



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

November 17, 2011

The Honorable Jeannette Mott Oxford
Missouri House of Representatives
201 West Capitol Avenue
Room 135BB
Jefferson City, MO 65101-6806

Dear Ms. Oxford:

This is in response to your August 25, 2011, letter regarding the U.S. Nuclear Regulatory Commission's (NRC) handling of the October 21, 2003, shutdown at the Callaway Plant and the NRC's apparent lack of transparency in answering your questions regarding the shutdown. In response to your concern, a meeting between you and appropriate NRC staff was arranged to discuss your questions.

On November 8, 2011, Mr. Tony Vogel, Director, Division of Reactor Safety, and Mr. David Dumbacher, Senior Resident Inspector, Callaway Plant, met with you in St. Louis, Missouri. Also in attendance at that meeting were Mr. Lawrence Criscione and Mr. Ed Smith from the Missouri Coalition for the Environment. During this meeting, the following topics were discussed:

1. NRC actions and basis for conclusions regarding the October 2003 Callaway Plant shutdown, and
2. NRC perspectives on the 10 questions documented in your letters to us.

It is my understanding that during the meeting you and Mr. Vogel had a good dialogue regarding the plant shutdown and the results of NRC inspection and investigation efforts. Enclosed for your information is a summary of NRC conclusions regarding the 10 questions that were discussed. The NRC's actions regarding the Callaway Plant shutdown on October 21, 2003, have been extensive and focused on safety. Based on the NRC's independent inspection, we concluded that the shutdown did not endanger public health and safety, and that there has been no evidence obtained during the investigation and inspection that would indicate that there was wrongdoing, such as a cover-up, involved in the plant shutdown. Therefore, the NRC determined that absent new information, no further review was warranted.

The NRC is committed to ensuring public health and safety. We have expended extensive management, inspection, and investigation efforts to ensure that the issues related to the Callaway Plant October 2003 shutdown have been thoroughly evaluated with a strong focus on safety. In addition, as Mr. Vogel discussed with you on November 8, 2011, the NRC has

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communicated extensively with the concerned individual on his allegations. Consistent with NRC policy regarding the control of allegation correspondence, and the emphasis we place on protecting the alleged's identity, the correspondence was not made available to the public.

Sincerely,

A handwritten signature in black ink that reads "Elmo E. Collins". The signature is written in a cursive style with a large, prominent "E" and "C".

Elmo E. Collins
Regional Administrator

Enclosure:
As stated

**Responses to Questions from Representative Jeannette Mott Oxford
Letter of August 25, 2011**

The following is a summary of the NRC's position regarding the questions that were discussed with you in a meeting on November 8, 2011. (Note: Question #10 was not discussed per your request and is included here for completeness.)

- 1. Is it the NRC's opinion that on October 21, 2003, the reactor at Callaway Plant shut down due to a combination of the passive buildup of radioactive Xenon-135 and a 4°F passive rise in average reactor coolant temperature?**

Yes. Based upon the NRC's review of the facts and circumstances surrounding the shutdown, it is the NRC's conclusion that the reactor became subcritical due to a rise in reactor coolant temperature and the buildup of xenon-135, both of which contributed to negative reactivity. This is a design feature of a pressurized water reactor which has been analyzed and is allowed by Technical Specifications.

- 2. Is it the NRC's opinion that, prior to manually tripping the main turbine around 10:13 am on October 21, 2003, the NRC licensed operators at Callaway Plant recognized the reactor was going to subsequently passively shut itself down due to a lack of steam demand and the buildup of xenon-135?**

No. The NRC found that control room operators did not effectively control reactivity to maintain the reactor in the desired condition during low-power operations by properly anticipating, controlling, and responding to changing plant parameters. Operators did not sufficiently anticipate and compensate for xenon buildup when they attempted to stabilize and hold the plant at approximately 8 percent power. As a result, reactor coolant temperature decreased below the technical specification required minimum temperature for criticality.

- 3. Is it the NRC's opinion that, as reactor power lowered from the power range to the source range on October 21, 2003, the NRC licensed operators at Callaway Plant were aware the reactor had passively shut down?**

No. The operators did not use control rods or boron concentration—two means that operators can use to directly control the amount and timing of reactivity changes—to adjust for reactivity changes by xenon buildup and reactor coolant temperature changes. Based on the failure to use either of these means to maintain power at 8%, the NRC concluded that the operators were not aware of the shutdown.

- 4. Is it the NRC's opinion that, during the 45 minutes (from 10:39 to 11:25 am) the reactor was in the source range with the control rods at their last critical rod heights and with no Source Range Nuclear Instruments energized, the NRC licensed operators at Callaway Plant were aware the reactor was no longer critical?**

No, it is not the NRC's conclusion that the operators were fully cognizant of the operational condition of the reactor. It is our conclusion that the reactor was in a safe condition at all times. Operators did not shut down the reactor in a deliberate manner (e.g., by inserting control rod banks). Subsequent to the operators manually tripping the main turbine the reactor became subcritical due to xenon-135 buildup and the increase in reactor coolant temperature.

- 5. Is it the NRC's opinion that it is not relevant whether or not from 10:18 to 11:25 a.m. the NRC licensed operators were aware of the status of the nuclear fission reaction of the reactor they were monitoring?**

No, it is not the conclusion of the NRC that it is irrelevant that the operators were unaware of the status of the fission reaction of the reactor. However, it is clear that the reactor was in a safe condition throughout the duration of the event, even though the changing reactor physics environment made it challenging for the operators. Further, it is the NRC's conclusion that operator performance in not effectively controlling reactivity on October 21, 2003, was attributable, in part, to weaknesses with management oversight, training and procedural guidance.

- 6. Is it the NRC's opinion that upper management of Callaway Plant was, on October 21, 2003, aware that the reactor had passively shut down around 10:18 am?**

No. The NRC's independent inspection and investigation efforts did not identify any information or testimony that would suggest that managers at Callaway Plant were aware that the reactor had shutdown prior to the source range instruments being energized. The conclusion reached by the NRC is that the reactor operators were likely to have been alerted to the fact that reactor power had dropped into the source range when the source range energized at 11:34 am as documented in the reactor operator logs. Given this information, that is when upper management would have been able to determine the time of the reactor shutdown.

- 7. Is it the NRC's opinion that Dave Neterer, the Operations Manager, was not in the Control Room when the first channel of Source Range Nuclear Instruments energized at 11:25 am?**

No. The NRC's independent inspection and investigation efforts did not attempt to ascertain whether or not the Operations Manager was in the control room when the source range nuclear instruments were energized. The NRC investigative and inspection staff did not identify this as an important distinction in understanding the safety significance or regulatory compliance aspects of the event.

8. Did the NRC interview Dave Neterer as part of its investigation of the October 21, 2003, passive reactor shutdown?

No. The NRC's independent inspection and investigation efforts did not include an interview of the Operations Manager. The information needed to assess the safety significance and regulatory compliance aspects of the event was obtained through efforts independent of the Operations Manager.

9. According to Mr. Criscione, Shutdown Margin calculations at Callaway Plant are Quality Assurance records which must be stored for decades. Mr. Criscione claims that no Shutdown Margin calculation was performed "*just prior to tripping the main turbine*" on October 21, 2003, whereas the NRC claims that *one was performed*. Is the NRC willing to request a copy of the Shutdown Margin calculation that was in effect at Callaway Plant during the 106 minute delay and provide me a copy of that calculation?

No. The NRC mistakenly provided erroneous information to Mr. Criscione in previous correspondence which we corrected in follow-up correspondence dated July 25, 2011. In that correction letter, Mr. Criscione was informed that the staff had determined that a shutdown margin verification had not been completed prior to the tripping of the main turbine. The staff had subsequently determined that the shutdown margin calculation was performed after the main turbine tripped, not before. Specifically, on October 21, 2003, at 10:12 a.m., the main turbine was tripped. At 12:55 p.m., the shutdown margin calculation was completed satisfactorily. While the factual error is regrettable, the NRC staff determined that it does not alter our conclusion in that the actual safety significance of the event was not impacted by the failure to perform the calculation prior to the turbine trip.

10. Did Nick Taylor of the US NRC investigate any of Mr. Criscione's allegations? If so, did Nick Taylor interview Lawrence Criscione as part of his investigation?

No, Mr. Taylor did not investigate Mr. Criscione's allegations; rather Mr. Taylor was assigned to perform an independent review of the safety significance of the October 21, 2003, plant event. Based on his task, which fell outside of the allegation program, it was neither necessary nor appropriate for Mr. Taylor to interview Mr. Criscione. The allegation process at the NRC is a separate process and is handled independently of plant event reviews except where the review can provide support to an allegation without compromising the alleged's identity or inappropriately affecting the outcome.