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JUL 12 2007

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION**
**PROPOSED LICENSE AMENDMENT NO. 285**
**FOR UNIT 1 OPERATING LICENSE NO. NPF-14**
**AND PROPOSED LICENSE AMENDMENT NO. 253**
**FOR UNIT 2 OPERATING LICENSE NO. NPF-22**
**EXTENDED POWER UPRATE APPLICATION RE:**
**MATERIALS AND CHEMICAL ENGINEERING**
**TECHNICAL REVIEW REQUEST FOR ADDITIONAL INFORMATION RESPONSES**
**PLA-6245**

**Docket Nos. 50-387**
**and 50-388**

*References:* 1) *PPL Letter PLA-6076, B. T. McKinney (PPL) to USNRC, "Proposed License Amendment Numbers 285 for Unit 1 Operating License No. NPF-14 and 253 for Unit 2 Operating License No. NPF-22 Constant Pressure Power Uprate," dated October 11, 2006.*

2) *PPL Letter PLA-6212, B. T. McKinney (PPL) to USNRC, "Proposed License Amendment No. 285 for Unit 1 Operating License No. NPF-14 and Proposed License Amendment No. 253 for Unit 2 Operating License No. NPF-22 Extended Power Uprate Application Re: Materials and Chemical Engineering Technical Review Request for Additional Information Responses," dated June 1, 2007.*

Pursuant to 10 CFR 50.90, PPL Susquehanna LLC (PPL) requested in Reference 1 approval of amendments to the Susquehanna Steam Electric Station (SSES) Unit 1 and Unit 2 Operating Licenses (OLs) and Technical Specifications (TSs) to increase the maximum power level authorized from 3489 Megawatts Thermal (MWt) to 3952 MWt, an approximate 13% increase in thermal power. The proposed Constant Pressure Power Uprate (CPPU) represents an increase of approximately 20% above the Original Licensed Thermal Power (OLTP).

The purpose of this letter is to supplement the response to NRC Question 4 contained in the Request for Additional Information Response transmitted to NRC in Reference 2.

The Enclosure contains the PPL supplemental response.

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HRR

There are no new regulatory commitments associated with this submittal.

PPL has reviewed the "No Significant Hazards Consideration" and the "Environmental Consideration" submitted with Reference 1 relative to the Enclosure. We have determined that there are no changes required to either of these documents.

If you have any questions or require additional information, please contact Mr. Michael H. Crowthers at (610) 774-7766.

I declare under perjury that the foregoing is true and correct.

Executed on: 7-12-07

B. T. McKinney

Enclosure: Supplement to Request for Additional Information Response

Copy: NRC Region I
Mr. A. J. Blamey, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Sr. Project Manager
Mr. R. R. Janati, DEP/BRP

# Enclosure to PLA-6245

# Supplement to Request for Additional Information Response

**Supplemental Questions and Responses to PPL Response NRC Question 4 of PLA-6212:**

**NRC Question:**

Please describe how the thickness values predicted by your CHECWORKS model compare to the measured thickness values. For example, for the components listed in the response to NRC Question 4 on flow-accelerated corrosion (PLA-6212, dated June 1, 2007), or for another sample of components at Susquehanna 1 & 2 representing a range of FAC rates, please compare the most recent wall thickness measurements to the CHECWORKS model predictions.

**PPL Response:**

The CHECWORKS (CW) models for Susquehanna Units 1 & 2 (SSES) were developed only recently (03/2005) and are not yet considered to be 'calibrated' as defined in EPRI NSAC-202L. Since the models are not 'calibrated,' associated predictive analysis results may not provide the desired correlation with actual (measured) plant data.

Prior to CW, FAC-susceptible plant systems were modeled using PPL in-house software that utilized FAC predictive methodologies available in the public domain. The FAC analyses were used to determine the relative susceptibility of components in each system; components with the highest predicted wear rate / lowest remaining life were incorporated into the FAC Program inspection scope. These components were monitored for wear and inspection frequencies were determined based on a conservative analysis of SSES FAC wear data. While a large number of component inspections were performed, the component type / parallel train coverage required for model calibration by the current NSAC-202L guidance was not satisfied. In addition, component gridding requirements and conventions have evolved over time, so only a limited amount of component UT grid data could be loaded into CW (UT grids must be compatible for CW analysis), which also affected the calibration status of the CW models.

The CW predictive analysis results are used primarily for the selection of components for inspection in the effort to achieve model 'calibration' using NSAC-202L guidance. The CW analysis results are used in conjunction with the trended historical data from past component inspections to select components for inspection that will serve to monitor the condition of the predicted highest wear / lowest remaining service life components in a given system as well as to achieve 'calibration' of the CW model. A 'calibrated' predictive model closely predicts actual FAC wear and allows a reduction in the number of components that must be monitored in a given system.

A summary of predicted thickness values and corresponding measured thickness values are provided in the below Table. The data provided for components listed in the response to NRC Question 4 on flow-accelerated corrosion (PLA-6212, dated June 1, 2007) is current inspection data if it was available (U1RIO14-2006 / U2RIO13-2007, unless noted otherwise). If data for the specific component was not available, a component was selected that was located in a line that was subject to similar operating conditions.

## CHECWORKS PREDICTED THICKNESS VALUES VS. MEASURED THICKNESS VALUES

| Description | Component Name (PLA-6212) | Geometry (PLA-6212) | Same / Similar Component [Inspection Outage / Comment] | Geometry | Measured Thickness (in) | Predicted Thickness (in) | Measured / Predicted Thickness |
|---|---|---|---|---|---|---|---|
| EXTRACTION to FWH #5 | GFD-101-2-5020-T | TEE | GFD-101-2-5020-T [U1RIO14] | TEE | 0.426 | 0.106 | 4.019 |
| FEEDWATER FWH2 to FWH3 | GBD-118-1-1000-N | EXIT NOZZLE | GBD-118-2-1510-E [U1RIO14] | 90 DEG ELBOW | 0.707 | 0.532 | 1.329 |
| FEEDWATER FWH5 to RFP | GBD-121-2-5655-N | INLET NOZZLE | GBD-121-2-5620-T [U1RIO14] | TEE | 0.884 | 0.500 | 1.768 |
| FEEDWATER RFP to REACTOR | DBD-101-6-1105-O | ORIFICE | DBD-101-6-1105-O [U1RIO14] | ORIFICE | 1.891 | 0.686 | 2.757 |
| FWH DRAIN FWH5 to LCV | GBD-103-1-1010-E | 90 DEG ELBOW | GBD-136-2-5040-E [U1RIO14; FWH DRAIN FWH4 to LCV] | 90 DEG ELBOW | 0.507 | 0.403 | 1.258 |
| REACTOR to RWCU PUMPS | DBA-121-1-9600-N | EXIT NOZZLE | DBA-101-1-2505-E [U1RIO14] | 90 DEG ELBOW | 0.429 | 0.041 | 10.463 |
| RWCU RGEN HX TUBSIDE | DBC-103-1-7000-N | EXIT NOZZLE | DBC-103-1-7095-E [U1RIO14] | 90 DEG ELBOW | 0.558 | 0.324 | 1.722 |
| RWCU RGEN HX to FEEDWATER | DBB-122-1-8605-O | ORIFICE | DBB-122-1-8570-P [U1RIO14] | PIPE D/S VALVE | 0.400 | 0.411 | 0.973 |
| FEEDWATER RFP to REACTOR | DBD-201-4-1125-O | ORIFICE | DBD-201-4-1130-P [U2RIO13] | PIPE D/S ORIFICE | 1.381 | 1.191 | 1.160 |
| RWCU RGEN HX to FEEDWATER | DBB-222-2-8620-O | ORIFICE | DBB-222-2-8625-P [U2RIO12] | PIPE D/S ORIFICE | 0.430 | 0.392 | 1.097 |

It is apparent from the data provided that the CW predicted thickness values are generally conservative. In one case, the predicted thickness value is marginally less than the measured value (2.7%). This can be attributed to the fact that there is less historical data available for the RWCU system since it did not become significantly susceptible to FAC until hydrogen water chemistry was implemented.

**NRC Question**

Please identify the non-destructive test methods used in your FAC program for measuring component thickness.

**PPL Response:**

The SSES FAC Program utilizes ultrasonic testing (UT) as the primary NDE method for determining component wall thickness. While program procedures allow the use of other NDE technologies such as radiography (RT), UT has been the only method utilized by the Program to date.