

DTE Energy®



Detroit Edison

**Fermi 3
Combined
License
Application**

**Part 7:
Departures
Report**

(Includes Information on
Departures, Exemptions and
Supplemental Information)

Revision 4
February 2012

Introduction:

A departure is a plant-specific deviation from design information in a standard design certification rule. Departures from the reference ESBWR Design Control Document (DCD) are identified and evaluated consistent with regulatory requirements and guidance. Each departure is examined in accordance with 10 CFR 52 requirements. Although the ESBWR Design Certification Application is currently under review with the NRC, departures are evaluated utilizing the guidance provided in Regulatory Guide 1.206, Section C.IV.3.3.

It is anticipated that the final certification rulemaking for the ESBWR would have the same change process as that in current appendices to 10 CFR 52 and in the proposed 10 CFR 52 Appendix E, "Design Certification Rule for the ESBWR Design." References in this part to the Design Certification Rule (DCR) or 10 CFR 52 Appendix E are understood to mean the proposed 10 CFR 52 Appendix E and the anticipated final ESBWR DCR.

The following departure is evaluated in this report:

EF3 DEP 11.4-1: Long-term, Temporary Storage of Class B and C Low-Level Radioactive Waste

Departure: EF3 DEP 11.4-1 - Long-Term, Temporary Storage of Class B and C Low-Level Radioactive Waste

Summary of Departure:

The ESBWR DCD identifies that on-site storage space for a six-month volume of packaged waste is provided in the Radwaste Building. The Fermi Unit 3 Radwaste Building is configured to accommodate a minimum of ten years volume of packaged Class B and C waste, while maintaining space for at least three months of packaged Class A waste. This departure is effected by reconfiguring the arrangement of systems and components within the ESBWR RWB volume. The systems structures and components requiring re-arrangement are associated with the Liquid Waste Management System (LWMS) and Solid Waste Management System (SWMS). The existing Radwaste Building Fire Protection and HVAC Systems have sufficient capacity to accommodate the extra volume of Class B and C wastes, and require no modification.

Scope/Extent of Departure:

This departure affects Tier 2 information in the ESBWR DCD. The departure from the Tier 2 information does not involve a change to or departure from Tier 1 information, Tier 2* information, Operational Requirements or the Technical Specifications. This departure is identified in FSAR Sections 1.2.2.10.2, 1.2.2.16.9, 11.4, 11.4.1, 11.4.2.2.1, 11.4.2.2.2, 11.4.2.2.4, 11.4.2.3.1, 12.2, and 12.3; FSAR Tables 9A.5-5R, 11.4-1R, 11.4-2R, 12.2-22R, 9A.2-21R, and 12.3-8R; and FSAR Figures 1.2-21R, 1.2-22R, 1.2-23R, 1.2-24R, 1.2-25R, 9A.2-20R, 9A.2-22R, 9A.2-23R, 9A.2-24R, 11.4-1R, 11.4-2R, 12.3-19R, 12.3-20R, 12.3-21R, 12.3-22R, 12.3-39R, 12.3-40R, 12.3-41R, 12.3-42R, 12.3-61R, 12.3-62R, 12.3-63R, and 12.3-64R.

Departure Justification:

DCD Sections 11.4.1, SWMS Design Basis, and 11.4.2.2.4, Container Storage Subsystem, discuss on-site storage space for low-level radioactive waste. The design accommodates a six month volume of packaged waste storage in the Radwaste Building.

Class A, B, and C low-level radioactive waste is normally promptly disposed of at licensed offsite processing and disposal facilities. In the event that an offsite facility is not available to accept Class B and C waste shipments, the Fermi Unit 3 Radwaste Building waste storage space has been configured to accommodate at least ten years of Class B and C waste generated during plant operation. Shielding analysis results show that the dose rates in surrounding areas, both within the building and externally, are maintained below the allowable limits in accordance with the radiological area classification in FSAR Section 12.3.1.3. Long-term, temporary storage of Class B and C waste HICs, with design lifetimes of 300 years, will not have an adverse effect on the integrity of the waste containers. Periodic inspections will be performed to confirm container integrity during storage.

The increased Class B and C waste storage space is consistent with the regulatory guidance of NUREG-0800, Section 11.4, Appendix 11.4-A. The storage space reserved for Class A waste exceeds that recommended by NUREG-0800, Standard Review Plan, Branch Technical Position 11-3.

Departure Evaluation:

This departure affects Tier 2 information.

This Tier 2 departure does not affect off-site dose rates or the integrity of waste containers in storage. As such, the potential for increased radiation exposure to members of the public is not created. Accordingly, it does not:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the plantspecific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of a SSC important to safety previously evaluated in the plant-specific DCD;
5. Create a possibility for an accident of a different type than any evaluated previously in the plant specific DCD;

6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD use.

This departure does not affect resolution of an ex-vessel severe accident design feature identified in the DCD.

Therefore, in accordance with Regulatory Guide 1.206, Section C.IV.3.3, and 10 CFR 52 Appendix E, Section VIII.B.5, this departure does not require prior NRC approval or an exemption from 10 CFR 52, Appendix E.

EXEMPTIONS

Exemption 1 introduction:

Detroit Edison Company (DTE) requests an exemption from the requirements of 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51. Section 70.22(b) requires an application for a license for special nuclear material (SNM) to contain a full description of the applicant's program for material control and accounting (MC&A) of special nuclear material under §§ 74.31, 74.33, 74.41, and 74.51 (While not containing an explicit exception for Part 50 reactors, § 74.33 applies only to uranium enrichment facilities and thus is not directly implicated in this exemption request). Section 70.32(c) requires a license authorizing the use of special nuclear material to contain and be subject to a condition requiring the licensee to maintain and follow a special nuclear material control and accounting program, measurement control program, and other material control procedures, including the corresponding records management requirements. However, §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 contain exceptions for nuclear reactors licensed under 10 CFR Part 50. The regulations applicable to the MC&A of special nuclear material for nuclear reactors licensed under 10 CFR Part 50 are provided in 10 CFR Part 74, Subpart B, §§ 74.11 through 74.19, excluding § 74.17. The purpose of this exemption request is to seek similar exceptions for this combined license (COL) under 10 CFR Part 52, such that the same regulations will be applied to the special nuclear material MC&A program as nuclear reactors licensed under 10 CFR Part 50.

Summary of Exemption

Applicable Regulation(s): As permitted by 10 CFR 70.17 and 10 CFR 74.7 exemptions are requested from the provisions of 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 relating to SNM accountability. Specifically, this exemption request would extend the current exceptions embodied in these regulations applicable to 10 CFR Part 50 licensees to the requested Fermi 3 10 CFR Part 52 combined license.

Specific wording from which exemption is requested:

10 CFR 70.22(b). Contents of applications:

- (b) Each application for a license to possess special nuclear material, to possess equipment capable of enriching uranium, to operate an uranium enrichment facility, to possess and use at any one time and location special nuclear material in a quantity exceeding one effective kilogram, except for applications for use as sealed sources and for those uses involved in the operation of a nuclear reactor licensed pursuant to part 50 of this chapter and those involved in a waste disposal operation, must contain a full description of the applicant's program for control and accounting of such special nuclear material or enrichment equipment that will be in the applicant's possession under license to show how compliance with the requirements of §§ 74.31, 74.33, 74.41, or 74.51 of this chapter, as applicable, will be accomplished.

10 CFR 70.32. Conditions of licenses:

- (c) (1) Each license authorizing the possession and use at any one time and location of uranium source material at an uranium enrichment facility or special nuclear material in a quantity exceeding one effective kilogram, except for use as sealed sources and those uses involved in the operation of a nuclear reactor licensed pursuant to part 50 of this chapter and those involved in a waste disposal operation, shall contain and be subject to a condition requiring the licensee to maintain and follow:
- (i) The program for control and accounting of uranium source material at an uranium enrichment facility and special nuclear material at all applicable facilities as implemented pursuant to § 70.22(b), or §§ 74.31 (b), 74.33(b), 74.41 (b), or 74.51 (0) of this chapter, as appropriate;
 - (ii) The measurement control program for uranium source material at an uranium enrichment facility and for special nuclear material at all applicable facilities as implemented pursuant to §§ 74.31 (b), 74.33(b), 74.45(c), or 74.59(e) of this chapter, as appropriate; and
 - (iii) Other material control procedures as the Commission determines to be essential for the safeguarding of uranium source material at an uranium enrichment facility or of special nuclear material and providing that the licensee shall make no change that would decrease the effectiveness of the material control and accounting program implemented pursuant to § 70.22(b), or §§ 74.31 (b), 74.33(b), 74.41 (b), or 74.51 (c) of this chapter, and the measurement control program implemented pursuant to §§ 74.31 (b), 74.33(b), 74.41 (b), or 74.59(e) of this chapter without the prior approval of the Commission. A licensee desiring to make changes that would decrease the effectiveness of its material control and accounting program or its measurement control program shall submit an application for amendment to its license pursuant to § 70.34.

10 CFR 74.31, Nuclear material control and accounting for special nuclear material of low strategic significance:

- (a) General performance objectives. Each licensee who is authorized to possess and use more than one effective kilogram of special nuclear material of low strategic significance, excluding sealed sources, at any site or contiguous sites subject to control by the licensee, other than a production or utilization facility licensed pursuant to part 50 or 70 of this chapter, or operations involved in waste disposal, shall implement and maintain a Commission approved material control and accounting system that will achieve the following objectives:

10 CFR 74.41, Nuclear material control and accounting for special nuclear material of moderate strategic significance:

- (a) General performance objectives. Each licensee who is authorized to possess special nuclear material (SNM) of moderate strategic significance or SNM in a quantity exceeding one effective kilogram of strategic special nuclear material in irradiated fuel reprocessing operations other than as sealed sources and to use this material at any site other than a nuclear reactor licensed pursuant to part 50 of this chapter; or as reactor irradiated fuels involved in research, development, and evaluation programs in facilities other than irradiated fuel reprocessing plants; or an operation involved with waste disposal, shall establish, implement, and maintain a Commission-approved material control and accounting (MC&A) system that will achieve the following performance objectives:

10 CFR 74.51, Nuclear material control and accounting for strategic special nuclear material:

- (a) General performance objectives. Each licensee who is authorized to possess five or more formula kilograms of strategic special nuclear material (SSNM) and to use such material at any site, other than a nuclear reactor licensed pursuant to part 50 of this chapter, an irradiated fuel reprocessing plant, an operation involved with waste disposal, or an independent spent fuel storage facility licensed pursuant to part 72 of this chapter shall establish, implement, and maintain a Commission-approved material control and accounting (MC&A) system that will achieve the following objectives:

Exemption Discussion

Nuclear reactors licensed under Part 50 are explicitly excepted from the requirements of §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51. There is no technical or regulatory reason to treat nuclear reactors licensed under Part 52 differently than reactors licensed under Part 50 with respect to the MC&A provisions in 10 CFR Part 74. As indicated in the Statement of Considerations for 10 CFR § 52.0(b) (72 Fed. Reg. 49352, 49372, 49436 (Aug. 28, 2007)), applicants and licensees under Part 52 are subject to all of the applicable requirements in 10 CFR Chapter I, whether or not those provisions explicitly mention a COL under Part 52. This regulation clearly indicates that plants licensed under Part 52 are to be treated no differently than plants licensed under Part 50 with respect to the substantive provisions in 10 CFR Chapter I (which includes Parts 70 and 74). In particular, the exception for nuclear reactors licensed under Part 50, as contained in §§ 70.22(b), 70.32(c), 74.31, 74.41, or 74.51, should also be applied to reactors licensed under Part 52.

An exemption from the requirements of §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 would not mean that a MC&A program would be unnecessary or that the COL application would be silent regarding MC&A. To the contrary, the MC&A requirements in Subpart B to Part 74 would still be applicable to the COL just as they are to licenses issued under Part 50. Additionally, the COL application describes the MC&A program for satisfying Subpart B to Part 74.

The exemption is being requested as permitted by 10 CFR 70.17(a) and 10 CFR 74.7. This exemption request is evaluated under 10 CFR § 52.7, which incorporates the evaluation criteria of § 50.12 and are extended to the evaluation of exemptions requested under 10 CFR 70.17(a) and 10 CFR 74.7. These sections allow the Commission to grant an exemption if 1) the exemption is authorized by law, 2) will not present an undue risk to the public health and safety, 3) is consistent with the common defense and security, and 4) special circumstances are present as specified in 10 CFR § 50.12(a)(2). The criteria in § 50.12 encompass the criteria for an exemption in 10 CFR §§ 70.17(a) and 74.7, the specific exemption requirements for Parts 70 and 74, respectively. Therefore, by demonstrating that the exemption criteria in § 50.12 are satisfied, this request also demonstrates that the exemption criteria in §§ 52.7, 70.17(a) and 74.7 are satisfied.

Evaluation Against Exemption Criteria

1. This exemption is not inconsistent with the Atomic Energy Act or any other statute and is therefore authorized by law.
2. An exemption from the requirements of 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 would not present an undue risk to public health and safety. The exemption would extend to the requested Fermi 3 COL the exceptions currently included in these sections that are applicable to 10 CFR Part 50 licensees. Furthermore, the COL application contains a description of the applicant's MC&A program under Subpart B to Part 74. Therefore, the exemption from 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 would not present an undue risk to public health and safety.
3. An exemption from the requirements of 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 would not be inconsistent with the common defense and security. The exemption would extend to the requested Fermi 3 COL the exceptions currently included in these sections that are applicable to 10 CFR Part 50 licensees. Furthermore, the COL application contains a description of the applicant's MC&A program under Subpart B to Part 74. Therefore, the exemption from §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 is consistent with the common defense and security.
4. The exemption request involves special circumstances under 10 CFR § 50.12(a)(2)(ii). That subsection defines special circumstances as when "[a]pplication of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." Since the Commission determined that the requirements in 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51 are unnecessary for Part 50 applicants, those requirements are also unnecessary for Part 52 applicants.

As demonstrated above, the exemption complies with the requirements of 10 CFR §§ 50.12, 52.7, 70.17, and 74.7. For these reasons, approval of the requested exemption is requested from the regulations of 10 CFR §§ 70.22(b), 70.32(c), 74.31, 74.41, and 74.51, as described herein.