ArevaEPRDCPEm Resource

From: Pederson Ronda M (AREVA NP INC) [Ronda.Pederson@areva.com]
Sent: Friday, November 20, 2009 7:18 PM
To: Tesfaye, Getachew
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); KOWALSKI David J (AREVA NP INC); WILLIFORD Dennis C (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 263, FSAR Ch 9, Supplement 1
Attachments: RAI 263 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided a partial response to 1 of the 2 questions of RAI No. 263 on August 31, 2009. The attached file, "RAI 263 Supplement 1 Response US EPR DC.pdf" provides a technically correct and complete response to 1 of the remaining 2 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which supports the response to RAI 263 Question 09.05.08-11.

The following table indicates the respective pages in the response document, "RAI 263 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 263 — 09.05.08-11	2	3

AREVA NP is unable to provide a response to one of the remaining questions at this time. As discussed with the NRC staff, several fuel rack related RAIs are being deferred due to the time required to process the required FSAR changes in Chapter 9 to include the new and spent fuel rack designs.

Therefore, the schedule for a technically correct and complete response to this remaining question has been revised as provided below.

Question #	Response Date
RAI 263 — 09.01.01-24 (Parts 3 and 6)	December 10, 2009

Sincerely,

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
AREVA NP Inc.
An AREVA and Siemens company
3315 Old Forest Road
Lynchburg, VA 24506-0935
Phone: 434-832-3694
Cell: 434-841-8788

From: WELLS Russell D (AREVA NP INC)
Sent: Monday, August 31, 2009 4:19 PM
To: 'Getachew Tesfaye'
Cc: Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 263, FSAR Ch 9

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 263 Response US EPR DC.pdf" provides a technically correct and partial response to 1 of the 2 questions.

The following table indicates the respective pages in the response document, "RAI 263 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 263 — 09.01.01-24	2	3
RAI 263 — 09.05.08-11	4	4

A schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 263 — 09.01.01-24 (Parts 3 and 6)	November 20, 2009
RAI 263 — 09.05.08-11	November 20, 2009

Sincerely,

(Russ Wells on behalf of)

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
AREVA NP, Inc.
An AREVA and Siemens company
3315 Old Forest Road
Lynchburg, VA 24506-0935
Phone: 434-832-3694
Cell: 434-841-8788

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, July 17, 2009 7:14 PM
To: ZZ-DL-A-USEPR-DL
Cc: Poehler, Jeffrey; Terao, David; Wolfgang, Robert; Segala, John; Hearn, Peter; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 263(3237,3068), FSAR Ch. 9

Attached please find draft RAI No. 263 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-336

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 979

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Subject: Response to U.S. EPR Design Certification Application RAI No. 263, FSAR Ch 9, Supplement 1
Sent Date: 11/20/2009 7:18:18 PM
Received Date: 11/20/2009 7:18:21 PM
From: Pederson Ronda M (AREVA NP INC)

Created By: Ronda.Pederson@areva.com

Recipients:
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
"KOWALSKI David J (AREVA NP INC)" <David.Kowalski@areva.com>
Tracking Status: None
"WILLIFORD Dennis C (AREVA NP INC)" <Dennis.Williford@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

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MESSAGE	4182	11/20/2009 7:18:21 PM
RAI 263 Supplement 1 Response US EPR DC.pdf	69166	

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

Response to

Request for Additional Information No. 263, Supplement 1

7/30/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.01.01 - Criticality Safety of Fresh and Spent Fuel Storage and Handling
SRP Section: 09.05.08 - Emergency Diesel Engine Combustion Air Intake and Exhaust System

Application Section: FSAR Ch. 9

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects) (CIB1)
QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

Question 09.05.08-11:

In response to RAI No. 09.05.08-8, the applicant stated that FSAR Tier 1 Section 2.5.4 and Table 2.5.4-4 will be revised to add item 3.15: "Each EDG exhaust path has a bypass exhaust path."

a. The staff noted that Table 2.5.4-4 on EDG ITAAC (Item 3.15) shows the acceptance criteria for the bypass exhaust device as "each EDG exhaust path bypass device provides an exhaust path when actuated." The saff is concerned that this acceptance criteria does not adequately demonstrate the bypass feature. Specifically, once the disk ruptures, a bypass will be provided.

   Confirm that the design of the EDG exhaust prevents a seismic event from causing reduced exhaust flow with elevated backpressure (but not high enough to acutate the bypass path).

b. In addition to the above concern, FSAR Tier 2 Section 9.5.8.6, "Instrument Requirements," provides the following statements:

   "When a high-high setpoint is reached, the bypass valve is actuated. The rupture disk is the actuator used to perform this function."

   This wording would tend to imply that the bypass device may be something more than a standard rupture disk. However, reviews of Figures 2.5.4-3 and 9.5.8-1 indicate that the bypass path is controlled by a single rupture disk.

   Provide further clarification of the operation of the bypass device and ITAAC acceptance criteria that best demonstrates proper functioning of the bypass path in the event of full or partial failure of the normal exhaust path. If the bypass device is a standard rupture disk, the wording in Section 5.4.8.6 should be clarified. If the bypass device is some combination of an active valve with a rupure disk, the acutation of this device, along with ITAAC acceptance criteria, should be described.

Response to Question 09.05.08-11:

a. The rupture disk is a pressure actuated device that will rupture on high back pressure in the exhaust system. The rupture disk is designed to rupture within the pressure limits defined by the emergency diesel engine (EDG) manufacturer to maintain full engine performance. The rupture disk is a safety-related Seismic Category I system component. The rupture disks are designed, manufactured, tested and qualified as ASME Section III Class 3 components and supplied by the EDG manufacturer as part of the EDG package under their Appendix B program. The rupture disk will be installed, inspected and maintained per the manufacturer's requirements, and is included in the operations and maintenance inservice testing program. This minimizes the likelihood of a degradation of engine performance from a full or partial flow restriction in the downstream non-safety-related portion of the exhaust system.

   U.S. EPR FSAR Tier 1, Table 2.5.4-4—Emergency Diesel Generator ITAAC, Item 3.15, Inspections, Tests, Analyses column will be revised to state:

   "Analysis or type tests will be performed on the EDG exhaust bypass device."

U.S. EPR FSAR Tier 1, Table 2.5.4-4—Emergency Diesel Generator ITAAC, Item 3.15, Acceptance Criteria column will be revised to state:

> "Analysis or type test results conclude that the EDG rupture disk will rupture within the pressure limits defined by the EDG manufacturer."

The stated changes demonstrate adequate bypass feature acceptance criteria.

b. The exhaust system instrumentation provides an alarm function, which will only alert operations personnel of a degrading condition, to allow actions to be taken prior to the actuation of the rupture disk. There is no control function for the rupture disk. U.S. EPR FSAR Tier 2, Section 9.5.8.6 and Table 9.5.8-1—DGAIES Indicators and Alarms will be revised to provide further clarification.

FSAR Impact:

U.S. EPR FSAR, Tier 1 Table 2.5.4-1, and U.S. EPR FSAR, Tier 2 Section 9.5.8.6 and Table 9.5.8-1 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

9.5.8-11

Table 2.5.4-4—Emergency Diesel Generator ITAAC (~~7~~ 10 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.15	Each EDG exhaust path has a bypass exhaust path.	Analysis or type tests will be performed on the EDG exhaust bypass device. ~~Analysis, tests, type tests or a combination of analysis, test and type tests will be performed on the EDG exhaust bypass device.~~	Analysis or type test results conclude that the EDG rupture disk will rupture within the pressure limits defined by the EDG manufacturer. ~~Each EDG exhaust path bypass device provides an exhaust path when actuated.~~
3.16	Portions of the EDG piping shown as ASME Code Section III in Figure 2.5.4-1, Figure 2.5.4-2, Figure 2.5.4-3, Figure 2.5.4-4, and Figure 2.5.4-5 are designed in accordance with ASME Code Section III requirements.	Inspections of the ASME Code Section III Design Reports (NCA-3550) and associated reference documents will be performed. ~~Inspections will be performed for the existence of ASME Code Section III Design Reports.~~	ASME Code Section III Design Reports (NCA-3550) exist and conclude that portions of the EDG piping shown as ASME Code Section III in Figure 2.5.4-1, Figure 2.5.4-2, Figure 2.5.4-3, Figure 2.5.4-4, and Figure 2.5.4-5 comply with ASME Code Section III requirements. ~~ASME Code section III Design Reports (NCA-3550) exist for portions of the EDG piping shown as ASME Code Section III in Figure 2.5.4-1, Figure 2.5.4-2, Figure 2.5.4-3, Figure 2.5.4-4, and Figure 2.5.4-5.~~

9.5.8.6 Instrument Requirements

The EDG control system monitors the diesel generator support system. Alarms essential for the availability of the system are transmitted to the MCR. The air filters are monitored for differential pressure and the temperature of the exhaust gas is monitored. Indicators and alarms are listed in Table 9.5.8-1.

~~The instrumentation and control for the DGAIES is designed to provide the following safety-related function:~~

- ~~Monitoring the EDG exhaust gas system backpressure – The exhaust gas system backpressure is monitored to make sure that an undesirable pressure is not attained that would affect the operability of the diesel engine. When a high-high setpoint is reached, the bypass valve is actuated. The rupture disk is the actuator used to perform this function.~~

The instrumentation and control for the DGAIES is designed to provide the following non-safety-related functions:

9.5.8-11

- Monitoring of diesel engine combustion air system – The air filters are monitored for fouling by differential pressure measurement.
- Intake air shutoff dampers – The intake air supply is equipped with shutoff dampers that are actuated in the event of an emergency shutdown or overspeed trip. The dampers are actuated by the automated safety actuation system. The dampers have no safety-related function.
- Monitoring of diesel engine exhaust gas system – The temperature and backpressure of the exhaust gas is monitored.

9.5.8.7 References

1. NUREG/CR-0660, "Enhancement of Onsite Emergency Diesel Generator Reliability," University of Dayton Research Institute for the U.S. NRC; UDR-TR-79-07; February 1979.

Table 9.5.8-1—DGAIES Indicators and Alarms

Component	Indication/Alarm
Intake air Temperature	Monitoring w/alarm
Intake air filter A differential pressure	Monitoring w/alarm
Intake air filter B differential pressure	Monitoring w/alarm
Intake silencer A differential pressure	Monitoring w/alarm
Intake silencer B differential pressure	Monitoring w/alarm
Intercooler A differential pressure	Monitoring w/alarm
Intercooler B differential pressure	Monitoring w/alarm
Manifold pressure A	Monitoring w/alarm
Manifold pressure B	Monitoring w/alarm
Cyl. Bank A exhaust gas temperature	Monitoring w/alarm
Cyl. Bank B exhaust gas temperature	Monitoring w/alarm
Turbo A inlet gas temperature	Monitoring w/alarm
Turbo B inlet gas temperature	Monitoring w/alarm
Turbo A outlet gas temperature	Monitoring w/alarm
Turbo B outlet gas temperature	Monitoring w/alarm
Turbo A inlet gas pressure	Monitoring w/alarm
Turbo B inlet gas pressure	Monitoring w/alarm
Turbo A outlet gas pressure	Monitoring w/alarm
Turbo B outlet gas pressure	Monitoring w/alarm
Exhaust System back pressure	Monitoring w/alarm ~~and control~~
Temperature downstream of diesel engine	Monitoring w/alarm

9.5.8-11

Next File