PSEG Nuclear LLC
P.O. Box 236,, Hancocks Bridge, NJ 08038-0236

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FOL 2.C.(22)5
FOL 2.C.(22)6

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July 30, 2009

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

Hope Creek Generating Station
Facility Operating License No. NPF-57
NRC Docket No. 50-354

Subject: RF15 Steam Dryer Inspection Results

This letter provides information in accordance with Hope Creek Generating Station Operating License Conditions 2.C.(22)5 and 2.C.(22)6.

License Condition 2.C.(22)5 requires:

> During the first scheduled refueling outage after Cycle 15 and during the first two scheduled refueling outages after reaching full EPU [(extended power uprate)] conditions, a visual inspection shall be conducted of all accessible, susceptible locations of the steam dryer in accordance with BWRVIP-139 inspection guidelines.

Refueling outage RF15 (spring 2009) was the first scheduled refueling outage after Cycle 15 and also the first scheduled refueling outage after reaching full EPU conditions. During RF15, a visual inspection was conducted of all accessible, susceptible locations of the steam dryer in accordance with BWRVIP-139 inspection guidelines. The inspection also included steam dryer indications observed during inspections performed before RF15.

The attached report provides a summary of the inspection results. The indications identified during the inspection have been entered into the PSEG Nuclear Corrective Action Program. Each indication was evaluated and determined to be acceptable for continued operation. The detailed results are available for inspection.

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The information contained in this letter and attachment is provided to comply with the FOL requirements described above. There are no new regulatory commitments contained in this submittal.

Should you have any questions regarding this submittal, please contact Mr. Paul Duke at 856-339-1466.

Sincerely,

George P. Barnes
Site Vice President
Hope Creek Generating Station

Attachment
1. HCGS RF15 Steam Dryer Inspection Results

cc: S. Collins, Regional Administrator – NRC Region I
R. Ennis, Project Manager - USNRC
NRC Senior Resident Inspector - Hope Creek
P. Mulligan, Manager IV, NJBNE
L. Marabella, Corporate Commitment Tracking Coordinator
T. Devik, Hope Creek Commitment Tracking Coordinator

Hope Creek Generating Station

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RF15 Steam Dryer Inspection Results

Steam Dryer Inspection Results from the First Refueling Outage Following Implementation of Extended Power Uprate

General Steam Dryer Inspection Results

A visual inspection was conducted during refueling outage RF15 (April 2009) of all accessible, susceptible locations of the Hope Creek steam dryer in accordance with Electric Power Research Institute (EPRI) Technical Report 1011463, "BWR Vessel and Internals Project, Steam Dryer Inspection and Flaw Evaluation Guidelines (BWRVIP-139)." The re-baseline inspection included the exterior of outer and inner bank hoods, end plates, cover plates, tie bars, drain channels, support ring, and lifting rods; 223 locations were inspected. This was the first refueling outage following full implementation of extended power uprate (EPU). The plant had operated over 7 months at full EPU conditions prior to the outage. The inspection identified no damage that would adversely affect the steam dryer's structural integrity and identified no damage resulting from EPU.

Prior Steam Dryer Indications

Prior to RF15, eight (8) steam dryer indications were identified as a result of inspections. Seven (7) indications were evaluated as acceptable for continued operation. Of the 7, six had no discernable changes observed during the RF15 inspection.

One of the 7 indications did change from the previous inspection. The previous inspection found two cracks on one of the thread tack welds of the steam dryer lifting rod eye assembly at the 140° azimuth location. Based on location and industry experience, the cracks are most likely inter-granular stress corrosion cracking (IGSCC). The RF15 inspection found that these two cracks now appear to be joined in the heat-effected zone of the tack weld. The previous evaluation for continued operation stated that the two cracks could propagate along the entire length of the tack weld. The RF15 inspection found that this has occurred. The previous evaluation for continued operation was therefore still valid. Since the other tack weld on this lifting rod is intact, the anti-rotational function is maintained. Also even with the potential for these cracks to propagate inward 1/8 inch over a small area, there is insignificant impact to the 3-inch diameter rod's lifting or holddown function. The propagation of the crack was most likely caused by IGSCC and not by EPU operation. The lifting rod was not impacted by EPU operation.

One of the prior identified indications required corrective action. The indication was a severed lifting lug bracket, and the bracket was removed in April 2003. This was not affected by EPU operation.

Newly Identified Indications from the RF15 Inspection

Two new indications were found during the RF15 steam dryer inspection. All other locations were inspected and no reportable indications were found. The new indications were evaluated and determined to be acceptable for continued operation. They will be inspected again during the next refueling outage.

One new indication is a crater crack on a lifting rod brace and is at the end of the weld. This type of crater crack is likely a welding flaw from construction and is not service induced. The welding residual stress has now been relieved which makes the indication look open. The indication was not documented at the time, but is visible in RF13 (April 2006) inspection video. Based upon review of the previous video, no significant change has occurred over the past two operating cycles. This indication has no effect on the structural capability of the weld. This new indication was not attributed to EPU operation.

The second new indication was found on the vertical face of the steam dryer support ring, was circumferential, and was measured as 3.5 inch in length. This indication appears to be IGSCC. Throughout the BWR industry, there have been many reports of IGSCC cracking in the support ring. At Hope Creek the support ring is 3.5-inch wide and 9.5-inches high. The ring sections were cut from Type 304 stainless steel and cold formed into a ring. This process left residual (cold working) stresses on the surface. The combination of susceptible material (304 stainless steel), significant residual stresses (cold working), and the BWR coolant environment provides all of the prerequisites for IGSCC. This indication was evaluated to have no effect on the structural capacity of the support ring, was attributed to IGSCC, and was not attributed to EPU operation.

Conclusion

A complete re-baseline inspection of the Hope Creek steam dryer was performed during refueling outage RF15. The re-baseline included all portions of the steam dryer included in BWRVIP-139 inspection guidelines for the Hope Creek curved hood design. The RF15 inspections did not find any impact to the Hope Creek steam dryer structural integrity due to EPU operations. The previous identified indications and the newly identified indications were evaluated and none challenge the structural integrity or function of the steam dryer. The steam dryer will be re-baseline inspected again in the next refueling outage, RF16, and the results will be provided at that time consistent with Hope Creek's Operating License.