



Dominion

Kewaunee Power Station

Appeal of FAQ 69.2

*Emergency Diesel Generator Fuel
Oil Line Fitting Failure*

Tom Webb

Paul Miller

Don Olson



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- *Purpose*

- *To demonstrate that Kewaunee Power Station's treatment of unavailability hours associated with an EDG fuel oil line fitting failure was in full compliance with NEI 99-02 guidance.*



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- *Agenda*
 - *Discuss guidance interpretation issue*
 - *Provide overview of EDG fuel oil leak sequence*
 - *Discuss NEI 99-02 guidance*
 - *Discuss Historical Precedent*
 - *Staff response to FAQ*
 - *Conclusion*



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- *Guidance Interpretation Issue*
 - *NEI 99-02, revision 4, section F 2.2.2, Failures: Treatment of Discovered Conditions that Result in the Inability to Perform a Monitored Function; for other discovered conditions where the discovery of the condition is not coincident with the failure...
“unplanned unavailability would accrue in all instances from the time of discovery or annunciation consistent with the definition in section F 1.2.1.”*



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- *Guidance Interpretation Issue (Cont.)*
 - *Is “time of discovery” when the licensee observes a degraded condition and should have determined that the component cannot perform its monitored function or is it when the licensee actually determines that the component would not have been able to perform its monitored function*



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- *Overview of EDG 1A fuel oil fitting leak sequence*
 - *6/28/06, Non-Licensed Operator (NLO) discovers leak at fuel oil inlet tee connection (1 drop per minute)*
 - *Work request (WR) initiated, no CAP*
 - *7/1/06, WR Screening Team assigns work order to repair leak*
 - *Yellow-60 priority assigned. (no operability concerns, repair within 12 week maintenance cycle)*
 - *7/20/06, EDG run for 2.62 hours, no comment on leak*



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- *Overview of EDG 1A fuel oil fitting leak sequence (Cont.)*
 - *7/26/06, EDG run for 0.13 hours, no comment on leak*
 - *8/17/06, EDG run for 0.12 hours, no comment on leak*
 - *8/17/06, EDG run for 1.03 hours then declared inoperable due to increased leakage on inlet tee connection*



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- *Overview of EDG 1A fuel oil fitting leak sequence (Cont.)*
 - *8/18/06, inlet tee connection leak repaired and EDG returned to service*
 - *9/5/06, contracted vendor to do past operability evaluation of failed fitting in accordance with CAP process*
 - *10/16/06, submitted LER that stated “ a conservative decision has been made to declare the EDG inoperable from 6/28/06 to 8/17/06”*



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- *Overview of EDG 1A fuel oil fitting leak sequence (Cont.)*
 - *3Q06, Kewaunee reported in MSPI an EDG run failure and unavailable hours for the time to repair the fitting after the increased leakage on August 17*
 - *12/06, NRC Senior Resident Inspector questioned station's assignment of unavailable hours*
 - *2/07, vendor reported that EDG would not have met mission time with the fitting in the "as found" condition on August 17*



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- *NEI 99-02, Revision 4, Guidance*
 - *Treatment of Discovered Conditions (pages F-21, 22)*
 - *Discovered conditions that render a monitored component incapable of performing its monitored function are included in unreliability as a failure.... This treatment accounts for the amount of time that the condition existed **prior to discovery**, when the component was **in an unknown failed state**.*
 - *Unplanned unavailability would accrue in all instances from the **time of discovery** or annunciation consistent with the definition in section F 1.2.1 (page F-22, line 18)*



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- *NEI 99-02, Revision 4, Guidance (Cont.)*
 - *Treatment of Discovered Conditions (page F-21, 22) (cont.)*
 - *If the degraded condition is not addressed by any of the pre-defined success criteria, an engineering evaluation to determine the impact of the degraded condition on the monitored function(s) should be completed and documented. (page F-22)*



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- *NEI 99-02, Revision 4, Guidance (Cont.)*
 - *Train unavailable hours (page F-5)*
 - *Unavailable hours are counted **only for the time required to recover the train's monitored functions***
 - *In all cases, a train that is considered to be operable is also considered to be available*
 - *Fault exposure hours are not included*
 - *Unavailability (page 25, Indicator Definition)*
 - *“Unavailable hours are counted **only from the time of discovery of a failed condition to the time the train's monitored functions are recovered.**”*



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- *NEI 99-02, Revision 4, Guidance (Cont.)*
 - *Unplanned unavailable hours (section F 1.2.1, page F-5)*
 - *Unavailable hours to correct discovered conditions that render a monitored component incapable of performing its monitored function are counted as unplanned unavailable hours*



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- *How does guidance address “time of discovery”?*
 - *Time of discovery has two parts*
 - *Discovery of a degraded condition*
 - *Determination that a component with degraded conditions is incapable of performing monitored safety function(s)*
 - *(page F-21, lines 29-30; page F-5, lines 36-37)*



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- *How does guidance address “time of discovery”? (Cont.)*
 - *In Kewaunee’s case the degraded condition was discovered in June, 2006 and assessed not to affect operability. A vendor’s analysis of the fitting’s condition after the August increased leakage, and its impact on the ability of the EDG to perform its monitored functions, was not determined until February, 2007*



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- *Historical precedent on time of discovery*
 - *During the first year of MSPI implementation, both industry and resident inspectors have treated the assignment of unavailable hours as Kewaunee did*
 - *See example 10, on the next two slides, which came from an NRC training presentation used to prepare inspectors of the conduct of the MSPI Verification TI 2515/169*
 - *Examples 4 and 5 provide similar conclusions*

Example 10

- During a surveillance, the "B" RHR pump overheats and the licensee stops the surveillance and places the pump in PTL. The licensee determines that SW valve 3443 was not fully open after maintenance 32 days ago. Engineering determines pump is currently ok and the pump is returned to service once the valve is opened. Valve 3443 is in boundary but not monitored. However, cooling is considered part of the supercomponent (pump). An operability evaluation concludes the pump was always operable with this reduced cooling flow.

Example 10

- Unreliability
 - If we accept past operability call, no impact on Unreliability.
 - If the past operability call is incorrect, (pump could not meet mission time), this will be a run failure.
- Unavailability
 - Regardless of the unreliability call, the train was unavailable for 1 hour.
- Finding
 - Uses the 32 days in the SDP evaluation.



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- *Historical precedent on time of discovery*
(Cont.)
 - *MSPI was intended to simplify the indicator with respect to the treatment of situations like Kewaunee's*
 - *From a PRA perspective, unavailability that exists prior to a failure is accounted for in MSPI by entering a failure to run in the data*



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- *Additional information on the Staff response (provided May 22, 2007) to this FAQ*
 - *“The staff determined that the discovery date should be viewed as coincident with the failure date” without explanation as to how this is consistent with the guidance*
 - *This is the specific issue for which the FAQ requested clarification*



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- *Additional information on the Staff response (provided May 22, 2007) to this FAQ (Cont.)*
 - *The response discusses several performance deficiencies by the Kewaunee staff as the justification for the staff's conclusion on time of discovery*
 - *The purpose of the indicator is to monitor the performance of selected systems (page 25, lines 4-5), not human performance*



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- *Conclusions*

- *Reiterating the issue - is “time of discovery” when the licensee observes a degraded condition and should have determined that the component cannot perform its monitored function or is it when the licensee actually determines that the component would not have been able to perform its monitored function*



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- *Conclusions (Cont.)*

- *For the purpose of assigning unavailable hours to a train where a discovered condition renders a monitored component unable to perform a monitored function; “time of discovery” consists of two parts; a degraded condition and knowledge that the degraded condition makes the component unable to perform its monitored function*
- *Requiring the assignment of unavailable hours for a period of time in which the licensee “should have known” a component was failed represents a significant change to the MSPI guidance and should be processed in accordance with IMC 0608*



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- *Conclusions (Cont.)*
 - *NEI 99-02 should be revised to clarify “time of discovery”*
 - *Dominion acknowledges that Kewaunee did not address this issue appropriately in June 2006*
 - *Kewaunee properly assigned a failure and unavailability hours for the EDG fuel oil fitting failure*
 - *Kewaunee fully complied with NEI 99-02 guidance for treatment of unavailability hours associated with the EDG fuel oil line fitting failure*