

W3F1-2025-0032

10 CFR 50.90

August 26, 2025

ATTN: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Licensee Amendment Request – Technical Specification Section 5.0,  
"Design Features," Rewrite

Waterford Steam Electric Station, Unit 3  
NRC Docket No. 50-382  
Renewed Facility Operating License No. NPF-38

As required by 10 CFR 50.90, Entergy Operations, Inc. (Entergy), hereby requests Nuclear Regulatory Commission (NRC) approval to revise Waterford Steam Electric Station, Unit 3 (WF3), Technical Specification (TS) Section 5.0, "Design Features," consistent with the Design Features section of NUREG-1432, Revision 5 (Reference 1). The proposed amendment removes certain design details and figures from the TSs which are already contained in other license basis documents controlled in accordance with 10 CFR 50.59, "Changes, tests, and experiments," 10 CFR 50.54(q), "Emergency Plans," and/or WF3 TS 6.14, "Offsite Dose Calculation Manual (ODCM)," and are not required to be included in the TS Design Features section by 10 CFR 50.36(c)(4).

The enclosure provides a description and assessment of the proposed change.

- Attachment 1 of the enclosure provides the existing TS pages marked up to show the proposed changes.
- Attachment 2 provides retyped (clean) TS pages.

As this is an administrative change, Entergy requests approval of the proposed license amendment by June 1, 2026. The proposed changes would be implemented within 90 days of issuance of the amendment.

This request is similar to that submitted for Surry Power Station Units 1 and 2 on April 2, 2008 (Reference 2), which was approved on December 10, 2008 (Reference 3).

There are no new commitments contained in this submittal. Should you have any questions concerning this issue, please contact me at 601-368-5102.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this license amendment request, with enclosure, is being provided to the designated State Officials.

I declare under penalty of perjury, that the foregoing is true and correct.  
Executed on August 26, 2025.

Respectfully,

Phil Couture

PC/dbb/chm

Enclosure: Evaluation of the Proposed Change

Attachments to Enclosure:

1. Technical Specification Pages Markups
2. Technical Specification Pages Retyped

- References:
1. NUREG-1432, Revision 5, Volume 1, Specifications, "Standard Technical Specifications – Combustion Engineering Plants," ML21258A421, September 2021.
  2. Virginia Electric and Power Company letter to NRC, "Proposed License Amendment Request – Revision of Technical Specifications Design Features," ML080940287, April 2, 2008.
  3. NRC Letter to Virginia Electric and Power Company, "Surry Power Station, Unit Nos. 1 and 2, Issuance of Amendments Regarding Revision of Technical Specification 5.0, "Design Features," ML082682183, December 10, 2008.

cc: NRC Region IV Regional Administrator  
NRC Senior Resident Inspector – WF3  
NRC Project Manager – WF3  
Designated State Official – Louisiana

**Enclosure**

**W3F1-2025-0032**

**Evaluation of the Proposed Change**

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## EVALUATION OF THE PROPOSED CHANGE

### 1.0 SUMMARY DESCRIPTION

As required by 10 CFR 50.90, Entergy Operations, Inc. (Entergy), hereby requests Nuclear Regulatory Commission (NRC) approval to revise Waterford Steam Electric Station, Unit 3 (WF3), Technical Specification (TS) Section 5.0, "Design Features," consistent with the Design Features section of NUREG-1432, Revision 5 (Reference 1). The proposed amendment removes certain design details and figures from the TSs which are already contained in other license basis documents (LBDs) controlled in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments," 10 CFR 50.54(q), "Emergency Plans," and/or WF3 TS 6.14, "Offsite Dose Calculation Manual (ODCM)," and are not required to be included in the TS Design Features section by 10 CFR 50.36(c)(4). In addition, the section is reformatted and revised, consistent with NUREG-1432, to the extent possible.

### 2.0 DETAILED DESCRIPTION

#### 2.1 Current TS Requirements

The WF3 TS Design Features section includes details and figures related to the site Exclusion Area and Low Population Zone (LPZ), maps related to structures and release points of radioactive gases and liquids to unrestricted areas, and a figure indicating the location of the two site Meteorological (MET) Towers. This information and supporting figures are proposed for removal from the TSs.

The remaining information, related to fuel storage, is maintained, but reformatted and renumbered accordingly for consistency with NUREG-1432 (Reference 1). No technical changes are made to this information.

#### 2.2 Reason for the Proposed Change

The WF3 TS Design Features section contains design information regarding the plant site, information which is already contained in site LBDs, as described in Section 2.3 of this letter, and is not required to be included in the TS Design Features section by 10 CFR 50.36(c)(4), "Design features." Likewise, this information does not conform to the TS guidance provided in NUREG-1432 (Reference 1). Consequently, it is proposed that TS 5.0 be revised to remove this information and to revise and reformat the remaining TS information to conform to NUREG-1432, to the extent possible. The deleted TS information that is retained in the site LBDs will continue to be subject to and controlled by the requirements of 10 CFR 50.54(q), 10 CFR 50.59, and WF3 TS 6.14, as applicable, should any future changes to the information be necessary.

## 2.3 Description of the Proposed Change

The following changes to the WF3 TS Design Features section are proposed:

- WF3 TS 5.1, "Site Location", is revised to include a summary description, consistent with NUREG-1432 (Reference 1) and information currently contained in the WF3 Emergency Plan. This change removes TSs 5.1.1 and 5.1.2 along with Figures 5.1-1 and 5.1-2, associated with the WF3 Exclusion Area and LPZ, respectively. Exclusion Area and LPZ figures (maps) are currently contained in WF3 Emergency Plan, Figure 2-1 and Figure 2-8.
- WF3 TS 5.1.3 and Figure 5.1-3, associated with maps defining unrestricted areas for radioactive gaseous and liquid effluents, are removed. This figure is currently located in Attachment 1 of the WF3 ODCM. In addition, the location of fuel handling building is shown on Figure 2-3 of the Emergency Plan and Figure 2.1-4 of the WF3 Updated Final Safety Analysis Report (UFSAR). WF3 UFSAR Figure 2.1-4 also includes the location of the plant stack.

WF3 TS 5.1.3 also describes, in part, a definition of the unrestricted area of the site, in order to address potential radioactive release to this area. The WF3 ODCM governs monitoring and measuring releases to unrestricted areas of the WF3 site and surrounding areas. WF3 ODCM Section 3.0 provides the definition of "unrestricted area" as it pertains to WF3. In addition, Chapters 11 and 12 of the WF3 UFSAR describe controls and limits on radioactive releases to unrestricted areas. Also, unrestricted area is defined in WF3 TS 1.36.

- WF3 TS 5.5, associated with the location of the MET Towers, is removed. The locations of the two towers are currently shown on Figure 2-8 of the WF3 Emergency Plan.

Reformatting or administrative changes required to support establishing consistency with NUREG-1432 (Reference 1) do not involve technical changes to remaining TS requirements, which are associated with the storage of nuclear fuel. This involved renumbering and, in some cases, relocating information from one page to another, which resulted in deletion of TS pages 5-6a, 5-6b, 5-6c, and 5-6d, and including deletion of TS Page 5-7, which contains no technical information.

As a result of the necessary renumbering, the revised numbers for the remaining nuclear fuel storage requirements of the WF3 TS Design Features section requires an administrative revision to WF3 TS 3.9.13, "Spent Fuel Storage," which references the Design Features section related to nuclear fuel storage criticality requirements. The reference is changed from TS 5.6.1 to the new number, TS 5.3.1

## **3.0 TECHNICAL EVALUATION**

Consistent with the NUREG-1432 (Reference 1) improved standard technical specification (STS) format, WF3 TS 5.1, "SITE," is renamed "Site Location." WF3 TS 5.1 is also revised to delete the existing discussion of the site Exclusion Area (TS 5.1.1) and LPZ (TS 5.1.2), along with associated Figures 5.1-1 and 5.1-2. Exclusion Area and LPZ figures (maps) are currently contained in WF3 Emergency Plan Figures 2-1 and 2-8. Since changes to the Emergency Plan

are subject to 10 CFR 50.54(q) requirements, any future changes to the information would be properly evaluated and adequately controlled. Furthermore, the deleted text and figures are not required to be included in the TS by 10 CFR 50.36(c)(4), and NUREG-1432 does not include this information in the Design Features section. Therefore, it is proposed that the Exclusion Area and LPZ statements, along with associated Figures 5.1-1 and 5.1-2, be deleted from the TS. In so doing, a brief description of the site location is added to WF3 TS 5.1, consistent with NUREG-1432 and information contained within the WF3 Emergency Plan.

Also, WF3 TS 5.1.3 and Figure 5.1-3, associated with maps defining unrestricted areas for radioactive gaseous and liquid effluents, are proposed for removal from the TSs. This figure is currently located in Attachment 1 of the WF3 ODCM. In addition, the location of fuel handling building is shown on Figure 2-3 of the Emergency Plan and on Figure 2.1-4 of the WF3 Updated Final Safety Analysis Report (UFSAR). WF3 UFSAR Figure 2.1-4 also includes the location of the plant stack. In addition, WF3 TS 5.1.3 also describes, in part, a definition of the unrestricted area of the site, in order to address potential radioactive release to this area. The WF3 ODCM governs monitoring and measuring releases to unrestricted areas of the WF3 site and surrounding areas as defined in WF3 TS 1.16. WF3 ODCM Section 3.0 provides the definition of "unrestricted area" as it pertains to WF3. In addition, Chapters 11 and 12 of the WF3 UFSAR describe controls and limits on radioactive releases to unrestricted areas. Since changes to the Emergency Plan are subject to 10 CFR 50.54(q), ODCM changes are governed by WF3 TS 6.14, and UFSAR changes are subject to 10 CFR 50.59 requirements, any future changes to the information would be properly evaluated and adequately controlled. Furthermore, the deleted text and figure are not required to be included in the TS by 10 CFR 50.36(c)(4), and NUREG-1432 does not include this information in the Design Features section. Therefore, it is proposed that the discussion of a map defining unrestricted areas for radioactive gaseous and liquid effluents be deleted from the TSs, along with associated Figure 5.1-3.

WF3 TS 5.5, associated with the location of the two WF3 MET Towers, is removed, along with TS Figure 5.1-1 discussed previously. The locations of the two towers are currently shown on Figure 2-8 of the WF3 Emergency Plan. Since changes to the Emergency Plan are subject to 10 CFR 50.54(q), any future changes to the information would be properly evaluated and adequately controlled. Furthermore, the deleted text and figure are not required to be included in the TS by 10 CFR 50.36(c)(4), and NUREG-1432 does not include this information in the Design Features section. Therefore, it is proposed that information related to the MET Tower locations be deleted from the TSs.

Due to proposed removal of the aforementioned information, the retaining of information related to nuclear fuel storage is renumbered, and information is moved from page to page to accommodate available space. This involved renumbering and, in some cases, relocating information from one page to another, which resulted in deletion of TS pages 5-6a, 5-6b, 5-6c, and 5-6d, and including deletion of TS Page 5-7, which contains no technical information. Formatting is revised consistent with NUREG-1432 (Reference 1) formatting. Because WF3 TS 3.9.13 refers to the "Criticality" requirements contained within the WF3 Design Features TS section (TS 5.3.1, as renumbered), this reference in TS 3.9.13 is changed to reflect this new number. These administrative changes do not result in any technical change to the existing TS requirements related to the storage of nuclear fuel. Therefore, Entergy considers these changes to be acceptable.

### 3.1 Conclusion

Based on the above, Entergy concludes that the proposed changes conform to the requirements of 10 CFR 50.36, the current WF3 requirements and controls, and the STS. Attachment 1 of this enclosure includes a markup of the affected TS pages. Attachment 2 of this enclosure includes a retyped (clean) copy of the affected TS pages. The formatting of the retyped pages has been modified for professional appearance and consistency with STS formatting, and is considered administrative only (i.e., reformatting involved no technical change to requirements).

## 4.0 REGULATORY EVALUATION

### 4.1 Applicable Regulatory Requirements/Criteria

With respect to Design Features, 10 CFR 50.36(c)(4) provides guidance as to which design features should be included in TS. 10 CFR 50.36(c)(4) states, "Design features to be included are those features of the facility such as materials of construction and geometric arrangements, which, if altered or modified, would have a significant effect on safety and are not covered in categories described in paragraphs (c)(1), (2) and (3) of this section." System design information, e.g., specifications and figures, not included within the improved STS for the respective unit design, does not meet the criteria of 10 CFR 50.36(c)(4) for inclusion as design features and may be relocated from the TS to other licensee-controlled documents. The design features proposed for removal do not meet the applicability requirements in 10 CFR 50.36. Such information is more appropriately contained in the site Emergency Plan, ODCM, and/or UFSAR, which are subject to requirements of 10 CFR 50.54(q), WF3 TS 6.14, and 10 CFR 50.59, respectively, providing adequate assurance that any future changes to the information would be properly evaluated and adequately controlled. These LBDs meet the NRC expectations for a licensee-controlled documents for the purpose of removal and relocated specifications that do not meet 10 CFR 50.36 criteria. Therefore, the removal of the Design Features information identified in the proposed TS license amendment request is acceptable because the information does not meet the criteria of 10 CFR 50.36(c)(4).

NUREG-1432 (Reference 1) provides generic recommendations for requirements associated with the operation of Combustion Engineering designed nuclear steam supply systems such as that of the WF3 station. The Design Features information proposed for removal from the WF3 TS are not included in NUREG-1432. Consequently, the removal of information from the WF3 TS with reliance on other licensee-controlled documents is consistent with NUREG-1432.

Entergy proposes to revise the specifications in TS Section 5.0 to reflect the NUREG-1432 (Reference 1) improved STS, to the extent practical, and 10 CFR 50.36(c)(4) inclusion criteria. The TS information proposed for deletion is already included within the stated WF3 LBDs or addressed by other TS requirements, which will ensure that any future changes are adequately evaluated, as applicable. Consequently, the proposed change meets the regulations and is consistent with NUREG-1432 guidance, industry precedents, and NRC Policy. Therefore, the proposed change is acceptable.

#### 4.2 Precedent

The proposed changes are consistent with those described in Surry Power Station Units 1 and 2 license amendment request dated April 2, 2008 (Reference 2) as approved by the NRC on December 10, 2008 (Reference 3).

#### 4.3 No Significant Hazards Consideration Analysis

Entergy Operations, Inc. (Entergy) has evaluated the proposed changes to the Waterford Steam Electric Station, Unit 3 (WF3) Technical Specifications (TSs) using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

Entergy proposes to revise the WF3 Section 5.0, "Design Features," TSs to delete information that is not required to be included in TS Section 5.0 by 10 CFR 50.36(c)(4). The TS information being deleted is currently included in other licensing basis documents (LBDs), e.g., the Updated Final Safety Analysis Report, Emergency Plan, and/or Offsite Dose Calculation Manual. A summary of the WF3 site location, consistent with that contained in NUREG-1432, "Standard Technical Specifications – Combustion Engineering Plants," Revision 5, and the WF3 Emergency Plan is added. Other administrative changes, one of which affects Design Features numbering referenced in WF3 TS 3.9.13, "Spent Fuel Storage," are also proposed as a result of reformatting, renumbering, and rewording of TSs for consistency with NUREG-1432 and existing NRC Policy.

Basis for no significant hazards consideration determination: As required by 10 CFR 50.91(a), Entergy analysis of the issue of no significant hazards consideration is presented below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes to Section 5.0, "Design Features," deletes certain details from the TS that are not required to be maintained in the TS by 10 CFR 50.36(c)(4), adds a description of the WF3 site location, and revises the TS for consistency with NUREG-1432, Revision 5.0. The remaining changes are administrative, necessary to support the removal of the aforementioned information and the renumbering of retained information. The proposed changes do not add or modify any plant system, structures or component and has no impact on plant equipment operation. Thus, the proposed change does not affect initiators of analyzed events or assumed mitigation of accident or transient events.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change is administrative in nature, no new or different accidents result from the proposed changes. The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the changes do not impose any new or different requirements that could involve a new or different kind of accident previously evaluated. The changes do not alter assumptions made in the safety analysis.

Therefore, this change does not create the possibility of a new or different kind of accident from an accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed administrative changes to Section 5.0, "Design Features," deletes certain details from the TS that are not required to be maintained in the TS by 10 CFR 50.36(c)(4), adds a description of the WF3 site location, and revises the TS for consistency with NUREG-1432, Revision 5.0. The remaining changes are administrative, necessary to support the removal of the aforementioned information and the renumbering of retained information. The proposed TS changes do not alter the manner in which safety limits, limiting safety system settings, or limiting conditions for operation are determined, and the dose analysis acceptance criteria are not affected. The proposed changes do not result in plant operation in a configuration outside the analyses or design basis and does not adversely affect systems that respond to safely shutdown the plant and to maintain the plant in a safe shutdown condition.

Therefore, this change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above, Entergy concludes that the requested change involves no significant hazards consideration, as set forth in 10 CFR 50.92(c), "Issuance of Amendment."

#### 4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## **5.0 ENVIRONMENTAL CONSIDERATION**

The proposed amendment is confined to administrative changes only. The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

## **6.0 REFERENCES**

1. NUREG-1432, Revision 5, Volume 1, Specifications, "Standard Technical Specifications – Combustion Engineering Plants," ML21258A421, September 2021.
2. Virginia Electric and Power Company letter to NRC, "Proposed License Amendment Request – Revision of Technical Specifications Design Features," ML080940287, April 2, 2008.
3. NRC Letter to Virginia Electric and Power Company, "Surry Power Station, Unit Nos. 1 and 2, Issuance of Amendments Regarding Revision of Technical Specification 5.0, Design Features," ML082682183, December 10, 2008.

## **7.0 ATTACHMENTS**

1. Technical Specification Pages Markups
2. Technical Specification Pages Retyped

**Enclosure, Attachment 1**

**W3F1-2025-0032**

**Technical Specification Pages Markups**

(18 TS Pages Follow)

## REFUELING OPERATIONS

### 3/4.9.13 SPENT FUEL STORAGE

#### LIMITING CONDITION FOR OPERATION

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3.9.13 Storage of fuel assemblies in the spent fuel storage racks of Region 1 (cask storage pit) and Region 2 (spent fuel pool and refueling canal) shall be stored within the limitations of Specification 5.63.1.

APPLICABILITY: Whenever a fuel assembly is stored in a spent fuel storage rack.

#### ACTION:

- a. With the requirements of the LCO not met, immediately initiate action to restore the non-complying fuel assembly within requirements.
- b. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.9.13 Verify by administrative means that each fuel assembly meets fuel storage requirements contained in Specification 5.63.1 prior to storing the fuel assembly in a spent fuel storage rack.

## 5.0 DESIGN FEATURES

### 5.1 ~~Site~~TE Location

The Waterford Steam Electric Station, Unit 3, is located on a 3,561.3 acre plot in Killona, Louisiana, in St. Charles Parish, about 25 miles (40 km) west of New Orleans. The exclusion area boundary shall have a radius of 914 meters from the center of the reactor.

#### EXCLUSION AREA

~~5.1.1 The exclusion area shall be as shown in Figure 5.1-1.~~

#### LOW POPULATION ZONE

~~5.1.2 The low population zone shall be as shown in Figure 5.1-2.~~

#### MAP DEFINING UNRESTRICTED AREAS FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS

~~5.1.3 Information regarding radioactive gaseous and liquid effluents, which will allow identification of structures and release points as well as definition of UNRESTRICTED AREAS within the SITE BOUNDARY that are accessible to MEMBERS OF THE PUBLIC, shall be as shown in Figure 5.1-3.~~

~~The definition of UNRESTRICTED AREA used in implementing these Technical Specifications has been expanded over that in 10 CFR 20.1003. The UNRESTRICTED AREA boundary may coincide with the Exclusion (fenced) Area boundary, as defined in 10 CFR 100.3(a), but the UNRESTRICTED AREA does not include areas over water bodies. For calculations performed pursuant to 10 CFR 50.36a, the concept of UNRESTRICTED AREAS, established at or beyond the SITE BOUNDARY, is utilized in the Controls to keep levels of radioactive materials in liquid and gaseous effluents as low as is reasonably achievable.~~

### 5.2 NOT USED

### 5.2.3 ReactorEACTOR CoreORE

#### 5.2.1 FuelUEL AssembliesSSEMBLIES

~~5.3.1 The reactor shall contain 217 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy-4 or ZIRLO or Optimized ZIRLO™ fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.~~

#### 5.2.2 ControlONTROL ElementLEMENT AssembliesSSEMBLIES

~~5.3.2 The reactor core shall contain 87 control element assemblies.~~

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from  
TS Pg  
5-5

## 5.3.6 Fuel Storage

### 5.3.1 Criticality

5.3.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. For Region 1 (cask storage pit) and Region 2 (spent fuel pool and refueling canal) racks, a maximum  $k_{\text{eff}}$  of less than 1.00 when flooded with unborated water, and less than, or equal to, 0.95 when flooded with water having a boron concentration of 524 ppm.
- b. A nominal 10.185 inch center-to-center distance between fuel assemblies placed in Region 1 (cask storage pit) spent fuel storage racks.
- c. A nominal 8.692 inch center-to-center distance between fuel assemblies in the Region 2 (spent fuel pool and refueling canal) racks, except for the four southernmost racks in the spent fuel pool which have an increased N-S center-to-center nominal distance of 8.892 inches.
- d. Fresh and irradiated fuel assemblies may be allowed unrestricted storage in Region 1 racks.

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TS Pg  
5-6

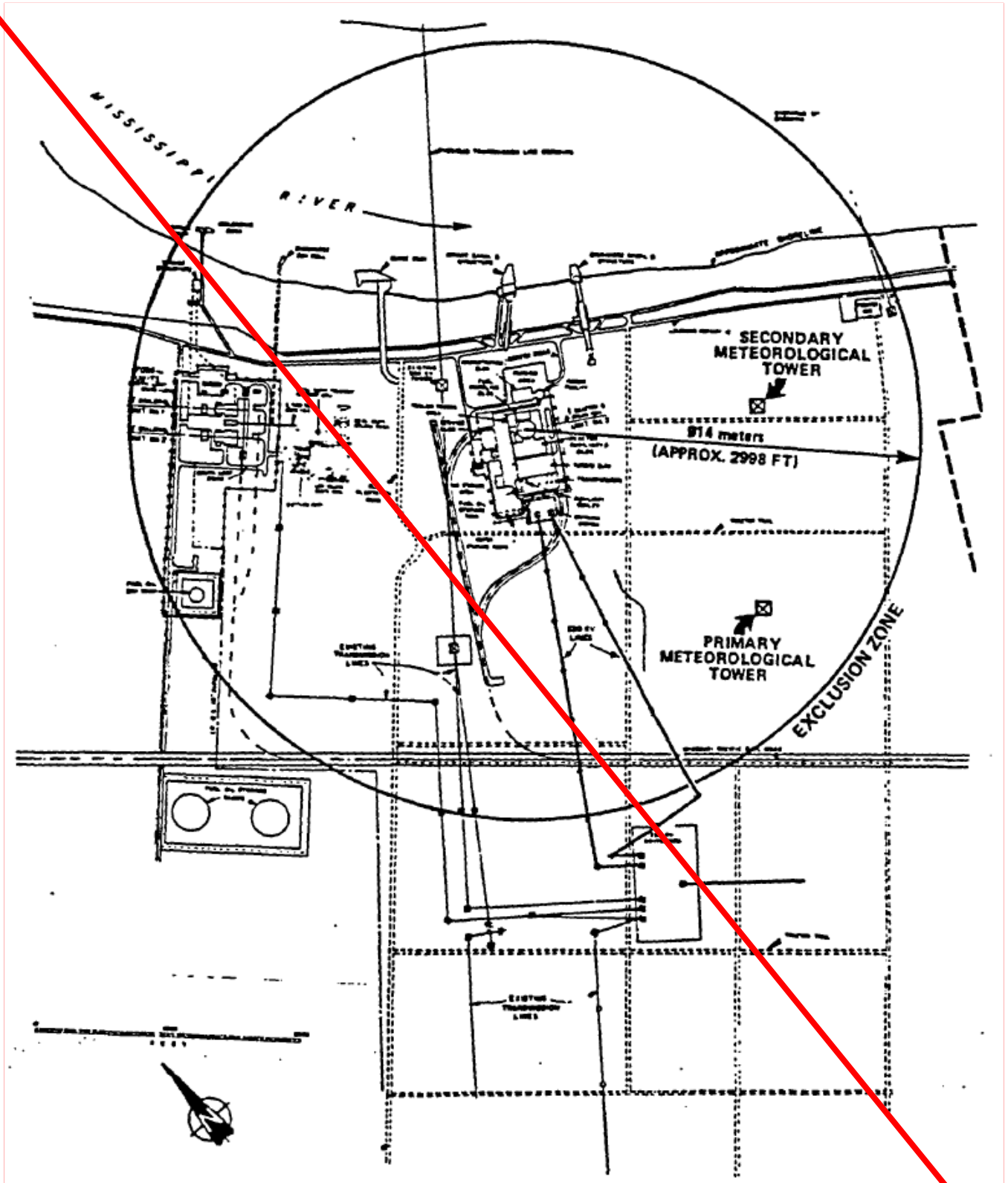


FIGURE 5.1-1  
EXCLUSION AREA

## 5.0 DESIGN FEATURES

### 5.3 Fuel Storage (continued)

#### 5.3.1 Criticality

##### 5.3.1.1 The spent fuel storage racks are designed and shall be maintained with: (continued)

- e. Fresh fuel assemblies may be stored in the Region 2 racks provided that they are stored in a "checkerboard pattern" with empty cells as illustrated in Figure 5.36-1, Pattern 1. Irradiated fuel assemblies with any burnup may also be stored with empty cells in the checkerboard configuration of Figure 5.36-1, Pattern 1.
- f. Irradiated fuel assemblies with a burnup in the "acceptable range" of Figure 5.36-2 may be allowed unrestricted storage in the Region 2 racks.
- g. Irradiated fuel assemblies with a burnup of  $\geq 27$  GWd/MTU in the "unacceptable range" of Figure 5.36-2 may be stored in the Region 2 racks in a "checkerboard pattern", as illustrated in Figure 5.36-1, Pattern 2 with irradiated fuel in the "acceptable range" of Figure 5.36-3.
- h. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent.

5.36.1.2 The  $k_{\text{eff}}$  for fresh fuel stored in the new fuel storage racks shall be less than or equal to 0.95 when flooded with unborated water and shall not exceed 0.98 when aqueous foam moderation is assumed.

#### 5.3.2 Drainage RAINAGE

5.6.3—The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation +40.0 MSL. When fuel is being stored in the cask storage pit and/or the refueling canal, these areas will also be maintained at +40.0 MSL.

#### 5.3.3 Capacity APACITY

5.6.4—The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1849 fuel assemblies in the main pool, 255 fuel assemblies in the cask storage pit and after permanent plant shutdown 294 fuel assemblies in the refueling canal. The heat load from spent fuel stored in the refueling canal racks shall not exceed  $1.72 \times 10^6$  BTU/Hr. Fuel shall not be stored in the spent fuel racks in the cask storage pit or the refueling canal unless all of the racks are installed in each respective area per the design.

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5-6

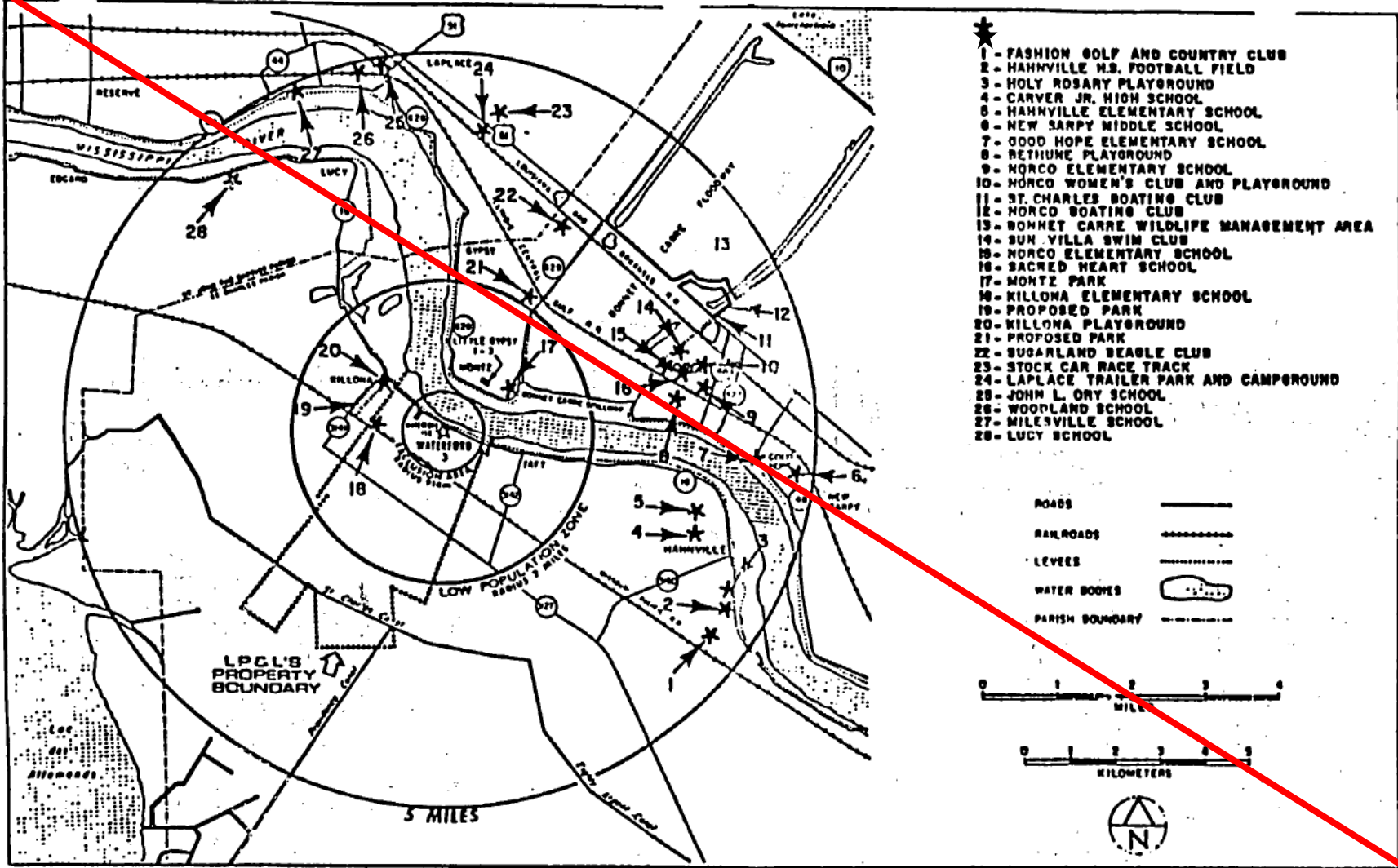
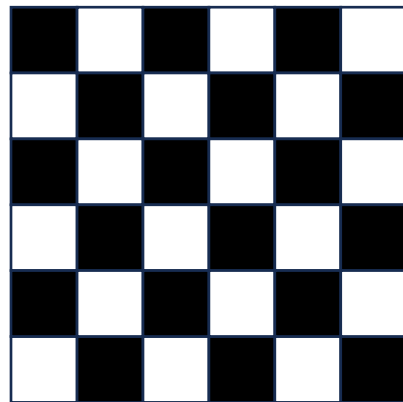


FIGURE 5.1-2—LOW POPULATION ZONE

## 5.0 DESIGN FEATURES



**Pattern 1**

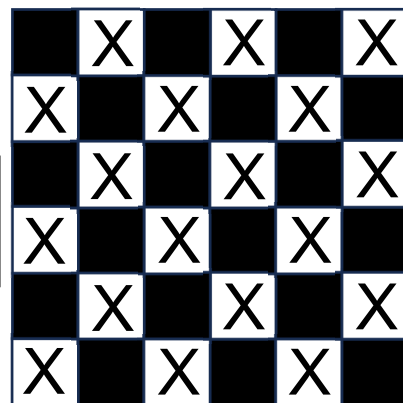


Cells loaded with fresh or irradiated fuel of less than, or equal to, 5 wt% initial U-235 enrichment



Water-filled, empty cells

### Checkerboard of Fresh or Irradiated Fuel Assemblies and Empty Storage Cells



**Pattern 2**



Cells loaded with irradiated fuel of 27 GWd/MTU burnup, or higher



Cells loaded with fuel having the enrichment-burnup combinations specified in Figure 5.36-3

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TS Pg  
5-6a

### Checkerboard of Fuel Assemblies with Burnups of 27 GWd/MTU, or higher, and Fuel Assemblies of Specified Enrichment-Burnup Combinations

Note: Either of these checkerboard arrangements may be used in areas contiguous to areas of unrestricted storage in Region 2 (Figure 5.36-2). For interfaces between a Pattern 1 checkerboard and a Pattern 2 checkerboard, each high-reactivity irradiated assembly (-e.g., 27 GWd/MTU) in a Pattern 2 configuration may be face-adjacent to no more than one fresh (-or irradiated-) fuel assembly; each fresh (-or irradiated-) fuel assembly in a Pattern 1 configuration may be face-adjacent with up to two high-reactivity irradiated fuel assemblies. See Figure 5.63-4 for examples of contiguous Pattern 1 and Pattern 2 fuel checkerboards which meet these requirements.

Figure 5.36-1 Alternative Checkerboard Storage Arrangements

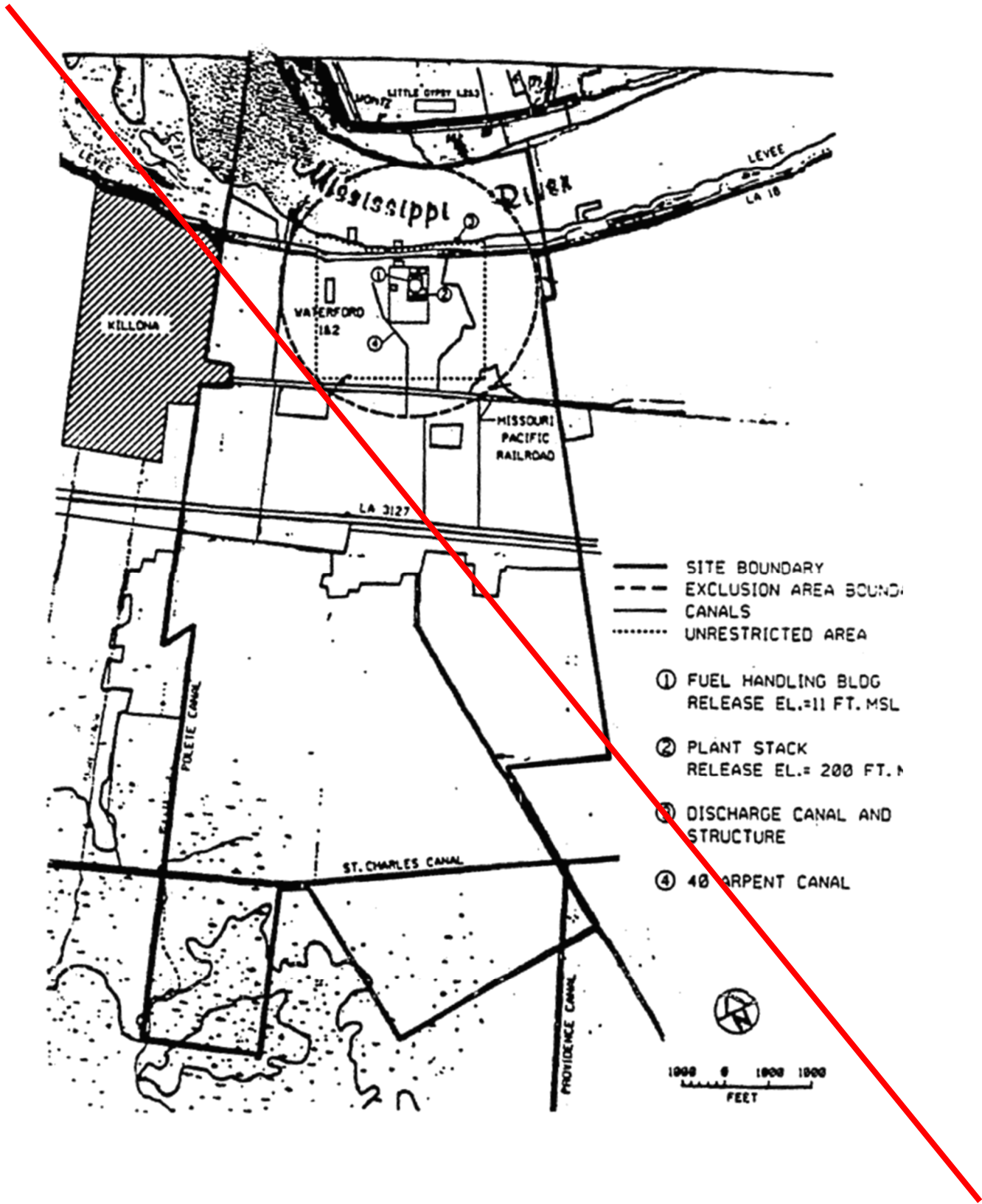
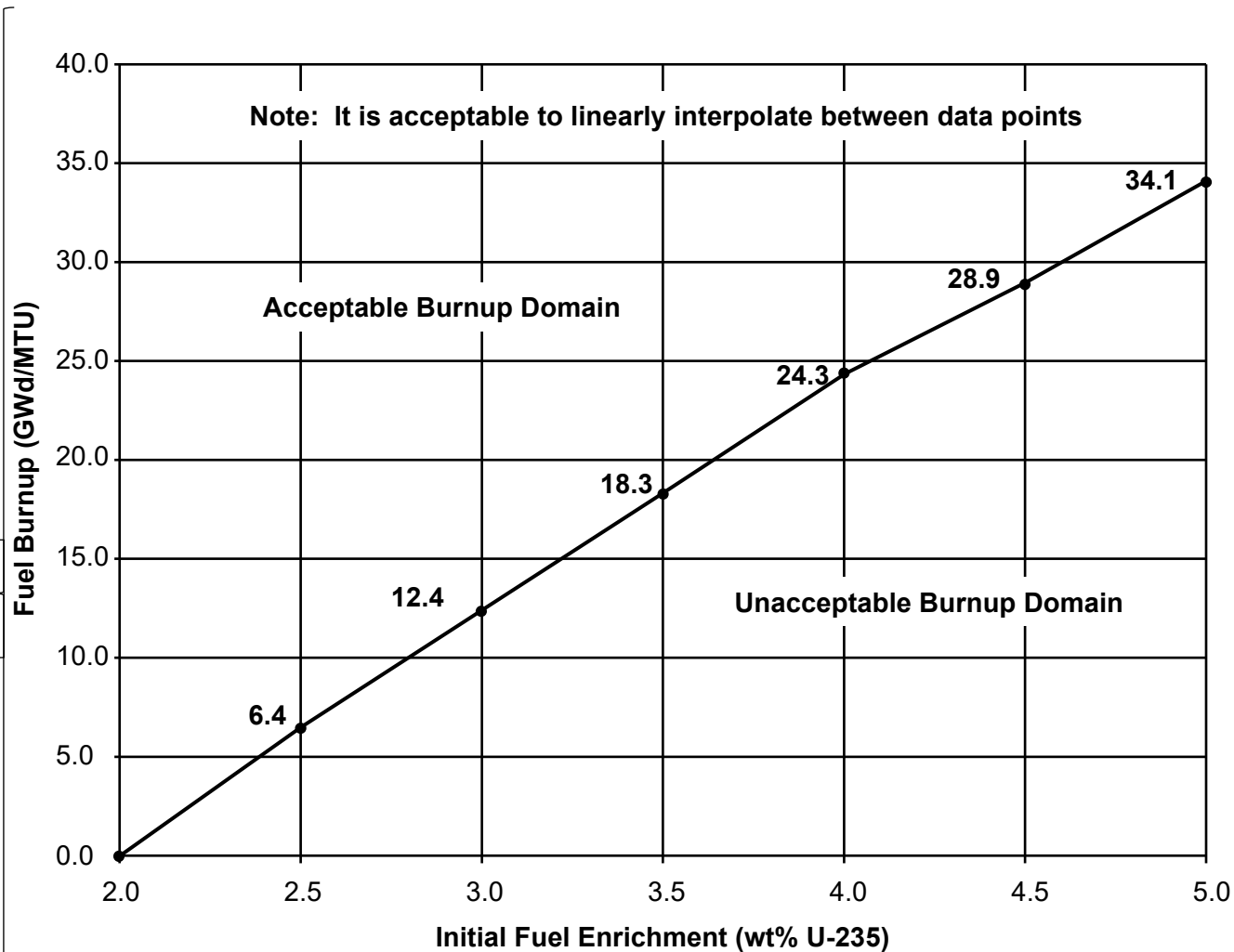


FIGURE 5.1.3 SITE BOUNDARY FOR RADIOACTIVE GASEOUS AND LIQUID EFFLUENTS

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Note: For enrichments lower than 2 wt%, apply the burnup value at 2 wt%.

Figure 5.36-2 Acceptable Burnup Domain for Unrestricted Storage of Irradiated Fuel in Region 2 of the Spent Fuel Pool

## 5.0—DESIGN FEATURES

---

### 5.3—REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1— The reactor shall contain 217 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy-4 or ZIRLO or Optimized ZIRLO™ fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

#### CONTROL ELEMENT ASSEMBLIES

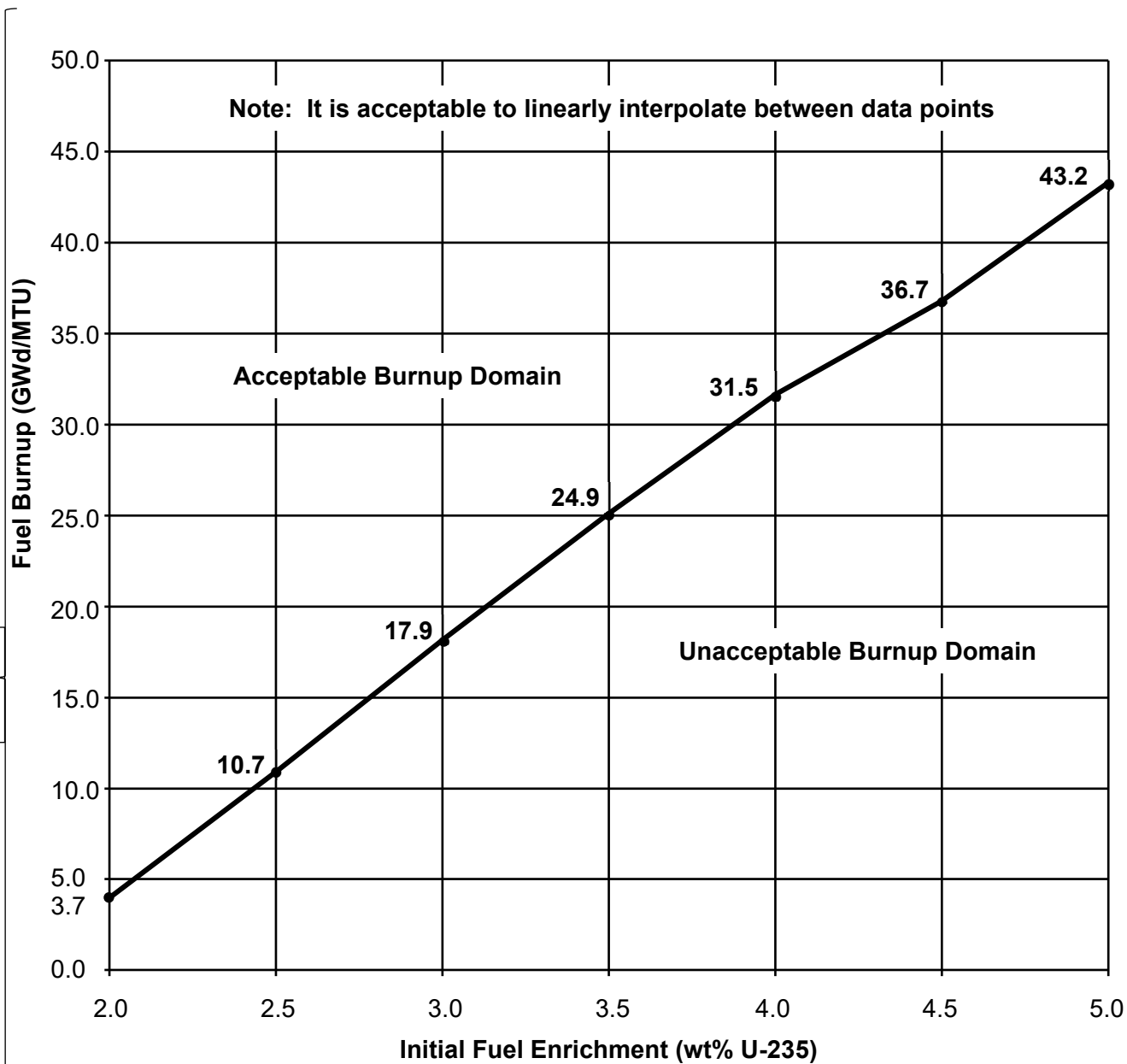
5.3.2— The reactor core shall contain 87 control element assemblies.

### 5.4—NOT USED

### 5.5—METEOROLOGICAL TOWERS LOCATION

5.1.1— The primary and backup meteorological towers shall be located as shown on Figure 5.1-1.

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Pg 5-1



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**Note: For enrichments lower than 2 wt%, apply the burnup value at 2 wt%.**

Figure 5.36-3 Acceptable Burnup Domain for Irradiated Fuel in a Checkerboard Arrangement with Fuel of 5 wt% Enrichment, or Less, at 27 GWd/MTU Burnup, or Higher, in Region 2 of the Spent Fuel Pool

## 5.0 DESIGN FEATURES

### 5.6 FUEL STORAGE

#### CRITICALITY

5.6.1—The spent fuel storage racks are designed and shall be maintained with:

- a.—For Region 1 (cask storage pit) and Region 2 (spent fuel pool and refueling canal) racks, a maximum  $k_{\text{eff}}$  of less than 1.00 when flooded with unborated water, and less than, or equal to, 0.95 when flooded with water having a boron concentration of 524 ppm.
- b.—A nominal 10.185 inch center to center distance between fuel assemblies placed in Region 1 (cask storage pit) spent fuel storage racks.
- c.—A nominal 8.692 inch center to center distance between fuel assemblies in the Region 2 (spent fuel pool and refueling canal) racks, except for the four southernmost racks in the spent fuel pool which have an increased N-S center to center nominal distance of 8.892 inches.
- d.—Fresh and irradiated fuel assemblies may be allowed unrestricted storage in Region 1 racks.
- e.—Fresh fuel assemblies may be stored in the Region 2 racks provided that they are stored in a "checkerboard pattern" with empty cells as illustrated in Figure 5.6-1, Pattern 1. Irradiated fuel assemblies with any burnup may also be stored with empty cells in the checkerboard configuration of Figure 5.6-1, Pattern 1.
- f.—Irradiated fuel assemblies with a burnup in the "acceptable range" of Figure 5.6-2 may be allowed unrestricted storage in the Region 2 racks.
- g.—Irradiated fuel assemblies with a burnup of  $\geq 27$  GWd/MTU in the "unacceptable range" of Figure 5.6-2 may be stored in the Region 2 racks in a "checkerboard pattern", as illustrated in Figure 5.6-1, Pattern 2 with irradiated fuel in the "acceptable range" of Figure 5.6-3.
- h.—Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent.

5.6.2—The  $k_{\text{eff}}$  for fresh fuel stored in the new fuel storage racks shall be less than or equal to 0.95 when flooded with unborated water and shall not exceed 0.98 when aqueous foam moderation is assumed.

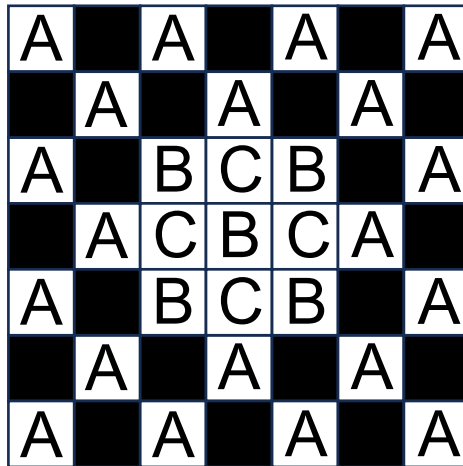
#### DRAINAGE

5.6.3—The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation +40.0 MSL. When fuel is being stored in the cask storage pit and/or the refueling canal, these areas will also be maintained at +40.0 MSL.

#### CAPACITY

5.6.4—The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1849 fuel assemblies in the main pool, 255 fuel assemblies in the cask storage pit and after permanent plant shutdown 294 fuel assemblies in the refueling canal. The heat load from spent fuel stored in the refueling canal racks shall not exceed  $1.72 \times 10^6$  BTU/Hr. Fuel shall not be stored in the spent fuel racks in the cask storage pit or the refueling canal unless all of the racks are installed in each respective area per the design.

### 5.7 NOT USED



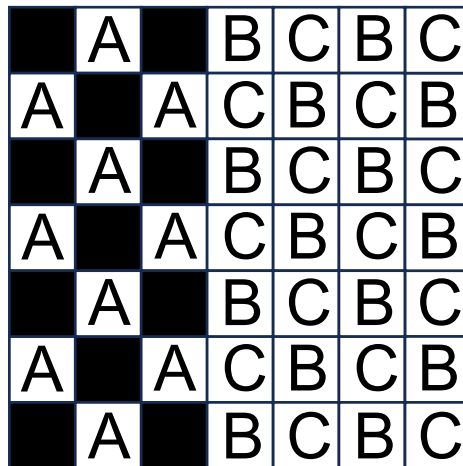
- |  |
|--|
|  |
|--|

 $\leq 5$  wt% U-235,  $\geq 27$  GWd/MTU irradiated fuel
- |   |
|---|
| A |
|---|

 Irradiated fuel at, or above, the curve m Figure 5.63-3
- |   |
|---|
| B |
|---|

 $\leq 5$  wt% U-235 fresh or irradiated fuel at any burnup
- |   |
|---|
| C |
|---|

 Empty storage cell



- |  |
|--|
|  |
|--|

 $\leq 5$  wt% U-235,  $\geq 27$  GWd/MTU irradiated fuel
- |   |
|---|
| A |
|---|

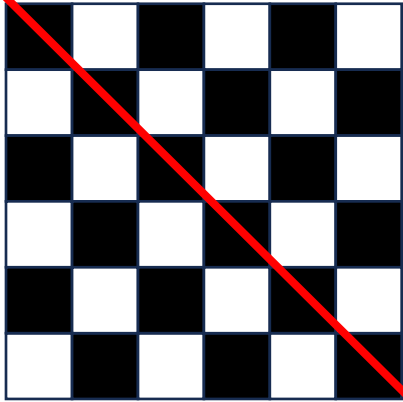
 Irradiated fuel at, or above, the curve m Figure 5.63-3
- |   |
|---|
| B |
|---|

 $\leq 5$  wt% U-235 fresh or irradiated fuel at any burnup
- |   |
|---|
| C |
|---|

 Empty storage cell

Figure 5.36-4 Examples of Contiguous Checkerboard Configurations Which Meet Interface Requirements

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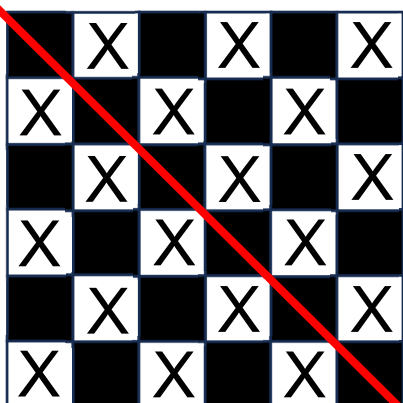
Cells loaded with fresh or irradiated fuel of less than, or equal to, 5 wt% initial U-235 enrichment



Water filled, empty cells

**Pattern 1**

**Checkerboard of Fresh or Irradiated Fuel Assemblies and Empty Storage Cells**



Cells loaded with irradiated fuel of 27 GWd/MTU burnup, or higher



Cells loaded with fuel having the enrichment-burnup combinations specified in Figure 5.6-3

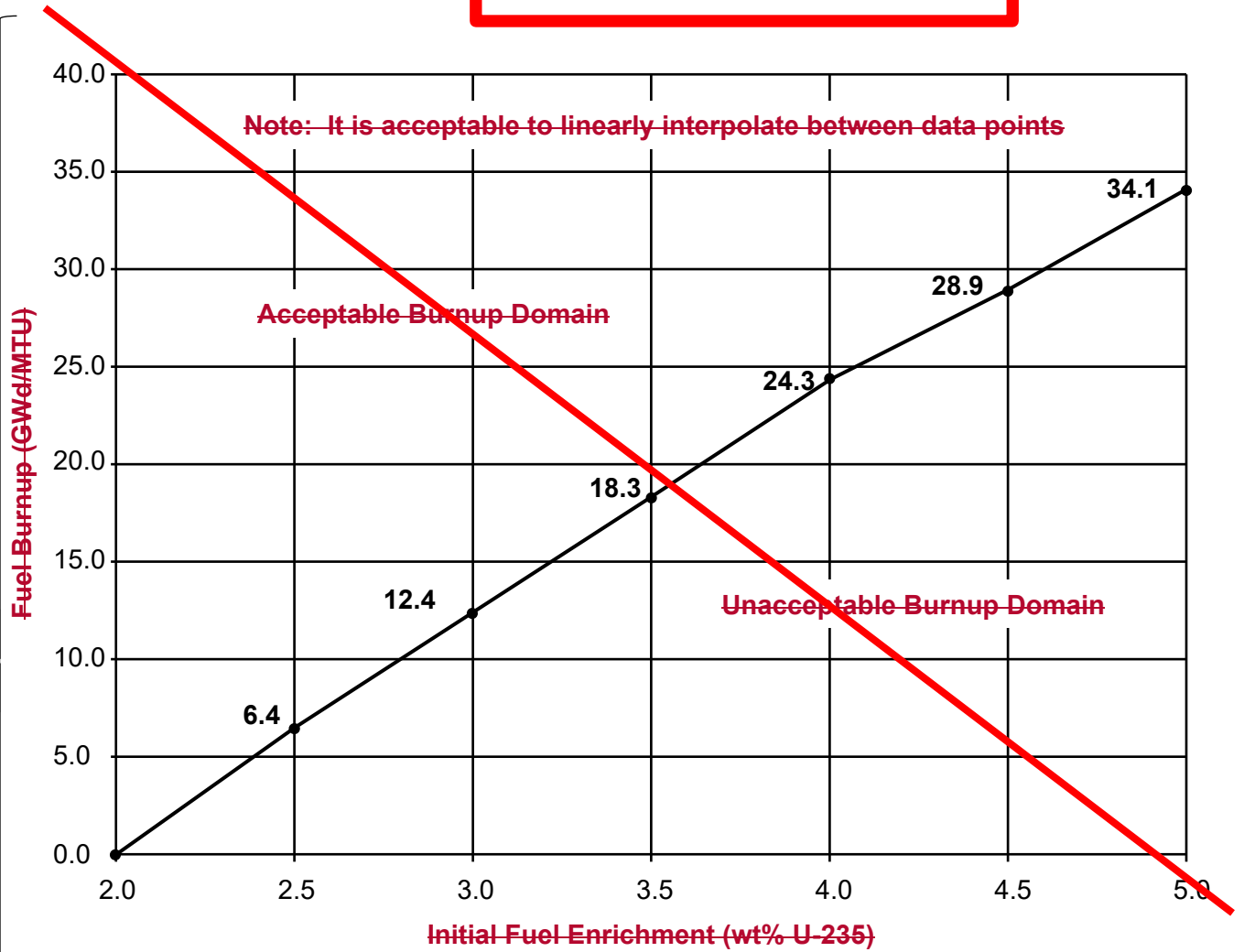
**Pattern 2**

**Checkerboard of Fuel Assemblies with Burnups of 27 GWd/MTU, or higher, and Fuel Assemblies of Specified Enrichment-Burnup Combinations**

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Note: Either of these checkerboard arrangements may be used in areas contiguous to areas of unrestricted storage in Region 2 (Figure 5.6-2). For interfaces between a Pattern 1 checkerboard and a Pattern 2 checkerboard, each high-reactivity irradiated assembly (e.g., 27 GWd/MTU) in a Pattern 2 configuration may be face-adjacent to no more than one fresh (or irradiated) fuel assembly; each fresh (or irradiated) fuel assembly in a Pattern 1 configuration may be face-adjacent with up to two high-reactivity irradiated fuel assemblies. See Figure 5.6-4 for examples of contiguous Pattern 1 and Pattern 2 fuel checkerboards which meet these requirements.

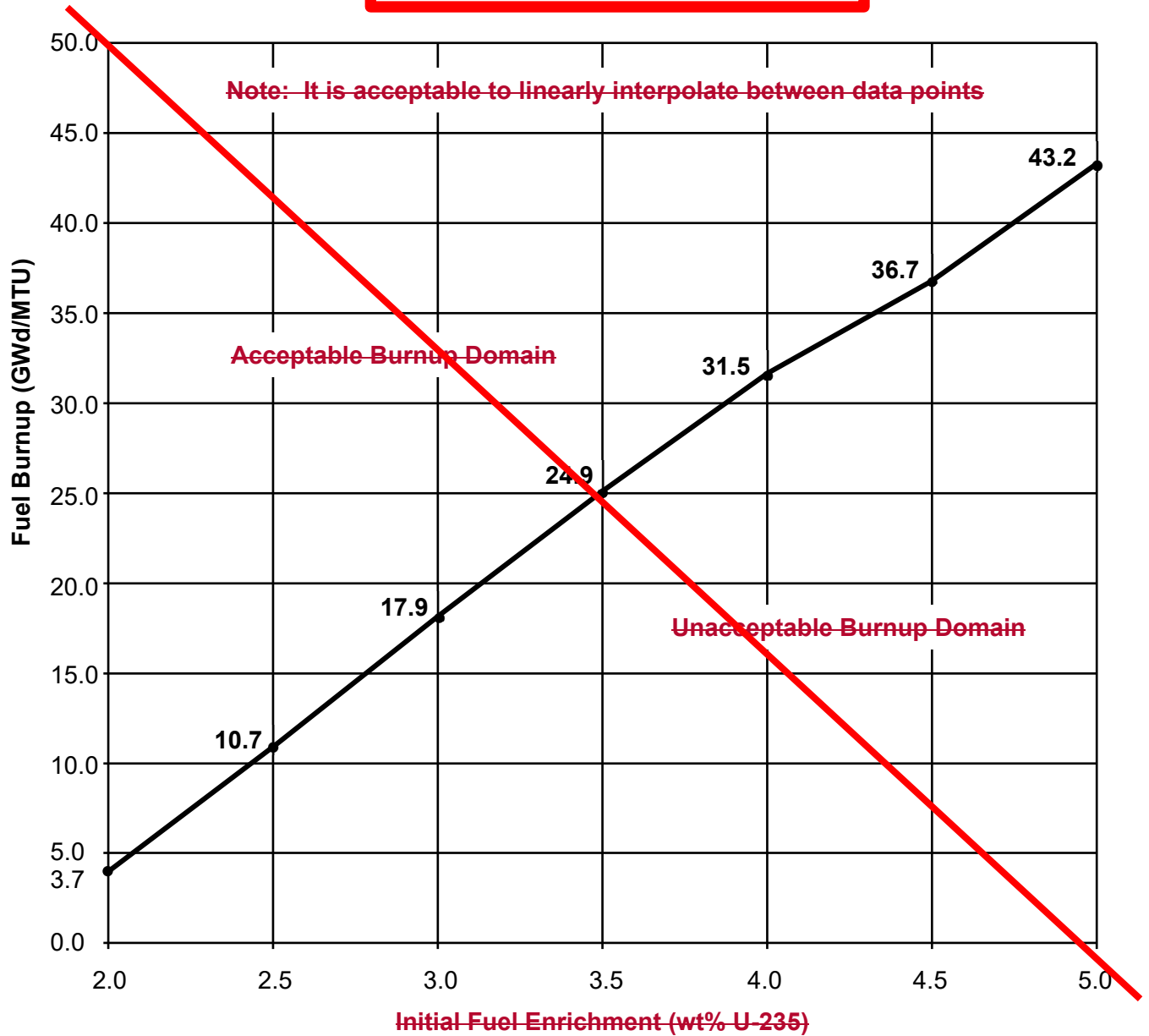
Figure 5.6-1—Alternative Checkerboard Storage Arrangements



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Note: For enrichments lower than 2 wt%, apply the burnup value at 2 wt%.

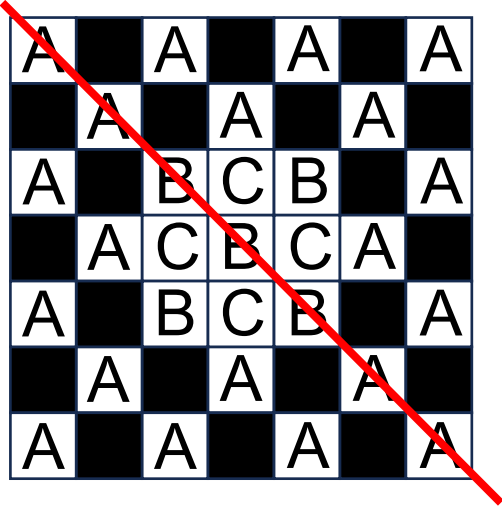
Figure 5.6-2 Acceptable Burnup Domain for Unrestricted Storage of Irradiated Fuel in Region 2 of the Spent Fuel Pool



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to TS  
Pg 5-5

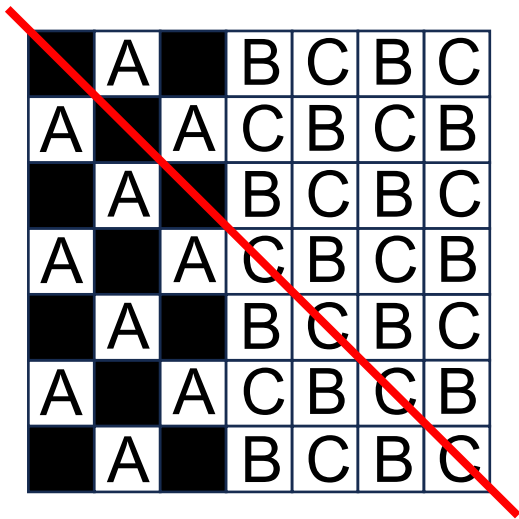
Note: For enrichments lower than 2 wt%, apply the burnup value at 2 wt%.

Figure 5.6-3— Acceptable Burnup Domain for Irradiated Fuel in a Checkerboard Arrangement with Fuel of 5 wt% Enrichment, or Less, at 27 GWd/MTU Burnup, or Higher, in Region 2 of the Spent Fuel Pool



$\leq 5$  wt% U-235,  $\geq 27$  GWd/MTU irradiated fuel  
 Irradiated fuel at, or above, the curve in Figure 5.6-3  
 $\leq 5$  wt% U-235 fresh or irradiated fuel at any burnup  
 Empty storage cell

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$\leq 5$  wt% U-235,  $\geq 27$  GWd/MTU irradiated fuel  
 Irradiated fuel at, or above, the curve in Figure 5.6-3  
 $\leq 5$  wt% U-235 fresh or irradiated fuel at any burnup  
 Empty storage cell

Figure 5.6-4 Examples of Contiguous Checkerboard Configurations Which Meet Interface Requirements

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**Enclosure, Attachment 2**

**W3F1-2025-0032**

**Technical Specification Pages Retyped**

(7 TS Pages Follow)

## REFUELING OPERATIONS

### 3/4.9.13 SPENT FUEL STORAGE

#### LIMITING CONDITION FOR OPERATION

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3.9.13 Storage of fuel assemblies in the spent fuel storage racks of Region 1 (cask storage pit) and Region 2 (spent fuel pool and refueling canal) shall be stored within the limitations of Specification 5.3.1.

APPLICABILITY: Whenever a fuel assembly is stored in a spent fuel storage rack.

ACTION:

- a. With the requirements of the LCO not met, immediately initiate action to restore the non-complying fuel assembly within requirements.
- b. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.9.13 Verify by administrative means that each fuel assembly meets fuel storage requirements contained in Specification 5.3.1 prior to storing the fuel assembly in a spent fuel storage rack.

## 5.0 DESIGN FEATURES

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### 5.1 Site Location

The Waterford Steam Electric Station, Unit 3, is located on a 3,561.3 acre plot in Killona, Louisiana, in St. Charles Parish, about 25 miles (40 km) west of New Orleans. The exclusion area boundary shall have a radius of 914 meters from the center of the reactor.

### 5.2 Reactor Core

#### 5.2.1 Fuel Assemblies

The reactor shall contain 217 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy-4 or ZIRLO or Optimized ZIRLO™ fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

#### 5.2.2 Control Element Assemblies

The reactor core shall contain 87 control element assemblies.

### 5.3 Fuel Storage

#### 5.3.1 Criticality

- 5.3.1.1 The spent fuel storage racks are designed and shall be maintained with:
- a. For Region 1 (cask storage pit) and Region 2 (spent fuel pool and refueling canal) racks, a maximum  $k_{\text{eff}}$  of less than 1.00 when flooded with unborated water, and less than, or equal to, 0.95 when flooded with water having a boron concentration of 524 ppm.
  - b. A nominal 10.185 inch center-to-center distance between fuel assemblies placed in Region 1 (cask storage pit) spent fuel storage racks.
  - c. A nominal 8.692 inch center-to-center distance between fuel assemblies in the Region 2 (spent fuel pool and refueling canal) racks, except for the four southern-most racks in the spent fuel pool which have an increased N-S center-to-center nominal distance of 8.892 inches.
  - d. Fresh and irradiated fuel assemblies may be allowed unrestricted storage in Region 1 racks.

## 5.0 DESIGN FEATURES

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### 5.3 Fuel Storage (continued)

#### 5.3.1 Criticality (continued)

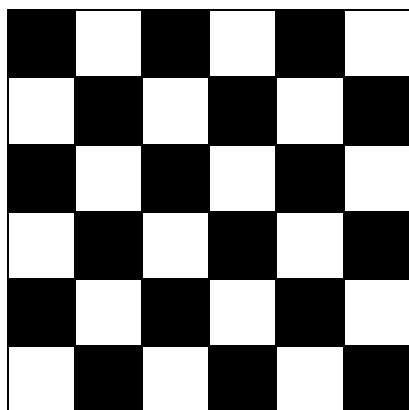
- 5.3.1.1 The spent fuel storage racks are designed and shall be maintained with: (continued)
- e. Fresh fuel assemblies may be stored in the Region 2 racks provided that they are stored in a "checkerboard pattern" with empty cells as illustrated in Figure 5.3-1, Pattern 1. Irradiated fuel assemblies with any burnup may also be stored with empty cells in the checkerboard configuration of Figure 5.3-1, Pattern 1.
  - f. Irradiated fuel assemblies with a burnup in the "acceptable range" of Figure 5.3-2 may be allowed unrestricted storage in the Region 2 racks.
  - g. Irradiated fuel assemblies with a burnup of  $\geq 27$  GWd/MTU in the "unacceptable range" of Figure 5.3-2 may be stored in the Region 2 racks in a "checkerboard pattern", as illustrated in Figure 5.3-1, Pattern 2 with irradiated fuel in the "acceptable range" of Figure 5.3-3.
  - h. Fuel assemblies having a maximum U-235 enrichment of 5.0 weight percent.
- 5.3.1.2 The  $k_{\text{eff}}$  for fresh fuel stored in the new fuel storage racks shall be less than or equal to 0.95 when flooded with unborated water and shall not exceed 0.98 when aqueous foam moderation is assumed.


#### 5.3.2 Drainage


The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation +40.0 MSL. When fuel is being stored in the cask storage pit and/or the refueling canal, these areas will also be maintained at +40.0 MSL.

#### 5.3.3 Capacity

The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1849 fuel assemblies in the main pool, 255 fuel assemblies in the cask storage pit and after permanent plant shutdown 294 fuel assemblies in the refueling canal. The heat load from spent fuel stored in the refueling canal racks shall not exceed  $1.72 \times 10^6$  BTU/Hr. Fuel shall not be stored in the spent fuel racks in the cask storage pit or the refueling canal unless all of the racks are installed in each respective area per the design.

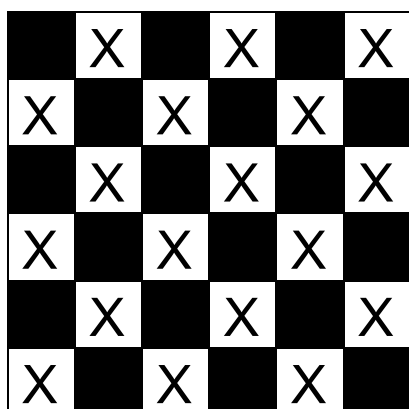



 Cells loaded with fresh or irradiated fuel of less than, or equal to, 5 wt% initial U-235 enrichment


 Water-filled, empty cells

**Pattern 1**

**Checkerboard of Fresh or Irradiated Fuel Assemblies and Empty Storage Cells**



 Cells loaded with irradiated fuel of 27 GWd/MTU burnup, or higher

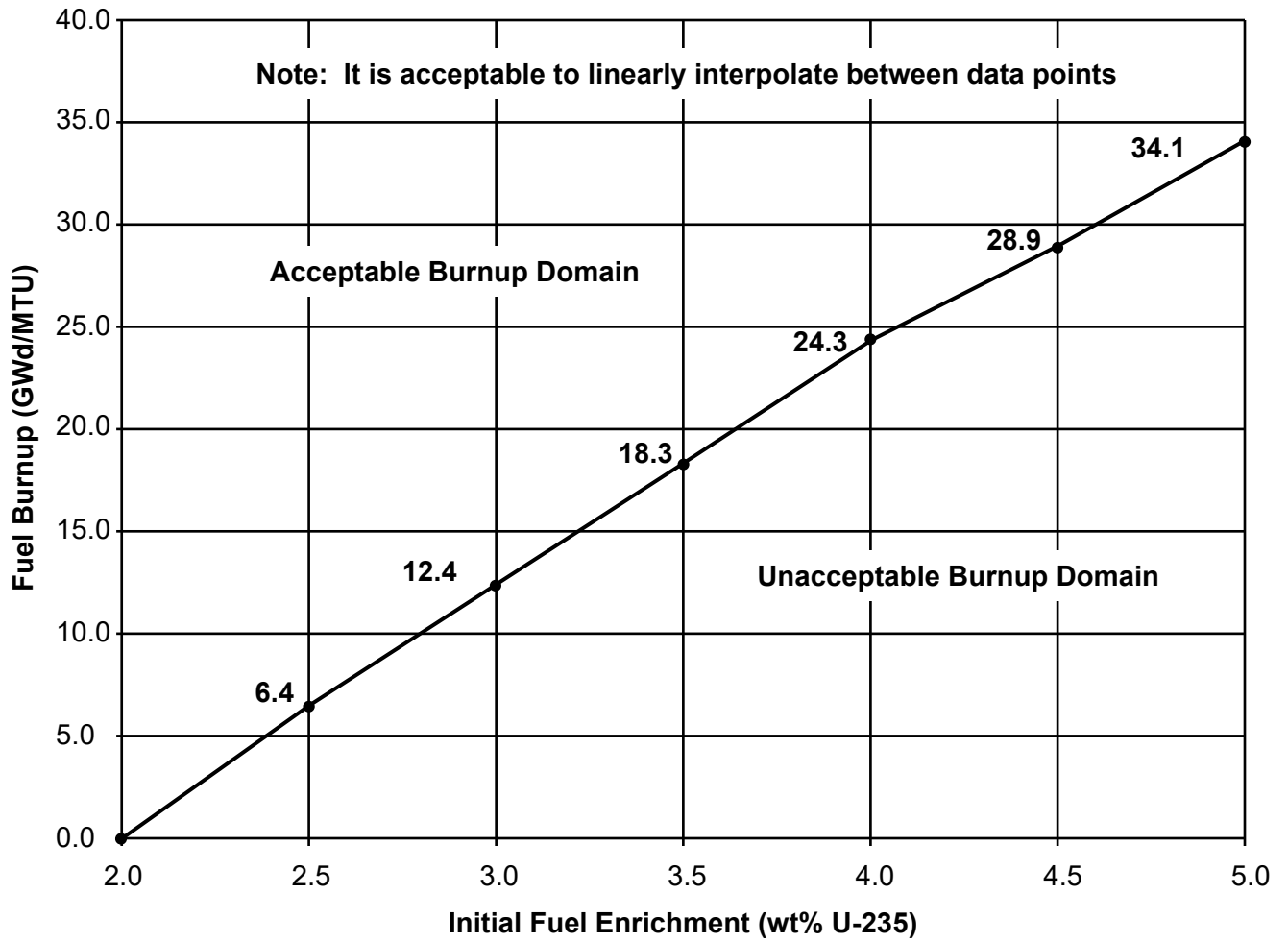
 Cells loaded with fuel having the enrichment-burnup combinations specified in Figure 5.3-3

**Pattern 2**

**Checkerboard of Fuel Assemblies with Burnups of 27 GWd/MTU, or higher, and Fuel Assemblies of Specified Enrichment-Burnup Combinations**

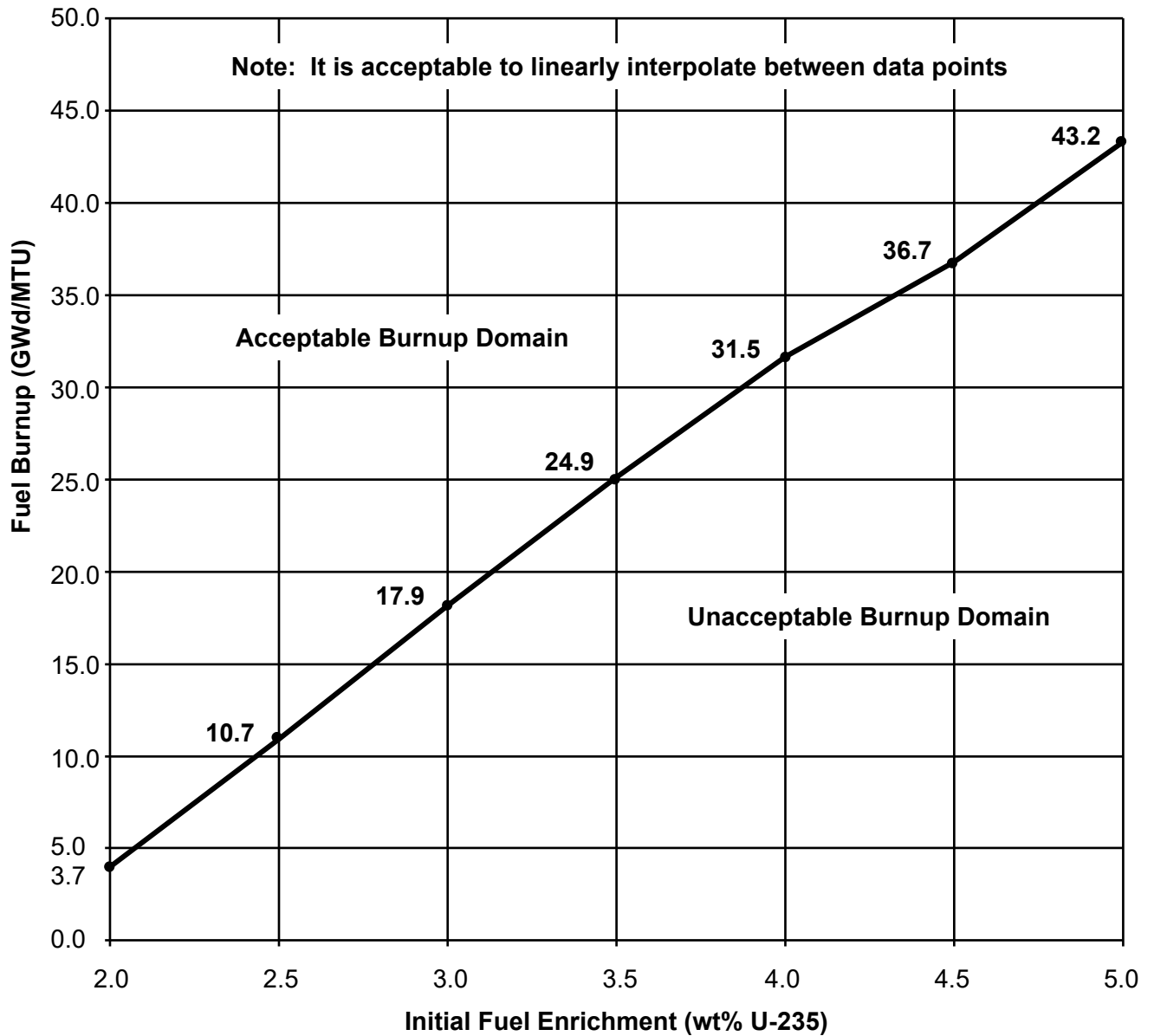
Note: Either of these checkerboard arrangements may be used in areas contiguous to areas of unrestricted storage in Region 2 (Figure 5.3-2). For interfaces between a Pattern 1 checkerboard and a Pattern 2 checkerboard, each high-reactivity irradiated assembly (e.g., 27 GWd/MTU) in a Pattern 2 configuration may be face-adjacent to no more than one fresh (or irradiated) fuel assembly; each fresh (or irradiated) fuel assembly in a Pattern 1 configuration may be face-adjacent with up to two high-reactivity irradiated fuel assemblies. See Figure 5.3-4 for examples of contiguous Pattern 1 and Pattern 2 fuel checkerboards which meet these requirements.

Figure 5.3-1 Alternative Checkerboard Storage Arrangements



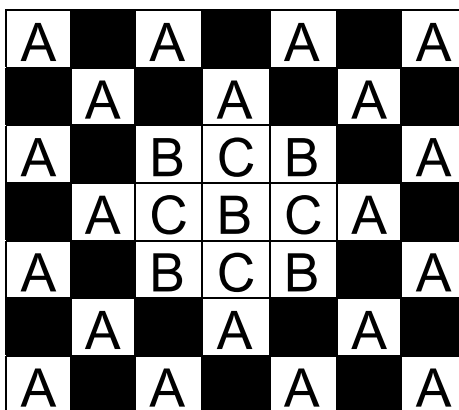
**Note: For enrichments lower than 2 wt%, apply the burnup value at 2 wt%.**


Figure 5.3-2 Acceptable Burnup Domain for Unrestricted Storage of Irradiated Fuel in Region 2 of the Spent Fuel Pool

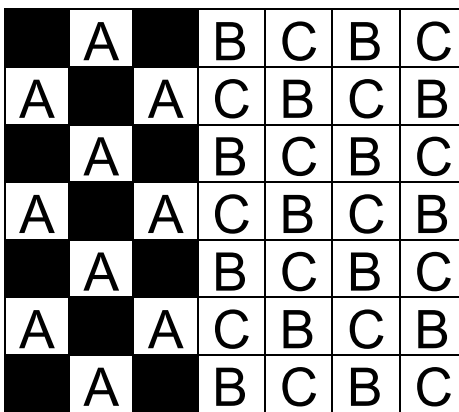


Note: For enrichments lower than 2 wt%, apply the burnup value at 2 wt%.

Figure 5.3-3 Acceptable Burnup Domain for Irradiated Fuel in a Checkerboard Arrangement with Fuel of 5 wt% Enrichment, or Less, at 27 GWd/MTU Burnup, or Higher, in Region 2 of the Spent Fuel Pool



-   $\leq 5$  wt% U-235,  $\geq 27$  GWd/MTU irradiated fuel
- A** Irradiated fuel at, or above, the curve m Figure 5.3-3
- B**  $\leq 5$  wt% U-235 fresh or irradiated fuel at any burnup
- C** Empty storage cell




-   $\leq 5$  wt% U-235,  $\geq 27$  GWd/MTU irradiated fuel
- A** Irradiated fuel at, or above, the curve m Figure 5.3-3
- B**  $\leq 5$  wt% U-235 fresh or irradiated fuel at any burnup
- C** Empty storage cell

Figure 5.3-4 Examples of Contiguous Checkerboard Configurations Which Meet Interface Requirements