWST provides the following required minimum water volume: 66,886 ft^3.
7.4	Post-LOCA pH control is provided for the IRWST with TSP.	An inspection and analysis will be performed of the post LOCA pH control for the IRWST with TSP.	The following quantity of TSP exists for the IRWST to provide a post-LOCA pH control > 7: ≥ 12,200 lb_m TSP.
7.5	The IRWST suction inlet line for each safety injection system division has a debris screen.	a. An inspection will be performed for the existence of a debris screen in the IRWST suction inlet line for each safety injection system division. b. An inspection will be performed to verify the minimum surface area and maximum mesh grid opening of the debris screen.	a. A debris screen exists in the IRWST suction inlet line for each safety injection system division. b. The debris screen has a minimum surface area of 753 ft^2 and the screen mesh is a maximum grid opening of 0.08 x 0.08 inches.
7.6	The IRWST supplies water to the safety injection system and to the severe accident heat removal system.	An inspection will be performed of the IRWST to supply water to the safety injection system and severe accident heat removal system.	The IRWST supplies water to the safety injection system and the severe accident heat removal system.

Table 2.2.5-3—FPCPS Inspections, Tests, Analyses, and Acceptance Criteria (~~5~~ 7 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.4	The fuel pool cooling system has provisions to allow flow testing of the fuel pool cooling system pumps during plant operation.	Testing for flow of the fuel pool cooling system pumps to the spent fuel pool will be performed.	The normal flow return line allows fuel pool cooling system pump flow to the spent fuel pool.
7.5	Containment isolation valves listed in Table 2.2.5-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.2.5-1 to close within the containment isolation response time following initiation of a containment isolation signal. 14.03.11-1, c1	~~The c~~Containment isolation valves listed in Table 2.2.5-1 close within ~~the required times~~60 seconds following initiation of a containment isolation signal~~:~~. ~~30 FAL12 AA001, 30FAL12 AA002, and 30FAL15 AA002 - a maximum 30 second closure time.~~
7.6	The fuel pool cooling system design provides for maintaining the spent fuel pool water level above the spent fuel.	Inspection and testing will be performed to demonstrate the spent fuel pool water level is maintained above the spent fuel.	The spent fuel pool water level is maintained greater than or equal to 23 feet above the spent fuel.

Next File

Table 2.2.6-3—CVCS Inspections, Tests, Analyses, and Acceptance Criteria (~~6~~ 8 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.3	Containment isolation valves listed in Table 2.2.6-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.2.6-1 to close within the containment isolation response time following initiation of a containment isolation signal. 14.03.11-1, c1	~~The c~~Containment isolation valves listed in Table 2.2.6-1 close within ~~the required times~~60 seconds following initiation of a containment isolation signal~~:~~. ~~30KBA14AA002 ≤ 30 s~~ ~~30KBA14AA003 ≤ 30 s~~ ~~30KBA34AA002 ≤ 20 s~~ ~~30JEW01AA005 ≤ 15 s~~ ~~30JEW50AA001 ≤ 15 s~~ ~~30JEW50AA002 ≤ 15 s~~
7.4	The CVCS maximum flow rate required in the design basis analysis is less than the total combined maximum run-out flow of both CVCS pumps listed in Table 2.2.6-1.	~~An analysis~~ A test will be performed to verify the CVCS maximum flow rate required by design basis analysis is less than the total combined maximum run-out flow of both charging pumps.	The CVCS maximum flow rate required by design basis analysis is less than the following maximum run-out flow (delivered to the cold legs): 112.66 lb_m/s (total for both CVCS pumps).
7.5	The CVCS charging pumps listed in Table 2.2.6-1 provide the required seal water flow for operation of the reactor coolant pumps.	Inspection and testing will be performed to verify the CVCS charging pumps provide the required seal water flow to the reactor coolant pumps.	The chemical and volume control charging pumps provide a minimum seal water flow rate of 8 gpm to each operating reactor coolant pump.

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Table 2.2.7-3 - EBS Inspections, Tests, Analyses, and Acceptance Criteria (~~6~~ 7 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.4	Containment isolation valves listed in Table 2.2.7-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.2.7-1 to close within the containment isolation response time following initiation of a containment isolation signal.	~~The c~~Containment isolation valves listed in Table 2.2.7-1 close within ~~the required times~~60 seconds following initiation of a containment isolation signal.~~: 30JDH10 AA006 and 30JDH40 AA006 close in less than or equal to 15 seconds.~~

14.03.11-1, c1

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Table 2.3.3-3—SAHRS Inspections, Tests, Analyses, and Acceptance Criteria (~~5~~ 6 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.1	The SAHRS heat exchanger as listed in Table 2.3.3-1 has the capacity to transfer the design heat load to the CCWS.	Tests and analyses will be performed to demonstrate the capability of the SAHRS heat exchanger as listed in Table 2.3.3-1 to transfer the heat load to the CCWS.	A report exists and concludes that the SAHRS system has the capacity to remove the design heat load via the heat exchanger listed in Table 2.3.3-1.
7.2	Class 1E valves listed in Table 2.3.3-2 perform the function listed in Table 2.3.3-1 under system design conditions.	Tests and analyses or a combination of tests and analyses will be performed to demonstrate the ability of the valves listed in Table 2.3.3-2 to change position as listed in Table 2.3.3-1 under system design conditions.	The as-installed valve changes position as listed in Table 2.3.3-1 under system design conditions.
7.3	Containment isolation valves listed in Table 2.3.3-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.3.3-1 to close within the containment isolation response time following initiation of a containment isolation signal.	~~A report exists and concludes that the c~~Containment isolation valves listed in Table 2.3.3-1 close within ~~the required times~~60 seconds following initiation of a containment isolation signal.~~:~~ ~~30JMQ40 AA001 ≤ 60 sec.~~ ~~30JMQ41 AA001 ≤ 60 sec.~~ ~~30JMQ42 AA001 ≤ 60 sec.~~ ~~30JMQ43 AA001 ≤ 60 sec.~~

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Table 2.4.14-1—Hydrogen Monitoring System Equipment

Equipment Description	Equipment Tag Number (1)	Equipment Location	Seismic Category	IEEE Class 1E (2)	Harsh Environment	M In
Hydrogen Sensor	30JMU10CQ001	Reactor Building	I	1N 2A ~~Yes~~	Yes	
Hydrogen Sensor	30JMU10CQ002	Reactor Building	I	1N 2A ~~Yes~~	Yes	
Hydrogen Sensor	30JMU10CQ003	Reactor Building	I	1N 2A ~~Yes~~	Yes	
Hydrogen Sensor	30JMU10CQ004	Reactor Building	I	1N 2A ~~Yes~~	Yes	
Hydrogen Sensor	30JMU10CQ005	Reactor Building	I	1N 2A ~~Yes~~	Yes	
Hydrogen Sensor	30JMU10CQ006	Reactor Building	I	1N 2A ~~Yes~~	Yes	
Hydrogen Sensor	30JMU10CQ007	Reactor Building	I	1N 2A ~~Yes~~	Yes	

1) Equipment tag numbers are provided for information and are not part of the design certification.

2) N denotes the division the component is normally powered from. A denotes the division the componen alternate feed is implemented.

3.3 Equipment listed in Tables 2.6.8-1 and 2.6.8-2 perform the functions listed in Tables 2.6.8-1 and 2.6.8-2.

3.4 Equipment identified as Seismic Category I in Tables 2.6.8-1 and 2.6.8-2 can withstand ~~a~~ seismic design basis ~~seismic~~ loads without loss of safety function as listed in Tables 2.6.8-1 and 2.6.8-2.

4.0 Displays and Controls

4.1 Displays listed in Table 2.6.8-3—Containment Ventilation System Equipment I&C and Electrical Design are retrievable in the main control room (MCR) and the remote shutdown station (RSS) as listed.

4.2 The CBVS equipment controls that are provided in the MCR and RSS are as listed in Table 2.6.8-3.

4.3 ~~Actuators~~ Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 2.6.8-3 responds to the state requested by a test signal~~are controlled by a PACS module~~.

4.4 The CBVS provides containment pressure indication. 14.03-1b

5.0 Electrical Power Design Features

5.1 The equipment designated as Class 1E in Table 2.6.8-3 are powered from the Class 1E division as listed in Table 2.6.8-3 in a normal or alternate feed condition.

5.2 Motor operated dampers listed in Table 2.6.8-3 fail to the position as shown in Table 2.6.8-3 on loss of power.

6.0 Environmental Qualifications

6.1 Electrical drivers for equipment listed in Table 2.6.8-3 for harsh environment can perform the safety function in Tables 2.6.8-1 and 2.6.8-2 following exposure to the design basis environments for the time required.

7.0 Equipment and System Performance

7.1 The CBVS low flow purge exhaust subsystem exhausts through a CBVS iodine filtration train~~maintains a negative pressure in the Containment Building relative to the environment when the CBVS low flow purge subsystem is operating~~.

8.0 Inspections, Tests, Analyses and Acceptance Criteria (ITAAC)

~~The inspections, tests, analyses, and acceptance criteria (ITAAC) for the CBVS are specified in~~ Table 2.6.8-4~~—~~ lists the CBVS ITAAC~~Containment Ventilation System ITAAC~~.

Table 2.6.8-3—Containment Building Ventilation System Equipment I&C and Electrical (2 Sheets)

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E Source (2)	Failure Position	EQ – Harsh Env.	PACS
Motor operated dampers	30KLA21AA001	Fuel Building	N/A~~Division 1~~	Close	Yes	Yes
Motor operated dampers	30KLA22AA001	Fuel Building	N/A~~Division 4~~	Close	Yes	Yes
Motor operated damper	30KLA50AA002	Reactor Building	Division 2^N Division 1^A	Close	Yes	Yes
Electric Heater	30KLA50AH001	Reactor Building	Division 2^N ~~N/A~~Division 1^A			
Motor operated damper	30KLA50AA004	Reactor Building	Division 2^N ~~N/A~~Division 1^A	Close	Yes	Yes
Recirculation Fans	30KLA51AN001	Reactor Building	Division 2^N ~~N/A~~Division 1^A	N/A	Yes	Yes
Recirculation Fans	30KLA52AN001	Reactor Building	Division 1^N ~~N/A~~Division 2^A	N/A	Yes	Yes
Containment Pressure Sensor	30KLA70CP801	Fuel Building	Yes	N/A	Yes	N/A
Containment Pressure Sensor	30KLA70CP802	Safeguard Building	Yes	N/A	Yes	N/A
Containment Pressure Sensor	30KLA70CP803	Safeguard Building	Yes	N/A	Yes	N/A
Containment Pressure Sensor	30KLA70CP804	Fuel Building	Yes	N/A	Yes	N/A

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Table 2.6.8-4—Containment Building Ventilation System ITAAC (~~3~~ 5 Sheets)

Commitment Wording		Inspections, Tests, ~~or Analysis~~Analyses	Acceptance Criteria
4.2	Controls exist in the MCR and the RSS as identified in Table 2.6.8-3.	Test will be performed for the existence of control signals from the MCR and the RSS to the equipment listed in Table 2.6.8-3.	a) The controls listed in Table 2.6.8-3 as being in the MCR exist in the MCR. b) The controls listed in Table 2.6.8-3 as being in the RSS exist in the RSS.
4.3	~~Actuators~~ Equipment listed as being controlled by a PACS module in Table 2.6.8-3 responds to the state requested by a test signal ~~are controlled by a PACS module~~. 14.03-1b	A~~n operational~~ test will be performed using test signals ~~for the actuators being controlled by a PACS module as listed in Table 2.6.8-3. An inspection will be performed on the actuation of the actuator~~.	~~The actuators~~Equipment listed as being controlled by a PACS module in Table 2.6.8-3 ~~actuate~~ responds to the state requested by the signal.
4.4	The CBVS provides containment pressure indication.	A test will be performed.	a) Containment pressure sensors listed in Table 2.6.8-3 provide containment pressure indication in the MCR. b) Containment pressure sensors listed in Table 2.6.8-3 provide containment pressure indication in the RSS.

Table 2.7.1-3—Component Cooling Water System Inspections, Tests, Analyses, and Acceptance Criteria (~~7~~ 9 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.9	Containment isolation valves listed in Table 2.7.1-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.7.1-1 to close within the containment isolation response time following initiation of a containment isolation signal.	~~A report exists and concludes that the c~~Containment isolation valves listed in Table 2.7.1-1 close within~~ the required times~~ 60 seconds following initiation of a containment isolation signal.

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Table 2.7.5-3—Fire Water Distribution System Inspections, Tests, Analyses, and Acceptance Criteria (~~4~~ 5 Sheets)

Commitment Wording		Inspection, Test or Analysis	Acceptance Criteria
7.2	The FWDS pumps consist of at least one electric motor-driven pump and one diesel engine-driven pump.	a. An inspection will be performed to verify that at least one electric motor-driven pump and one diesel engine-driven pump exists. b. An analysis will be performed.	a. At least one electric motor-driven pump and one diesel engine-driven pump exists. b. ~~Completion of analysis~~ Analysis reports exist and conclude ~~indicates~~ a sufficient number of pumps to provide 100% capacity are available assuming failure of the largest pump or loss of offsite power.
7.3	FWDS pumps have sufficient NPSHA.	Testing and analyses will be performed to verify ~~adequate~~ NPSHA for FWDS pumps.	The FWDS pumps have ~~sufficient~~ NPSHA that is greater than net positive suction head required (NPSHR) at system run-out flow.
7.4	Class 1E valves listed in Table 2.7.5-2 perform the function listed in Table 2.7.5-1 under system conditions.	Tests and analyses or a combination of tests and analyses will be performed to demonstrate the ability of the valves listed in Table 2.7.5-2 to change position as listed in Table 2.7.5-1 under system design conditions.	The as-installed valve changes position as listed Table 2.7.5-1 under system design conditions.
7.5	The fire water distribution system has provisions to allow flow testing of the fire water distribution system pumps during plant operation.	Testing for flow of the fire water distribution system pumps back to the fire water storage tank will be performed.	The flow test line allows fire water distribution system pump flow back to the fire water storage tank.
7.6	Containment isolation valves listed in Table 2.7.5-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.7.5-1 to close within the containment isolation response time following initiation of a containment isolation signal.	~~See Table 3.3.1-1, item 3.0.~~Containment isolation valves listed in Table 2.7.5-1 ~~shall be closed~~close within 60 seconds ~~of~~following initiation of a containment isolation signal.~~initiating event.~~

14.03.11-1, c1

2.9.4 Sampling Activity Monitoring System

1.0 Description

The sampling activity monitoring system provides the following safety-related function:

- Provides a radioactivity indication that initiates isolation of the main control room (MCR) ventilation intake.

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The sampling activity monitoring system provides the following non-safety-related function:

- Provides ventilation stack radiation monitoring indication in the MCR and remote shutdown station (RSS).
-

2.0 Arrangement

2.1 The functional arrangement of the sampling activity monitoring system is shown in Figure 2.9.4-1—Sampling Activity Monitoring System Functional Arrangement.

2.2 The location of the sampling activity monitoring system equipment is as listed in Table 2.9.4-1—Sampling Activity Monitoring System Equipment Mechanical Design.

3.0 Mechanical Design Features

3.1 Equipment identified as Seismic Category I in Table 2.9.4-1 can withstand ~~a~~ seismic design basis ~~seismic~~ loads without loss of safety function as listed in Table 2.9.4-1.

4.0 Displays and Controls

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4.1 The MCR ventilation intake radioactivity monitors listed in Table 2.9.4-1 initiate a MCR alarm when radiation level exceeds a preset limit.

4.2 The sampling activity system provides ventilation stack radiation monitoring.

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 2.9.4-2—Sampling Activity Monitoring System Equipment I&C and Electrical Design are powered from a Class 1E division in a normal or alternate feed condition.

6.0 Equipment and System Performance

6.1 MCR Ventilation Intake Radioactivity Monitors initiate isolation of the MCR ventilation and initiation of supplemental filtration upon receipt of high radioactivity levels.

Table 2.9.4-1—Sampling Activity Monitoring System Equipment Mechanical Design

Equipment Description	Equipment Tag Number (1)	Equipment Location	Function
MCR Ventilation Intake Radioactivity Monitor	30KLK65CR001	Safeguard Building Division 2	Indicate Radioactivity Levels
MCR Ventilation Intake Radioactivity Monitor	30KLK65CR002	Safeguard Building Division 2	Indicate Radioactivity Levels
MCR Ventilation Intake Radioactivity Monitor	30KLK66CR001	Safeguard Building Division 3	Indicate Radioactivity Levels
MCR Ventilation Intake Radioactivity Monitor	30KLK66CR002	Safeguard Building Division 3	Indicate Radioactivity Levels
Ventilation Stack Radioactivity Monitor	30KLK95CR001	Vent Stack	Indicate Radioactivity Levels
Ventilation Stack Radioactivity Monitor	30KLK95CR002	Vent Stack	Indicate Radioactivity Levels

1) Equipment tag numbers are provided for information only and are not part of the certified design.

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Table 2.9.4-2—Sampling Activity Monitoring System Equipment I&C and Electrical Design

Equipment Description	Equipment Tag Number (1)	Equipment Location	IEEE Class 1E Source(2)
MCR Ventilation Intake Radioactivity Monitor	30KLK65CR001	Safeguard Building Division 2	Yes
MCR Ventilation Intake Radioactivity Monitor	30KLK65CR002	Safeguard Building Division 2	Yes
MCR Ventilation Intake Radioactivity Monitor	30KLK66CR001	Safeguard Building Division 3	Yes
MCR Ventilation Intake Radioactivity Monitor	30KLK66CR002	Safeguard Building Division 3	Yes
Ventilation Stack Radioactivity Monitor	30KLK95CR001	Vent Stack	Yes
Ventilation Stack Radioactivity Monitor	30KLK95CR002	Vent Stack	Yes

1) Equipment tag numbers are provided for information only and are not part of the certified design.
2) Enter Yes or No.

14.03-1b

Table 2.9.4-3—Sampling Activity Monitoring System
~~Inspections, Tests, Analyses, and Acceptance Criteria~~ITAAC
(2 Sheets)

14.03-1b

Commitment Wording		Inspections, Tests, ~~or Analysis~~Analyses	Acceptance Criteria
4.2	The sampling activity system provides ventilation stack radiation monitoring.	A test will be performed.	a. Ventilation stack radiation monitors listed in Table 2.9.4-1 and Table 2.9.4-2 provide ventilation stack radiation indication in the MCR. b. Ventilation stack radiation monitors listed in Table 2.9.4-1 and Table 2.9.4-2 provide ventilation stack radiation indication in the RSS.
~~4~~5.1	The components designated as Class 1E in Table 2.9.4-2 are powered from a Class 1E division in a normal or alternate feed condition.	a. Testing will be performed for components designated as Class 1E in Table 2.9.4-2 by providing a test signal in each normally aligned division. b. Testing will be performed for components designated as Class 1E in Table 2.9.4-2 by providing a test signal in each division with the alternate feed aligned to the divisional pair.	a. The test signal provided in the normally aligned division is present at the respective Class 1E component identified in Table 2.9.4-2. b. The test signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E component identified in Table 2.9.4-2.
6.1	MCR Ventilation Intake Radioactivity Monitors listed in Table 2.9.4-1 initiate isolation of the MCR ventilation and initiation of supplemental filtration upon receipt of high radioactivity levels.	A test will be performed to verify that the MCR ventilation isolation and supplemental filtration is initiated upon radiation levels exceeding a preset limit.	The monitors listed in Table 2.9.4-1 initiate MCR ventilation isolation and supplemental MCR filtration when radiation level exceeds a preset limit.

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Table 3.3-1 Integrated Tests, Analyses, and Acceptance Criteria

	Commitment Wording	Inspection, Test or Analysis	Acceptance Criteria
1.0	The integrated leak rate from containment does not exceed the maximum allowable leakage rate.	A test will be performed to evaluate the containment leakage rate.	The maximum allowable leakage rate shall not exceed 0.25% of containment air mass per day at containment pressure of 55 psig.
2.0	Safety injection pumped flow will be delivered to the RCS before the maximum elapsed time. 14.03.11-1, c1	Tests will be performed to determine the safety injection pumped flow delivery time.	Time for safety injection flow to reach full flow shall not exceed 15 seconds with offsite power available or 40 seconds with loss of offsite power.
3.0	Containment isolation for valves and dampers other than the HVAC dampers in Item 5.0 below ~~shall be~~is completed within the maximum acceptable time.	A test will be performed to determine the time when all containment isolation valves are closed.	All containment isolation valves ~~shall be closed~~close within 60 seconds of isolation initiating event.
4.0	Upon SIS actuation, the MSRT shall control secondary system cooldown at a pre-defined rate.	A test will be performed to confirm the cooldown rate.	The secondary system is depressurized from a maximum opening pressure of 1414.7 psia to a maximum of 900 psia at a rate sufficient to reduce temperature at a rate of 180˚F/hr.
5.0	Containment isolation for the following HVAC dampers shall be completed within the maximum acceptable time: 30KLA10AA001 30KLA10AA003 30KLA20AA001 30KLA20AA003 30KLA30AA002 30KLA30AA003 30KLA40AA001 30KLA40AA002	A test or series of tests will be performed to determine the time when all containment isolation dampers are closed.	All containment isolation dampers shall be closed within 10 seconds of the actuation signal.

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Table 3.11-1—List of Environmentally Qualified Electrical/I&C Equipment

(Sheet 72 of 102)

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)	Safety Class (Note 4)			
KLA 6 RCP2 Air Temp meas	30KLA61CT004	30UJA34005	H	H	SII	NS-AQ		EMC	Y
KLA 6 SG1 Air Temp Meas	30KLA61CT005	30UJA34003	H	H	SII	NS-AQ		EMC	Y
KLA 6 SG2 Air Temp Meas	30KLA61CT006	30UJA34004	H	H	SII	NS-AQ		EMC	Y
KLA 6 Eq Comp CRDM Air Temp Meas	30KLA61CT007	30UJA15001	H	H	SII	NS-AQ		EMC	Y
KLA 6 FAL Valves Air Temp Meas	30KLA61CT008	30UJA23020	H	H	SII	NS-AQ		EMC	Y
KLA 6 KTA Pumps Air Temp meas	30KLA61CT011	30UJA07022	H	H	SII	NS-AQ		EMC	Y
KLA 6 Supply Air Temp Meas 3	30KLA63CT001	30UJA23018	H	H	SII	NS-AQ		EMC	Y
KLA 6 Supply Air Temp Meas 4	30KLA63CT002	30UJA23018	H	H	SII	NS-AQ		EMC	Y
KLA 6 RCP3 Air Temp Meas	30KLA63CT003	30UJA34006	H	H	SII	NS-AQ		EMC	Y
KLA 6 RCP4 Air Temp Meas	30KLA63CT004	30UJA23009	H	H	SII	NS-AQ		EMC	Y
KLA 6 SG3 Air Temp Meas	30KLA63CT005	30UJA34007	H	H	SII	NS-AQ		EMC	Y
KLA 6 SG4 Air Temp Meas	30KLA63CT006	30UJA34008	H	H	SII	NS-AQ		EMC	Y
KLA 6 Safety Relief Valve rm Air Temp	30KLA63CT008	30UJA34019	H	H	SII	NS-AQ		EMC	Y
KLA 6 UJA11024 Air Temp Meas	30KLA63CT009	30UJA11024	H	H	SII	NS-AQ		EMC	Y
KLA 6 UJA11022 Air Temp Meas	30KLA63CT010	30UJA11022	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 1	30KLA65CT001	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 2	30KLA65CT002	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 3	30KLA65CT003	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 4	30KLA65CT004	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 5	30KLA65CT005	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 6	30KLA65CT006	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 7	30KLA65CT007	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA 6 Temp Sensor Primary Pipe 8	30KLA65CT008	30UJA11001	H	H	SII	NS-AQ		EMC	Y
KLA DP Sens 4 FB	30KLA70CP801	30UFA13004	M	H	SI~~I~~	S~~NS-AQ~~	1E	EMC	
KLA DP Sens 3 SG2	30KLA70CP802	32UJH10002	M	H	SI~~I~~	S~~NS-AQ~~	1E	EMC	
KLA DP Sens 3 SG3	30KLA70CP803	33UJH10002	M	H	SI~~I~~	S~~NS-AQ~~	1E	EMC	
KLA DP Sens 3 FB	30KLA70CP804	30UFA10052	M	H	SI~~I~~	S~~NS-AQ~~	1E	EMC	
KLA DP Sens 5 FB	30KLA70CP851	30UFA13004	M	H	SI~~I~~	S~~NS-AQ~~		EMC	
KLA DP Sens 2 SG2	30KLA70CP852	32UJH10002	M	H	SI~~I~~	S~~NS-AQ~~		EMC	
KLA DP Sens 2 SG3	30KLA70CP853	33UJH10002	M	H	SI~~I~~	S~~NS-AQ~~		EMC	
KLA DP Sens 2 FB	30KLA70CP854	30UFA10052	M	H	SI~~I~~	S~~NS-AQ~~		EMC	
KLA 7 UJA40001 Temp Sens 1	30KLA71CT001	30UJA40001	H	H	SII	NS-AQ		EMC	Y
KLA 7 UJA40001 Temp Sens 2	30KLA71CT002	30UJA40001	H	H	SII	NS-AQ		EMC	Y
KLA 7 UJA34014 Temp Sens 1	30KLA71CT003	30UJA34014	H	H	SII	NS-AQ		EMC	Y
KLA 7 UJA34015 Temp Sens 1	30KLA71CT004	30UJA34015	H	H	SII	NS-AQ		EMC	Y
KLA 7 Setdown Area Op Fl Temp Sens	30KLA71CT005	30UJA29013	H	H	SII	NS-AQ		EMC	Y
KLA 7 Access Area Eq Hatch Temp Sens	30KLA71CT006	30UJA29016	H	H	SII	NS-AQ		EMC	Y
KLA 7 Inst Meas Table Temp Sens	30KLA71CT007	30UJA23041	H	H	SII	NS-AQ		EMC	Y
KLA 7 JND JNG Valv Lp 1 Temp Sens	30KLA71CT009	30UJA11025	H	H	SII	NS-AQ		EMC	Y
KLA 7 JND JNG Valv Lp 2 Temp Sens	30KLA71CT010	30UJA11026	H	H	SII	NS-AQ		EMC	Y
KLA 7 JND JNG Valv Lp 3 Temp Sens	30KLA71CT011	30UJA11027	H	H	SII	NS-AQ		EMC	Y
KLA 7 JND JNG Valv Lp 4 Temp Sens	30KLA71CT012	30UJA11028	H	H	SII	NS-AQ		EMC	Y
KLA 7 LCQ Flash Tk Temp Sens	30KLA71CT013	30UJA11018	H	H	SII	NS-AQ		EMC	Y
KLA 7 LCQ Heat exchgr Temp Sensor	30KLA71CT014	30UJA07018	H	H	SII	NS-AQ		EMC	Y
KLA 7 Hot Pip Pen Temp Sens	30KLA71CT015	30UJA07016	H	H	SII	NS-AQ		EMC	Y

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