



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

November 17, 2010

MEMORANDUM TO: ACRS Members

FROM: Girija Shukla, ACRS Senior Staff Engineer /**RA**/
Reactor Safety Branch B, ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE PLANT LICENSE
RENEWAL SUBCOMMITTEE MEETING ON AUGUST 18, 2010

The minutes for the subject meeting were certified on November 5, 2010. Along with the transcripts and presentation materials, this is the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment: E. Hackett
C. Santos
A. Dias

cc w/ Attachment: ACRS Members



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
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WASHINGTON, DC 20555 - 0001**

November 5, 2010

MEMORANDUM TO: Girija Shukla, ACRS Senior Staff Engineer
Reactor Safety Branch A, ACRS

FROM: Dr. Mario Bonaca, Chairman
Plant License Renewal Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES FOR THE MEETING OF THE
SUBCOMMITTEE ON PLANT LICENSE RENEWAL REGARDING
KEWAUNEE POWER STATION ON AUGUST 18, 2010 IN ROCKVILLE,
MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on August 18, 2010, are an accurate record of the proceedings of that meeting.

/RA/ **November 5, 2010**
Dr. Mario Bonaca, Chairman Date
Plant License Renewal Subcommittee

Certified on: November 5, 201
By: Mario V. Bonaca

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MINUTES FOR THE MEETING OF THE SUBCOMMITTEE ON PLANT LICENSE
RENEWAL REGARDING KEWAUNEE POWER STATION
AUGUST 18, 2010
ROCKVILLE, MARYLAND**

INTRODUCTION

On August 18, 2010, the Advisory Committee on Reactor Safeguards (ACRS) Subcommittee on Plant License Renewal held a meeting to review the License Renewal Application (LRA) for Kewaunee Power Station (KPS), and the associated NRC staff's Safety Evaluation Report (SER) with Open Items, dated July 2010, in Room T-2B1, at 11545 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to hear presentations by and hold discussions with representatives of the U.S. Nuclear Regulatory Commission (NRC or the staff) and the applicant, Dominion Energy Kewaunee, Inc. The meeting was convened at 8:30 am and adjourned at 12:00 pm.

ATTENDEES

ACRS Members

M. Bonaca, Chairman
John Stetkar, Member

Sam Armijo, Member
Charles Brown, Member

W. Shack, Member
J. Barton, Consultant

ACRS Staff

G. Shukla, ACRS Staff

NRC Staff

B. Holian, NRR/DLR
J. Daily, NRR/DLR
C. Tilton, Region III, NRC
J. Robinson, NRR/DLR
S. Min, NRR/DLR
C. Doutt, NRR/DLR
S. Cochrum, HR/TTC
On Yee, NRR/DLR
R. Sun, NRR/DLR
B. Lehman, NRR/DLR
D. Alley, NRR/DCI
B. Fu, NRR/DLR
J. Dozier, NRR/DLR
K. Green, NRR/DLR
W. Rogers, NRR/DLR

A. Hiser, NRR/DLR
M. Mitchell, NRR/DCI
E. Wong, NRR/DCI
Q. Gan, NRR/DLR
J. Medoff, NRR/DLR
R. Vaucher, NRR/DLR
A. Priyanis, NRR/DLR
D. Brittner, NRR/DLR
M. Levin, NRR/DSS
R. Li, NRR/DLR
K. Miller, NRR/DE
R. Auluck, NRR/DLR
J. Tsao, NRR/DCI
L. Perkins, NRR/DLR

KPS (Dominion Energy Kewaunee) Presenters

Steve Scace Alan Price Michael Wilson Stewart Yuen Paul Aitken

Others Attendees

T. Breeno, Dominion	A. Thomas, PSEG
P. Thomas, Dominion	G. Sosson, PSEG
D. Lehman, Dominion	W. Borrero, APS
M. Hale, Dominion	E. Blocher, STARS
P. Burkes, Dominion	C. Wandell, APS
A. Price, Dominion	R. Meeden, APS
D. Wooten, Dominion	G. Michael, APS
C. Sorrell, Dominion	M. Karbassin, APS
W. Webster, Dominion	J. Hesser, APS
C. Torres, Dominion	D. Coxon, APS
B. Rodill, Dominion	K. Schreckor, APS
W. Zipp, Dominion	D. Steinsiel, APS
M. Hotchkiss, Dominion	J. O'Rourke, Exelon
D. Lippard, Dominion	
M. Gallagher, Exelon	

The presentation slides and handouts used during the meeting are attached to the office copy of the transcript of this meeting. The presentations to the Subcommittee are summarized below.

SUMMARY OF MEETING

Opening Statement

Chairman Mario Bonaca convened the meeting by introducing the ACRS members present. Chairman Bonaca stated that the purpose of the meeting was to review the Kewaunee Power Station (KPS) License Renewal Application, the NRC staff's draft Safety Evaluation Report (SER) with open items, and associated documents. He stated that the Subcommittee would hear presentations from representatives of Office of Nuclear Reactor Regulation (NRR), and the applicant, Dominion Energy Kewaunee, Inc. He also stated that the Subcommittee would gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate for deliberation by the Full Committee. Chairman Bonaca acknowledged that the Committee had received no written statements or requests for time to make oral statements from members of the public. This meeting was open to public.

DISCUSSION OF AGENDA ITEMS

Staff Introduction

Mr. Brian Holian, Director of the Division of License Renewal in NRR, introduced the principal staff members present. He then called upon the applicant's presenter, Mr. Steve Scace, KPS Site Vice President.

Dominion Energy Kewaunee Presentation

In the meeting, Dominion Energy Kewaunee provided a brief overview of the Kewaunee Power Station's site description, operating history, license renewal application, aging management programs (AMPs), commitments and implementation, technical items of interest, and the SER Open Items.

Dominion Energy Kewaunee staff also provided the current plant status and major improvements made between 1985 – 2010, such as replacement of Main Condenser Tubes, Feedwater Heater Tubes, Plant Process computer, Steam Generator, Reactor Vessel Head, and on-going switchyard Improvements, and transformer replacements.

Dominion Energy Kewaunee staff provided overview of the license renewal application and stated that it was prepared by a diverse project team members experienced with Surry, North Anna, and Millstone LRAs. The team participated in the NEI LR industry working groups and was involved with GALL Updates. In the LRA development, the Scoping and Screening was consistent with 10CFR Part 54 and NEI 95-10, utilized site component databases, controlled drawings, design and licensing documents. In-scope structures, components and commodities were screened to determine if AMR was required. Aging Management Review was consistent with 10CFR Part 54 and NEI 95-10, and utilized industry aging reports and plant-specific OE. The LAR is consistent with the GALL Report.

Dominion Energy Kewaunee staff also discussed the following Time-Limited Aging Analyses (TLAAs): Reactor vessel neutron embrittlement, Metal fatigue and thermal cycle limit assumptions, Environmental qualification of electrical equipment, and Metal containment and penetrations fatigue. Other miscellaneous TLAAs discussed were Crane load cycle limit, Reactor coolant loop leak-before-break, Reactor vessel underclad cracking, RCP motor flywheel crack growth. There are 34 Aging Management Programs, 28 are existing programs, including 1 plant-specific, and 6 are new AMPs. The AMPs are consistent with the GALL Report. Dominion Energy Kewaunee has made 45 license renewal commitments. These commitments will be completed on the schedule provided in the LRA or sooner. Dominion is also participating in NEI-LR Implementation Working Group.

Dominion Energy Kewaunee staff further discussed the following technical Items of interest: groundwater quality, and historical reactor trip transients. Elevated groundwater chloride concentrations were indicated near in-scope structures based on monitoring well sample readings. The readings were marginally over 500 ppm limit and the elevated readings attributed to de-icing methods of the use of road salt. The de-icing practice was changed to incorporate sand mix to reduce total chloride deposited on ground. No significant effect of elevated readings on structure is observed. Regarding historical reactor trip transients, the rate of occurrence of reactor trips has reduced since initial plant operations. Reactor trips have been recorded since plant initial startup and reactor trips are monitored as a transient for fatigue cycle counting purposes.

Further, Dominion Energy Kewaunee staff discussed the following four SER Open Items (OIs): (1) OI 3.0.3.2.20-1: Use of FatiguePro Software; (2) OI B2.1.32-1: Work Control Process Program; (3) OI 3.1.2.1.7-1: S/G Divider Plate Cracking due to PWSCC; and (4)

OI 3.0.3.2.4-1: Recent Operating Experience for Buried and Underground Piping and Tanks.

(1) OI 3.0.3.2.20-1: Use of FatiguePro Software

The applicant discussed that initial evaluation of environmental effects on fatigue life utilized EPRI FatiguePro stress-based fatigue (SBF) monitoring for 2 locations. RIS 2008-30 identified potential for non-conservatism when FatiguePro SBF applied and the NRC staff issued RAI B3.2-2. The applicant established a LR Commitment 41 to re-evaluate these locations using ASME Code, Section III, NB-3200 compliant methods. Reevaluation provided an acceptable 60-year fatigue life results and the applicant has submitted a summary report in response to RAI B3.2-2 to support closure of Commitment 41 and this Open Item.

(2) OI B2.1.32-1: Work Control Process Program

The applicant has revised the Work Control Process program (WCP) following initial submittal in response to NRC concerns. The revised WCP is a new program that is consistent with the GALL Report M32: One-Time Inspection, and M38: Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components. The NRC staff requested additional clarifications for selection of one-time inspection sample sizes and schedule for completion of inspections; minimum sample size for periodic inspections and inspection frequencies for inspections of internal surfaces; capability to detect aging effects based on OE examples submitted; and clarification of the commitment to implement the WCP program. The applicant provided additional information to address the NRC request. The applicant clarified that the methodology used to determine one-time inspection sample size, clarified that periodic inspections are based on planned surveillance and maintenance activities, and not on predetermined sample size; and that inspections are expected to be performed multiple times due to periodic nature of program. The applicant also established a new Commitment 47 to provide relevant OE within 2 years after implementation of WCP, and clarified that the WCP AMP is a new AMP and that one-time inspections will be completed prior to period of extended operation. The applicant has provided a response to RAI B2.1.32-1 to address this Open Item.

(3) OI 3.1.2.1.7-1: S/G Divider Plate Cracking due to PWSCC

Based on recent foreign operating experience (OE) with steam generator (SG) divider plate cracking, the NRC staff issued RAI 3.1.2.2.13-1 for identification of materials of construction for SG divider plate assembly, evaluation of the potential for PWSCC cracks to propagate to base materials or cladding, and provide an inspection program if required. EPRI Steam Generator Task Force is currently evaluating the concern for any generic industry action. The applicant discussed that KPS monitors and evaluates industry (foreign and domestic) operating experience, including steam generator OE. Kewaunee SGs were replaced in 2001 and has only limited service life to cause cracking. Crack propagation into base materials or cladding is not likely to occur at Kewaunee because divider plate assembly welds are of PWSCC resistant Alloy 52/152, and the industry experience indicates that PWSCC cracking stops when non-susceptible materials are encountered. No domestic or foreign OE is found to be related to crack propagation into base materials. The applicant has provided a response to RAI 3.1.2.2.13-1 to address this Open Item.

(4) OI 3.0.3.2.4-1: Recent OE for Buried and Underground Piping and Tanks

The NRC staff issued RAI B2.1.7-3 to request Identification of buried and underground components addressed by the applicant's Buried Piping and Tanks Inspection and the External Surfaces Monitoring programs, and identification of updates to these programs to incorporate lessons learned from recent events related to buried piping leakage. KPS has adopted NEI NSIAC buried piping initiative. Dominion Energy evaluates industry operating experience for buried piping program enhancements, and actively participates as a member of EPRI Buried Piping Integrity Group. The applicant has provided a response to RAI B2.1.7-3 to address this Open Item

NRC Presentation, Division of License Renewal

In the meeting, the NRC staff provided a brief overview of the Kewaunee license renewal application and its review by the staff, including Scoping and Screening review, the Region III License Renewal Inspection, applicant's Aging Management Programs and AMR results, with Open Items, and Time-Limited Aging Analyses (TLAAs).

The NRC staff further discussed an overview of the staff's Safety Evaluation Report (SER) with Open Items that was issued on July 16, 2010. The SER contained the following 4 Open Items (OIs) (1) Use Of FatiguePro™ Software in Metal Fatigue Calculations (OI 3.0.3.2.20-1); (2) Ni-Alloy Steam Generator Divider Plate Cracking due to PWSCC (OI 3.1.2.1.7-1); (3) Incorporating recent operating experience for buried and underground piping and tanks (OI 3.0.3.2.4-1); and (4) Work Control Process Program Issues (OI B2.1.32-1). The staff also discussed KPS Structures and Components subject to Aging Management Review. The Scoping and Screening Methodology is consistent with requirements of 10 CFR 54.4 and 54.21. Systems and structures within the scope of license renewal are appropriately identified in accordance with 10 CFR 54.4, and SSCs within the scope of license renewal are appropriately identified in accordance with 10 CFR 54.4(a), and those subject to an AMR in accordance with 10 CFR 54.21(a)(1).

NRC Region III Presentation

The staff from the NRC Region III provided an overview of the license renewal regional Inspection at KPS that was conducted using the inspection procedure IP 71002. The inspection was performed by 5 inspectors and 1 observer and lasted for 2 weeks. The inspection included Scoping & Screening review, Aging Management Programs and Operating Experience review. Walkdowns of portions of 10 systems were performed and the team reviewed a sampling of 24 of the 34 AMPs related to Aging Management Program (AMP) Changes such as, Buried Piping and Tanks Inspection Program, Compressed Air Monitoring Program, External Surface Monitoring Program, and Metal Fatigue of Reactor Coolant Pressure Boundary.

The Region III inspection concluded that overall the scoping of non-safety SSCs and application of the AMPs to those SSCs was acceptable and documentation supporting the application was auditable and retrievable. Based on the review of the selected samples, the inspection results support a conclusion that there is reasonable assurance that the effects of aging will be adequately managed at KPS.

NRC Presentation, Division of License Renewal (Contd.)

The staff further discussed the following four Open Items that were identified during the staff review of the KPS license renewal application.

(1) OI 3.0.3.2.20-1: Metal Fatigue of Reactor Coolant Pressure Boundary

The applicant's use of FatiguePro™ in stress-based portion of metal fatigue calculations did not incorporate all portions of stress tensor for calculations on two of the RCS components. The applicant agreed to perform updated, confirmatory fatigue calculations for these two affected components. The applicant has submitted the results to staff and the staff is in the process of reviewing the results.

(2) OI 3.1.2.1.7-1: Cracking due to PWSCC for Ni-Alloy SG Divider Plate

Extensive cracking due to PWSCC has been identified in some European SG divider plates, even with proper primary water chemistry. Cracks in those SGs were found in the stub-runner/divider plate region. The staff is concerned of its possible propagation into the tubesheet cladding, tubesheet, or into SG-RCS channel head. The applicant has provided the response and the staff is in the process of evaluating applicant's response.

(3) OI 3.0.3.2.4-1: Buried Piping and Tanks Inspection

The staff has noted a number of recent industry events involving leakage from buried and underground piping/tanks. The staff is concerned about continued susceptibility to failure of buried/underground piping within the scope of license renewal. The staff issued an RAI, requesting applicant to discuss all instances of leakage/ adverse conditions identified at KPS and how applicant's AMPs have been revised to address such instances. The applicant was requested to discuss how the AMPs will address recent industry OE concerning aging effects in buried, underground, and limited access piping and tanks. The applicant has provided the response and the staff is in the process of evaluating the response.

(4) OI B2.1.32-1: Work Control Process Program Issues

The staff has noted a number of issues in newly-submitted revised Work Control Process AMP. The staff issued an RAI, requesting applicant to provide explanations/justifications on the following issues. The program does not completely specify minimum percentages, sample sizes, and inspection frequencies of populations. The OE examples create uncertainties as to whether the AMP will effectively manage the aging effects, and applicant's Commitment 25 was somewhat ambiguous. The applicant has provided the response and the staff is in the process of evaluating the response.

The staff also discussed the aging management of in-scope inaccessible concrete (below grade) and pressurized thermal shock (PTS) limits for reactor vessel materials due to neutron embrittlement.

In conclusion, on the basis of its review and pending satisfactory resolution of all open items, the staff has determined that the requirements of 10CFR54.29(a) have been met for the license renewal of the Kewaunee Power Station.

COMMENTS AND OBSERVATIONS FROM THE SUBCOMMITTEE MEMBERS

ACRS members at the meeting asked several pertinent questions and made several comments to the presenters. These members' questions and comments and their responses are provided in the transcript of this meeting. Overall, the members commented that there are no issues related to the license renewal of the Kewaunee Power Station.

SUBCOMMITTEE CONCLUSIONS

Chairman Bonaca concluded the meeting by thanking the staff and the applicant. He stated that the presentations and discussions were very good. The meeting was adjourned.

REFERENCES

1. NRC Staff Safety Evaluation Report with Open Items, dated July 2010
2. NRC RIII Inspection Report 05000305/2009007, dated November 12, 2009
3. NRC AMP Audit Report, dated August 12, 2009
4. NRC Work Control Process AMP Audit Report, dated December 14, 2009
5. NRC Scoping and Screening Audit Report, dated July 13, 2009
6. Dominion Energy Kewaunee License Renewal Application

NOTE:

Additional details of this meeting can be obtained from a transcript of this meeting available in the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Rockville, MD, (301) 415-7000, downloading or view on the Internet at <http://www.nrc.gov/reading-rm/doc-collections/acrs/> or it can be purchased from Neal R. Gross and Co., 1323 Rhode Island Avenue, NW, Washington, D.C. 20005, (202) 234-4433 (voice), (202) 387-7330 (fax), nrgross@nealgross.com (e-mail).
