FENOC
FirstEnergy Nuclear Operating Company

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TO: **File** **DATE: September 25, 2012**
FROM: **Steven Dort**
SUBJECT: **NRC Telecon Regarding Davis-Besse License Renewal – Severe Accident Mitigation Alternatives Analysis Questions**

NRC Attendees: **Elaine Keegan, John Parillo, Steve Short, Bruce Schmitt**

FENOC Attendees: **Cliff Custer, Cindy Williams, Steven Dort**

This telephone conference call was initiated by Elaine Keegan, NRC Environmental Project Manager for Davis-Besse License Renewal. The telecon took place at 1500 hours on September 25, 2012. The purpose of the call was to discuss questions raised by the Nuclear Regulatory Commission (NRC) during review of the revised Severe Accident Mitigation Alternatives (SAMA) Analysis submitted by FENOC letter L-12-244 dated July 16, 2012.

The NRC requested clarification for two specific issues from the July 16, 2012 letter as follows:

1. Attachment 1, item 3, explains that the escalation of decontamination costs was revised to be based on the consumer price index. Provide the value of this revised escalation factor and the value used in the SAMA analysis provided in the Environmental Report.

   - FENOC responded that a multiplier of 1.95 was used to escalate costs to 2009 dollars (from 1986 dollars) to compensate for changes in the consumer price index during the analysis period. The SAMA analysis provided in the Environmental Report did not consider an escalation factor and was based on values in terms of 1986 dollars. See Environmental Report Table E.3-19, "MACCS2 Economic Parameters Used in CHRONC," in the July 16, 2012 letter for the updated cost information.

2. Attachment 1 describes five corrections made to the SAMA analysis. These corrections, however, do not appear to explain the changes to the Modular Accident Analysis Program (MAAP) results provided in the Enclosure to Attachment 3 (Amendment No. 29), including the following:

   a. Table 4.e-1 indicates changes were made to PLHEAT for various release categories.

   b. Table E.3-1 (E.3-6 of the ER) indicates changes were made to the cesium iodine release fractions.

   c. Table E.3-13 indicates changes were made to numerous parameters (e.g., OALARM, RELFRC, PDELAY, PLUDUR, and End of Release).

Discuss how the changes in Attachment 1 affected these values, or whether additional modifications were made to the MAAP runs. If additional changes were made, briefly discuss the changes made and the basis for the changes.

- FENOC responded that the changes to the MAAP results were primarily the result of re-running MAAP using 'mass' for the initial core inventory instead of 'activity', as recommended by MAAP Users Group Bulletin – MAAP-FLAASH #68, "MAAP4 Fission Product Input Parameter Clarification." MAAP-FLAASH #68 states that, "The option of specifying the inventory by providing values of radioactivity for individual isotopes… is not valid because the isotopes that were selected for the model are the most radioactive but not the most massive, resulting in calculated masses that are substantially less than the actual masses." The MAAP-FLAASH also states that the impact of using the radioactivity of fission product inventory for specified nuclides on the distributions of the fission products in groups that are substantially under-represented can cause users to be misled, as the results could be underestimated.

  Therefore, as recommended by MAAP-FLAASH #68, FENOC changed the initial core inventory MAAP parameter as follows:

  > In the August 2010 Environmental Report, MAAP calculations were run using the 'radioactivity' of fission product inventory given in curies for the specified nuclide.
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  > In the July 16, 2012 letter, the MAAP calculations were run using the 'mass' of fission product inventory given in kilograms.

  One additional change to the MAAP was made to ensure completeness by including a third 'fission product release period' criteria as follows:

  > In the August 2010 Environmental Report, MAAP calculations defined the fission product release period as the time at which the release stops from all 12 fission product groups, or the time of reactor vessel failure + 48 hours, whichever comes first.
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  > In the July 16, 2012 letter, MAAP calculations were revised to define the fission product release period as the time at which all fission product releases stop, or the time of reactor vessel failure + 48 hours, or containment failure + 48 hours.

  The cumulative effect of the above changes resulted in changes to 'PLHEAT' (energy of release), the cesium iodine release fractions – 'RELFRC' (release fraction) and 'PLUDUR' (plume duration), and End of Release.

The changes in OALARM and PDELAY are very small and are likely due to rounding or re-running the MAAP. For example, OALARM for release category (RC) 2.1 changed from 8.35E-02 to 8.34E-02 hours, and PDELAY for RC 1.1 changed from 73.80 to 73.20 hours.

There was no further discussion, and the call was concluded.