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January 25, 2007
GO2-07-018

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397 RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RELATED TO GENERIC LETTER 2006-02 RESPONSE**

References:
1) Letter dated December 5, 2006, C Haney (NRC) to Holders of Operating Licenses for Nuclear Power Reactors, "Request for Additional Information Regarding Resolution of Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power (TAC Nos. MD0947 through MD1050)"

2) Letter dated April 3, 2006, GO2-06-053, WS Oxenford (Energy Northwest) to the NRC, "Response to Generic Letter 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power"

Dear Sir or Madam:

In a letter dated December 5, 2006 (Reference 1), Energy Northwest received a Request for Additional Information (RAI) related to Columbia Generating Station's (Columbia's) response to Generic Letter 2006-02 (Reference 2). Attached herein are responses to the two questions detailed in the RAI identified as applicable to Columbia.

The information provided in the attached responses to these RAIs on the capability of the contingency analysis tool that Bonneville Power Administration (BPA) and Pacific Northwest Security Coordinator (PNSC) uses to represent the BPA transmission system response has been obtained from the independent PNSC contractor and BPA through interview and information provided by PNSC and BPA. Neither the analysis tool nor the internal working procedures are under the control of Energy Northwest. However, we have strived to assure that the information provided within these RAI responses is complete and accurate to the best of our abilities.

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There are no new regulatory commitments being made. If you have any questions or require additional information, please contact Mr. GV Cullen at (509) 377-6105.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the date of this letter.

Respectfully,

D. W. Coleman acting for

WS Oxenford
Vice President, Technical Services
Mail Drop PE08

Attachment: Response to Request for Additional Information

cc: BS Mallett – NRC RIV
CF Lyon – NRC NRR
NRC Sr. Resident Inspector – 988C
RN Sherman – BPA/1399
WA Horin – Winston & Strawn

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

NRC Question 3
Verification of RTCA Predicted Post-Trip Voltage

Your response to question 2(g) indicates that you have not verified by procedure the voltages predicted by the online grid analysis tool (software program) with actual real plant trip voltage values. It is important that the programs used for predicting post-trip voltage be verified to be reasonably accurate and conservative. What is the range of accuracy for your GO's contingency analysis program? Why are you confident that the post-trip voltages calculated by the GO's contingency analysis program (that you are using to determine operability of the offsite power system) are reasonably accurate and conservative? What is your standard of acceptance?

Energy Northwest Response

Following additional benchmarking of operating experience in the industry, plant procedures were revised in mid-2006 to obtain and review transmission system data after a Columbia plant trip. The purpose of these procedure changes was to enable a review of the performance of the off-site power system prior to and following a station trip against station requirements and the voltage predicted by the contingency analysis tool used by the Pacific Northwest Security Coordinator (PNSC) and Bonneville Power Administration (BPA).

Subsequently, Columbia tripped off the grid on October 31, 2006.

Using available SCADA (Supervisory Control and Data Acquisition) voltage data that preceded the Columbia outage, the on-line power-flow model predicted an Ashe Substation (Ashe) voltage of 238.5 kV following a plant trip and transfer of load from the Ashe 500 kV source to the Ashe 230 kV source on October 31st. The actual post trip voltage at the Ashe 230 kV bus varied between 238.5 kV and 238. 8 kV as recorded by SCADA. These results verify that the contingency analysis tool deployed by the PNSC is accurately representing the BPA transmission system response.

According to BPA, the contingency analyzer was first acquired in 1991 and has been used on a regular basis by the PNSC for transmission system analysis since the year 2000. Currently, the PNSC is using AREVA T&D's e-terra*transmission* software that was installed in 2004. The on-line power-flow and contingency analyzer is often used to check transmission system response to specific outage requests to ensure there are no problems caused by that outage before the outage is actually taken. The results have been very close to the actual transmission system response. This has given BPA and the PNSC confidence that this power flow and contingency analysis tool provides a realistic representation of grid conditions.

Overall, from the recent evaluation performed after an actual trip of Columbia along with the assurances from BPA of consistent operating performance history, Energy Northwest believes that the AREVA T&D contingency analysis program deployed by the PNSC yields reasonably accurate results when applied to predict Columbia post trip voltage violations.

NRC Question 5
Seasonal Variation in Grid Stress (Reliability and Loss-of-offsite Power (LOOP) Probability)

Certain regions during certain times of the year (seasonal variations) experience higher grid stress as is indicated in Electric Power Research Institute (EPRI) Report 1011759, Table 4-7, Grid LOOP Adjustment Factor, and NRC NUREG/CR-6890. Do you adjust the base LOOP frequency in your probabilistic risk assessment (PRA) and Maintenance Rule evaluations for various seasons? If you do not consider seasonal variations in base LOOP frequency in your PRA and Maintenance Rule evaluations, explain why it is acceptable not to do so.

Energy Northwest Response

The availability of off-site power is an important consideration in how Energy Northwest manages risk during maintenance activities in accordance with 10 CFR 50.65(a)(4). Like many utilities, Energy Northwest respects adverse seasonal impacts on grid status by avoiding grid-sensitive maintenance activities during times of possible high grid stress. Nonetheless, plant procedures require that if a scheduled maintenance activity or adverse weather condition could increase the potential for a LOOP, then the associated increase in risk must be both "qualitatively" and "quantitatively" evaluated. This evaluation is accomplished through the use of a high-risk-evolution variable (HRE_LOSP) in the Sentinel (Columbia risk evaluation tool) import. Whenever the HRE_LOSP variable is triggered, the Sentinel qualitative evaluation will assess the Plant Transient Functions based on the HRE_LOSP logic, and in addition, the Sentinel quantitative evaluation will re-calculate a new Core Damage Frequency (CDF) using a LOOP frequency increased by 100% from the yearly average value. Appropriate risk management actions are followed according to the Sentinel results. Based on this procedurally required process, the risk of a potential LOOP is expected to be well informed and minimized.

While Energy Northwest does recognize that seasonal variations in grid stress can exist, accounting for such variations in the base LOOP frequency in the Columbia PRA and Maintenance Rule evaluations is not judged to be appropriate or beneficial due to the following considerations:

1) Table 4-7 of EPRI-1011759 is not a fully realistic representation of Columbia-specific grid conditions. For example, the table estimates the spring season Grid-LOOP Adjustment Factor to be H (High) for the WSCC (Western System Coordinating Council) Region, but for Columbia, the BPA hydroelectric units (Figure 1) typically experience high runoff during spring

and produce abundant power, to the degree that in some years BPA has requested an economic dispatch of Columbia operation during the spring. As a result, the grid is less stressed and more stable during the spring season.

2) The impact of seasonal variation of grid stress for Columbia has not been statistically justified. With the high BPA hydroelectric base generation within and supplying the FCRTS (Federal Columbia River Transmission System) network, superior grid stability has been historically demonstrated. Columbia Final Safety Analysis Report, Section 8.2.2 documents the worst case conditions in the late summer and mid-winter and demonstrates that for either case, the grid is stable, damped and results in acceptable performance. This is validated by the fact that Columbia has never experienced a grid-induced LOOP event.

3) Assigning seasonally based LOOP risk probability may be contrary to risk-informed decision-making. If one accepts that the LOOP frequency is higher during summer months, this would imply that the LOOP frequency is lower than the average LOOP frequency during non-summer months. Adopting such a philosophy could be adverse to risk since most Emergency Diesel Generator (EDG)-related maintenance activities are performed during non-summer months.

Based on these considerations, use of the averaged LOOP initiating event frequency is judged to be appropriate.

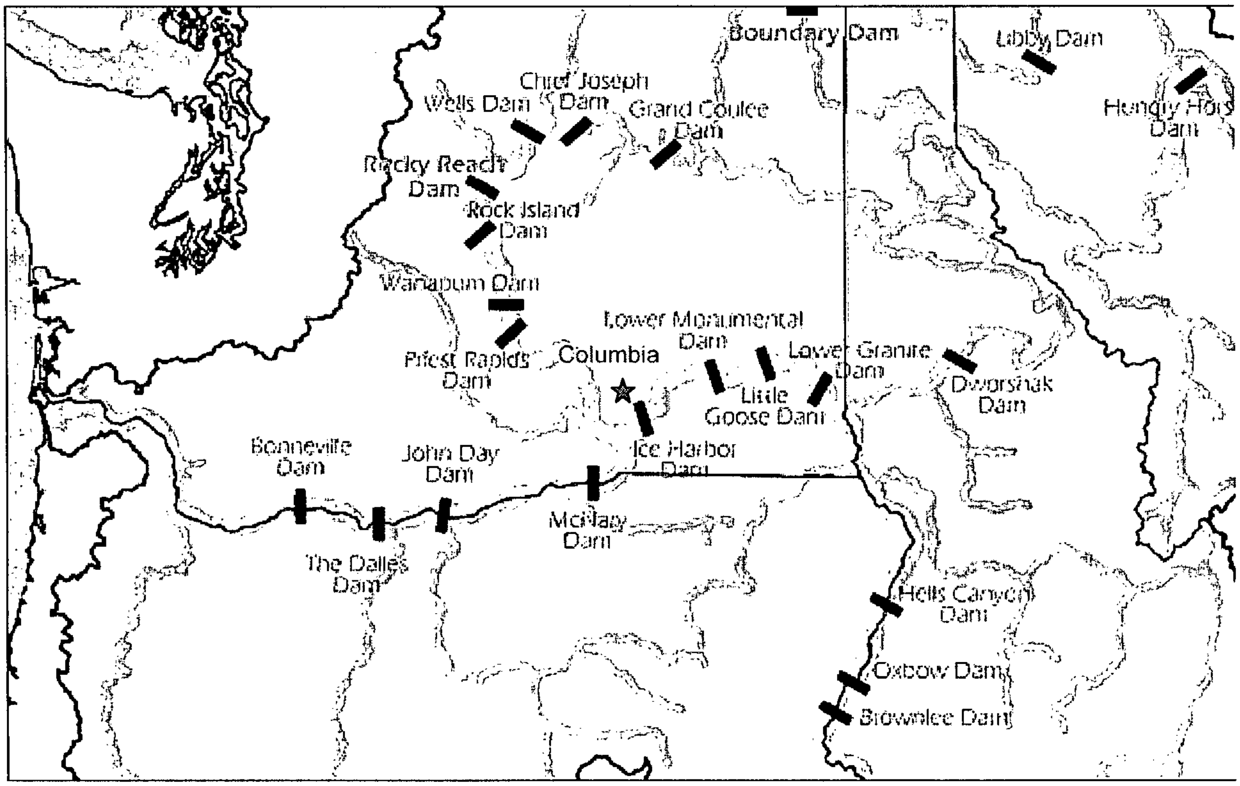

Figure 1. Major Northwest Hydroelectric Stations