September 11, 2007

Mr. Ronnie L. Gardner
AREVA NP Inc.
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

SUBJECT: AREVA NP, INC. - REQUEST FOR ADDITIONAL INFORMATION REGARDING ANP-10279, "U.S. EPR HUMAN FACTORS ENGINEERING PROGRAM" (TAC NO. MD4252)

Dear Mr. Gardner:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated January 29, 2007, AREVA NP Inc. submitted for NRC staff review, Topical Report ANP-10279, Revision 0, "U.S. EPR Human Factors Engineering Program Topical Report."

The NRC staff has reviewed your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter, and is unchanged from the draft that was provided to your staff via electronic mail on September 4, 2007 (Agencywide Documents Access and Management System Accession No. ML072480078) and discussed during a telephone conference on September 5, 2007. Your staff has agreed that your response would be provided by October 31, 2007.

If you have any questions regarding this matter, I may be reached at (301) 415-3361.

Sincerely,

/RA/

Getachew Tesfaye, Senior Project Manager
EPR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Project No. 733

Enclosure:
Request for Additional Information

cc: DC AREVA - EPR Mailing List

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REQUEST FOR ADDITIONAL INFORMATION

ANP-10279, "U.S. EPR HUMAN FACTORS ENGINEERING

PROGRAM TOPICAL REPORT," REVISION 0

PROJECT NO. 733

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated January 29, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML070370196), AREVA NP Inc. (AREVA) submitted for NRC staff review, Topical Report ANP-10279, Revision 0, "U.S. EPR Human Factors Engineering Program Topical Report," (ADAMS Accession No. ML070370197). The NRC staff has reviewed AREVA's submittal and has determined that the following information is required to complete its review.

RAI-01: General Comment: The use of the terminology human-machine interface (HMI) and human-system interface (HSI) throughout the report is confusing. The distinction between the two terms should be clarified.

RAI-02: General Comment: Use of a combination of verb tenses "should"/"should be" vs "will"/"will be," vs "are", etc., make it difficult to determine whether a commitment is made or not. For example, on p.2-3, "The acoustic environment and the mean noise level in the MCR should aid operator alertness…" versus "The lighting in the control rooms provide optimum working conditions…"

RAI-03: P. 4-5, Section 4.2.3: "Single purpose, fixed-location, continuously available controls and related displays should remain available via the SICS." Does this mean they always will be available or that they might be available or unavailable? Please clarify.

RAI-04: P. 5-3, Figure 5.2-1: Please describe (compare and contrast) the individual functions of Human Factors Design, HSI Design, Control Rooms Design, and Automation Systems Design.

RAI-05: P. 5-12, Section 5.4.2.1.2: "As the design evolves, the structure of the HFE and Control Room Design Team may change; however, the functions required of the team do not transfer to any other organization." If this were to occur, could the team's authority for exercising its responsibility for the HFE program change, essentially diminish? What are the controls in place to prevent this from occurring?

RAI-06: P. 5-22, Section 5.4.3.1: Why are personnel interviews limited to utility personnel?

RAI-07: P. 5-27, Section 5.4.4: "For the U.S. EPR, the process for defining and allocating plant functions is not relevant to the HSI design as the HSI design has evolved to a high level of detail. Implementation of a process of FRA and FA would be equivalent to reverse engineering for the sake of creating documentation." Please explain the rationale for these statements.

Also, this section continues by saying, "…AREVA NP will extract… a list of functions that have been automated for the OL3 plant. AREVA NP will then compare that list

of functions to the list derived for the U.S. EPR from system and function activities and capture the differences. The completed FA would then consist of those functions which are allocated identically for OL3 and the U.S. EPR and a list of gaps." Was an FRA and FA completed for OL3? What is meant by "…the list derived for the U.S. EPR from system and function activities"…i.e., what are the U.S. EPR system and function activities?

RAI-08: P. 5-29, Section 5.4.5: "The operating procedures for the U.S. EPR are based on the work developing procedures for the OL3 EPR and other precursor plants. The completed operating procedures constitute an analysis of the tasks that operators should perform to safely operate the plant. The operating procedures should satisfy the required safety objectives to be considered completed. The completed plant procedures are subjected to a separate verification process to evaluate their technical effectiveness. For the U.S. EPR, the TA will consist of verification (see Section 5.4.11) that controls and displays are available and are organized to be compatible with the intended operations, including safety objectives as a subset, as defined in the procedures."

It appears that AREVA NP will use OL3 operating procedures as the basis for determining operator tasks for the U.S. EPR. However, it is the output from task analysis that is used as an input to developing procedures. Also Section 5.4.9 states, "…AREVA NP will produce operational guidelines for the development of plant-specific normal operating, abnormal operating, alarm response, and EOPs..." From this statement, it appears that AREVA NP will develop U.S. EPR-specific "generic guidelines." Please explain how these guidelines will be used to determine operator tasks. Also, how will AREVA NP account for any operator tasks that are not contained in procedures? Has a task analysis been completed for OL3? Has/will AREVA NP use the OL3 task analysis to determine operator tasks required for the U.S. EPR?

RAI-9: From a human factors engineering standpoint, how similar is the OL3 HSI design to the AREVA NP HSI design? What are the major HSI design differences?

RAI-10: Please explain how the concept of "Minimum Inventory" of alarms, controls, and displays, needed to bring the plant to safe shutdown conditions in the event of a loss of all primary instrumentation is addressed by the U.S. EPR design.

RAI-11: Appendix A, Table A-2, p. A-4: Will the Implementation Plan(s) for HSI be included as part of the DCD for the U.S. EPR?

RAI-12: Appendix A, Table A-2: Under the heading, "Output Results," and "Schedule," what is meant by "Detailed Design?" When in the overall human factors engineering design process, will the "output results" be completed for each HFE Program Element? How will the products for each element be available to the staff for review and approval?

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)