June 10, 2008

LICENSEE: Wolf Creek Nuclear Operating Corporation

FACILITY: Wolf Creek Generating Station

SUBJECT: SUMMARY OF PUBLIC MEETING ON SAFETY EVALUATION REPORT WITH OPEN ITEMS REGARDING THE WOLF CREEK GENERATING STATION LICENSE RENEWAL REVIEW (TAC NO. MD3181)

On Thursday, May 1, 2008, members of the U.S. Nuclear Regulatory Commission (NRC) staff held public meetings in the Executive Boulevard Building in Rockville, Maryland, to discuss the status of the safety evaluation of the license renewal application submitted by Wolf Creek Nuclear Operating Corporation (WCNOC).

This was a category 1 public meeting. The public was invited to observe this meeting and had one or more opportunities to communicate with the U.S. Nuclear Regulatory Commission (NRC) staff after the business portion, but before the meeting was adjourned. One representive from the Strategic Teaming and Resource Sharing (STAR) alliance (an owner group) was present to observe the meeting. There was also a call-in observer from the Vogtle license renewal applicant. No member of the public chose to participate in the meeting.

Enclosure 1 provides a listing of the participants attending the meeting. Enclosure 2 is a copy of the meeting handouts (copy of slide presentation) presented by the WCNOC staff. Enclosure 3 is the meeting agenda. A summary of the discussion during the meeting is as follows:

1. Status of SER open items

The SER has three open items related to metal fatigue analysis. The response for the open items was scheduled for May 15, 2008. The purpose of the May 1, 2008 meeting was to discuss the status of the information to be submitted on May 15, 2008 for closure of the metal fatigue analysis open items. Of the three open items, one requires the staff confirmation of inputs and assumptions of supporting calculations for the metal fatigue analysis. This will be performed by the staff prior to closure of the SER open items and before the issuance of the final SER. Issuance of the SER is scheduled for July 29, 2008.

2. Information expectation for the May 15, 2008 submittal

In the LRA, the applicant uses the Green's function approach to calculate the Cumulative Usage Factors (CUFs) for hot leg surge line nozzle and the charging nozzles. The staff is concerned that this approach may not be conservative. Therefore, the staff expects the applicant to submit an ASME Section III, Subsection NB-3200 analysis along with the Green's function approach analysis for comparison. The staff expects that these analyses will contain sufficient information

such that a comparison on the transients, F_{en} value, and locations can be made. In addition, the staff expects both of these analysis approaches to reflect:

- Current plant configuration (presence of thermal sleeve for the charging nozzle)
- all of plant operating history (accounting CUF accumulated prior to implementation of modified operating procedure for the surge line nozzle).

WCNOC staff stated that a confirmation of the thermal-sleeve configuration would be performed.

\RA

Tam Tran, Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Enclosures:
As stated

Docket No. 50-482

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LIST OF PARTICIPANTS – ENCLOSURE 1
WOLF CREEK GENERATING STATION (WCGS)
SAFETY EVALUATION REPORT WITH OPEN ITEMS
MAY 1, 2008

Participants	Affiliation
John Fair	U.S. Nuclear Regulatory Commission (NRC)
Kenneth Chang	NRC
Louise Lund	NRC
On Yee	NRC
Qi Gang	NRC
Robert Hsu	NRC
Samson Lee	NRC
Tam Tran	NRC
Arthur Turner	Wolf Creek Nuclear Operating Corporation (WCNOC)
Diane Hooper	WCNOC
Lorrie Bell	WCNOC
Maurice Dingler	WCNOC
Curt Carney	Structural Integrity Associates (SIA)
Dave Gerber	SIA
Tim Gilman	SIA
Don Stevens	Worley Parsons
Chalmer Myer	Southern Nuclear

ENCLOSURE

SLIDE PRESENTATION – ENCLOSURE 2
WOLF CREEK GENERATING STATION (WCGS)
WOLF CREEK METAL FATIGUE OPEN ITEMS
MAY 1, 2008

Wolf Creek Metal Fatigue Open Item

1

ENCLOSURE 2

Purpose

1. Provide the results of the fatigue analysis using ASME Code Section III, Subsection NB-3200 methodology
2. This analysis will provide input in setting a corrective action level for the cumulative usage factor (CUF) to assure that sufficient margin exists to allow the highest fatigue usage per cycle to occur without exceeding CUF =1.0

   See Draft SE Section 4.3.1.3.2 – Commitment No. 21

Analysis Methodology for the Charging Nozzle

- Used NB-3222.4/NB-3216.2 of Section III of the ASME Code 2001 Edition with Addenda thru 2003.
- 3- Dimensional model included the following locations:
  - Local portion of cold leg piping
  - Cold leg to charging nozzle weld
  - Charging nozzle
  - Nozzle to piping weld
  - Portion of the attached piping
  - Thermal sleeve
- Finite Element Model
  - Developed using ANSYS Finite Element Analysis software

Methodology for Other Nozzles

- Hot Leg Surge Line Nozzle
  - Same methodology as for charging nozzle
    - Analysis per NB-3222.4/NB-3216.2 of Section III of ASME Code
    - Additional transients for Pressurizer Insurge/Outsurge effects
      Account for both pre-MOP and post-MOP operation
- High Head Safety Injection Boron Injection Tank (BIT HHSI) and Residual Heat Removal Cold Leg Return – Accumulator Safety Injection (ACCSI) Nozzles
  - CUF analysis using Cycle-Based Fatigue Methodology

Cycle-Based Fatigue(CBF)

- Fatigue usage is computed using stress intensity range pairs from the existing design analysis, but on a the number of cycles that reflect actual operation (both past and future)
  - Stress-intensity ranges are determined using 6 stress components according to ASME Code Section NB – 3200 or NB 3600.
  - Number of cycles (actual and projected) determined with the assistance from automated cycle counting , using actual plant instrument data

Charging Nozzle

- Selection of design transients
  - Transients that meet both of the following conditions will not be considered – they would add insignificant fatigue usage.
    - Delta-T < 25 degrees F
    - Delta-P < 250 pound per square inch (psi)

Design Transients Considered

- Auxiliary Transients:
  - Charging and Letdown flow shutoff & return to service
  - Letdown flow shutoff w/ prompt return to service
  - Letdown flow shutoff w/ delayed return to service
  - Charging flow shutoff w/ prompt return to service
  - Charging flow shutoff w/ delayed return to service
  - Charging flow step decrease and return to normal
  - Charging flow step increase and return to normal
  - Letdown flow step decrease and return to normal
  - Letdown flow step increase and return to normal

Design Transients Considered

- Normal RCS Transients:
  - Plant heat up
  - Plant cool down
  - Reduce temperature return to power
  - Large step load decrease with steam dump
  - Feed water cycling
  - Loop out of service
  - Refueling
  - Turbine roll test
  - Primary side leakage test

Design Transients Considered

- Upset RCS Transients:
  - Loss of load
  - Loss of power
  - Partial loss of flow
  - Reactor trip A - w/ no inadvertent cool down
  - Reactor trip B - w/ cool down and no SI
  - Reactor trip C - w/ cool down and SI
  - Inadvertent RCS Depressurization
  - Inadvertent Auxiliary Spray
  - Inadvertent startup of an inactive loop
  - Inadvertent safety injection actuation
  - Excessive Feed water flow
  - RCS Cold over pressurization (COMS)
  - OBE seismic (10 cycles/event)

Design Transients Considered

- Test Transients:
  - Primary Side Hydrostatic test
- Other Transients

  Other transients evaluated, but they contribute no fatigue usage at the charging nozzle

Results

- ASME Code Section III NB 3200 analysis
  - EAF Usage < 1.0 meets code allowable
    - CUF with F_{en} = 0.490 (preliminary)
    - CUF without F_{en} = 0.0773 (preliminary)
- Current monitoring program analysis
  - Results conservative compared to NB 3200
    - CUF with F_{en} = 0.838
    - CUF without F_{en} = 0.1527

MEETING AGENDA – ENCLOSURE 3
Division of License Renewal
Project Branch 1 Meeting
Wolf Creek Generating Station (WCGS)

EBB1E03, May 1, 2008, 1:00 – 3:00 PM
Rockville, MD

I.	Introduction	10 minutes
II	Discussion of Metal Fatigue analyses for WCGS license renewal	1 hrs 20 minutes
III	Public comment	30 minutes
IV	- Adjourn –	

ENCLOSURE 3

Letter to Wolf Creek Nuclear Operating Corporation from T. Tran, dated June 10, 2008

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