DTE Energy®

Detroit Edison

Fermi 3 Combined License Application

Part 7: Departures Report

(Includes Information on Departures, Exemptions and Supplemental Information)

Revision 0
September 2008

DEPARTURES

A *departure* is a plant-specific deviation from design information in a standard design certification rule.

A Departures Report includes deviations identified in the Fermi 3 FSAR from the information in the applicable NRC approved DCD. At the time of application submittal, an ESBWR standard design certification and rule has not been issued by the NRC, and therefore departures would not be considered to currently exist. However, for the purposes of identifying changes to Revision 4 of the ESBWR DCD, three DCD Departures were identified. The purpose of these departures, in combination, is to provide long-term dose estimates which more closely represent anticipated doses due to normal operational releases from Fermi 3.

Departure Number	Description
EF3 DEP 9.4-1	Reactor Building, Fuel Building, Turbine Building, and Radwaste Building Ventilation Release Point
EF3 DEP 11.1-1	Revised Source Term for Argon-41
EF3 DEP 12.2-1	Airborne Dose Calculation Methodology

Departure Number: EF3 DEP 9.4-1, Reactor Building, Fuel Building, Turbine Building, and Radwaste Building Ventilation Release Point

Affected DCD/FSAR Sections: 2.0, 9.4.2, 9.4.3, 9.4.4, 9.4.6, 12.2.2.1

Summary of Departure:

In Revision 4 of the ESBWR DCD, the Radwaste Building Heating, Ventilating and Air Conditioning System (RWVS), Turbine Building HVAC System (TBVS), Fuel Building HVAC System (FBVS), and Reactor Building HVAC System (RBVS) exhaust to the plant vent stack. In Revision 5 of the ESBWR DCD, the plant design is changed to provide for individual vent release locations for the Radwaste Building, Turbine Building, and Reactor Building roofs; along with other minor design changes.

Scope/Extent of Departure:

This Departure is identified in COLA Part 2, FSAR Subsections 9.4.2, 9.4.3, 9.4.4, and 9.4.6. The tables and figures associated with these subsections in Revision 4 of the ESBWR DCD are also replaced by the corresponding tables and figures in Revision 5 of the ESBWR DCD. This Departure is also identified in FSAR Subsection 12.2.2.1.

Departure Justification:

This Departure is acceptable because it meets the design objective of providing a vent path for the RWVS, TBVS, FBVS, and RBVS. The change does not adversely affect any safety-related system or safety-related portion of a system, nor does it conflict with applicable regulatory guidance.

Departure Evaluation:

This Departure is associated with the non-safety-related RWVS and TBVS, and non-safety-related portions of the FBVS and RBVS. It results in a suitable vent path for the RWVS, TBVS, FBVS, and RBVS and does not adversely impact the RWVS, TBVS, FBVS, and RBVS. This vent configuration has been evaluated by GEH and has been found to be acceptable for inclusion into the ESBWR design.

Therefore, this Departure has no safety significance.

Departure Number: EF3 DEP 11.1-1, Revised Source Term for Argon-41

Affected DCD/FSAR Sections: 11.1.2, 12.2.2.1

Summary of Departure:

The value used in DCD Revision 4 for the Ar-41 release rate is not consistent with NUREG-0016, "Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Boiling Water Reactors (BWR-GALE Code)."

Extent/Scope of Departure:

This Departure is identified in COLA Part 2, FSAR Subsection Section 11.1.2. DCD Table 11.1-1 in Revision 4 of the ESBWR DCD is also replaced by the corresponding table in Revision 5 of the ESBWR DCD. This Departure is also identified in COLA Part 2, FSAR Subsection 12.2.2.1.

Departure Justification:

The value used in DCD Revision 4 for the Ar-41 release rate is not consistent with NUREG-0016, "Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Boiling Water Reactors (BWR-GALE Code)." The Ar-41 release rate is revised to 40 uCi/sec, which is conservative, to be consistent with NUREG-0016. In addition, the design basis value for Ar-41 will be removed from DCD Revision 5, Table 11.1-1, as it is not used in the normal release or accident dose evaluations.

Departure Evaluation:

This Departure results in a conservative analysis in accordance with NUREG-0016. This change to the source terms has been evaluated by GEH and has been found to be acceptable for inclusion into the ESBWR DCD.

Therefore, this Departure has no safety significance.

Departure Number: EF3 DEP 12.2-1, Airborne Dose Calculation Methodology

Affected DCD/FSAR Sections: 12.2

Summary of Departure:

Specific details and information on the derivation of the airborne source terms is expanded for multi-mode release point analysis. This approach makes the presentation of the supporting information about airborne effluents consistent with the corresponding details provided in the development of the source terms for liquid effluents.

Scope/Extent of Departure:

This departure is identified in COLA Part 2, FSAR Subsection 12.2.2.1, Table 12.2-15R, and Table 12.2-18aR.

Departure Justification:

DCD Revision 4 Section 12.2.2.1 states that "The methodology of NUREG-0016 was used in determining the annual airborne release values in Table 12.2-16." The models, assumptions, and parameters cannot be inferred from NUREG-0016 alone. Accordingly, a newly created DCD Revision 5 Appendix 12B is developed and the text in DCD Revision 5 Section 12.2.2.1 is revised to refer the reader to this appendix for specific details and information on the derivation of the airborne source terms. This approach makes the presentation of the supporting information about airborne effluents consistent with the corresponding details provided in the development of the source terms for liquid effluents.

Additionally, since the effluent releases impact the normal operation offsite doses, DCD Revision 5 Table 12.2-18b was revised. The meteorology boundary of 800 meters has been deleted in DCD Revision 5 Tables 12.2-15 and 12.2-18a, as the boundary distance is not relevant to the generic ESBWR release or dose analyses; the only meteorologically relevant parameters needed are the long-term X/Q and D/Q values.

Departure Evaluation:

Revising the airborne dose calculational methodology to meet applicable requirements does not adversely affect the calculation of airborne doses. This methodology approach has been evaluated by GEH and has been found to be acceptable for inclusion into the ESBWR airborne dose calculation methodology.

Therefore, this Departure has no safety significance.

EXEMPTION REQUESTS

An *exemption* must be obtained if information proposed in the COL application is inconsistent with one or more NRC regulation. Exemptions are submitted pursuant to 10 CFR 52.7 and 52.93 and must comply with the special circumstances in 10 CFR 50.12(a).

There are no exemptions being requested by Detroit Edison for the Fermi 3 COL application.

SUPPLEMENTS

Supplements (or supplemental information) are FSAR content that is not related to COL items, departures, variances, conceptual design, or permit conditions. Supplement items are identified within the FSAR by a left margin annotation "SUP" as defined in COLA Part 2, FSAR Chapter 1. Supplemental information is provided throughout the FSAR primarily to conform with Regulatory Guide 1.206 guidance, and to address Standard Review Plan (NUREG-1555) acceptance criteria. Supplement items are also utilized to address DCD options and to demonstrate that the design of the facility falls within the site characteristics and bounding design parameters specified in the DCD. The purpose of supplement items is to ensure completeness of the FSAR and the COL application.