



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 20, 2010

Mr. S. K. Gambhir  
Vice President Technical Services  
Columbia Generating Station  
Energy Northwest  
MD PE04  
P.O. Box 968  
Richland, WA 99352-0968

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
COLUMBIA GENERATING STATION, LICENSE RENEWAL APPLICATION  
(TAC NO. ME3058) CONCERNING STRUCTURES

Dear Mr. Gambhir:

By letter dated January 19, 2010, Energy Northwest submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54), to renew operating license NPF-21 for Columbia Generating Station, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Abbas Mostala and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-4029 or by e-mail at [evelyn.gettys@nrc.gov](mailto:evelyn.gettys@nrc.gov).

Sincerely,

A handwritten signature in cursive script that reads "Evelyn Gettys".

Evelyn Gettys, Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-397

Enclosure:  
As stated

cc w/encl: Distribution via Listserv

COLUMBIA GENERATING STATION  
LICENSE RENEWAL APPLICATION  
REQUEST FOR ADDITIONAL INFORMATION

Holston

**RAI 3.3.2.3.17-2**

Background

LRA Tables 3.3.2-17 and 3.3.2-41 state that for stainless steel filter bodies, flexible connections, piping, strainer screens, tubing, and valve bodies exposed to air (internal), there is no aging effect and no aging management program (AMP) is proposed. The aging management review (AMR) line items cite Generic Note G. License Renewal Application (LRA) Table 3.0-1 states that air can be, "process air in locations where condensation, water pooling, or accumulation of contaminants could occur (moisture content is enough to facilitate crevice and pitting corrosion in various metals, as well as general corrosion of steel)." The GALL Report states that for stainless steel components exposed to condensation a plant-specific AMP is to be evaluated to address pitting and crevice corrosion.

Issue

The staff does not have sufficient information to evaluate the air environment in relation to the applicant's claim that there are no aging effects and no AMP is required.

Request

Justify why the air environment for these components does not contain moisture, or specify an AMP to manage the aging effect.

Holston

**RAI 3.3.2.3.33-1**

Background

LRA Table 3.3.2-33 states that stainless steel piping exposed to air-indoor uncontrolled (external) is being managed for loss of material by the Supplemental Piping/Tank Inspection Program. The AMR line item cites Generic Note G. The line item associated with piping in LRA Table 3.3.2-33 also cites plant specific Note 0303, which states that the Supplemental Piping/Tank Inspection Program will manage loss of material at the air-water interface. The staff notes that the GALL Report states that stainless steel exposed to air-indoor uncontrolled (external) is not subject to any aging effects; however, the plant-specific note states that this item is associated with an air-water interface. The GALL Report recommends that stainless steel exposed to (a) treated water should be managed by the XI.M2, "Water Chemistry" and the XI.M32, "One-Time Inspection" Programs, (b) raw water can be managed by the XI.M20, "Open-Cycle Cooling Water System" Program, and (c) condensation can be managed by a plant specific AMP.

ENCLOSURE

Issue

The staff lacks sufficient information to determine the type of water environment that exists at the air-water interface and thus cannot determine if the Supplemental Piping/Tank Inspection Program is sufficient to manage aging of the components.

Request

1. If the water environment at the air-water interface is treated water, justify why the XI.M2, "Water Chemistry" program is not utilized in managing the aging of this piping.
2. If the water environment at the air-water interface is raw water, justify why the Supplemental Piping/Tank Inspection Program, based on one time inspections, is sufficient to manage the aging of the piping when the XI.M20, "Open-Cycle Cooling Water System" Program includes periodic inspections to detect the associated aging effect.
3. If the water environment at the air-water interface is condensation justify why the Supplemental Piping/Tank Inspection Program, based on one time inspections is sufficient to manage the aging of the piping.

Electrical Rhov

**RAI B.2.40-1 Supplement 1**

Background:

In the applicant's response to RAI B.2.40-1, dated August 31, 2010, the applicant stated that an appropriate frequency for thermography checks will be established in conjunction with performing torque checks on the other non-segregated metal enclosed buses (MEB) during the next refueling outage to prevent recurrence of this type of event. The applicant also stated the content and controls for preventive maintenance (PM) activities will be strengthened to ensure proper completion of critical steps, that there are appropriate levels of review, and approval is applied to changes. In addition, the applicant stated that both the thermography inspection and the visual inspections will be performed at least once every 10 years, with the first inspections to be completed prior to the end of the current operating license.

Issue:

The staff is concerned that applicant's new AMP using thermography and visual inspections performed at least every 10 years is similar to previous maintenance activities (including procedure and schedules) and as such, the management of aging effects under the new program may not be adequate to allow in-scope MEBs to continue to perform their intended function consistent with the current licensing basis (CLB) for the period of extended operation.

Request:

Describe maintenance activities (including procedures and schedules) for the MEB preventive maintenance program applied to non-segregated MEB prior to the August 5, 2009 6.9 kV E-BUS-NONSEG/N2/X MEB event. Recognizing that there has been an MEB failure, discuss

how the proposed inspection frequency of at least once every 10 years will be adequate and provide reasonable assurance that the aging effects will be managed such that in-scope MEBs will continue to perform their intended functions consistent with the CLB for the period of extended operation.

In addition, discuss how the torque checks are consistent with the guidance provided in Electric Power Research Institute document TR-104213, "Bolt Joint and Applications Guide," with regard to electrical bolted connection torque checks at CGS.

#### Small Bore Piping Program

##### **RAI B.2.49-2**

##### Background

LRA Section B.2.49 states that the Small Bore Piping Program is a new plant-specific program that will detect and characterize cracking in small-bore piping components that are exposed to reactor coolant. In the "detection of aging effects" program element the applicant stated that in-scope components will be grouped into populations based on component type, material, and environment. The applicant also stated that the sample size will be 10% of each population (except for socket welds) with a minimum of one location and a maximum of 20 locations; the socket weld sample will include three locations. SRP-LR Section A.1.2.3.4 states that this program element should describe "when," "where," and "how" program data are collected (i.e., all aspects of activities to collect data as part of the program). It also states that when sampling is used to inspect a group of structures and components, a basis should be provided for the inspection population and sample size that is selected.

##### Issue

The applicant stated the number of socket welds to be examined as a part of the Small Bore Piping Program; however, it does not state the total number of such welds in the plant (i.e., the sample population). The staff is unable to determine the sample size for socket welds as a percentage of the total number of such welds present to assess whether the sample size is sufficient to be representative of the total socket weld sample population.

##### Request

Provide and justify the sampling information that is selected, in terms of number of welds and percent of welds to be inspected, for the volumetric examinations of socket welds for both nondestructive and/or destructive examinations.

#### Kichline

##### **RAI 3.4.2.3.3-1**

##### Background

In LRA Tables 3.4.2-3, 3.4.2-4 and 3.4.2-6, the applicant stated that the steel main condenser heat exchanger (shell), tanks, piping, piping components, piping elements, strainers, traps and valve bodies exposed to moist air (internal) are being managed for loss of material by the

Supplemental Piping/Tank Inspection Program. The AMR line items cite Generic Note G, indicating that for the line items the environment is not in the GALL Report for these components and material.

GALL Report Item VII.G-23 in the Fire Protection Table and VII.H2-21 in the Emergency Diesel Generator Table apply for steel piping, piping components, and piping elements exposed to moist air or condensation (internal). Both entries recommend GALL AMP XI.M38 "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," to manage loss of material for steel components exposed to moist air or condensation (internal) via the performance of visual inspections.

In LRA Section B.2.51, the applicant stated that its Supplemental Piping/Tank Inspection Program is a new program that will manage the aging of steel, gray cast iron, and stainless steel components that are exposed to moist air environments, particularly the aggressive alternate wet and dry environment that exists at air water interfaces or air spaces of susceptible piping and tanks, using a combination of volumetric and visual one-time inspections of the internal and external surfaces of components to identify evidence of a loss of material.

Issue

It is unclear to the staff how the one-time inspections performed by the Supplemental Piping/Tank Inspection Program are adequate to manage aging for components exposed to moist air or condensation, given that the GALL Report recommends periodic inspections.

Request

Justify how the one time inspections performed by the Supplemental Piping/Tank Inspection Program are adequate to manage aging for components exposed to moist air or condensation.

**TLAA-Parks**  
**RAI 4.2.1-2**

Background:

10 CFR 54.3 defines time-limited aging analyses (TLAA) as those licensee calculations and analyses that:

- (1) Involve systems, structures and components within the scope of license renewal, as delineated in 10 CFR 50.54(a)
- (2) Consider the effects of aging
- (3) Involve time-limited assumptions defined by the current operating term
- (4) Were determined to be relevant by the licensee in making a safety determination
- (5) Involve conclusions or provide the basis for conclusions related to the capability of the system, structure, and component to perform its intended functions, and
- (6) Are contained or incorporated by reference in the CLB

Reactor vessel neutron fluence meets all six of these criteria. It is relevant in making a safety determination because its value affects the reference temperature for nil-ductility transition and the reactor coolant system pressure-temperature limits.

Issue:

The Columbia Generating Station License Renewal Application states that neutron fluence is not a TLA.

Request:

Please revise LRA Section 4.2.1 to indicate the correct categorization of neutron fluence and provide the appropriate disposition in accordance with 10 CFR 54.21(c).

October 20, 2010

Mr. S. K. Gambhir  
Vice President Technical Services  
Columbia Generating Station  
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Sincerely,  
*/RA/*  
Evelyn Gettys, Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-397

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As stated

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Letter to S.K. Gambhir from E. Gettys dated October 20, 2010

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
COLUMBIA GENERATING STATION, LICENSE RENEWAL APPLICATION  
(TAC NO. 3058) CONCERNING STRUCTURES

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