

June 5, 2012

Mr. J. A. Gresham, Manager
Westinghouse Electric Company
Nuclear Services
1000 Westinghouse Drive
Cranberry Township, PA 16066

SUBJECT: ACCEPTANCE FOR REVIEW OF WESTINGHOUSE TOPICAL REPORT
WCAP-17524-P, REVISION 0, AP1000 CORE REFERENCE REPORT

Dear Mr. Gresham:

By letter dated March 6, 2012, Westinghouse Electric Company submitted for U. S. Nuclear Regulatory Commission (NRC) staff review Topical Report (TR) WCAP-17524-P, Revision 0, AP1000 Core Reference Report. The NRC staff has performed an acceptance review of the Core Reference Report, and found that, except for the key issues identified below; the material presented provides the technical information in sufficient detail to enable the staff to complete a detailed technical review. The key issues identified by the NRC staff as having potential scheduling impact are:

- Fuel Thermal Conductivity Degradation (TCD) – The UO_2 thermal conductivity (see Section 4.4.2.11.1) does not account for burnup effects. In its letter of April 5, 2012, Westinghouse committed to provide the NRC with a numerical estimate of the impact of the fuel pellet TCD on the Loss of Coolant Accident peak cladding temperature results reported in WCAP-17524-P by June 15, 2012. The NRC staff expects that Chapter 15 safety analyses supplemental information will be submitted to demonstrate that the impact of TCD is accounted for.
- Impact of Robust Protection Grid (RPG) on GSI-191 – The Topical Report indicates (see Section 2.6) that the RPG design retained key characteristics of the previous P-grid design such that the GSI-191 performance was expected to be the same as for the previous P-grid design; and that some GSI-191 comparison tests were run with the RPG, which demonstrated that the RPG performed as well if not better than the standard P-grid. The NRC staff will evaluate whether sufficient comparison test information is available to demonstrate sufficient head loss margin exists for the RPG.
- Fuel Assembly Seismic Structural Response – The Topical Report indicates (see Section 4.2.3.5) that the fuel assembly seismic response analysis follows the guidelines of Appendix A of the Standard Review Plan, Section 4.2, which may imply that only the beginning of life (BOL) condition of grid strength is needed for seismic and LOCA evaluations. Because of spacer grid spring relaxation due to irradiation which could affect the fuel bundle stiffness and the grid strength, the NRC staff has determined the need to evaluate the fuel structural response to the seismic/LOCA load for the minimum grid strength considering irradiation effects.

The NRC staff expects to complete its review and issue its safety evaluation by June 2013 provided that Westinghouse is able to address these key issues and any other issues identified during the review process in a timely manner. The request for additional information (RAI) will also cover other areas, such as the critical heat flux test data bases pertaining to the fuel spacer grid design changes, the spent fuel pool criticality analysis pertaining to the advanced first core design, the transition cycle core design and analysis beyond the first cycle, and the RCS pressure-temperature limit pertaining to the revised core loading pattern.

The above schedule for completion of staff's review and issuance of its safety evaluation assumes:

- One round of RAIs
- Westinghouse Response to RAIs within 60 days
- No interaction with Advisory Committee on Reactor Safeguards (ACRS)

Section 170.21 of Title 10 of the *Code of Federal Regulations* requires that TRs are subject to fees based on the full cost of the review. You did not request a fee waiver; therefore, NRC staff hours will be billed accordingly.

If you have any questions, please contact the Project Manager, Ravindra Joshi, at (301) 415-6191 or Ravindra.Joshi@NRC.gov.

Sincerely,

/RA Amy Snyder for:/

Mark Tonacci, Chief
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

Project No. 0793

cc: See next page

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DC Westinghouse - AP1000 Mailing List
cc:

(Revised 05/21/2012)

Ms. Sara Barczak
Southern Alliance for Clean Energy
P.O. Box 8282
Savannah, GA 31401

Mr. Tony Robinson
AREVA NP, Inc.
3315 Old Forest Road
Lynchburg, VA 24501

Paul M. Bessette
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Mr. Paul A. Russ
Director, AP1000 Licensing
Westinghouse
1000 Westinghouse Drive
Cranberry Township, PA 16066

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

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

Mr. Barton Z. Cowan, Esquire
Eckert Seamans Cherin & Mellott, LLC
600 Grant Street, 44th Floor
Pittsburgh, PA 15219

Mr. Paul Gaukler
Pillsbury, Winthrop, Shaw, Pittman
2300 N Street, NW
Washington, DC 20037

Ms. Sophie Gutner
P.O. Box 4646
Glen Allen, VA 23058

Ms. Shannon Bowyer Hudson
Office of Regulatory Staff
State of South Carolina
1401 Main Street
Suite 900
Columbia, SC 29201

Rita Kilpatrick
250 Arizona Ave.
Atlanta, GA 30307

DC Westinghouse - AP1000 Mailing List

Email

agaughtm@southernco.com (Amy Aughtman)
alsterdis@tva.gov (Andrea Sterdis)
amonroe@scana.com (Amy Monroe)
APAGLIA@Scana.com (Al Paglia)
APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
bgattoni@roe.com (William (Bill) Gattoni))
Bill.Jacobs@gdsassociates.com (Bill Jacobs)
BrinkmCB@westinghouse.com (Charles Brinkman)
Carellmd@westinghouse.com (Mario D. Carelli)
cberger@energetics.com (Carl Berger)
crpierce@southernco.com (C.R. Pierce)
CumminWE@Westinghouse.com (Edward W. Cummins)
cwaltman@roe.com (C. Waltman)
david.hinds@ge.com (David Hinds)
david.lewis@pillsburylaw.com (David Lewis)
doug.ellis@shawgrp.com (Doug Ellis)
eddie.grant@excelservices.com (Eddie Grant)
erg-xl@cox.net (Eddie R. Grant)
ewallace@nuscalepower.com (Ed Wallace)
fbelser@regstaff.sc.gov
gcesare@enercon.com (Guy Cesare)
George.Madden@fpl.com (George Madden)
gzinke@entergy.com (George Alan Zinke)
james1.beard@ge.com (James Beard)
jerald.head@ge.com (Jerald G. Head)
jflitter@regstaff.sc.gov
jim@ncwarn.org (Jim Warren)
john.elnitsky@pgnmail.com (John Elnitsky)
Joseph_Hegner@dom.com (Joseph Hegner)
jrappe@nuscalepower.com (Jodi Rappe)
kinneyrw@dhec.sc.gov (Ronald Kinney)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lchandler@morganlewis.com (Lawrence J. Chandler)
lindg1da@westinghouse.com (Don Lindgren)
maria.webb@pillsburylaw.com (Maria Webb)
marilyn.kray@exeloncorp.com
mark.beaumont@wsms.com (Mark Beaumont)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
maurerbf@westinghouse.com (Brad Maurer)
media@nei.org (Scott Peterson)
melto1ma@westinghouse.com (Michael Melton)

DC Westinghouse - AP1000 Mailing List

Mitch.Ross@fpl.com (Mitch Ross)
MSF@nei.org (Marvin Fertel)
nirsnet@nirs.org (Michael Mariotte)
nscjiangguang@sina.com (Jiang Guang)
Nuclaw@mindspring.com (Robert Temple)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul.Jacobs@fpl.com (Paul Jacobs)
Paul@beyondnuclear.org (Paul Gunter)
pbessette@morganlewis.com (Paul Bessette)
Raymond.Burski@fpl.com (Raymond Burski)
rclary@scana.com (Ronald Clary)
rgrumbir@gmail.com (Richard Grumbir)
Richard.Orthen@fpl.com (Richard Orthen)
ritterse@westinghouse.com (Stanley E. Ritterbusch)
RJB@NEI.org (Russell Bell)
robert.kitchen@pgnmail.com (Robert H. Kitchen)
rong-pan@263.net (Pan Rong)
sabinski@suddenlink.net (Steve A. Bennett)
saporito3@gmail.com (Thomas Saporito)
sara@cleanenergy.org
sfrantz@morganlewis.com (Stephen P. Frantz)
shudson@regstaff.sc.gov (Shannon Hudson)
sisk1rb@westinghouse.com (Rob Sisk)
stephan.moen@ge.com (Stephan Moen)
Steve.Franzone@fpl.com (Steve Franzone)
strambgb@westinghouse.com (George Stramback)
Tansel.Selekler@nuclear.energy.gov (Tansel Seleklek)
tdurkin@energetics.com (Tim Durkin)
Timothy.Beville@nuclear.energy.gov (Tim Beville)
tom.miller@hq.doe.gov (Tom Miller)
tomccall@southernco.com (Tom McCallum)
TomClements329@cs.com (Tom Clements)
trsmith@winston.com (Tyson Smith)
Vanessa.quinn@dhs.gov (Vanessa Quinn)
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)