UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 15, 2015

Mr. Ernest J. Harkness
Site Vice President
FirstEnergy Nuclear Operating Company
Mail Stop A-PY-A290
P.O. Box 97, 10 Center Road
Perry, OH 44081-0097

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT NO. 1 - REQUEST FOR ADDITIONAL INFORMATION CONCERNING ALTERNATIVE ACCIDENT SOURCE TERM DESIGN BASES (TAC NO. MF3197)(L-13-306)

Dear Mr. Harkness:

By application letter dated December 6, 2013, as supplemented by a letters dated February 27, and October 8, 2014 (Agencywide Document Access and Management System (ADAMS) Accession No. ML13343A013, ML14059A221 and ML14282A218, respectively), FirstEnergy Nuclear Operating Company (FENOC, the licensee) submitted a license amendment request for the Perry Nuclear Power Plant. The proposed amendment would revise the Updated Safety Analyses Report (USAR) to reflect updated radiological calculations using an alternative accident source term form the applicable design bases event and to revise the Technical Specification definition of DOSE EQUIVALENT IODINE-131.

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with Mr. Phil Lashley of your staff on January 15, 2015, it was agreed that FENOC would provide a response within 30 days from the date of this letter.

The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources.

If circumstances result in the need to revise the requested response date, please contact me at (301) 415-2315.

Sincerely,

/RA/

Eva A. Brown, Senior Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-440

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

ALTERNATIVE SOURCE TERM DESIGN BASES

FIRSTENERGY NUCLEAR OPERATING COMPANY (FENOC)

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

1. In the December 6, 2013, submittal, FENOC (the licensee) proposes to update Table 15.6-13 of the Updated Safety Analysis Report (USAR) to reflect two corrections to the atmospheric dispersion value (X/Q) for the 24-96 hour X/Q and the 96-720 hour X/Q approved by the U. S. Nuclear Regulatory Commission (NRC) staff in March 1999. The change to the 24-96 hour (1-4 day) X/Q is an order of magnitude increase (i.e., from E-5 to E-4).

   a. Address whether the original values are currently credited to determine Control Room (CR) dose in any affected accident scenario.

   b. Address the application of these corrected values in determining the CR dose for any affected accident scenario.

      Time dependent wind speed factors, which would have further reduced X/Qs, were not applied.

2. In the October 8, 2014, supplement, the licensee indicated that the onsite tracer gas study did not include sampling and estimation of X/Qs at the intakes to the building housing the onsite Technical Support Center (TSC) in its basement. The licensee discussed similarities in the exposures of the air intakes to the CR and the onsite TSC and how dispersion and dilution might be slightly different for the two receptor locations with the relative concentrations at the TSC expected to be somewhat lower. The short-term X/Qs for the onsite TSC, appear to apply scaling factors to the 0 to 8-hour X/Q value based on the Murphy-Campe dispersion model in order to account for the effects of varying wind direction on concentrations over the longer accident averaging time intervals.

   a. Discuss why the proposed, scaled X/Q values for the onsite TSC were not adjusted to account for the same measurement uncertainties in the tracer gas study (as described in Subsection 15.6.5.5.1.10 of the USAR) as was the case for the design-basis CR X/Qs, along with the possible additional uncertainty of different dispersion conditions at the TSC air intakes which, as indicated in the October 8 supplement, are located at the corner of a structure (i.e., the Service Building), but whose dispersion effects do not otherwise appear to be addressed.

   b. As the resulting onsite TSC X/Q values were scaled from earlier Murphy-Campe modeling results, and the acknowledged limitation that the "testing may not have

captured the full range of poor dispersion conditions," explain the rationale for the footnote on Page 6 of the attachment to the October 8, 2014, supplement.

3. Figure 1 of Attachment 6 to the December 6, 2013, submittal illustrates that the assumed direct release to atmosphere for this accident scenario is from the Auxiliary Building. Assuming a release location for the main steam line break outside containment (MSLBOC) accident that is different from the design-basis loss-of-coolant accident (LOCA) release location (i.e., from the outer edge of the Containment Building as indicated in Subsection 2.3.4.2 of the USAR), discuss the following:

   a. Whether the distances to the exclusion area boundary and the low population zone receptors from the potential MSLBOC release point are less than the distances implied by assuming that the same X/Q values for the design-basis accident apply for the MSLBOC release scenario and either justify their applicability and use or revise as necessary;

   b. The release elevation for the MSLBOC, its orientation (relative to True North) with respect to the CR air intake locations, and its distance to those intakes;

   c. Given any differences and/or uncertainties noted previously for the onsite tracer study and its results (especially if source-receptor distances are less and/or orientations are different), address the use of the same adjusted CR X/Q values for the LOCA release scenario; and,

   d. Confirm that the LOCA release still represents the controlling accident scenario for the CR.

4. In support of the NRC's staff confirmatory analysis of the estimated onsite TSC X/Q values, and for the MSLBOC accident, provide and discuss the following analysis inputs:

   a. Sequential, hourly onsite meteorological data for a representative period of record (POR), including upper and lower measurement heights and units of measure (NOTE: previous confirmatory modeling analyses by the NRC were based on a 5-year POR from 1993 to 1997);

   b. Scaled drawings showing the locations and heights of the release points for the LOCA and for the MSLBOC accident, the TSC and CR intake locations and heights, distances between the release points (sources) and receptors, and orientations relative to True North from the receptors to the sources, and from which building heights and dimensions can be determined; and

   c. Release characteristics for each source, as applicable, including vertical velocity, flow rate, stack radius (and associated units of measure).