ENERGY NORTHWEST

P.O. Box 968 ■ Richland, Washington 99352-0968

February 19, 2003
GO2-03-029

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: **COLUMBIA GENERATING STATION, DOCKET NUMBER 50-397 REQUEST FOR ENFORCEMENT DISCRETION FROM TECHNICAL SPECIFICATION 3.8.1, "A.C. SOURCES - OPERATING"**

Dear Sir or Madam:

This letter provides written follow-up to the Energy Northwest request for enforcement discretion regarding Technical Specification (TS) 3.8.1, "A.C. Sources - Operating." Specifically, discretion from compliance with the Completion Time requirements of TS 3.8.1 Condition B.4 was requested for the eleven-day period beginning at 2100 on February 16, 2003, and ending at 2100 on February 27, 2003. Technical Specification 3.8.1 Condition B.4 requires that, when in Modes 1, 2, and 3 with one of the three required diesel generators inoperable, the inoperable diesel generator must be restored to operable status within 72 hours and 6 days from discovery of the failure to meet the Limiting Condition for Operation (LCO). If the inoperable diesel generator is not restored to operable status within the required Completion Time, TS 3.8.1 Condition F must be entered. Condition F requires that the plant be placed in Mode 3 within 12 hours and Mode 4 within 36 hours.

This follow-up letter is submitted pursuant to a verbal request that was made via a telephone conference conducted between approximately 0715 and 0905 on Sunday, February 16, 2003, between representatives of Energy Northwest and NRC personnel from Headquarters and the Region IV office. The NRC verbally granted Energy Northwest's request for enforcement discretion during the telephone conference. The written request for enforcement discretion is attached and summarized below.

One issue discussed during the telephone conversation was the deferral of additional surveillance tests. Energy Northwest has moved those surveillances that can be performed after 2100 on February 27, 2003.

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This request for enforcement discretion is being made to avoid an unnecessary plant transient that would result from compliance with TS 3.8.1, Condition F. Columbia Generating Station is currently operating at full power and Diesel Generator Number 1 (DG-GEN-DG1) has been declared inoperable due to degradation of its north generator bearing. This degradation was identified through bearing vibration monitoring during monthly diesel generator testing. Work activities to replace the bearing are underway. However, replacement of the bearing and post-maintenance testing of DG-1 cannot be completed prior to the expiration of TS 3.8.1 Completion Time B.4. Under our current bearing replacement plan, DG-1 will be returned to operable status by 2100 on February 27, 2003.

Energy Northwest has evaluated this situation and determined that compliance with TS 3.8.1 Condition B.4 would result in an unnecessary plant transient (i.e., shutdown). Requesting a license amendment would not be practical because the plant will be returned to compliance with the TS before a license amendment could be issued. Prior adoption of line item improvements for the TSs would not have eliminated the need for this extension. Therefore, Energy Northwest is requesting enforcement discretion from the requirements of TS 3.8.1 Condition B.4 for the eleven-day period beginning at 2100 on February 16, 2003, and ending at 2100 on February 27, 2003.

A discussion of the circumstances that led to this request and the safety basis for the request is contained in Attachment 1. Energy Northwest has evaluated this change and determined that the issuance of the requested enforcement discretion will result in no net increase in radiological risk to the health and safety of the public. The Determination of No Significant Hazards is contained in Attachment 2. The Plant Operations Committee has reviewed this request and recommended approval by the Plant General Manager. The Plant General Manager has approved submittal of this request.

Should you have any questions concerning this letter, please contact Ms. Christina Perino at (509) 377-2075.

Respectfully,

RL Webring
Vice President, Nuclear Generation
Mail Drop PE04

Attachments
1. Request for Enforcement Discretion from TS 3.8.1
2. Determination of No Significant Hazards

cc: EW Merschoff - NRC – RIV
NRC Sr. Resident Inspector - 988C
DG Holland - NRC – NRR
RN Sherman - BPA/1399
TC Poindexter - Winston & Strawn

REQUEST FOR ENFORCEMENT DISCRETION FROM TECHNICAL SPECIFICATION 3.8.1, "A. C. SOURCES - OPERATING"
Attachment 1

Energy Northwest hereby requests enforcement discretion from the requirements of Columbia Generating Station Technical Specification (TS) 3.8.1, "A.C. Sources - Operating." Specifically, discretion from compliance with the Completion Time requirements of TS 3.8.1 Condition B.4 is requested for the eleven-day period beginning at 2100 on February 16, 2003, and ending at 2100 on February 27, 2003. Technical Specification 3.8.1 Condition B.4 requires that, when in Modes 1, 2, and 3 with one of the three required diesel generators inoperable, the inoperable diesel generator must be restored to operable status within 72 hours and 6 days from discovery of the failure to meet the Limiting Condition for Operation (LCO). If the inoperable diesel generator is not restored to operable status within the required Completion Time, TS 3.8.1 Condition F must be entered. Condition F requires that the plant be placed in Mode 3 within 12 hours and Mode 4 within 36 hours.

Columbia Generating Station is currently operating at full power and Diesel Generator Number 1 (DG-GEN-DG1) is inoperable due to a degraded generator bearing. Diesel Generator Number 1 (DG-1) was declared inoperable at 2100 on February 13, 2003. The degraded generator bearing was identified through bearing vibration monitoring during monthly diesel generator testing. Work activities to replace the generator bearing are underway. However, replacement of the bearing and testing of DG-1 cannot be completed prior to the expiration of the applicable Completion Time specified in TS 3.8.1 Condition B.4. DG-1 is expected to be returned to operable status by 2100 on February 27, 2003. The basis for this request is described below.

1. The Technical Specification (TS) or other license conditions that will be violated.

   Technical Specification 3.8.1, "A.C. Sources - Operating," Condition B.4 requires that, when in Modes 1, 2, and 3 with one of the three required diesel generators inoperable, the inoperable diesel generator must be restored to operable status within 72 hours and 6 days from discovery of the failure to meet the LCO. If the inoperable diesel generator is not restored to operable status within 72 hours and 6 days from discovery of the failure to meet the LCO, Condition F must be entered. Technical Specification 3.8.1, Condition F requires that the plant be placed in Mode 3 within 12 hours and Mode 4 within 36 hours.

   This request for enforcement discretion is being made to avoid an unnecessary plant transient that would result from compliance with TS 3.8.1, Condition F.

2. The circumstances surrounding the situation, including apparent root causes, the need for prompt action and identification of any relevant historical events.

   Columbia Generating Station has three diesel generators that supply an emergency on-site source of backup alternating current (AC) power. The Division 1 and 2 diesel generators supply backup power to their redundant Class 1E electrical distribution systems and the Division 3 diesel generator supplies backup power exclusively to the High Pressure Core

Spray (HPCS) system. The Division 1 and 2 diesel generators are each dual-drive diesel generators and are designed to restore onsite power to their respective Class 1E distribution system divisions in the event of a coincident loss of all offsite AC power.

In 1991, the north DG-1 generator bearing (a double row tapered roller bearing) was replaced. Vibration levels were relatively constant from installation until 1995. Then in 1995, after approximately 300 hours of run time, vibration levels increased.

The bearing vibration monitoring continued, and in February 2001 it was noted that vibration readings on the DG-1 generator bearing were increasing. It was believed that the probable cause was a defect in the bearing's outer race. DG-1 was determined to be operable and a work request was initiated to replace the diesel generator bearing during the refueling outage scheduled for May 2003.

During subsequent surveillance testing in June 2002, vibration levels for the DG-1 generator bearing experienced another increase. The vibration data was analyzed after that and each subsequent surveillance test. Energy Northwest concluded that the vibration levels had stabilized and the bearing was still not degraded to the extent that warranted the diesel generator to be declared inoperable.

In September 2002, a Follow-up Assessment of Operability (FAO) was performed which concluded that DG-1 was operable. An independent consultant was used to assist in preparing the FAO. According to a conservative bearing life analysis technique using fatigue failure as the primary degradation mechanism, the bearing was determined to have between 1 to 5% of its total life remaining. From this, Energy Northwest conservatively estimated the bearing had a remaining life of greater than the design basis 30-day requirement.

The bearing vibration monitoring data was evaluated again in January 2003 by a second independent consultant. Energy Northwest received this consultant's report on February 10, 2003. The second consultant agreed that the bearing was operable but provided a different probable cause for the vibration. The probable cause of the alternate analysis was related to bearing cage wear. Life prediction techniques for bearing cage wear are not well established. The second independent consultant's analysis was based on a review of vibration trend data, the bearing oil analysis results, and the independent consultant's knowledge of similar bearing performance. The second consultant concluded that the bearing was capable of running the required 30 days (720 hours) in an emergency.

Subsequent additional preliminary analysis by the first consultant received this past week indicated that another failure mechanism was possible and concluded that DG-1 may not be able to run for 30 days as required by the design basis of the plant.

Energy Northwest has now obtained evaluations from two independent and experienced consultants. Three different bearing degradation mechanisms have been postulated. While Energy Northwest considers one of these degradation mechanisms more likely than the others, questions exist relative to each mechanism. Based on the additional time that would be required to prove or disprove each mechanism, Energy Northwest determined that it was prudent and conservative to declare DG-1 inoperable. Accordingly, prompt action is necessary to allow the bearing to be replaced on-line and avoid an unnecessary plant transient.

A work schedule for replacement of the bearing has been developed and work activities have begun. Under our current work schedule, this bearing replacement, including post-maintenance testing, will take approximately 11 days. An additional 3 days is being requested to allow for contingencies that may arise as the bearing replacement work progresses.

A summary of the major elements of the work schedule is as follows:

- Mobilize a crane to lift roof sections and generator.
- Remove steel and roof sections from generator room, rig and remove generator.
- Replace generator bearing.
- Re-terminate associated generator power, controls, and instrument wiring.
- Reinstall, re-couple, and realign generator, reinstall exhaust/intakes, perform a 1-hour run and hot alignment.
- Perform post-maintenance testing, including a 24-hour run with associated measurement and testing activities.

Although the root cause of the DG-1 bearing degradation has not yet been identified, a failure analysis of the bearing will be performed following its removal to determine the cause. We do not believe that a common cause problem exists on similar bearings installed on the DG-2 or DG-3 generators. The bearings associated with DG-3 are of a different design (sleeve bearings) and are operating normally. Analysis of bearing vibration data for DG-1 has led to the conclusion that the premature DG-1 bearing degradation is probably due to a minor defect in the bearing outer race or bearing cage. The similar bearing on DG-2 is not experiencing the same problem based on the following:

- Bearing defect frequencies are readily recognizable in vibration spectral plots and the vibration data for the DG-2 bearing do not show any evidence of bearing defects.
- DG-2 oil analysis results do not show any evidence of abnormal bearing wear or degradation.

DG-2 and DG-3 are currently reliable based on our diesel reliability program. Our station blackout reliability goal of greater than or equal to 95% is currently being met.

As the bearing is replaced, Energy Northwest may identify potential causes that were not originally postulated. These will be promptly assessed to determine if DG-2 or DG-3 could be affected. Technical Specification 3.8.1 Required Action B.3.1 requires a determination that operable DG(s) are not inoperable due to common cause failures.

3. The safety basis for the request, including an evaluation of the safety significance and potential consequences of the proposed course of action. This evaluation should include at least a qualitative risk assessment, using both risk insights and informed judgments as appropriate.

   During the period that DG-1 is inoperable the remaining operable DG's and offsite power and offsite circuits are adequate to supply electrical power to the onsite Class 1E distribution system.

   Although there is a certain risk associated with delaying the required entry into TS 3.8.1 Condition F due to DG-1 being inoperable, many challenges to plant systems, such as increased potential for plant transients or disturbances, occur during shutdown evolutions. The 11-day delay to entering TS 3.8.1 Condition F will not result in a net increase in radiological risk to the public health and safety when compared to a plant shutdown.

   This conclusion is based on a comparison of the estimates of shutdown risk to the risks of repairing DG-1 during power operation with implemented compensatory measures. The compensatory measures are listed in our response to question 7.

   Among these compensatory measures, the most significant improvements to plant risk are:

   - No elective maintenance on risk significant systems and equipment. This allows the use of a "no maintenance" assumption in the evaluation.
   - Establishment of the ability to maintain battery voltages necessary for RCIC and ADS to function for a longer period during a station blackout condition. This allows a longer time to credit restoration of an offsite or onsite AC source.
   - Restrict the performance of elective work on offsite sources. This assures that a grid-initiated loss of an offsite AC source is minimized.

   The impact of seismic and internal fire events was also evaluated and does not control the relative risk decision. Evaluation of the fire PRA and insights from the Seismic IPEEE confirm that these external events have a negligible contribution to the risk results and therefore do not substantively affect the decision-making regarding repair of DG-1 online.

   The alternative to performing on-line maintenance repair of the subject Diesel Generator is a reactor shutdown to accomplish the repair. However, there is risk introduced by a shutdown. The assumptions for determining the shutdown risk include:

- Shutdown is assumed as a manual shutdown with no equipment unavailable except DG-1.
- Initiating event frequency is not increased during the transition to shutdown from power.
- None of the identified compensatory actions discussed are incorporated in the shutdown evaluation. This is a necessary assumption to provide a reasonable understanding of the risk value of the compensatory measures.
- Minimal risk was assumed for the forced outage period following shutdown.

The above evaluation for Total CDP results in no net increase in the Total CDP for performing the DG-1 repairs online.

Columbia Generating Station will be required to perform maintenance inside containment if the plant is shutdown. De-inerting of containment will be necessary. De-inerting would result in an increase of LERF for the transition to shutdown case. Because the CDP comparison results in no net increase, the LERF comparison also results no net increase.

When the risk of staying on-line for an additional 11 days with DG-1 inoperable (with the compensatory measures in place) is compared to the risk of a manual shutdown there is no net increase in radiological risk to the health and safety of the public.

4. The justification for the duration of the noncompliance.

   Columbia Generating Station is currently operating at full power and DG-1 is considered inoperable due to degradation of a generator bearing. The generator bearing degradation was identified through bearing vibration monitoring during monthly diesel generator testing.

   The bearing replacement cannot be completed within the applicable TS Completion Time specified in TS 3.8.1 Condition B.4. Under our current work schedule, this bearing replacement, including post-maintenance testing, will take approximately 11 days. An additional 3 days is being requested to allow for contingencies that may arise as the bearing replacement work progresses.

5. The basis for the licensee's conclusion that the noncompliance will not be of potential detriment to the public health and safety and that no significant hazard consideration is involved.

   See Attachment 2, Determination of No Significant Hazards.

6. The basis for the conclusion that the noncompliance will not involve adverse consequences to the environment.

The operation of Columbia Generating Station during the period of non-compliance with the TSs will result in no adverse consequences to the environment in that there will be no significant change in the types or significant increases in the amounts of any effluents that may be released offsite, and no significant increase in individual or cumulative occupational radiation exposure.

7. Any proposed compensatory measures.

During the period that the plant is in non-compliance with the TS, Energy Northwest has implemented a number of compensatory measures that will reduce plant risk.

a. The Bonneville Power Administration (BPA), the offsite power grid operator, has been informed of the unavailability of DG-1 and has been requested to defer discretionary maintenance on the local network around Columbia Generating Station. BPA has deferred discretionary maintenance on the local network around Columbia Generating Station for the time period DG-1 will be out-of-service. The local network is defined as all 500 kV, 230 kV and 115 kV transmission system equipment located in an area bounded by the Midway Substation, White Bluffs Substation, Benton Substation, and Ashe Substation.
b. We have requested that BPA notify the plant of any emergent conditions that could affect local grid stability or reliability.
c. All normal entrances to the Columbia Generating Station transformer yard have been locked and posted. Planned maintenance in the transformer yard has been suspended. Access to the transformer yard is controlled in accordance with plant procedure PPM 1.9.13, Transformer Yard Access and Controls.
d. A daily tour of the transformer yard is being performed by Operations to identify concerns that could place offsite power or the transformers at risk.
e. Operations is performing a verification of the correct breaker alignments and indicated power availability for each offsite power circuit once every 8 hours.
f. Operations is contacting the BPA Munro and Dittmer Dispatching Centers on a daily basis to verify no unusual conditions exist that could affect the reliability of the plant offsite power circuits.
g. During the time DG-1 is inoperable we will not perform any elective maintenance on equipment that provide the controls and ability to connect to offsite power.
h. A daily check of the weather forecast is being performed to anticipate severe weather. Severe weather is currently defined in plant procedures as wind gusts greater than or equal to 58 mph, hail greater than or equal to ¾" in diameter, visual sighting of a funnel cloud or tornado, or lighting strikes in the local area. If severe weather conditions are forecasted, an assessment of the risk will be performed and appropriate actions will be implemented.
i. During the time that DG-1 is inoperable, maintenance and testing will be limited on all risk significant equipment including Division 1 equipment. Required surveillance

testing will be performed. Plant General Manager approval is required for all discretionary maintenance on all risk significant equipment.

j. No elective maintenance will be performed on Diesel Generator 2 or Diesel Generator 3. Both DG-2 and DG-3 will be classified and controlled as protected equipment.

k. No elective work will be scheduled that results in utilizing ignition sources in the vicinity of or on risk significant equipment for the time DG-1 is out-of-service, except as required for maintenance activities in the DG-1 room.

l. Each operating crew has reviewed the actions to be taken should a loss of offsite power occur while DG-1 is inoperable.

m. Columbia Generating Station has the ability to manually establish an additional source of offsite power by disconnecting the main generator bus links and back-feeding the safety related busses from the 500 kV power export network. We have staged tools and prepared the necessary clearance order to accomplish this task expeditiously.

n. A portable diesel has been staged to power the Division 1 and 2 125-volt and Division 1 250-volt battery chargers. Providing our Division 1 and 2 125-volt and Division 1 250-volt batteries with extended capacity after a loss of all AC power results in a significant benefit to Probabilistic Risk Analysis (PRA) results for the plant.

8. A statement that the request has been approved by the plant On-site Review Committee.

   This request for enforcement discretion was reviewed by the Columbia Generating Station Plant Operations Committee and approved by the Plant General Manager.

9. The request must specifically address which of the NOED criteria for appropriate plant conditions specified in Section B is satisfied and how it is satisfied.

   At the time the enforcement discretion was verbally requested, the plant was in Mode 1 at full power. As of the date of this letter the plant continues to operate at or near full power. Approval of this request is appropriate and necessary to avoid an undesirable transient resulting from compliance with the Actions of an LCO, thereby minimizing the potential adverse safety consequences and operational risks.

   The NRC Inspection Manual Part 9900, Technical Guidance, Operations - Notices of Enforcement Discretion, Criterion, that is satisfied:

   - Section B, 2.1(1)(a); The NOED is intended to avoid unnecessary transients as a result of compliance with the license condition and, thus minimize potential safety consequences and operational risks.

10. If a follow-up license amendment is required, both the written NOED request and the license amendment request must be submitted within 2 working days.

A follow-up license amendment request is not practical due to the short duration of the TS enforcement discretion. The plant will be restored to compliance with the existing TSs before a license amendment could be issued.

11. For severe weather or other natural phenomena-related NOED's, the licensee's request must be sufficiently detailed for the staff to evaluate the likelihood that the event could affect the plant.

    This is not a severe weather or other natural phenomenon related NOED.

DETERMINATION OF NO SIGNIFICANT HAZARDS

Energy Northwest is requesting enforcement discretion from the requirements of Columbia Generating Station Technical Specification (TS) 3.8.1, "A.C. Sources - Operating." Specifically, discretion from compliance with the Completion Time requirements of TS 3.8.1 Condition B.4 is requested for the eleven-day period beginning at 2100 on February 16, 2003, and ending at 2100 on February 27, 2003. Technical Specification 3.8.1 Condition B.4 requires that, when in Modes 1, 2, and 3 with one of the three required diesel generators inoperable, the inoperable diesel generator must be restored to operable status within 72 hours and 6 days from discovery of the failure to meet the LCO. If the inoperable diesel generator is not restored to operable status within the required Completion Time, TS 3.8.1 Condition F must be entered. Condition F requires that the plant be placed in Mode 3 within 12 hours and Mode 4 within 36 hours.

This request for enforcement discretion is being made to avoid an unnecessary plant transient that would result from full compliance with TS 3.8.1, Condition F. Energy Northwest is requesting enforcement discretion from the Nuclear Regulatory Commission to allow one diesel generator (DG-1) to be inoperable for 11 days longer than allowed by the plant's technical specifications. The additional time is needed to replace a degraded generator bearing on DG-1 and conduct post-maintenance testing.

Columbia Generating Station is currently operating at full power and Diesel Generator Number 1 (DG-GEN-DG1) has been declared inoperable due to degradation of its north generator bearing. This degradation was identified through bearing vibration monitoring during monthly diesel generator testing. Work activities to replace the generator bearing are underway. However, replacement of the bearing and post-maintenance testing of Diesel Generator Number 1 (DG-1) will not be completed prior the expiration of the applicable TS Completion Time specified in TS 3.8.1 Condition B.4. Under the current bearing replacement plan, DG-1 will be returned to operable status by 2100 on February 27, 2003.

The proposed enforcement discretion has been evaluated against the standards in 10 CFR 50.92 and has been determined to not involve a significant hazards consideration, in that operation of the facility during the period in question of the enforcement discretion:

1. Does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   Columbia Generating Station has three diesel generators. The Division 1 and 2 diesel generators provide onsite electrical power to vital systems should offsite electrical power be interrupted. The Division 3 diesel generator is dedicated to provide onsite power to the High Pressure Core Spray system should offsite power be interrupted. The diesel generators are not an initiator of any accident previously

evaluated. Therefore, this extended time period of operation with the Division 1 diesel generator out-of-service will not increase the probability of an accident previously evaluated.

The diesel generators act to mitigate the consequences of design basis accidents that assume a loss of offsite power. The Division 1 and 2 diesel generators are redundant to protect against a single failure. During the TS 72-hour Completion Time, Columbia Generating Station is allowed to remove one diesel generator from service, thereby losing this single failure protection. This operating condition is considered acceptable. The consequences of a design basis accident coincident with a failure of the redundant DG during the additional 11-day period DG-1 may be out-of-service are the same as those during the existing 72-hour Completion Time.

Furthermore, a compensatory action is in place that will limit discretionary maintenance and testing on risk significant systems and equipment during the period DG-1 is out-of-service. This will reduce the risk that other mitigating plant equipment would not be available in the event of a design basis accident. Energy Northwest has the ability to manually establish an additional source of offsite power by back-feeding the safety related busses from the 500 kV power export network. This would provide the plant with an additional source of offsite power in the event of the loss of the other offsite power networks. Therefore, during the period that the Division 1 diesel generator is proposed to be out-of-service, there is no significant increase in the consequences of an accident previously evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does not create the possibility of a new or different type of accident from any accident previously evaluated.

   During the additional 11-day period the Division 1 diesel generator is out-of-service, the plant will not be in any new unanalyzed configuration. The diesel generators are not an initiator to any accident, but are designed to respond and supply power to equipment that mitigates the consequences of accidents should an accident occur (Loss of Offsite Power).

   Therefore, the proposed change does not create the possibility of a new or different type of accident from any accident previously evaluated.

3. Does not involve a significant reduction in a margin of safety.

   During the period of the 72-hour TS Completion Time when one DG is out-of-service during power operation, the margin of safety is allowed to be reduced. This time period is a temporary relaxation of the single failure criteria, which, consistent with overall system reliability considerations, provides a limited time to repair the equipment and conduct testing. Energy Northwest is requesting enforcement discretion to allow an extension to this limited time. Energy Northwest has instituted a number of compensatory measures that reduce the possibility of a plant transient, loss of other on-site power sources, or a loss of offsite power during the period DG-1 is out-of-service. Energy Northwest concludes that the completion time of 11 days beyond that allowed by the TS 72-hour Completion Time does not result in a significant further reduction in the margin of safety, based on our management of plant risk, the reliability of the other diesel generators, and the compensatory measures put in place.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Conclusions

In conclusion, based on the consideration discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the NOED will not be inimical to the common defense and security or to the health and safety of the public.