ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Wednesday, May 19, 2010 3:16 PM
To: Tesfaye, Getachew
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); NOXON David B (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 276, FSARCh. 11, Supplement 4
Attachments: RAI 276 Supplement 4 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 276 on October 14, 2009. AREVA NP submitted Supplement 1 to the response on November 6, 2009 to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 2 to the response on November 12, 2009 to address the remaining question. AREVA NP provided Supplement 3 on March 31, 2010 to provide a revised schedule to submit FSAR markups for 2 of the questions. The attached file, "RAI 276 Supplement 4 Response US EPR DC.pdf," provides supplemental information and FSAR markup for 1 of the 2 questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the responses to RAI 276 Question 11.05-14.

The following table indicates the respective pages in the response document, "RAI 276 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's responses to the subject question.

Question #	Start Page	End Page
RAI 276 — 11.05-14	1	3

The schedule for the FSAR markups to the remaining one question has been changed based on the April 22 and 23, 2010 Chapter 11 audit and is provided below:

Question #	Response Date
RAI 276—11.05-13	July 29, 2010

Sincerely,

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Wednesday, March 31, 2010 4:54 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); NOXON David B (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 276, FSARCh. 11, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 276 on October 14, 2009. AREVA NP submitted Supplement 1 to the response on November 6, 2009 to address 1 of the remaining 2 questions. AREVA NP submitted Supplement 2 to the response on November 12, 2009 to address the remaining question. The prior responses to RAI 276, Questions 11.05-13 and 11.05-14 (Supplements 2 and 1 respectively) included a commitment to provide the FSAR markups associated with the responses by March 31, 2010.

Based on additional time needed to update engineering source documents, a complete FSAR markup is not provided for 2 of the questions as originally scheduled.

The schedule for the FSAR markups to the remaining 2 questions has been changed and is provided below:

Question #	Response Date
RAI 276—11.05-13	May 19, 2010
RAI 276—11.05-14	May 19, 2010

Sincerely,

Martin (Marty) C. Bryan
Licensing Advisory Engineer
AREVA NP Inc.
Tel: (434) 832-3016
Martin.Bryan.ext@areva.com

From: Pederson Ronda M (AREVA NP INC)
Sent: Thursday, November 12, 2009 1:57 PM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); NOXON David B (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 276, FSARCh. 11, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 276 on October 14, 2009. Supplement 1 to RAI No. 276 was sent on November 6, 2009 which responded to 1 of the 2 remaining questions. The attached file, "RAI 276 Supplement 2 Response US EPR DC.pdf," provides a technically correct and complete response to the one remaining question, as committed.

Appended to this file are two of the affected pages of the U.S. EPR Final Safety Analysis Report (FSAR) in redline-strikeout format which support the response to RAI 276 Question 11.05 -13.

A complete FSAR markup is not provided for the RAI 276 questions. As agreed by NRC staff during an FSAR Chapter 11 audit on October 7, 2009, FSAR markups may be submitted after Phase 2 completion to support Staff review to close confirmatory items. Therefore, a complete FSAR markup for the RAI 276 questions will be provided as indicated in the following table:

Question #	Supplement Date (providing FSAR Markup)
RAI 276 — 11.05-13	March 31, 2010
RAI 276 — 11.05-14	March 31, 2010

The following table indicates the respective pages in the response document, "RAI 276 Supplement 2 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 276 — 11.05-13	2	15

This concludes the formal AREVA NP response to RAI 276, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

Ronda Pederson
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Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
An AREVA and Siemens company
3315 Old Forest Road
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From: Pederson Ronda M (AREVA NP INC)
Sent: Friday, November 06, 2009 8:32 PM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); WILLIFORD Dennis C (AREVA NP INC); SLIVA Dana (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 276, FSARCh. 11, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 276 on October 14, 2009. The attached file, "RAI 276 Supplement 1 Response US EPR DC.pdf," provides a technically correct and complete response to 1 of the 2 questions, as committed.

Appended to this file is one of the affected pages of the U.S. EPR Final Safety Analysis Report (FSAR) in redline-strikeout format which support the response to RAI 276 Question 11.05 -14c.

A complete FSAR markup is not provided for Question 11.05 -14. As agreed by NRC staff during an FSAR Chapter 11 audit on October 7, 2009, FSAR markups may be submitted after Phase 2 completion to support Staff review to close confirmatory items. Therefore, a complete FSAR markup for this portion of the question will be provided as indicated in the following table:

Question #	Supplement Date (providing FSAR Markup)
RAI 276 — 11.05-14	March 31, 2010

The following table indicates the respective page(s) in the response document, "RAI 276 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 276 — 11.05-14	2	4

A complete answer is not provided for 1 question. The schedule for a technically correct and complete response to the remaining question has been revised as provided below.

Question #	Response Date

RAI 276 — 11.05-13	November 25, 2009

Sincerely,

Ronda Pederson

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From: Pederson Ronda M (AREVA NP INC)
Sent: Wednesday, October 14, 2009 5:47 PM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); WILLIFORD Dennis C (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 276, FSARCh. 11

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 276 Response US EPR DC.pdf" provides a schedule since a technically correct and complete response to the 2 questions is not provided.

The following table indicates the respective page(s) in the response document, "RAI 276 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 276 — 11.05-13	2	2
RAI 276 — 11.05-14	3	4

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

Question #	Response Date
RAI 276 — 11.05-13	November 6, 2009
RAI 276 — 11.05-14	November 6, 2009

Sincerely,

Ronda Pederson

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From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Monday, September 14, 2009 3:18 PM
To: ZZ-DL-A-USEPR-DL
Cc: Dehmel, Jean-Claude; Frye, Timothy; Jennings, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 276 (3496), FSARCh. 11

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on August 17, 2009, and discussed with your staff on August 25, 2009. No changes were made to the draft RAI questions as a result of that 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: 1423

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB71063127AF)

Subject: Response to U.S. EPR Design Certification Application RAI No. 276, FSARCh. 11, Supplement 4
Sent Date: 5/19/2010 3:15:43 PM
Received Date: 5/19/2010 3:15:47 PM
From: BRYAN Martin (EXT)

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MESSAGE	10004	5/19/2010 3:15:47 PM
RAI 276 Supplement 4 Response US EPR DC.pdf	229785	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Response to

Request for Additional Information No. 276, Supplement 4

9/14/2009

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 11.05 - Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems
Application Section: 11.5 and 5.2.5

QUESTIONS for Health Physics Branch (CHPB)

Question 11.05-14:

FSAR Sections 11.5.2 to 11.5.4 present the descriptions of PERMSS subsystems and Table 11.5-1 lists radiation monitoring methods used to monitor radioactive process and effluent streams for normal operations, anticipated operational occurrences, and accident conditions. Subsystem descriptions presented in Section 11.5 are supported by information presented in Sections 1.9, 7.1.2, 7.5.1, and 9.3.2. A review of these sections indicates that the design bases and system descriptions are not presented consistently. In particular, the staff noted that:

a) FSAR Section 1.9, Table 1.9-3 commits to the requirements of Part 50.34(f)(2)(viii), but this commitment is not addressed in FSAR Section 9.3.2 as it relates to the capability of prompting collecting samples from reactor coolant and containment. Section 11.5 refers to Section 9.3.2 for details and itself does not state how the requirements of Part 50.34(f)(2)(viii) are met.

b) FSAR Section 1.9, Table 1.9-3 commits to the requirements of Part 50.34(f)(2)(xvii), but this commitment is not addressed in FSAR Section 9.3.2 as it relates to design provisions for continuous sampling of radioiodines and particulates from all potential accident release points. Section 11.5 refers to Section 9.3.2 for details and Sections 11.5.3 and 11.5.4 do not state how the requirements of Part 50.34(f)(2)(xvii) are met.

c) FSAR Section 1.9, Table 1.9-3 commits to the requirements of Part 50.34(f)(2)(xvii), but this commitment is not addressed in FSAR Section 7.5.2 as it relates to design provisions for continuous sampling of radioiodines and particulates from all potential accident release points. For Part 50.34(f)(2)(xvii), Section 7.5.2 refers only to the monitoring of noble gases and does not refer to Section 9.3.2 for supporting details on design features. Also, Section 7.1.2 and Table 7.1-2 do not present specific information on how these requirements of Part 50.34(f)(2)(xvii) are being met.

d) FSAR Section 1.9, Table 1.9-3 commits to the requirements of Part 50.34(f)(2), but these commitments are not consistently referenced in the column identifying where in the FSAR such commitments are described. For example, FSAR Section 9.3.2 should be added to the commitment on Part 50.34(f)(2)(xvii) and (f)(2)(xxvi). Similarly, FSAR Section 11.5 should be added to the commitment on Part 50.34(f)(2)(xxvii).

e) FSAR Section 1.9, Table 1.9-2 commits to the guidance of Regulatory Guide (RG) 1.21 without any exclusion. FSAR Section 9.3.2 refers to RG 1.21 (regulatory position C.2) as it relates to the placement of radiation monitoring equipment on all potential effluent release points, but it does not address other equally important considerations. Such considerations are ensuring that sample collection is representative of effluent streams being monitored (regulatory position C.6 and ANSI/HPS 13.1-1999), and whether composite sampling will be used to assess releases for specific process and effluent streams (regulatory position C.7).

f) FSAR Section 9.3.2, Tables 9.3.2-1 and 9.3.2-2 refer to “activity” as a one of several process measurements that will be evaluated from primary and secondary sampling points. In sampling for noble gases, radioiodines, and particulates, the descriptions and tables do not identify significant or surrogate radionuclides that will be monitored as indicators of plant conditions; what type of analytical methods will be used for liquid, particulate, and gaseous samples, such as gross beta and alpha counting, gamma and alpha spectroscopy, and liquid scintillation counting; and types of samples that would require radionuclide chemical extraction before conducing radiological analyses.

Accordingly, FSAR Sections 1.9, 7.1.2, 7.5.1, 9.3.2, and 11.5 should be reviewed and revised to correct these inconsistencies and ensure the consistent presentation of all design bases, system descriptions, and design features of radiation instrumentation and sampling systems used in monitoring and controlling airborne radioactivity releases under normal operations, anticipated operational occurrences, and accident conditions in meeting the requirements of Part 50.34(f)(2).

Response to Question 11.05.14:

This question was answered in the Response to RAI 276, Supplement 1.

The following is supplemental information to the Response to Part f of this question:

> Activity monitoring associated with main steam is not part of the sampling systems in U.S. EPR FSAR Tier 2, Section 9.3.2. The gamma sensitive detectors are mounted adjacent to the main steam lines within the main steam and feedwater valve compartments. The radiological implications of detecting radioactivity on the secondary side are addressed in U.S. EPR FSAR Tier 2, Section 10.3.5.5 and Section 11.5.4.1. U.S. EPR FSAR Tier 2, Table 9.3.2-2 will not be revised to add the activity measurement associated with the main steam system.

FSAR Impact:

U.S. EPR FSAR Tier 2, Table 1.9-3, Section 9.3.2, Table 9.3.2-1, and Table 9.3.2-2 will be revised as described in the response including the RAI 276 Supplement 1 response, and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

9.3.2 Process Sampling Systems

The process sampling systems comprise the following:

- Nuclear sampling system (NSS).
- Secondary sampling system (SECSS).
- Severe accident sampling system (SASS).
- Hydrogen monitoring system (HMS).

The HMS is described in U.S. EPR FSAR Tier 2, Section 6.2.5.2.2.

Activity monitoring associated with main steam are described in Sections 10.3.5.5 and 11.5.4.1.

These process sampling systems provide centralized and local facilities for obtaining liquid and gaseous samples for the purpose of determining the physical and chemical characteristics and control parameters by measurements and analyses. Samples are obtained from the following:

- Primary and secondary coolant.
- Containment atmosphere.
- Liquid and gaseous waste treatment systems.
- In-containment refueling water storage tank (IRWST).

The process sampling systems are a subset of the process and effluent monitoring system, which is described in Section 11.5.

9.3.2.1 Design Bases

The processing sampling systems perform the following safety-related functions:

- Maintain containment isolation. Sample lines in the process sampling systems penetrating the containment are capable of isolation upon receipt of a containment isolation signal (CIS) from the reactor protection system.
- Maintain integrity of reactor coolant pressure boundary (RCPB). Motor-operated isolation valves in three NSS lines connected to the reactor coolant system (RCS) maintain RCPB integrity.

The process sampling systems have the following design basis requirements and criteria:

from those portions of the process sampling systems outside of the containment that contain or may contain radioactive material following an accident (10 CFR 50.34(f)(2)(xxvi)).

The process sampling systems are designed to meet the following functional criteria:

- Obtain liquid and gaseous samples from the primary coolant, liquid and gaseous waste treatment systems, auxiliary systems and inside containment.
- Purge sampling lines and reduce plateout (buildup of chemical residue) in sample lines, demonstrating compliance with RG 1.21, position C7.
- Representative samples from gaseous process streams and tanks are in accordance with American National Standards Institute/Health Physics Society (ANSI/HPS) Standard N13.1-1999. These criteria conform to RG 1.21, position C.6.
- Size RCS sample lines to minimize loss of reactor coolant following rupture of sample line.
- Recycle primary side samples according to their source to minimize waste.
- Continuously monitor secondary side activity and chemistry.
- Recycle secondary side samples to steam generator blowdown demineralizing system.
- Continuously monitor and obtain manual grab samples from selected points in the secondary side, main cycle and auxiliary systems.

9.3.2.2 System Description

9.3.2.2.1 General Description

Refer to Section 12.3.6.5.2 for process sampling system design features which demonstrate compliance with the requirements of 10 CFR 20.1406.

9.3.2.2.1.1 Nuclear Sampling System

The NSS obtains liquid and gaseous samples from the primary coolant, liquid and gaseous waste treatment systems, and auxiliary systems, in order to determine the characteristics of these samples by measurements and analyses. NSS samples are categorized as active liquid samples, slightly active liquid samples and gaseous samples. The NSS is contained within the Nuclear Island (NI).

Active Liquid Samples

The NSS continuously collects active liquid samples from the RCS at three different locations:

- One sample stream is degassed at a time to remove dissolved noble gases. The sample stream is routed through a multiple position valve into a degassing vessel. The vessel is purged before sampling to avoid cross-contamination. When the vessel inlet is isolated, dissolved gases are stripped off the liquid by nitrogen. Grab samples are taken from the vessel.

- The primary sample station and collection tank are shielded by being located in separate rooms, which reduces exposure by isolating the radiation source.

- Refer to Section 12.3.1.9.2 for additional information on sampling station accessibility and shielding.

To provide assurance that representative samples are obtained from liquid processes, sample points are located in turbulent flow zones (where applicable). For tanks, samples are taken from the bulk volume to avoid low points and sediment traps. Tanks with a high solids content will have provisions for agitation prior to sampling. Sample lines are flushed for a sufficient period of time prior to sample extraction in order to remove sediment deposits and air and gas pockets. This design conforms to RG 1.21, position C.6.

Slightly Active Liquid Samples

The NSS collects slightly active liquid grab samples from auxiliary systems containing slightly active liquids. Sample (glove) boxes are used to obtain grab samples from:

- Four safety injection system (SIS) accumulators inside Reactor Building (RB).
- Reactor boron and water makeup system (RBWMS).
- Fuel pool cooling system (FPCS).
- FPPS.
- Coolant degasification system (CDS).
- CTS.

Sample types taken include:

- Liquid grab.
- Degassed liquid grab.

Gaseous Samples

The NSS collects local gaseous grab samples from:

- Gaseous waste processing system (GWPS).

- The NSS provides information to indicate the potential for being breached or the actual breach of the barriers to fission product release (i.e., RCPB).
- The NSS provides information regarding the release of radioactive materials, which allows for early indication of the need to initiate other protective actions.
- The SASS obtains and analyzes gaseous samples from the containment atmosphere following a severe accident.
- The only safety-related function of the SECSS is containment isolation. Refer to Section 6.2.4. Therefore, GDC 64 is not applicable to the SECSS.

The design of the process sampling systems satisfies 10 CFR 50.34(f)(2)(xxvi) regarding having provisions for a leakage detection and control program to minimize the leakage from those portions of the process sampling systems outside of the containment that contain or may contain radioactive material following an accident.

- The NSS samples the RCS to provide information necessary to assess and control the plant under accident conditions.
- The SASS obtains and analyzes gaseous samples from the containment atmosphere following a severe accident for the purpose of confirming whether the containment atmosphere contains airborne activity.
- The NSS and SASS contains proper equipment to prevent unnecessary high exposures to workers and minimize leakage from the system to maintain exposure ALARA.
- Safety-related CIVs close on receipt of a CIS and contain radioactive material inside the RB. Refer to Section 6.2.4.
- The design of the process sampling systems satisfies 10 CFR 50.34(f)2(viii) as it relates to the capability of collecting samples from the reactor coolant (NSS) and containment (SASS).
- The design of the process sampling systems satisfies 10 CFR 50.34(f)(2)(xvii) regarding having provisions for a continuous sampling of radioiodines and particulates in gaseous effluents from the potential accident release points.

9.3.2.4 Inspection and Testing Requirements

Components in the process sampling systems are inspected and tested during plant startup. Refer to Section 14.2 (test abstract #071, #092, #100 and #204) for initial plant startup test program. The components are designed to permit periodic testing and inservice inspections during plant operation. System components are monitored during operation to demonstrate satisfactory functioning of the equipment. A description of the inservice testing program and inservice inspection program is provided in Section 3.9.6 and Section 6.6, respectively.

9.3.2.6 References

1. EPRI Report 1008224, "Pressurized Water Reactor Secondary Water Chemistry Guidelines," Revision 6, Electric Power Research Institute, December 2004.

2. ANSI/HPS N13.1-1999, "Guide to Sampling Airborne Radioactive Materials in Stacks and Ducts," American National Standards Institute/Health Physics Society, 1999.

Table 9.3.2-1—Primary Side Sampling Points

Process or Equipment	Number of Sample Points	Type of Sample	Process Measurement
LHSI / RHR	4	Grab	See Note
CVCS	2	Process	Boron, hydrogen, oxygen, conductivity and activity beta.
RCS	2	Process	Boron, hydrogen, oxygen, conductivity and activity beta.
Pressurizer	1	Process	Boron, hydrogen, oxygen, conductivity and activity beta.
CPS	6	Grab	See Note
SIS accumulators	4	Grab	See Note
RBWMS (boric acid pump)	2	Grab	See Note
FPCS	2	Grab	See Note
FPPS	2	Grab	See Note
CDS	2	Grab	See Note
CTS	2	Grab	See Note
GWPS	4	Grab	See Note
CSSS	1	Grab	See Note
NIDVS (primary effluents)	3	Grab	See Note
NSS (back feed tank)	1	Grab	See Note

NOTE:

1. Specific properties of liquid and gaseous grab samples to be measured are identified in plant procedures.

Next File

Table 9.3.2-2—Secondary Side Sampling Points

Process or Equipment	Number of Sample Points	Type of Sample	Process Measurement of Continuous Samples
SG blowdown	15	Continuous/grab	Activity gamma, cation conductivity, specific conductivity, sodium, and pH
Feedwater (upstream valve chamber)	1	Continuous/grab	Specific conductivity, cation conductivity, pH and oxygen
Feedwater pumps discharge (combined with start-up feedwater pump)	1 per pump (4 total)	Continuous/grab	Hydrazine, specific conductivity, cation conductivity, pH, O_2 and Na
Main steam (upstream HP turbine)	4	Continuous/grab	Cation conductivity, degassed cation conductivity and sodium
Main steam (downstream reheater)	2	Continuous/grab	Cation conductivity, degassed cation conductivity and sodium
Reheater drains	4	Continuous/grab	Cation conductivity, degassed cation conductivity and Na
Auxiliary steam system	1	Grab	
Auxiliary steam condensate	1	Grab	
Condensate pump discharge	1	Continuous/grab	Specific conductivity, cation conductivity, O_2 and Na
Condensate polisher discharge	Site specific	Continuous/grab	Cation conductivity, O_2 and Na
Condenser hotwells	6	Continuous	Cation conductivity, O_2 and Na
Moisture separator drains	2	Grab	
HP heater drains	2	Grab	
LP heater drains	2	Grab	
Clean drains	1	Grab	
Demineralized water storage tank	1	Grab	
Closed cooling water system	1	Grab	
Circulating water cooling water basin makeup	1	Continuous	pH/ORP and specific conductivity

Table 1.9-3—U.S. EPR Conformance with TMI Requirements (10 CFR 50.34(f)) and Generic Issues (NUREG-0933)
Sheet 3 of 5

Issue	Description	U.S. EPR Assessment	FSAR Section(s)
(2)(xvii) con't	d. Containment radiation intensity	Y	7.1.2.1.8
			7.5.2.1.1
			9.3.2
			11.5
			12.3
			18.7
	e. Noble gas effluents	Y	7.1.2.1.8
			7.5.2.1.1
			9.3.2
			11.5
			12.3
			18.7
(2)(xviii)	Provide instrumentation and unambiguous control room indication for inadequate core cooling conditions	Y	7.1.2.1.9
			7.5.2.1.1
(2)(xix)	Provide core damage instrumentation and control room indication	Y	7.1.2.1.10
			7.5.2.1.1
(2)(xx)	Provide emergency power supplies for PZR components	Y	7.1.2.1.11
			7.5.2.1.1
			Table 8.1-1
			8.3
(2)(xxv)	Provide an onsite Technical Support Center	Y	13.3
	Provide an onsite Operational Support Center	N/A-COL	N/A
(2)(xxvi)	Provide for post-accident leakage control and detection outside containment	Y	5.4.7
			9.3.2
(2)(xxvii)	Provide for in-plant radiation monitoring	Y	12.3.4
			11.5
(2)(xxviii)	Evaluate potential radioactivity and radiation pathways for post accident control room habitability problems	Y	6.4
			9.4.1
(3)(i)	Provide administrative procedures for evaluating operating experience and lessons learned	Y	18.2