10 CFR 50.54(f)

Progress Energy

Serial: RNP-RA/03-0075

AUG 15 2003

Director, Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

REQUEST FOR RELAXATION FROM THE ORDER
FOR ESTABLISHING INTERIM INSPECTION REQUIREMENTS
FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS

Ladies and Gentlemen:

By letter dated February 11, 2003, the NRC issued an Order establishing interim inspection requirements for reactor pressure vessel heads at pressurized water reactors. Progress Energy Carolinas, Inc. (PEC), provided a response to that Order by letter dated March 3, 2003. The PEC response for H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, stated that previous inspection results and materiel condition of the reactor pressure vessel (RPV) head are being reviewed to determine if there is sufficient technical basis to warrant relaxation of the Order requirements. Also in that letter, PEC consented to the Order subject to the understanding that it may seek relaxation of the requirements in Section IV of the Order upon completion of the review described above, if the criteria of Section IV.F are met; and the reservation of the right of HBRSEP, Unit No. 2, to request a hearing on any requirements of the Order that may be subject to such a relaxation request.

The review to determine if there is sufficient technical basis to warrant relaxation of the Order requirements has been completed. It has been concluded that sufficient technical basis exists to request relaxation of the Order requirements. The attachment to this letter provides a relaxation request in accordance with the provision of the Order that states the Director, Office of Nuclear Reactor Regulation, may, in writing, relax or rescind any of the above conditions upon demonstration by the licensee of good cause. In support of this relaxation request, three vendor technical reports are also provided as enclosures to this letter. Proprietary and non-proprietary versions of each report are provided.

Included with the proprietary version of the reports are the affidavits that set forth the basis on which the information may be withheld from public disclosure by the NRC, and addresses the considerations listed in 10 CFR 2.790. Accordingly, it is requested that the proprietary version of the enclosed reports be withheld from public disclosure in accordance with 10 CFR 2.790(b)(4).

Progress Energy Carolinas, Inc.
Robinson Nuclear Plant
3581 West Entrance Road
Hartsville, SC 29550

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PEC respectfully requests your review of this relaxation request and offers to meet with the NRC staff at their earliest convenience to discuss the substantial technical basis that comprises the case for good cause that the Order requirements be modified for HBRSEP, Unit No. 2.

The information contained in this letter, attachment, and enclosures is true and correct to the best of my information, knowledge and belief; and the sources of my information are officers, employees, contractors, and agents of PEC. I declare under penalty of perjury that the foregoing is true and correct.

If you have any questions concerning this matter, please contact Mr. C. T. Baucom.

Sincerely,

J. W. Moyer
Site Vice President
H. B. Robinson Steam Electric Plant, Unit No. 2

CAC/cac

Attachment

Enclosures:

WCAP-16110-P, "Development of a Technical Basis for the Inspection Interval of the H. B. Robinson Reactor Vessel Head Penetrations," July 2003, (Proprietary Version with affidavit).
WCAP-16110-NP, "Development of a Technical Basis for the Inspection Interval of the H. B. Robinson Reactor Vessel Head Penetrations," July 2003, (Non-proprietary Version).
WCAP-16132-P, "H. B. Robinson Unit 2 RPVH Inspection Fall 2002 Inspection Coverage Evaluation," August 2003, (Proprietary Version with affidavit).
WCAP-16132-NP, "H. B. Robinson Unit 2 RPVH Inspection Fall 2002 Inspection Coverage Evaluation," August 2003, (Non-proprietary Version).
R-3515-00-1, Revision 0, "Technical Basis for RPV Head CRDM Nozzle Inspection Interval H. B. Robinson Steam Electric Plant Unit No. 2," July 2003, (Proprietary Version with affidavit).
R-3515-00-1-NP, Revision 0, "Technical Basis for RPV Head CRDM Nozzle Inspection Interval H. B. Robinson Steam Electric Plant Unit No. 2," July 2003, (Non-proprietary Version).

c: Mr. L. A. Reyes, NRC, Region II (w/o Enclosures)
Mr. C. P. Patel, NRC, NRR (w/o Enclosures)
NRC Resident Inspector (w/o Enclosures)
NRC Document Control Desk

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

REQUEST FOR RELAXATION FROM THE ORDER REQUIREMENTS FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS (EA-03-009)

DEMONSTRATION OF GOOD CAUSE IN ACCORDANCE WITH SECTION IV.F OF THE ORDER

1. Components Affected

The H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Reactor Pressure Vessel (RPV) Head is constructed with 69 vessel head penetration (VHP) nozzles and one RPV head vent line, with the approximate geometric arrangement as shown in Figure 1.

HBRSEP, Unit No. 2, is categorized as a "high susceptibility" plant, in accordance with the calculation method provided in Section IV.A of the Order.

2. Order Requirement

Section IV.C of the Order states,

"All Licensees shall perform inspections of the RPV head using the following techniques and frequencies:

(1) For those plants in the High category, RPV head and head penetration nozzle inspections shall be performed using the following techniques every refueling outage.

(a) Bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle), AND

(b) Either:

(i) Ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred into the interference fit zone, OR

(ii) Eddy current testing or dye penetrant testing of the wetted surface of each J-Groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld."

3. Proposed Alternative

Bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle), except for a small percentage of surface area (approximately 1%) under the shroud support structure that is not visible, shall be conducted during the next refueling outage for HBRSEP, Unit No. 2, which is currently planned for April 2004.

Non-destructive examination (NDE) conducted in the previous refueling outage, along with analyses that demonstrate incipient failure during these two cycles of operation should not occur, are also provided as alternatives to the NDE requirements of Section IV.C.(1)(b) of the Order.

The HBRSEP, Unit No. 2, RPV head is scheduled to be replaced in October 2005, during Refueling Outage (RO)-23. If the RPV head is not replaced at that time, examination of the existing RPV head will be conducted in accordance with this Order or any applicable superseding requirement.

4. Reason for Request

Appropriate and sufficient actions have been taken to assure the integrity of the RPV head at HBRSEP, Unit No. 2. The safety benefits derived by the performance of NDE of the RPV head penetrations in accordance with Section IV.C.(1)(b) of the Order during the next refueling outage do not outweigh the impacts that these examinations would impose. As described in the basis for this relaxation request, safe operation of HBRSEP, Unit No. 2, will continue to be assured based on the examinations that have been completed in RO-21 and the analyses that have been performed to demonstrate that incipient failure during these two cycles of operation should not occur. The impacts of these examinations include radiation dose of approximately 1.2 rem to personnel supporting the NDE, additional dose to personnel not directly supporting the NDE of the RPV head of approximately 1 rem, an increase in outage duration of up to approximately 7 days, and a substantial expenditure of funds.

5. Basis for Relaxation Request

Section IV.F of Order EA-03-009 states that licensees proposing to deviate from the requirements of this Order shall seek relaxation of this Order pursuant to the procedure specified in the Order. It further states that the Director, Office of Nuclear Reactor Regulation, may, in writing, relax or rescind any of the Order conditions upon demonstration by the licensee of good cause.

The 20-day required Order response for HBRSEP, Unit No. 2, stated that previous inspection results and materiel condition of the RPV head are being reviewed to determine if there is sufficient technical basis to warrant relaxation of the Order requirements. Also in that letter, the consent to the Order was put forth, subject to the understanding that relaxation could be requested upon completion of the review, if the criteria of Section IV.F are met; and the right of

HBRSEP, Unit No. 2, to request a hearing on any requirements of the Order that may be subject to such a relaxation request was reserved.

The review to determine if there is sufficient technical basis to warrant relaxation of the Order requirements has been completed. It has been concluded that a relaxation request is warranted under the provision that good cause can be shown.

The demonstration of good cause is based on the following:

> Safe operation of HBRSEP, Unit No. 2, will continue to be assured based on the examinations that have been completed in RO-21 and the analyses that have been performed to demonstrate that incipient reactor coolant pressure boundary failure due to RPV head penetration failure should not occur.

Incipient reactor coolant pressure boundary failure is considered propagation of a flaw through the pressure retaining portion of the VHP nozzle or associated weld. Technical Evaluations pertaining to the details supporting this conclusion are provided as follows:

Completed Examinations

As stated in response to NRC Bulletins 2001-01, 2002-01, and 2002-02, the HBRSEP, Unit No. 2, RPV head has been examined during RO-20 (April 2001) and RO-21 (October 2002). A bare-metal qualified visual examination of the RPV head and VHP nozzles was conducted during RO-20 in April of 2001. This bare-metal qualified visual examination conducted in April of 2001 pre-dates the August 2001 issuance of NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles." Subsequent to the issuance of NRC Bulletin 2001-01, and as a result of correspondences, teleconferences, and meetings between HBRSEP, Unit No. 2, and the NRC staff, it was concluded that the April 2001 visual examination provided reasonable assurance of the structural integrity of the VHP nozzles until the next scheduled inspection in the fall of 2002 (Reference TAC No. MB2654).

On December 13, 2002, HBRSEP, Unit No. 2, submitted the results of RPV head and VHP nozzle inspections that were completed in November 2002 as part of RO-21. This submittal and the associated RO-21 inspections were in accordance with NRC Bulletin 2001-01, and NRC Bulletin 2002-02, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs." Inspections performed during RO-21 were a bare-metal qualified visual examination of the RPV head surface, which included visual examination for evidence of leakage 360° around each nozzle-head intersection, and NDE of the VHP nozzles. As described within the December 13, 2002, submittal, the scope of NDE for these examinations included:

- Eddy current examinations of the 69 J-groove welds and penetration tube outer diameter (OD) surfaces,

- Eddy current and ultrasonic examinations of the seventeen open penetration tubes from the penetration tube inner diameter (ID) surfaces, and,

- Eddy current examinations of 45 penetration tubes with thermal sleeves and seven penetration tubes with part length drive shafts from the penetration tube ID surfaces.

The RO-21 bare-metal qualified visual examination of the RPV head and head penetration nozzles did not identify evidence of VHP nozzle leakage or cracking. Additionally, the NDE of the RPV head penetrations found no evidence of service-related degradation. One recordable indication was identified that did not require repair. An engineering analysis of this indication has been completed, and the crack growth model associated with this analysis shows that the applied stress intensity factor for the indication is below the threshold for crack propagation. The engineering analysis further concluded that the indication is most likely a scratch or other surface anomaly resulting from the manufacturing process, and there is no concern for this indication during future service (Reference TAC No. MB5916).

Evaluation of Completed Examinations

The completed examinations of the RPV head at HBRSEP, Unit No. 2, were performed prior to the issuance of Order EA-03-009. The examinations have been reviewed to determine if there were any departures from the examinations described in Section IV.C of the Order. The following items have been identified as departures from Order requirements for the RO-21 examinations (these items include the associated technical justification for the departure):

Bare Metal Visual Examination

Section IV.C of Order EA-03-009 states that the bare metal visual examination shall include 100% of the RPV head surface (including 360° around each RPV head penetration nozzle). The bare metal visual examination performed during RO-21 was conducted in accordance with Special Procedure (SP)-1500, "Visual Examination of RPV Head Penetration Nozzles." SP-1500 required that personnel performing examinations be qualified VT-2 Level II or greater, and further specified that the responsible engineer should be present during the examinations. The examination procedure also states that prior to conducting the examinations, the examination team should review the latest revision of the Electric Power Research Institute (EPRI) Report 10006296, "Visual Examination for Leakage of PWR Reactor Head Penetrations on Top of RPV Head."

To perform the examination, the plant equipment was placed in a condition that allowed access to the entire top surface of the RPV head and 360° around each penetration, and the RPV head insulation was removed. SP-1500 instructs that during removal of insulation and/or debris to facilitate the examination, caution must be taken to not wipe off, smear, or disturb any boric acid deposits that may be present on the RPV head without first determining their source and relevance. A systematic approach, including the use of detail drawings, was used to ensure that the region of interest surrounding each penetration was inspected for 360° of its circumference. Each penetration-to-head interface (annulus) was closely scrutinized to determine if boric acid deposits were present in, or around, the penetration annulus. Penetrations were visually

accepted based on the absence of boric acid deposits in the annulus area and the results documented in SP-1500.

The results of the bare-metal qualified visual examination determined that the 69 VHP nozzles and the reactor head vent penetration were acceptable with no degradation, cracking, or leakage identified. During the initial examination, small amounts of boric acid residue were identified at the intersection of the VHP nozzle and RPV head on 12 penetrations (penetration numbers 26, 30, 31, 36, 38, 39, 46, 50, 51, 58, 62, and 63). This residue was considered to be masking the areas of interest. The residue was easily vacuumed and determined to be from a source other than the respective penetration annulus. Re-examination after vacuuming found the penetrations to be acceptable. The source of boric acid residue was determined to be canopy seal weld leakage above and in the vicinity of these penetrations. Some of that loose boric acid residue was determined to have fallen from the RPV head insulation to the RPV head surface during insulation removal. Canopy seal weld repairs were completed and the boric acid residue removed prior to plant startup from RO-21.

As indicated in the preceding summary, the bare metal visual examination of the RPV head concentrated on the regions around the RPV head penetrations. The RPV head insulation was removed to allow viewing of the RPV head surface. Any degradation of the RPV surface would have been apparent and properly dispositioned, if it had existed at that time. During the review of the RPV head configuration and determination of bare metal visual examination coverage, it was noted that the shroud support structure is not readily removable and it remained connected to the RPV head during the examinations. The area obscured by the RPV shroud support structure is estimated as approximately 1% of the surface area of the RPV head. Additionally, the areas "uphill" and "downhill" of the shroud support structure were clear for examination. No abnormalities were noted in these areas. There are no RPV head penetrations that were obscured.

NDE of RPV Head Penetrations

Section IV.C of Order EA-03-009 states that NDE shall include ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred into the interference fit zone; or eddy current testing or dye penetrant testing of the wetted surface of each J-groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld.

The NDE that was performed during RO-21 is summarized in the HBRSEP, Unit No. 2, letter dated December 13, 2002. The scope of NDE for the HBRSEP, Unit No. 2, RO-21 examinations of RPV head penetrations included:

- Eddy current examinations of the 69 J-groove welds and penetration tube outer diameter (OD) surfaces,

- Eddy current and ultrasonic examinations of the seventeen open penetration tubes from the penetration tube inner diameter (ID) surfaces, and,

- Eddy current examinations of 45 penetration tubes with thermal sleeves and seven penetration tubes with part length drive shafts from the penetration tube ID surfaces.

The approach used for the detection of primary water stress corrosion cracking (PWSCC) involved the application of eddy current examination techniques to examine the critical "wetted surfaces" of the OD and ID surfaces of the RPV head penetrations and J-groove welds. For open penetration tubes, eddy current examinations were supplemented by ultrasonic testing.

The Westinghouse Grooveman manipulator was used to perform eddy current examinations of the 69 J-groove welds and penetration tube OD surfaces. The eddy current probe holders are designed to conform to the geometry of the J-groove welds and penetration OD surfaces, and thereby allow the probes to follow the contour of the assembly. Continuous positional and video feedback is provided to the operator to assist in achieving coverage of the weld and the penetration tube. Scanning of the penetration tube OD surface is conducted in a vertical direction and the probes are indexed in the circumferential direction. For scanning of the J-groove welds, scanning is conducted in the circumferential direction, along the weld, and the index is in a direction perpendicular to the weld.

The Westinghouse 7010 Open Housing Scanner was used to deliver an end effector containing ultrasonic and eddy current probes to perform examinations of the seventeen open penetration tubes from the penetration tube ID surfaces. The scanning motion is in the axial (vertical) direction, moving from the bottom of the penetration tube to an elevation approximately two inches above the J-groove weld. The probe is indexed in the circumferential direction. With the 7010 Open Housing Scanner, five examinations are conducted simultaneously which include:

- Eddy current inspection for identification of circumferential and axial degradation on the ID surfaces of the penetration tubes.

- Time-of-flight diffraction (TOFD) ultrasonic inspection optimized for identification of circumferentially oriented degradation on the penetration tube OD surfaces.

- TOFD ultrasonic inspection optimized for identification of axially oriented degradation on the penetration tube OD surfaces.

- High frequency, straight beam ultrasonic inspection to identify variations in the tube-to-reactor vessel head shrink fit area that might indicate a leak path.

- Low frequency, straight beam ultrasonic inspection for identification of degradation in the weld, parallel to the tube-to-weld interface.

These examinations included TOFD ultrasonic techniques demonstrated capable of detecting axial and circumferential reflectors on the penetration tube OD surfaces with PCS24 probes.

Additionally, these examinations included straight beam ultrasonic techniques at 2.25 MHz to interrogate the J-groove weld zone, and at 5.0 MHz to identify possible leak paths in the shrink fit region between the RPV head penetrations and the reactor vessel head. Eddy current examinations were demonstrated capable of detecting axial and circumferential degradation on the penetration tube ID surfaces.

The Westinghouse Eddy Current Gapscanner was used to perform eddy current examination of the 45 penetration tubes with thermal sleeves and seven penetration tubes with part length drive shafts from the penetration tube ID surfaces. The Eddy Current Gapscanner is designed to position and guide eddy current "sword" probes into the annulus between the ID surface of the RPV head penetration tube and the OD surface of the thermal sleeve, and to manipulate the probe to provide the desired coverage. The nominal annulus size is 0.125 inch. The sword probe design utilizes a flexible metal "sword" on which a pair of eddy current probes is mounted in a spring configuration that enables the probes to ride on the ID surface of the penetration tubes. The scanning motion is in the vertical direction, moving from the bottom of the penetration tube to an elevation approximately two inches above the uphill side of the J-groove weld. The probes are indexed in the circumferential direction. The Eddy Current Gapscanner consists of a probe tilt and drive unit to advance and reverse the probe in the tube/thermal sleeve annulus, a turntable to rotate the probe drive around the axis of the penetration, a lifting cylinder to raise and lower the tilt and drive unit, and a centering device consisting of two clamping arms.

The NDE of the HBRSEP, Unit No. 2, RPV head penetrations found no evidence of service-related degradation. No indication or degradation was identified that required repair. As described in more detail below, one recordable parent tube indication was identified and dispositioned by engineering analysis. HBRSEP, Unit No. 2, letters dated August 12, 2002, and September 9, 2002, provided to the NRC the RPV head inspection plan and acceptance criteria that were used to accomplish these NDE activities.

Results from the Westinghouse Grooveman eddy current examinations of the 69 RPV head penetration J-groove welds and penetration tube OD surfaces showed no detectable degradation. There were no recordable or reportable indications in any of the J-groove welds or penetration tube OD surfaces. Additional details regarding these examinations are provided within the December 13, 2002 letter.

Eddy current results from penetration tube ID surface examinations with the Westinghouse 7010 Open Housing Scanner found nine penetration tubes with indications characteristic of craze cracking. This phenomenon was found typically at the 180-degree location and below the weld. The craze cracking was not detectable with the TOFD ultrasonic probes, indicating the depth of these indications to be less than 0.040 inch, which is the TOFD detection limit. As such, these indications are not considered to have any impact on the integrity of the RPV head penetration tubes. TOFD ultrasonic examinations with the Westinghouse 7010 Open Housing Scanner showed nine penetrations with weld interface indications and shallow parent tube indications in the weld interface region. An indication profile analysis was performed to assess the significance of these reflectors. The results of this analysis, combined with the results from the wetted surface eddy current examinations of the J-groove welds and penetration tube OD

surfaces, determined that these indications are associated with the manufacturing process and are not a result of service-related degradation. Details regarding the 7010 Open Housing Scanner examinations are provided in the December 13, 2002 letter.

One recordable parent tube indication was identified in Penetration Tube No. 47. The indication was visible with the PCS24 TOFD ultrasonic testing transducer pair oriented for detection of axial indications. The indication is located wholly in the Alloy 600 penetration tube material and is axial in orientation. The bottom edge of the 0.28 inch long indication is located at 2.84 inches above the top edge of the weld at the 170° location, nearly at the uphill peak, with a depth less than 0.060 inch. The flaw aspect ratio is 4.7:1. An engineering analysis of this indication has been completed, and the crack growth model associated with this analysis shows that the applied stress intensity factor for the indication is below the threshold for crack propagation. The engineering analysis further concluded that the indication is most likely a scratch or other surface anomaly resulting from the manufacturing process, and there is no concern for this indication during future service.

Eddy current results from penetration tube ID surface examinations with the Westinghouse Eddy Current Gapscanner showed evidence of craze cracking in seven penetrations. These indications had eddy current characteristics the same as those identified with the 7010 Open Housing Scanner in terms of low amplitude and small phase angle. Additional details regarding the Gapscanner examinations are provided in the December 13, 2002 letter.

During the review of the NDE coverage for this relaxation request, it was noted that the nozzle examinations did not achieve the entirety of the wetted surface of the nozzles from 2 inches above the J-groove to the bottom of the nozzle. A portion of the bottom of the nozzles was not examined. Analyses have been conducted that conclude an undetected flaw in the non-examined region would not be expected to propagate through the J-groove weld region on the penetration during the proposed deferral period in which requested relaxation of NDE would apply. These analyses are contained in the enclosed report, WCAP-16132, with proprietary and non-proprietary versions provided.

Also, the RPV head vent penetration was not subjected to NDE. This penetration is not an area of concern because of the fabrication characteristics for this penetration. Specifically, the RPV head vent penetration was fabricated from a large section of low alloy steel that was welded-in and stress-relieved with the vessel. Accordingly, HBRSEP, Unit No. 2, is not expected to have a potential for PWSCC at this location. Additionally, the RPV head vent penetration is exempt from examination in accordance with Subarticle IWB-1220 of ASME Section XI, 1995 Edition, with 1996 Addenda, which is the currently applicable version of ASME Section XI for HBRSEP, Unit No. 2. Specifically, Subparagraph (b)(1) of Subarticle IWB-1220 states that piping of nominal pipe size (NPS) 1 or smaller is exempt from examination.

Evaluation of Susceptibility Factors

Section IV.A of Order EA-03-009 states that the susceptibility category shall be determined by the calculation of effective degradation years (EDY) based on the equation:

$$EDY = \sum_{j=1}^{n} \left\{ \Delta EFPY_j \exp\left[-\frac{Q_i}{R}\left(\frac{1}{T_{head,j}} - \frac{1}{T_{ref}} \right) \right] \right\}$$

where:

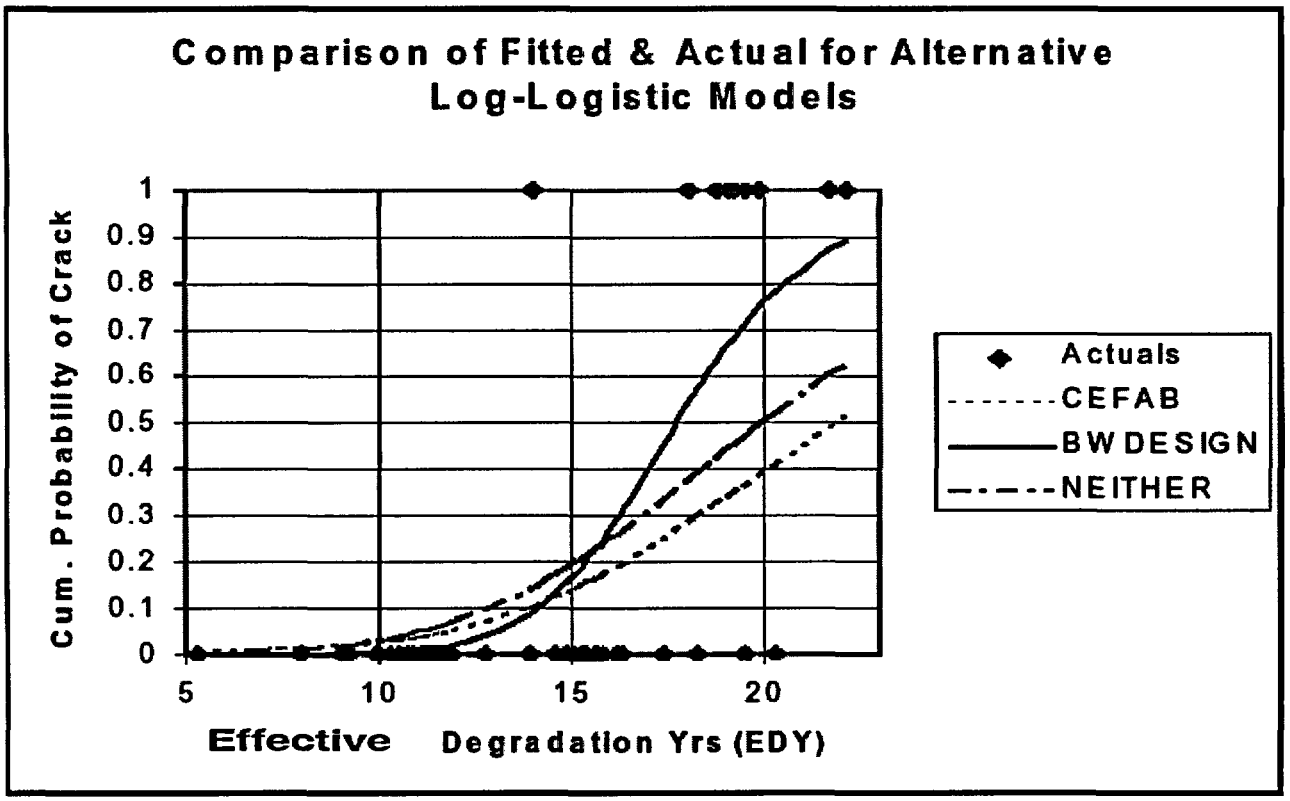
EDY	=	total effective degradation years, normalized to a reference temperature of 600°F
$\Delta EFPY_j$	=	operating time in years at $T_{head,j}$
Q_i	=	activation energy for crack initiation (50 kcal/mole)
R	=	universal gas constant (1.103×10^{-3} kcal/mole°R)
$T_{head,j}$	=	100% power head temperature during time period j (°R = °F + 459.67)
T_{ref}	=	reference temperature (600°F = 1059.67°R)
n	=	number of different head temperatures during plant history

The current and projected EDY for the HBRSEP, Unit No. 2, RPV head is estimated as follows:

Operating Period	Cumulative Effective Degradation Years	Assumptions
End of previous cycle (Cycle 21, RO-21) October 2002	20.3	Head temperature estimated as 598.24°F. Approximately 21.8 EFPY.
End current cycle (Cycle 22, RO-22) April 2004	21.7	Head temperature estimate increased to 599.7°F for 1.7% power uprate. Estimated additional EFPY is 1.4.
End of next cycle (Cycle 23, RO-23) October 2005	23.1	Head temperature estimated as 599.7°F. Estimated additional EFPY is 1.4.

These EDY values are very similar to the accumulated EFPY because the estimated RPV head temperature for HBRSEP, Unit No. 2, is very close to 600°F.

Section 3 of WCAP-16110 (proprietary and non-proprietary versions enclosed with this submittal) provides a statistical analysis of differential susceptibility. That analysis resulted in the following comparison of estimated cumulative probability of PWSCC for three selected categories of RPV upper head design and manufacture (Combustion Engineering Fabrication [CEFAB], Babcock and Wilcox [B&W] Design [BW DESIGN], and those plants that fit in neither of these categories [NEITHER]).



Based on these categorizations, this comparison demonstrates that B&W Design RPV heads are the most susceptible and Combustion Engineering Fabrication RPV heads are the least susceptible, and that factors other than time and temperature significantly influence the likelihood of PWSCC. HBRSEP, Unit No. 2, currently has a Combustion Engineering Fabrication RPV head.

Section 6 of WCAP-16110 and Section 4 of Dominion Engineering, Incorporated (DEI), Report R-3515-00-1 (proprietary and non-proprietary versions enclosed with this submittal) provide additional details pertaining to the materials and manufacturing processes used for the HBRSEP, Unit No. 2, RPV head. Compilation and review of these details did not reveal any factors that would be expected to uniquely impact the susceptibility to PWSCC of the RPV head penetrations or the associated welds.

Deterministic Evaluation of Flaw Propagation and Crack Growth

Section 4 of WCAP-16110, and Sections 6 and 7 of DEI Report R-3515-00-1, provide the methods and results of deterministic evaluations of flaw propagation and crack growth by two independent consultants. The cases analyzed demonstrate that incipient failure is not predicted to occur within the proposed period of NDE deferral. Incipient failure is considered propagation of a flaw through the pressure retaining portion of the VHP nozzle or associated weld. Although one case (the uphill side of the 27° nozzle at the head operating temperature of

599.7°F) predicted less than 3 years for flaw propagation through the weld (DEI Report R-3515-00-1, Section 7.2), the probabilistic analysis in Section 8 of the DEI Report shows that the probability of a leak is low.

As stated previously, during the review of the NDE coverage for this relaxation request, it was noted that the nozzle examinations did not achieve the entirety of the wetted surface of the nozzles from 2 inches above the J-groove to the bottom of the nozzle. A portion of the bottom of the nozzles was not examined (see enclosed examination coverage report, WCAP-16132). Analyses have been conducted that conclude an undetected flaw in the non-examined region would not be expected to propagate through the J-groove weld region on the penetration during the proposed 3 years of operation in which requested relaxation of NDE would apply. Specifically, stress analysis of the approximations for "as-built" configuration of the weld, including approximations for as-built weld fillet, were used to predict axial through-wall flaw propagation. The results of this evaluation concluded that an assumed flaw in the unexamined lower areas of the RPV head penetration is not expected to propagate through the reactor coolant pressure boundary during the proposed period of NDE deferral.

Probabilistic Evaluation of Flaw Propagation and Crack Growth

Section 5 of WCAP-16110 and Section 8 of DEI Report R-3515-00-1 provide the methods and results of probabilistic evaluations of flaw propagation and crack growth by two independent consultants. Section 5 of WCAP-16110 concludes that the probabilistic analysis provides quantitative confidence, based on suitably conservative assumptions, that: (a) leaks and critical flaws will not be generated, and (b) the projected plant risk increase will be within acceptable limits over the contemplated interval between inspections. Section 8 of the DEI Report concludes the following:

> "The base case probabilistic fracture mechanics (PFM) evaluation shows a maximum increment in core damage frequency (CDF) of 1E-7 per year. This is one order of magnitude lower than the 1E-6 criterion recommended by Regulatory Guide 1.174 for risk-informed decision making. In addition, a detailed sensitivity study shows that the conclusion that the effect on CDF is insignificant is robust and is not overly dependent on the set of input assumptions. Furthermore, the base case PFM calculations show a maximum probability of leakage just under 6% per year, a reasonable result considering the conservatisms inherent in the PFM inputs. Finally, a probabilistic wastage model similar to that presented in MRP-75 shows that the potential for boric acid corrosion of the low-alloy steel head material, given the bare metal visual examination (BMV) that is scheduled for the spring 2004 refueling outage, has an insignificant effect on CDF in comparison to the value of 1E-7 per year calculated on the basis of the PFM simulation."

Both evaluations performed by these consultants utilize conservative assumptions for probability of detection, pre-existing flaws, and flaw propagation. The resultant estimates for the probability of leakage show that there is a low probability (on the order of 5% per year) that

a leak will occur. The resultant estimates for CDF show that the CDF during the period of NDE deferral is not significantly impacted.

Evaluation of the Efficacy of BMV Examination

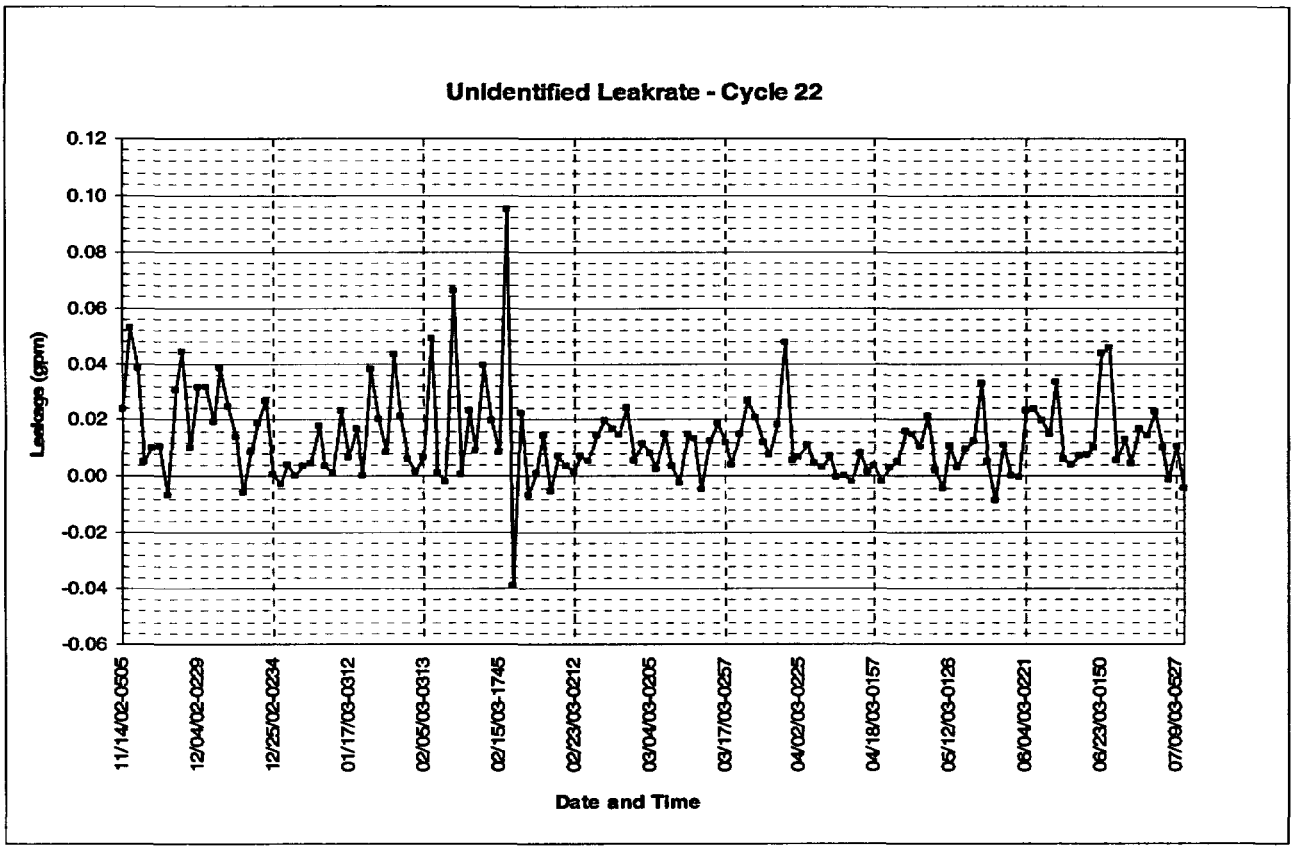
The proposed alternative is bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle), except for a small percentage of surface area (approximately 1%) under the shroud support structure that is not visible. This BMV shall be conducted during the next refueling outage for HBRSEP, Unit No. 2, which is currently planned for April 2004.

As described in the preceding sections of this relaxation request, NDE conducted in the previous refueling outage, along with analyses that demonstrate incipient failure during these two cycles of operation should not occur, are also provided as alternatives to the NDE requirements of Section IV.C.(1)(b) of the Order.

During 2001, NRC Bulletin 2001-01 requested the submittal of information related to the structural integrity of the reactor pressure VHP nozzles for their respective facilities, including the extent of VHP nozzle leakage and cracking that has been found to date, the inspections and repairs that have been undertaken to satisfy applicable regulatory requirements, and the basis for concluding that plans for future inspections will ensure compliance with applicable regulatory requirements.

The information requested was provided and supplemented in five letters, dated September 4, October 2, October 19, November 2, and November 12, 2001. These letters provide the basis for concluding that a qualified BMV examination of the RPV head, performed in April 2001, assured the integrity of the HBRSEP, Unit No. 2, VHP nozzles at that time. A significant aspect to that basis included the evaluation pertaining to the construction of the RPV head. In particular, the inference fit of the VHP nozzles and the conclusion that leakage from through-wall cracking of the VHP nozzle or J-groove weld would result in observable deposition of dried boric acid on the RPV head near the VHP nozzle head penetration annulus. This conclusion remains valid and applicable to the BMV that will be used to provide assurance of VHP integrity during the upcoming refueling outage in April of 2004.

Furthermore, the reactor coolant system leak rate is closely monitored by Operations and Engineering personnel at HBRSEP, Unit No. 2. The following graph provides the summary of leak rate monitoring for the current operating cycle. This graph shows that the unidentified leak rate during the current operating cycle has been typically maintained in a range of 0.00 to 0.05 gpm.

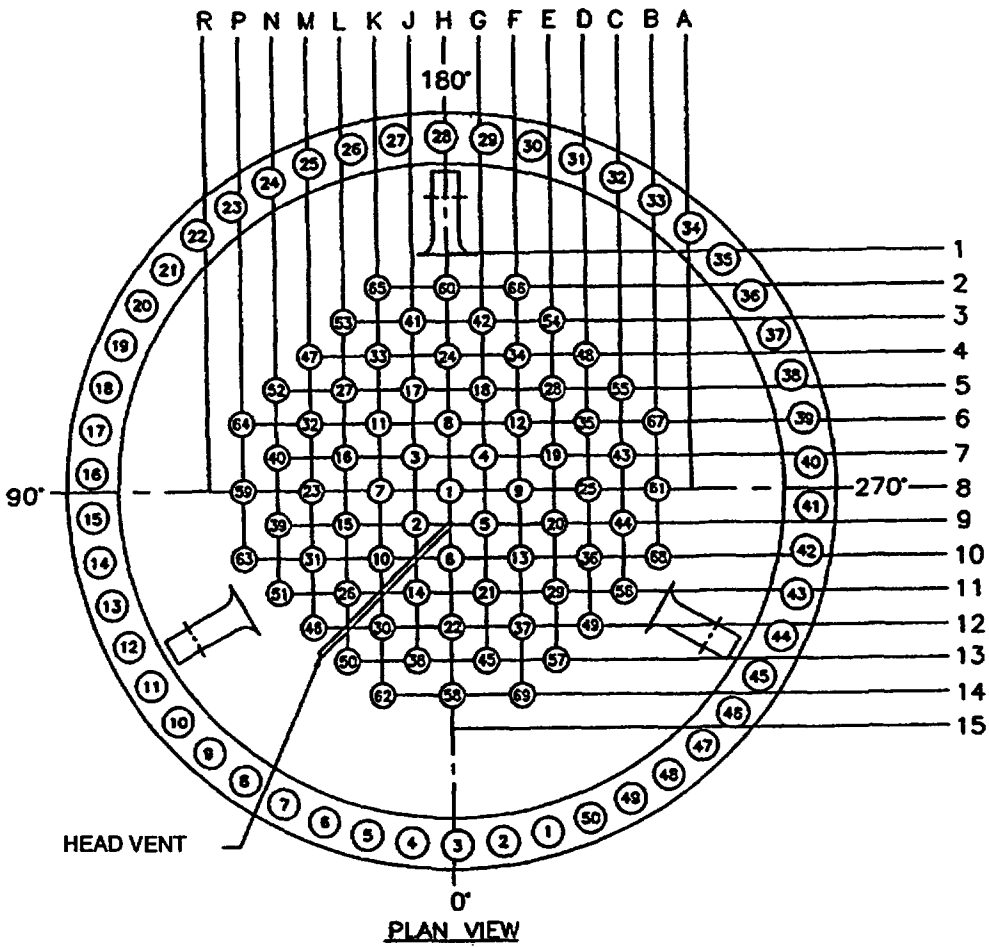


NDE examination required by Section IV.C.(1)(b) of the Order does provide some additional measure of assurance that non-leaking flaws could be detected and repaired before a leak could occur. Although, based on the probability of detection using these techniques, it is apparent that such NDE would not provide unequivocal assurance that a leak will not occur. Therefore, the proposed BMV examination and continued close monitoring of the unidentified leak rate are considered appropriate measures that provide continued assurance of VHP nozzle and RPV head integrity.

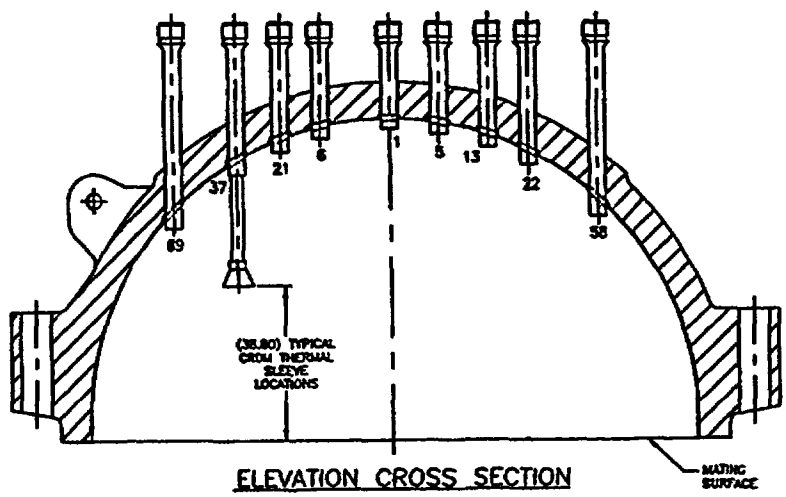
6. Duration of the Proposed Alternative

The requested duration of the proposed alternative is a deferral of the NDE examination requirements of Order EA-03-009 for one operating cycle. The HBRSEP, Unit No. 2, RPV head is scheduled to be replaced in October 2005, during Refueling Outage (RO)-23. If the head is not replaced at that time, examination of the existing RPV head will be conducted in accordance with the Order or any applicable superseding requirement.

FIGURE 1. HBRSEP, UNIT NO. 2, REACTOR PRESSURE VESSEL HEAD PENETRATIONS



PLAN VIEW



ELEVATION CROSS SECTION

NOTE: PENETRATIONS DEPICTED IN CROSS SECTION ARE REPRESENTATIVE OF DIFFERENT RADIAL LOCATIONS

Westinghouse

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Direct tel: (412) 374-5282
Direct fax: (412) 374-4011
e-mail: Sepp1ha@westinghouse.com

Our ref: CAW-03-1686

August 11, 2003

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: WCAP-16132-P, "H. B. Robinson Unit 2 RPVH Inspection Fall 2002 Inspection Coverage Evaluation" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-03-1686 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.790 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Progress Energy.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-03-1686 and should be addressed to the undersigned.

Very truly yours,

H. A. Sepp, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: J. Dyer
D. Holland
B. Benney
E. Peyton

bcc: H. A. Sepp (ECE 4-7A) 1L
R. Bastien, 1L, 1A (Nivelles, Belgium)
C. Brinkman, 1L, 1A (Westinghouse Electric Co., 12300 Twinbrook Parkway, Suite 330, Rockville, MD 20852)
RCPL Administrative Aide (ECE 4-7A) 1L, 1A (letter and affidavit only)

CAW-03-1686

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared H. A. Sepp, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC ("Westinghouse"), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

H. A. Sepp, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 11th day
of August, 2003

Notary Public

SHARON L. FIORI
COMMONWEALTH OF PENNSYLVANIA
NOTARY PUBLIC

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
Member, Pennsylvania Association Of Notaries

(1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC ("Westinghouse"), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Electric Company LLC.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse application for withholding accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by the Westinghouse Electric Company LLC in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in WCAP-16132-P, "H. B. Robinson Unit 2 RPVH Inspection Fall 2002 Inspection Coverage Evaluation" (Proprietary), dated August, 2003 for H. B. Robinson Unit 2, being transmitted by Progress Energy letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted for use by Westinghouse Electric Company LLC for H. B. Robinson Unit 2 is expected to be applicable for other licensee submittals in response to certain NRC requirements for justification of verifying RPVH Inspection Coverage.

This information is part of that which will enable Westinghouse to:

(a) Assist the customer in obtaining NRC approval.

(b) Verify RPVH Inspection Coverage.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for licensing documentation.

(b) Westinghouse can sell support and defense of verifying inspection coverage.

(c) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar documentation and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.790 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.790(b)(1).

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Westinghouse

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

Mr. Curt Castell
Progress Energy
H. B. Robinson Site
3581 West Entrance Road
Hartsville, SC 29550

Direct tel: 412-374-5651
Direct fax: 412-374-3451
e-mail: alexa1dw@westinghouse.com
Westinghouse S.O.: 21358
Customer P.O.: 3382
Task Work Auth.: 34
Our ref: PGN-03-51

July 24, 2003

PROGRESS ENERGY
H. B. ROBINSON
Development of a Technical Basis to Set the Inspection Interval for H.B. Robinson Reactor Vessel Head Penetrations

Dear Mr. Castell:

Enclosed are ten copies each of WCAP 16110-P and WCAP 16110-NP, for your use in support of the deferral of the upcoming reactor vessel head penetration inspection. Westinghouse has incorporated several rounds of Progress Energy comments and the report is now ready for submittal to the NRC.

Also enclosed is an affidavit for withholding to accompany the documents to NRC.

Additional work is underway to support your deferral, and the results will be transmitted to you under separate cover.

If there are any questions on this information, please contact Mr. Warren Bamford at 412-374-6515 or me at 412-374-5651.

Sincerely,

WESTINGHOUSE ELECTRIC COMPANY LLC

Joe Hamlin for

Dwain W. Alexander
Customer Projects Manager

Enclosures

cc:	Pete Harden	Westinghouse Charlotte
	Chris Church	Robinson
	Erdal Caba	Robinson
	Warren Bamford	Westinghouse E314C

Westinghouse

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Direct tel: (412) 374-5282
Direct fax: (412) 374-4011
e-mail: Sepp1ha@westinghouse.com

Our ref: CAW-03-1675

July 24, 2003

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: WCAP-16110-P, "Development of a Technical Basis for the Inspection Interval of the H. B. Robinson Reactor Vessel Head Penetrations" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-03-1675 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.790 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Progress Energy.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-03-1675 and should be addressed to the undersigned.

Very truly yours,

for H. A. Sepp, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: J. Dyer
D. Holland
B. Benney

bcc: H. A. Sepp (ECE 4-7A) 1L
R. Bastien, 1L, 1A (Nivelles, Belgium)
C. Brinkman, 1L, 1A (Westinghouse Electric Co., 12300 Twinbrook Parkway, Suite 330, Rockville, MD 20852)
RCPL Administrative Aide (ECE 4-7A) 1L, 1A (letter and affidavit only)

CAW-03-1675

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. W. Winters, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC ("Westinghouse"), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J. W. Winters, Manager
Project Engineering and Integration

Sworn to and subscribed
before me this 24th day
of July, 2003

Notary Public

SHARON L. FIORI
NOTARY PUBLIC
COMMONWEALTH OF PENNSYLVANIA

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
Member, Pennsylvania Association Of Notaries

(1) I am Manager, Project Engineering and Integration, in Nuclear Systems, Westinghouse Electric Company LLC ("Westinghouse"), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Electric Company LLC.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse application for withholding accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by the Westinghouse Electric Company LLC in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in WCAP-16110-P, "Development of a Technical Basis for the Inspection Interval of the H. B. Robinson Reactor Vessel Head Penetrations" (Proprietary), dated July 2003 for H. B. Robinson, being transmitted by Progress Energy letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted for use by Westinghouse Electric Company LLC for H. B. Robinson is expected to be applicable for other licensee submittals in response to certain NRC requirements for justification of extending the time interval between reactor vessel head penetration inspections.

This information is part of that which will enable Westinghouse to:

(a) Assist the customer in obtaining NRC approval.

(b) Determine safe intervals between head penetration inspections.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for licensing documentation.

(b) Westinghouse can sell support and defense of increasing interval time between head penetration inspections.

(c) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar support documentation and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.790 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.790(b)(1).

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AFFIDAVIT PURSUANT TO 10CFR2.790

I, E. STEPHEN HUNT, being duly sworn, affirm, and state as follows:

(1) This Affidavit supports an application to the Commission for withholding from public disclosure Dominion Engineering, Inc., (DEI) Report R-3515-00-1, Revision 0, "Technical Basis for RPV Head CRDM Nozzle Inspection Interval—H. B. Robinson Steam Electric Plant, Unit No. 2," July 2003. The non-proprietary version of this report, R-3515-00-1-NP, Revision 0, is being submitted with the proprietary version and is available for distribution without restriction.

(2) I am a Principal Officer of Dominion Engineering, Inc. (DEI), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rulemaking proceedings, and am authorized to apply for its withholding on behalf of DEI. I have personal knowledge of the criteria and procedures utilized by DEI in designating information as a trade secret, privileged, or as confidential or financial information.

(3) I am making the Affidavit in conformance with the provisions of 10CFR §2.790 of the Commission's regulations and in conjunction with the application by Progress Energy for withholding accompanying this Affidavit.

(4) Public disclosure of the information sought to be withheld is likely to cause substantial harm to DEI's competitive position and foreclose or reduce the availability of substantial profit-making opportunities.

(5) The locations in Report R-3515-00-1, Revision 0, of the information sought to be withheld are clearly identified in the report in accordance with 10CFR §2.790(b)(1)(i) and are listed in the following table:

Section	Information Sought to be Withheld
Section 4	head dimensions in para. 4.1; Table 4-1; parts of Table 4-2; Attachment 4-1
Section 5	parts of Table 5-1
Section 6	Table 6-1; Table 6-2.a; Table 6-2.b; Table 6-2.c; parts of Table 6-3; Table 6-4; Table 6-5
Section 8	parts of para. 8.1; para. 8.2; parts of para. 8.3; parts of para. 8.4; Table 8-1; Table 8-2; Table 8-5; Table 8-6; Figure 8-1; Figure 8-4; Figure 8-6; Figure 8-9; Figure 8-11
Appendix A	Calculation C-3515-00-1, Revision 0; Calculation C-3515-00-3, Revision 0
Appendix B	Figures B1-1 through B1-4.b; Figures B1-5 through B1-8.b; Figures B2-1 through B2-4.b; Figures B2-5 through B2-8.b; Figure B5-2; Figure B5-3; Figure B5-4
Appendix D	Calculation C-3515-00-2, Revision 0

(6) Pursuant to the provisions of 10CFR §2.790(b)(4) of the Commission's regulations, the following is furnished in consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) DEI has held the subject information in confidence. DEI has controlled the subject information and not disclosed it at any public forum. Any disclosure to third parties has been made pursuant to regulatory provisions or proprietary agreements that provide for maintenance of the information in confidence.

(ii) The information is of a sort customarily held in confidence by DEI. As described in paragraph (v) below, the information is held in confidence by DEI because disclosure would substantially affect DEI's competitive business position. This information principally is related to the methodology, assumptions, and detailed results of a specific probabilistic fracture mechanics model; the methodology, assumptions, and detailed results of specific structural finite-element analysis models; and a study of the materials and fabrication processing history of particular lots of nickel-alloy materials. In addition, DEI is required by agreement with other organizations to treat as proprietary and hold in confidence some of the information sought to be withheld (head dimensions, nozzle material heat processing and mechanical properties data, latest industry inspection result compilations, and detailed crack growth rate data).

(iii) The information sought to be withheld is being submitted to the NRC in confidence by Progress Energy in conjunction with an application by Progress Energy for withholding.

(iv) To the best of my and DEI's knowledge, no public disclosure of this information has been made, and it is not available in public sources. Information that is available in public sources is not being requested to be withheld, and as such is included in the accompanying non-proprietary version of the report.

(v) Public disclosure of the information sought to be withheld is likely to cause substantial harm to DEI's competitive position because:

(A) The subject information has substantial commercial value to DEI as significant portions of DEI's future business of providing engineering consulting to nuclear utilities in this area is substantially based upon the information sought to be withheld.

(B) The expertise represented by the subject information is a substantial part of DEI's current position as a competitor in the market of assisting nuclear utilities in the management of stress corrosion cracking material degradation. Development of this expertise by DEI required the recruitment, training, and employment of skilled engineers working in the nuclear power industry for over 10 years. The information was developed at considerable expense, including attendance at dozens of industry conferences and meetings, over more than a 10

year period of actively working in the technical engineering fields addressed by the report.

(C) Similar products and services are provided by DEI's major competitors. Acquiring of the information sought to be withheld would allow the competitors to take some share of the market for providing engineering consulting services in this area.

(D) A large effort over a sustained time period would be required by DEI's competitors and others to properly acquire or duplicate the information sought to be withheld by developing the basic methodologies, selecting and justifying the many detailed assumptions, integrating the many technical issues and concerns into a defensible technical presentation, and presenting the results in an easily comprehended manner. In some cases the subject information could only be acquired through a licensing or business agreement.

(E) There is expected to remain a marketplace for services in the areas related to the subject information and currently provided by DEI for many years into the future.

I have read the foregoing and the matters stated therein are true and correct to the best of my knowledge, information and belief. I make this Affidavit under penalty of perjury under the laws of the United States of America and under the laws of the Commonwealth of Virginia.

Executed at 11730 Plaza America Drive, Suite 310, Reston, Virginia being the premises and place of business of DEI.

August 4, 2003

E. Stephen Hunt
Principal Officer

Sworn to and subscribed before me this 4th day of August, 2003.
Witness my hand and official seal.
Anne Doane Notary Public

State of Virginia
County of Fairfax
Anne Doane Notary Public
My Comm. Exp. Aug 31, 2005