

April 23, 2010

APPLICANT: AREVA NP, INC.

PROJECT: U.S. EPR DESIGN CERTIFICATION
U.S. EPR CHAPTER 7 – INSTRUMENTATION AND CONTROLS

SUBJECT: JANUARY 25 AND 26, 2010, SUMMARY OF MEETING WITH AREVA NP TO
OBTAIN CLARIFICATION ON FORTHCOMING RESPONSES TO REQUESTS
FOR INFORMATION RELATED TO ISSUES OF CONCERN FOR
INSTRUMENTATION AND CONTROLS

On January 25 and 26, 2010, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and members of AREVA NP to discuss AREVA NP's proposed responses to a select set of staff questions which were originally transmitted as "Requests for Information (RAI)." A listing of these questions and their Agencywide Documents Access Management System (ADAMS) Accession Numbers are attached to the meeting notification memorandum (ADAMS Accession Number ML100120252).

After brief introductory remarks and instructions, attendees introduced themselves (a list of attendees is provided as Enclosure 1) to begin the business portion of the meeting.

As an addition to the agenda, the NRC first made a brief presentation (ADAMS ML100270088). The presentation outlined the staff's current position with respect to AREVA NP's response to RAI 286, Question 7.7-18 (ADAMS ML092870818) of October 14, 2009.

The result of the discussion regarding this presentation and its stated position with respect to Regulatory Guide (RG) 1.105 was that AREVA NP agreed and understood the staff's position, and would supplement their original response to better correlate the applicability of this regulatory guidance and its interface with the identified incore and excore instrumentation.

This discussion continued the following morning. The staff identified a need to assure that AREVA NP will meet RG 1.105 in order to complete their safety finding. AREVA NP agreed to provide the necessary information in the RG conformance section of the Final Safety Analysis Report (FSAR). AREVA NP also clarified that no additional design action needs to be taken with regard to the incore and excore systems in order for them to demonstrate compliance with the regulatory guide. AREVA NP intends to also annotate Table 1.9-2, "U.S. EPR Conformance with Regulatory Guides."

Following the Staff presentation, the meeting continued in line with its published agenda:

AREVA NP provided their presentation (ADAMS ML100280551).

The presentation provided an advance overview of AREVA NP's intended responses to the prioritized list of RAI questions provided by the NRC with the meeting notice. A follow-up audit is scheduled for the afternoon of January 26, 2010, to allow the staff access to AREVA NP's in-progress FSAR Revision 2. This is to assure that the submitted overlapping mark-ups accurately reflect the expected design descriptions.

A synopsis of the response presentations and the discussion is provided in the table below. After discussion of RAI 286, Question 7.01-17, below, the January 25, 2010, meeting ended at 4.00 P.M. with an opportunity for the public to address questions to the staff.

The presentation and discussion re-convened on January 26, 2010, with RAI 07.01-16.

High Priority

| <u>RAI</u> | <u>Question</u> | <u>Topic</u> |
|------------|-----------------|--|
| 303 | 7.03-28 | System based priority of Priority Actuation and Control (PACS): Ability of Diverse Actuation System (DAS) to operate given a single common case failure (SCCF) in the Protective System (PS), Safeguards Actuation System (SAS), or the Safety Information and Control System (SICS). |

After discussion, AREVA NP agreed to add additional markups. The staff identified no objection to the approach described.

286 7.09-46 Data communications – Conformance with ISG-04.

After discussion, the staff identified that, if Positions 2 and 3 of ISG-04 are met, although some information may need to be confirmed via an audit, the general approach appears to be adequate. AREVA NP will look at the inspections, tests, analyses and acceptance criteria (ITAAC) to determine if physical separation criteria are fully identified.

Staff identified that the interface description between safety and non-safety systems and between safety divisions is lacking reference material in the design certification (DC). Staff will assess during the audit.

AREVA NP is to add a high level description of the interface between the service unit and the safety system, including the operation of the key lock switch. Staff will also confirm during the audit whether the service unit serves the safety related Qualified Display System (QDS) or the non-safety related QDS.

309 7.09-59 One Remote Acquisition Unit (RAU) in maintenance, single failure of other RAU in division.

After discussion, the staff agreed to revisit the failure modes and effects analysis (FMEA) response in Section 7.2. AREVA NP will address General Design Criterion (GDC) 21 and the technical specifications for this response.

Medium Priority

| | | |
|----|---------|--|
| 56 | 7.01-15 | Instrumentation and controls (I&C) related operating experience to satisfy Title 10 of the Code of Federal Regulations (10 CFR) 52.47(a)(22) not identified in U.S. EPR FSAR Tier 2, Table 1.9-3 as being evaluated and incorporated. |
|----|---------|--|

After discussion it was agreed that U.S. EPR FSAR Tier 2, Table 1.9.3 did not require change, but a technical response addressing the four specific issues was appropriate.

| <u>RAI</u> | <u>Question</u> | <u>Topic</u> |
|------------|-----------------|---|
| 56 | 7.01-16 | Provide ITAAC to verify that as-installed Teleperm XS (TXS) systems are in accordance with TXS Topical Report. |

Per AREVA NP, new ITAAC has been drafted and a new item will be inserted into U.S. EPR FSAR Tier 2, Chapter 7 to address the concern. The draft could be available for audit.

| | | |
|-----------|----------------|---|
| 56 | 7.01-17 | Identify deviations from the U.S. EPR design and the TXS Topical Report. |
|-----------|----------------|---|

After discussion, AREVA NP will add wording to better address those differences which still maintain the key elements.

January 26, 2010

| | | |
|------------|----------------|---|
| 321 | 7.01-18 | Hardware and software qualification of embedded digital control systems; D3. |
|------------|----------------|---|

The response appears acceptable. However, the use of the Electric Power Research institute (EPRI) document for commercial grade equipment should be described in U.S. EPR FSAR Tier 2, Chapter 17, since it is not included in ANP-10266A, in order to include that as part of this response.

| | | |
|------------|----------------|--|
| 321 | 7.01-19 | Describe the software development process (SDP) used for the video display that will be used in the SICS. |
|------------|----------------|--|

AREVA NP intends to describe the QDS as qualified according to NRC endorsed standards. The QDS is developed from software similar to and at the same quality level as that used to develop the space tool. There will be ITAAC associated with the QDS.

| | | |
|------------|----------------|---|
| 321 | 7.01-20 | Will AREVA NP use the single-sided reduction factor in measurement uncertainty analysis? |
|------------|----------------|---|

No, they will not. AREVA NP will make some revisions in the U.S. EPR FSAR.

| | | |
|------------|----------------|--|
| 285 | 7.02-30 | Provide an exemption request to redefine the terms “detectable failure” and “non-detectable failure.” |
|------------|----------------|--|

Pending a new RAI request from staff, AREVA NP will update the FSAR to state that identifiable, but undetectable failures do not exist.

| | | |
|------------|----------------|---|
| 285 | 7.03-21 | Provide specific details on the design capabilities of the self-testing features, and their intended use to fulfill Institute of Electrical and Electronics Engineers (IEEE) Std 603-1991. |
|------------|----------------|---|

Credit is taken for self-test features to satisfy IEEE Std 603, Clause 5.7. Without committing to a specific technology they don't know what self-testing can do. AREVA NP can write a procedure to indicate what self-testing will not cover or clarify this in either the Digital Protection System Technical Report or the FSAR.

After discussion, AREVA NP agreed that they can provide more experiential data to support their failure analysis argument that the proof testing is sufficient, without additional periodic testing. AREVA NP also agreed to take another look at their response to RAI 285, Question 7.03 - 21 with respect to BTP 7-17, which states that, "Self-test functions should be verified during periodic functional tests," and how this has been incorporated. AREVA NP has previously committed to meeting the requirements of this document.

Medium Priority (continued)

| <u>RAI</u> | <u>Question</u> | <u>Topic</u> |
|------------|-----------------|---|
| 285 | 7.03-25 | Not addressed during meeting. |
| 285 | 7.03-26 | Equipment protective provisions that could prevent safety systems from accomplishing their safety functions. |

Staff concurred that the approach appears acceptable.

| | | |
|-----|---------|---|
| 285 | 7.03-27 | Operator actions are credited for isolating an affected steam generator (SG) during a steam generator tube rupture event (SGTR) when automatic mechanisms are available. |
|-----|---------|---|

AREVA NP identified that the slow progression of the event, and the problematic issues related to identification of a reliable series of encompassing automatic function setpoints influenced their decision to use manual actuation as the perceived most reliable method for mitigation of a SGTR. This approach appears sufficient to the staff.

| | | |
|-----|---------|---|
| 303 | 7.03-29 | List, describe, and categorize the Safety Automation System (SAS) functions. |
|-----|---------|---|

Per their presentation, AREVA NP will provide greater identification of the in-scope and out-of-scope items for U.S. EPR FSAR Tier 2, Chapter 7 address. Some of the information was identified as being within the D3 documentation. AREVA NP will provide a description of rod and group control within the RAI response.

| | | |
|-----|---------|--|
| 285 | 7.04-11 | Compliance of Remote Shutdown Station (RSS) transfer functionality to the requirements of GDC 3 |
|-----|---------|--|

After discussion, the NRC requested that AREVA NP describe in their response, where the equipment is located, and a description of common database. The location information needs to be in the FSAR.

| | | |
|-----|---------|--|
| 285 | 7.04-13 | PICS operability: Consistency of data between Process Information and Control System (PICS) and SICS. |
|-----|---------|--|

AREVA NP identified that the acceptable deviations in indication values between these display systems would be developed for all displays addressed in the response. AREVA NP will describe how the data displayed in the PICS may differ from that displayed in the SICS. They will also include discussion on two mechanisms of manual comparison between SICS and PICS. Staff identified that this response appears sufficient.

| | | |
|-----|--------|--|
| 285 | 7.05-9 | The ITAAC for the post-accident monitoring instrumentation to develop the final list of variables, their accuracy and ranges, etc., should be identified as Design Acceptance Criteria (DAC) in the ITAAC itself. |
|-----|--------|--|

AREVA NP identified that this information would be included in the U.S. EPR FSAR Tier 2, Chapter 14 response dealing with this issue. RAI 307, Question 14.03.03-45. Staff accepts this response subject to their review of the U.S. EPR FSAR Tier 2, Chapter 14 question.

Medium Priority (continued)

286 7.08-9 Justification as to why PICS does not need to meet GDC 1

AREVA NP pointed out that GDC 1 describes the Quality Assurance (QA) aspects of equipment important to safety as being based on their safety function. PICS does not have a "safety" function ascribed to it.

The staff pointed out that the PICS is instrumental to the operator in dealing with normal operations, anticipated operational occurrences, abnormal events and beyond-design-basis events; and as such, the PICS is considered important to safety. This is re-enforced by the need to address 10 CFR 50.62 and DAS quality requirements. The staff sees this as an item requiring resolution prior to completion of a Safety Evaluation with Open Items being issued. The telephone conference in 2 weeks (February 1, 2010), will bring together both organizations' position on this issue.

286 7.09-49 Operating experience regarding the effects of data storms on non-safety data communication networks.

The staff identified that the Standard Review Plan (SRP) did not include information notices on operating experience for addressing the requirements of 10 CFR 52.47(a)(22). However, the staff finds operating experience should still be addressed relative to data storms on Ethernet-based networks, especially as it applies to the Plant Data Network (PDN). This is supported by the guidance of SRP Section 14.3, which does include information notices as one of the sources for operating experience that should be addressed. Staff recommends adding a high level functional description in the FSAR on the PDN, including a high level mitigation strategy for data storms on the PDN, independent of the selected technology.

286 7.09-52 Provide ITAAC that verifies the plant data network is of sufficient quality and capacity to support PICS functions.

This issue is related to RAI 286, Question 7.08-9 and needs to be addressed in concert with that topic. The issue may be able to be addressed through start-up testing.

286 7.09-57 Input from the plant data network to overspeed control of the Turbine Generator I&C System.

Based on discussion, a supplement will be issued to augment the response submitted for RAI 243, Question 10.02-6.

309 7.09-60 Independence of RSS workstations from Main Control Room (MCR) workstations in a fire event.

Response appears sufficient to the staff. However, the staff will review the U.S. EPR Chapter 9 question related to this issue, which AREVA NP identified as RAI 151, Question 9.05.01-54 and the associated mark-ups of U.S. EPR FSAR, Interim Revision 2, pages 9.5-8 and 9.5-9.

DC AREVA NP - EPR Mailing List
cc:

(Revised 02/16/2010)

Mr. Glenn H. Archinoff
AECL Technologies
481 North Frederick Avenue
Suite 405
Gaithersburg, MD 20877

Mr. Gary Wright, Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Ms. Michele Boyd
Legislative Director
Energy Program
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Dr. Charles L. King
Licensing Manager, IRIS Project
Westinghouse Electric Company
Science and Technology Department
20 International Drive
Windsor, CT 06095

Ms. Sherry McFaden
Framatome NP, Inc.
3315 Old Forest Road, OF-16
Lynchburg, VA 24501

Mr. Steve Seitz
AREVA NP
100 Dean Road
East Lyme, CT 06333

Mr. Tom Sliva
7207 IBM Drive
Charlotte, NC 28262

Mr. Robert E. Sweeney
IBEX ESI
4641 Montgomery Avenue
Suite 350
Bethesda, MD 20814

DC AREVA NP - EPR Mailing List

Email

alau@washdc.whitecase.com (Albie Lau)
APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
BrinkmCB@westinghouse.com (Charles Brinkman)
carey.fleming@cengllc.com (Carey Fleming)
chris.maslak@ge.com (Chris Maslak)
christian.clement@unistarnuclear.com (Chrisitan Clement)
cwaltman@roe.com (C. Waltman)
david.hinds@ge.com (David Hinds)
david.lewis@pillsburylaw.com (David Lewis)
erg-xl@cox.net (Eddie R. Grant)
gcesare@enercon.com (Guy Cesare)
greg.gibson@unistarnuclear.com (Greg Gibson)
james.beard@gene.ge.com (James Beard)
james.p.mcquighan@constellation.com (Jim McQuighan)
jason.parker@pillsburylaw.com (Jason Parker)
jerald.head@ge.com (Jerald G. Head)
jgutierrez@morganlewis.com (Jay M. Gutierrez)
jim.riccio@wdc.greenpeace.org (James Riccio)
JJNesrsta@cpsenergy.com (James J. Nesrsta)
John.O'Neill@pillsburylaw.com (John O'Neill)
Joseph_Hegner@dom.com (Joseph Hegner)
junichi_uchiyama@mnes-us.com (Junichi Uchiyama)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lchandler@morganlewis.com (Lawrence J. Chandler)
Len.Gucwa.ext@AREVA NP.com (Len Gucwa)
Marc.Brooks@dhs.gov (Marc Brooks)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
mbowling@numarkassoc.com (Marty Bowling)
media@nei.org (Scott Peterson)
mike_moran@fpl.com (Mike Moran)
MSF@nei.org (Marvin Fertel)
mwetterhahn@winston.com (M. Wetterhahn)
nirsnet@nirs.org (Michael Mariotte)
Nuclaw@mindspring.com (Robert Temple)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul@beyondnuclear.org (Paul Gunter)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
Ronda.pederson@AREVA NP.com (Ronda Pederson)

DC AREVA NP - EPR Mailing List

rrsgarro@pplweb.com (Rocco Sgarro)
russell.wells@AREVA NP.com (Russell Wells)
sabinski@suddenlink.net (Steve A. Bennett)
sandra.sloan@AREVA NP.com (Sandra Sloan)
sfrantz@morganlewis.com (Stephen P. Frantz)
stephan.moen@ge.com (Stephan Moen)
Steve.Graham@hse.gsi.gov.uk (Steve Graham)
steven.hucik@ge.com (Steven Hucik)
strambgd@westinghouse.com (George Stramback)
tkkibler@scana.com (Tria Kibler)
tlharpster@pplweb.com (Terry Harpster)
tom.miller@hq.doe.gov (Tom Miller)
trsmith@winston.com (Tyson Smith)
Vanessa.quinn@dhs.gov (Vanessa Quinn)
VictorB@bv.com (Bill Victor)
vijukrp@westinghouse.com (Ronald P. Vijuk)
Wanda.K.Marshall@dom.com (Wanda K. Marshall)
wayne.marquino@ge.com (Wayne Marquino)
whorin@winston.com (W. Horin)