

August 29, 2007

APPLICANT: AREVA NP

PROJECT: U.S. EPR PRE-APPLICATION REVIEW

SUBJECT: SUMMARY OF MAY 9, 2007, MEETING WITH AREVA NP TO DISCUSS  
PROBABILISTIC RISK ASSESSMENT (PRA) METHODS REPORT AND  
PRELIMINARY RESULTS FOR LEVEL 1

On May 9, 2007, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of AREVA NP (AREVA) at NRC Headquarters, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. The purpose of this meeting was to discuss the PRA methods report submitted to the NRC on December 15, 2006, and the PRA Level 1 preliminary results for the U.S. Evolutionary Power Reactor (U.S. EPR) standard design. This project is currently in the pre-application phase and AREVA personnel plan to submit the application for design certification by the end of 2007. A list of meeting attendees is included as Enclosure 1. AREVA presented handouts that are shown in Enclosure 2 and can be accessed through the Agencywide Documents Access and Management System (ADAMS) Accession Number ML071410460.

This meeting was a follow-up to the October 24, 2006, meeting where AREVA provided an overview of the PRA methods and approach (ML063070257). In the first part of this meeting, AREVA presented an overview of their PRA results. They stated that their three primary goals for PRA design are: 1) to limit Core Damage Frequency (CDF) to less than 1E-5 per year, 2) to limit Large Release Frequency to less than 1E-6 per year, and 3) to include internal and external events (seismic and sabotage excluded) for all operating modes. Their objectives are to apply Regulatory Guide 1.200/ASME PRA Standard, to use bounding/realistic-type assumptions where detailed design information is not available for design certification, to follow developments of other industry consensus standards, and to use of good practices.

AREVA then discussed the U.S. EPR PRA scope and scope of initiating events for design certification, their approach for PRA quality and technical adequacy, and what they considered to be their success criteria. They indicated that they use computer codes MAAP and S-RELAP5 as their success criteria analysis tools. They also gave several reasons that they said contributed to the low risk associated with U.S. EPR design. Among the design features that contributed to low risk are increased redundancy and separation (4 independent safety trains), separate power divisions for each safety train, 4 Emergency Diesel Generators and 2 Station Blackout Diesel Generators, state-of-the-art digital Instrumentation & Control, Stand Still Seal System for Reactor Coolant Pumps, in-containment refueling water storage tank, and containment spray not needed for accident mitigation.

In the second part of the meeting, AREVA presented the preliminary results of their Level 1 PRA analysis (i.e., at power, internal events). They described in detail the scope of initiating events and the assumed frequencies and their bases. They discussed the frontline systems and

support systems modeled, the scope of human actions modeled, and the key PRA assumptions made. Finally, they presented the CDF results and their analysis of the results for various accident scenarios, including uncertainty analysis and sensitivity studies. They stated that Preliminary Level 1 PRA (at-power, internal events) shows no outliers and confirms robustness of the U.S. EPR design and that the U.S. EPR design goals will be met with margin.

AREVA concluded their presentation with assertion that the U.S. EPR is a robust design with design features that contribute to low CDF, PRA is being developed in conformance with NRC guidance, and preliminary Level 1 results provided insights on dominant events and benefit of U.S. EPR redundancy and diversity. The NRC staff provided feedback throughout the presentation.

Public attendees were given opportunity to comment prior to adjournment, but they chose not to comment.

Questions regarding this meeting can be directed to Getachew Tesfaye at 301-415-3361 or [gxt2@nrc.gov](mailto:gxt2@nrc.gov).

Getachew Tesfaye, Sr. Project Manager **/RA/**  
EPR Branch  
Division of New Reactor Licensing  
Office of New Reactor

Project No. 733

Enclosures: As stated

cc: DC AREVA - EPR Mailing List

support systems modeled, the scope of human actions modeled, and the key PRA assumptions made. Finally, they presented the CDF results and their analysis of the results for various accident scenarios, including uncertainty analysis and sensitivity studies. They stated that Preliminary Level 1 PRA (at-power, internal events) shows no outliers and confirms robustness of the U.S. EPR design and that the U.S. EPR design goals will be met with margin.

AREVA concluded their presentation with assertion that the U.S. EPR is a robust design with design features that contribute to low CDF, PRA is being developed in conformance with NRC guidance, and preliminary Level 1 results provided insights on dominant events and benefit of U.S. EPR redundancy and diversity. The NRC staff provided feedback throughout the presentation.

Public attendees were given opportunity to comment prior to adjournment, but they chose not to comment.

Questions regarding this meeting can be directed to Getachew Tesfaye at 301-415-3361 or [gxt2@nrc.gov](mailto:gxt2@nrc.gov).

Getachew Tesfaye, Sr. Project Manager  
EPR Branch  
Division of New Reactor Licensing  
Office of New Reactor

Project No. 733

Enclosures: As stated

cc: DC AREVA - EPR Mailing List

Distribution:

PUBLIC	LMrowca
RidsNroDnrl	MStutzke
RidsNroDnrlNarp	Hphan
GTesfaye	MPohida
PCoates	EFuller
RidsOgcMailCenter	JColaccino
RidsAcrcsAcnwMailCenter	GGulla
TRoy	
TClark	

ADAMS ACCESSION NO.: ML072320447

Package:ML072320457

NRC-001

OFFICE	LA: NRO/DNRL/NARP	PM: NRO/DNRL/NARP	BC: NRO/DNRL/NARP
NAME	PCoates	GTesfaye	JColaccino
DATE	08/23/2007	08/27/2007	08/29/2007

**OFFICIAL RECORD COPY**

Public Meeting with AREVA to Discuss Probabilistic Risk Assessment (PRA)  
Methods Report and Preliminary Results for Level 1 - U.S. EPR Design

May 9, 2007

Attendance Lists

Name	Affiliation
Ronda Daflucas	AREVA
Richard Turcotte	AREVA
Russ Wells	AREVA
Toney Mathews	AREVA
Robert Enzinna	AREVA
Darvin Kapitz	AREVA
Vesna Dimitrijevic	AREVA
Joe Mihalcik	Constellation
Taeyong Sung	CNSC
Yumi Kawanago	Mitsubishi
Masayuki Kambara	Mitsubishi
Getachew Tesfaye	NRC
Tarun Roy	NRC
Theresa Clark	NRC
Lynn Mrowca	NRC
Martin Stutzke	NRC
Hanh Phan	NRC
Marie Pohida	NRC
Edward Fuller	NRC
Joe Colaccino	NRC
Gerry Gulla	NRC

Enclosure 2

AREVA Handout - US-EPR  
Pre-Application Review Meeting  
DIVERSITY AND DEFENSE-IN-DEPTH  
METHODOLOGY

(ML071410460)

DC AREVA - EPR Mailing List

List #23

cc:

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

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

Mr. Marvin Fertel  
Senior Vice President  
and Chief Nuclear Officer  
Nuclear Energy Institute  
1776 I Street, NW  
Suite 400  
Washington, DC 20006-3708

Mr. Ray Ganthner  
AREVA, Framatome ANP, Inc.  
3315 Old Forest Road  
P.O. Box 10935  
Lynchburg, VA 24506-0935

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. John O'Neill  
Pillsbury, Winthrop, Shaw, Pittman  
2300 N Street, NW  
Washington, DC 20037

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

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

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

Email

APH@NEI.org (Adrian Heymer)  
awc@nei.org (Anne W. Cottingham)  
bennettS2@bv.com (Steve A. Bennett)  
bob.brown@ge.com (Robert E. Brown)  
BrinkmCB@westinghouse.com (Charles Brinkman)  
carey.fleming@constellation.com (Carey Fleming)  
chris.maslak@ge.com (Chris Maslak)  
cwaltman@roe.com (C. Waltman)  
david.hinds@ge.com (David Hinds)  
david.lewis@pillsburylaw.com (David Lewis)  
dlochbaum@UCSUSA.org (David Lochbaum)  
erg-xl@cox.net (Eddie R. Grant)  
frankq@hursttech.com (Frank Quinn)  
gcesare@enercon.com (Guy Cesare)  
greshaja@westinghouse.com (James Gresham)  
james.beard@gene.ge.com (James Beard)  
jcurtiss@winston.com (Jim Curtiss)  
jgutierrez@morganlewis.com (Jay M. Gutierrez)  
jim.riccio@wdc.greenpeace.org (James Riccio)  
JJNesrsta@cpsenergy.com (James J. Nesrsta)  
john.o'neil@pillsburylaw.com (John O'Neil)  
Joseph.savage@ge.com (Joseph Savage)  
Joseph\_Hegner@dom.com (Joseph Hegner)  
junichi\_uchiyama@mhi.co.jp (Junichi Uchiyama)  
KSutton@morganlewis.com (Kathryn M. Sutton)  
kwaugh@impact-net.org (Kenneth O. Waugh)  
lynchs@gao.gov (Sarah Lynch - Meeting Notices Only)  
maria.webb@pillsburylaw.com (Maria Webb)  
mark.beaumont@wsms.com (Mark Beaumont)  
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)  
media@nei.org (Scott Peterson)  
mike\_moran@fpl.com (Mike Moran)  
mwetterhahn@winston.com (M. Wetterhahn)  
nirsnet@nirs.org (Michael Mariotte)  
patriciaL.campbell@ge.com (Patricia L. Campbell)  
paul@beyondnuclear.org (Paul Gunter)  
paul.gaukler@pillsburylaw.com (Paul Gaukler)  
Petrovb@westinghouse.com (Bojan Petrovic)  
pshastings@duke-energy.com (Peter Hastings)  
RJB@NEI.org (Russell Bell)  
RKTemple@cpsenergy.com (R.K. Temple)  
roberta.swain@ge.com (Roberta Swain)  
rod.krich@constellation.com (Mr. Rod Krich)  
Ronda.Daflucas@areva.com (Ronda Daflucas)  
ronald.hagen@eia.doe.gov (Ronald Hagen)  
sandra.sloan@areva.com (Sandra Sloan)  
sfrantz@morganlewis.com (Stephen P. Frantz)  
steven.hucik@ge.com (Steven Hucik)

tkkibler@scana.com (Tria Kibler)  
tom.miller@hq.doe.gov (Tom Miller)  
trsmith@winston.com (Tyson Smith)  
vijukrp@westinghouse.com (Ronald P. Vijuk)  
waraksre@westinghouse.com (Rosemarie E. Waraks)  
wayne.marquino@ge.com (Wayne Marquino)  
whorin@winston.com (W. Horin)