NEXTera ENERGY POINT BEACH

November 20, 2009

NRC 2009-0110
10 CFR 50.90

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

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
Renewed License Nos. DPR-24 and DPR-27

Response to Request for Additional Information
License Amendment Request 247
Spent Fuel Pool Storage Criticality Control

References
(1) FPL Energy Point Beach Letter to NRC, License Amendment Request Number 247, Spent Fuel Pool Storage Criticality Control, dated July 24, 2008 (ML082240685)
(2) FPL Energy Point Beach Letter to NRC, Supplement to License Amendment Request Number 247, Spent Fuel Pool Storage Criticality Control, dated September 19, 2008 (ML082630114)
(3) NRC letter to NextEra Energy Point Beach, Point Beach Nuclear Plant, Units 1 and 2 - Request for Additional Information from Reactor Systems Branch Related to License Amendment Request No. 247 Spent Fuel Pool Storage Criticality Control - Round 3, dated October 22, 2009 (ML092930502)

NextEra Energy Point Beach, LLC (NextEra), (formerly known as FPL Energy Point Beach, LLC), submitted a proposed license amendment request for Commission review and approval pursuant to 10 CFR 50.90 for Point Beach Nuclear Plant (PBNP), Units 1 and 2 (Reference 1). The proposed amendment revises the licensing basis to reflect a revision to the spent fuel pool (SFP) criticality analysis methodology. The revised criticality analysis for the SFP storage racks credits burnup, integral fuel burnable absorber (IFBA), Plutonium-241 decay, and soluble boron, where applicable. NextEra provided a supplemental response (Reference 2) containing additional quantitative information to support the fidelity of key methodology aspects described in Reference (1).

Enclosure 1 of this letter provides the NextEra response to the request for additional information in accordance with Reference (3). Enclosure 2 contains an Addendum to WCAP-16541-P, Revision 2, which contains an analysis that restores the full 0.5% Δk analytical margin for the proposed storage configurations, incorporating any identified non-conservatisms. The changes to the proposed Technical Specifications, as a result of the burnup offsets, are contained in Enclosure 3.

This letter contains no new commitments and no revisions to existing commitments.

The information contained in this letter does not alter the no significant hazards consideration contained in Reference (1) and continues to satisfy the criteria of 10 CFR 51.22 for categorical exclusion from the requirements of an environmental assessment.

In accordance with 10 CFR 50.91, a copy of this letter is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing and enclosed information is true and correct. Executed on November 20, 2009.

Very truly yours,

NextEra Energy Point Beach, LLC

Larry Meyer
Site Vice President

Enclosures

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

ENCLOSURE 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 247
SPENT FUEL POOL STORAGE CRITICALITY CONTROL

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

The following information is provided by NextEra Energy Point Beach, LLC (NextEra) in response to the NRC staff's request for additional information (RAI) dated October 22, 2009, to support continued review of Point Beach Nuclear Plant (PBNP) License Amendment Request 247.

Question 1:

Based on the information submitted by the licensee to date, the staff finds that the licensee's analysis does not provide reasonable assurance that Point Beach fuel storage will comply with the regulatory limit of k_{eff} less than 1.0 under unborated conditions. Currently, there is not a generically approved methodology for performing an SFP criticality analysis. Therefore, licensees must submit a plant-specific SFP criticality analysis that includes technically-supported margins. Issues identified during staff review to date have reduced the reserved analytical margin, an order of magnitude from 0.5% Δk to 0.049% Δk. The analysis currently shows a maximum k_{eff} of 0.99951. The analytical margin is normally reserved to address potential uncertainties that are unaccounted for. The reserved analytical margin of 0.049% Δk essentially requires that there are no other uncertainties that must be accounted for, and that the remaining portions of the analysis are without issues. The staff finds that this is not the case for the Point Beach analysis.

For example, the proper use of the constant specific power and operating history assumption alone requires an additional allowance of 0.2% Δk margin, according to NUREG-6665, "Review and Prioritization of Technical Issues Related to Burnup Credit for LWR Fuel." With the reserved analytical margin at 0.049% Δk, the analysis is unable to accommodate this additional uncertainty. The analysis no longer provides reasonable assurance that k_{eff} will be less than 1.0.

With available margin being so small, issues that may be otherwise resolved by engineering judgment become more important to consider and quantify. Consequently, an issue that was relatively insignificant in the past can now be significant enough to cause regulatory limits to be exceeded. Issues such as the effect of not accounting for fission products and actinides in the criticality code validation, become important to quantify when any additional error greater than or equal to 0.00049 in Δk results in non-compliance. An analysis that retains the full 0.5 percent Δk analytical margin intact may allow the staff to accept engineering judgment to disposition certain issues.

"In summary, the staff finds that the current Point Beach analysis does not provide the staff with reasonable assurance that Point Beach fuel storage will comply with the regulatory limit of k_{eff}

less than 1.0 under unborated conditions. For the staff to continue its review, the licensee should consider resubmitting an analysis that restores the full 0.5% Δk analytical margin for the proposed storage configurations, incorporating any identified non-conservatisms. Alternatively, the licensee may attempt to regain the analytical margin by identifying and quantifying the conservatisms in their analysis. However, this approach usually results in a more lengthy review with additional RAIs to substantiate the identified conservatisms."

NextEra Response

Burnup offsets to restore the full administrative margin have been calculated. The burnup offsets result in increased burnup requirements for the three proposed storage configurations. The details on how the burnups were calculated and results are contained in Enclosure 2. The changes to the proposed technical specifications, as a result of the burnup offsets, are contained in Enclosure 3.

ENCLOSURE 2

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 247
SPENT FUEL POOL STORAGE CRITICALITY CONTROL

ADDENDUM TO WCAP-16541 REVISION 2
POINT BEACH UNITS 1 AND 2
SPENT FUEL POOL CRITICALITY SAFETY ANALYSIS

26 pages follow

Westinghouse Non-Proprietary Class 3

WCAP-16541-NP
Revision 2, Addendum 1

November 2009

Point Beach Units 1 and 2 Spent Fuel Pool Criticality Safety Analysis - Addendum

Westinghouse

WCAP-16541-NP
Revision 2, Addendum 1

Point Beach Units 1 and 2 Spent Fuel Pool Criticality Safety Analysis - Addendum

A. J. Blanco*
J. B. Clarity*

November 2009

Reviewer: **T. C. Bishop***

Approved: **E. J. Mercier*, Manager**
U.S. BWR Reload Analysis and Criticality Safety

***Electronically approved records are authenticated in the electronic document management system.**

Westinghouse Electric Company LLC
P.O. Box 355
Pittsburgh, PA 15230-0355

TABLE OF CONTENTS

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LIST OF TABLES

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LIST OF FIGURES

1.0 INTRODUCTION

This addendum documents revisions to the burnup vs. initial enrichment limit curves found in WCAP-16541-NP, Revision 2 (Reference 2) to incorporate burnup offsets. The report contains the methodology followed in generating the burnup offsets, burnup vs. initial enrichment limit curves, and burnup vs. initial enrichment polynomials for each configuration found in WCAP-16541-NP, Revision 2. The new burnup vs. initial enrichment limits restore the 0.005 Δk of administrative margin to satisfy the request for additional information in Reference 1.

Tables 1-1 and 1-2 summarize which tables and figures in Section 4.0 of the original issuance of WCAP-16541-NP have been updated.

Table 1-1 WCAP-16541-NP, Revision 2, Section 4.0 Tables

WCAP Table	Updated	Addendum Table
4-1	Yes	4-3
4-2	Yes	4-4
4-3	Yes	4-5
4-4	No	N/A
4-5	No	N/A

Table 1-2 WCAP-16541-NP, Revision 2, Section 4.0 Figures

WCAP Figure	Updated	Addendum Figure
4-1	No	N/A
4-2	No	N/A
4-3	No	N/A
4-4	No	N/A
4-5	No	N/A
4-6	No	N/A
4-7	Yes	4-1
4-8	Yes	4-2
4-9	Yes	4-3
4-10	No	N/A

2.0 Methodology

2.1 Background

WCAP-16541-NP, Revision 2, contains 0.005 Δk of administrative margin reserved from both the borated and unborated k_{eff} regulatory requirements of 0.95 and 1.0 respectively. A portion of the reserved administrative margin was used in response to requests for additional information (References 3, 5, and 7). Table 2-1 lists the total credited administrative margin.

2.2 Burnup Offset Generation

Burnup offsets are generated for each configuration, enrichment, and decay time combination to restore the administrative margin to a minimum of 0.005 Δk.

The maximum allowable fresh fuel enrichment for each configuration remains unaffected because administrative margin was credited only for situations related to depleted fuel.

The burnup offsets given in Section 3.0 are created by quadratically fitting k_{eff} vs. burnup for each enrichment/decay time combination for each configuration. The k_{eff} values as a function of burnup, enrichment, and decay time come from Tables 3-7, 3-11, and 3-13 of WCAP-16541-NP, Revision 2. The fitted equation coupling k_{eff} and burnup is then used to determine the burnup offset needed to restore a minimum of 0.005 Δk administrative margin.

2.3 Burnup Offset Impact on Biases and Uncertainties

The burnup offsets do not impact the biases and uncertainties documented in WCAP-16541-NP, Revision 2. The majority of uncertainty calculations were performed using fresh fuel and therefore are not impacted by the burnup offset. The sum of biases and uncertainties used in the WCAP-16541-NP, Revision 2 analysis is bounding (Reference 6, Question 2). The analysis in WCAP-16541-NP, Revision 2 incorporates limiting biases and uncertainties from fresh and depleted conditions, to maximize the sum of biases and uncertainties.

The temperature bias calculation was performed using depleted fuel. The temperature bias was taken as the maximum value calculated based on a variety of enrichment and burnup combinations for each configuration and therefore the most limiting value was included in each configuration (Reference 4, Question 3). The temperature bias is thus not affected by the burnup offset.

The burnup uncertainty in WCAP-16541-NP, Revision 2 is 5% of the burnup limit multiplied by the change in reactivity per change in burnup. In response to Question 1, documented in Reference 4, the burnup uncertainty was recalculated as described in Reference 8. The reactivity difference between the two methods was credited against the available administrative margin. To regain the full 0.005 Δk of administrative margin, the reactivity credit taken from the administrative margin is being translated into a burnup offset. This burnup offset does not impact the biases and uncertainties, as discussed above.

Table 2-1 Total Credited Administrative Margin

	Credited Administrative Margin (Δk)
"All-Cell"	0.00131
"1-out-of-4, 5.0 w/o Fresh, No IFBA"	0.00451
"1-out-of-4, 4.0 w/o Fresh, With IFBA"	0.00421

3.0 Analysis

3.1 Burnup Limits

The three configurations analyzed in WCAP-16541-NP, Revision 2 are an "All-Cell" configuration and two "1-out-of-4" configurations. The "All-Cell" configuration stores assemblies that have similar reactivity, where a "1-out-of-4" configuration stores one high reactivity assembly for every three low reactivity assemblies. The first of the two "1-out-of-4" configurations is the "1-out-of-4 5.0 w/o Fresh, No IFBA" configuration. This configuration assumes the high reactivity assembly is a 5.0 w/o fresh assembly without IFBA. The second of the two "1-out-of-4" configurations is the "1-out-of-4 4.0 w/o Fresh, With IFBA" configuration. This configuration assumes the high reactivity assembly is a 4.0 w/o fresh assembly with no IFBA or a greater than 4.0 w/o fresh assembly containing IFBA.

For each of these configurations WCAP-16541-NP, Revision 2 reports k_{eff} values for several burnup and decay time combinations for initial enrichments of 3.0, 4.0, and 5.0 w/o. The k_{eff} vs. burnup and burnup limit tables from WCAP-16541-NP, Revision 2 are presented in Table 3-1.

The formulation of the fitting coefficients and burnup offsets is given below for each configuration.

3.1.1 "All-Cell" Configuration

Quadratic fits of the data from Table 3-7 of WCAP-16541-NP, Revision 2 were used to develop fitting coefficients as discussed in Section 2.2. The fitting coefficients were used in conjunction with the original burnup limits to determine the nominal multiplication factor of the required burnup for each enrichment/decay time. The burnup offset was then determined so that the Δk_{eff} between the new burnup limit and original burnup limit was greater than that shown in Table 2-1. The resulting set of burnup offsets and associated margin reclaimed are shown in Table 3-2.

The minimum administrative margin gain for the "All-Cell" configuration, shown in Table 3-2, is 0.00138 Δk. From Table 2-1, the additional margin needed to return the administrative margin to 0.005 Δk is 0.00131 Δk. The burnup offsets shown in Table 3-2 will return all initial enrichment/decay time combinations in the "All-Cell" configuration to greater than 0.005 Δk administrative margin. Table 4-3 and Figure 4-1 present the updated burnup limits for the "All-Cell" configuration.

3.1.2 "1-out-of-4 5.0 w/o Fresh, No IFBA" Configuration

The same method used to determine the burnup offsets for the "All-Cell" storage configuration was used for the "1-out-of-4 5.0 w/o Fresh, No IFBA" configuration. The resulting set of burnup offsets and associated margin reclaimed are shown in Table 3-3.

The minimum administrative margin gain for the "1-out-of-4 5.0 w/o Fresh, No IFBA" configuration, shown in Table 3-3, is 0.00453 Δk. From Table 2-1, the additional margin needed to return the administrative margin to 0.005 Δk is 0.00451 Δk. The burnup offsets shown in Table 3-3 will return all initial enrichment/decay time combinations in the "1-out-of-4 5.0 w/o Fresh, No IFBA" configuration to greater than 0.005 Δk administrative margin. Table 4-4 and Figure 4-2 present the updated burnup limits for the "1-out-of-4 5.0 w/o Fresh, No IFBA" configuration.

3.1.3 "1-out-of-4 4.0 w/o Fresh, With IFBA" Configuration

The same method used to determine the burnup offsets for the "All-Cell" storage configuration was used for the "1-out-of-4 4.0 w/o Fresh, With IFBA" configuration. The resulting set of burnup offsets and associated margin reclaimed are shown in Table 3-4.

The minimum administrative margin gain for the "1-out-of-4 4.0 w/o Fresh, With IFBA" configuration, shown in Table 3-4, is 0.00424 Δk. From Table 2-1, the additional margin needed to return the administrative margin to 0.005 Δk is 0.00421 Δk. The burnup offsets shown in Table 3-4 will return all initial enrichment/decay time combinations in the "1-out-of-4 4.0 w/o Fresh, With IFBA" configuration to greater than 0.005 Δk administrative margin. Table 4-5 and Figure 4-3 present the updated burnup limits for the "1-out-of-4 4.0 w/o Fresh, With IFBA" configuration.

Table 3-1 WCAP-16541-NP, Revision 2 Data Source Tables

Configuration	k_{eff} vs. Burnup Tables	Burnup Limit Tables
"All-Cell"[1]	3-7	4-1
"1-out-of-4, 5.0 w/o Fresh, No IFBA"	3-11	4-2
"1-out-of-4, 4.0 w/o Fresh, With IFBA"	3-13	4-3

[1] Note that the "All-Cell" configuration was analyzed based on the assumption of having no fuel pins in guide tubes. The requirements outlined in Section 4.1.1.1 remain in place.

Table 3-2 "All-Cell" Configuration Burnup Offsets (MWd/MTU) and Associated Increase in Administrative Margin (Δk)

	0 yr decay		5 yr decay		10 yr decay		15 yr decay		20 yr decay	
Enrich.	Offset	Margin	Offset	Margin	Offset	Margin	Offset	Margin	Offset	Margin
3.0	200	0.00168	150	0.00138	150	0.00144	150	0.00152	150	0.00157
4.0	200	0.00141	200	0.00152	200	0.00157	200	0.00160	200	0.00165
5.0	250	0.00143	250	0.00152	250	0.00159	250	0.00166	200	0.00139

Table 3-3 "1-out-of-4 5.0 w/o Fresh, No IFBA" Configuration Burnup Offsets (MWd/MTU) and Associated Increase in Administrative Margin (Δk)

	0 yr decay		5 yr decay		10 yr decay		15 yr decay		20 yr decay	
Enrich.	Offset	Margin	Offset	Margin	Offset	Margin	Offset	Margin	Offset	Margin
3.0	2000	0.00464	1800	0.00473	1600	0.00464	1500	0.00465	1450	0.00462
4.0	2150	0.00461	1950	0.00469	1800	0.00457	1700	0.00454	1650	0.00465
5.0	2300	0.00461	2100	0.00462	2000	0.00457	1900	0.00453	1800	0.00453

Table 3-4 "1-out-of-4 4.0 w/o Fresh, With IFBA" Configuration Burnup Offsets (MWd/MTU) and Associated Increase in Administrative Margin (Δk)

	0 yr decay		5 yr decay		10 yr decay		15 yr decay		20 yr decay	
Enrich.	Offset	Margin	Offset	Margin	Offset	Margin	Offset	Margin	Offset	Margin
3.0	1300	0.00435	1150	0.00430	1100	0.00446	1000	0.00445	1000	0.00434
4.0	1450	0.00433	1250	0.00430	1200	0.00430	1100	0.00424	1150	0.00435
5.0	1550	0.00434	1450	0.00429	1400	0.00436	1350	0.00432	1300	0.00430

4.0 Results

4.1 Burnup vs. Enrichment Curves

This addendum to WCAP-16541-NP, Revision 2 contains tables and figures which supersede the original issuance of WCAP-16541-NP, Revision 2. Section 1.0 gives a listing of all tables (Table 1-1) and figures (Table 1-2) from Section 4.0 of the original issuance of WCAP-16541-NP, Revision 2 and indicates whether the table or figure is superseded by this addendum and the identifier (i.e. Table 4-2) of the new table or figure which supersedes that in WCAP-16541-NP, Revision 2. Tables 1-1 and 1-2 have been repeated here as Tables 4-1 and 4-2.

Table 4-1 WCAP-16541-NP, Revision 2, Section 4.0 Tables

WCAP Table	Updated	Addendum Table
4-1	Yes	4-3
4-2	Yes	4-4
4-3	Yes	4-5
4-4	No	N/A
4-5	No	N/A

Table 4-2 WCAP-16541-NP, Revision 2, Section 4.0 Figures

WCAP Figure	Updated	Addendum Figure
4-1	No	N/A
4-2	No	N/A
4-3	No	N/A
4-4	No	N/A
4-5	No	N/A
4-6	No	N/A
4-7	Yes	4-1
4-8	Yes	4-2
4-9	Yes	4-3
4-10	No	N/A

Table 4-3 Fuel Assembly Burnup versus Initial Enrichment for the "All-Cell" Storage Configuration

Initial Enrichment (w/o ^{235}U)	Limiting Burnup (MWd/MTU)				
	0 yr decay[2]	5 yr decay[2]	10 yr decay[2]	15 yr decay[2]	20 yr decay[2]
2.13	0	0	0	0	0
3.0	9135	8643	8480	8201	8116
4.0	18675	17850	17372	16989	16754
5.0	27599	26215	25256	24605	24000

Note that the assembly burnups as a function of initial enrichment for each decay period are described by the following polynomials:

$$\text{Assembly Burnup (0 yr decay)} = 71.56e^3 - 1166.69e^2 + 15059.19e - 27474.43$$
$$\text{Assembly Burnup (5 yr decay)} = -11.14e^3 - 287.32e^2 + 11630.42e - 23361.60$$
$$\text{Assembly Burnup (10 yr decay)} = -16.28e^3 - 308.68e^2 + 11655.01e - 23267.42$$
$$\text{Assembly Burnup (15 yr decay)} = -85.22e^3 + 436.68e^2 + 8884.52e - 20081.62$$
$$\text{Assembly Burnup (20 yr decay)} = -113.81e^3 + 669.67e^2 + 8161.13e - 19321.65$$

[2] Decay time is defined as the number of years since the fuel assembly was last critical

Table 4-4 Fuel Assembly Burnup versus Initial Enrichment for the "1-out-of-4 5.0 w/o Fresh, No IFBA" Storage Configuration

Initial Enrichment (w/o ^{235}U)	Limiting Burnup (MWd/MTU)				
	0 yr decay[3]	5 yr decay[3]	10 yr decay[3]	15 yr decay[3]	20 yr decay[3]
1.33	0	0	0	0	0
3.0	30193	27661	26113	25092	24131
4.0	42441	39403	37261	36016	34790
5.0	53469	50137	47589	46226	45005

Note that the assembly burnups as a function of initial enrichment for each decay period are described by the following polynomials:

Assembly Burnup (0 yr decay) = $428.92e^3 - 5757.04e^2 + 36677.22e - 39606.18$
Assembly Burnup (5 yr decay) = $354.71e^3 - 4760.55e^2 + 31941.49e - 34895.75$
Assembly Burnup (10 yr decay) = $346.35e^3 - 4566.17e^2 + 30296.34e - 33031.86$
Assembly Burnup (15 yr decay) = $321.26e^3 - 4212.08e^2 + 28522.05e - 31239.39$
Assembly Burnup (20 yr decay) = $326.36e^3 - 4138.31e^2 + 27551.88e - 30091.55$

[3] Decay time is defined as the number of years since the fuel assembly was last critical

Table 4-5 Fuel Assembly Burnup versus Initial Enrichment for the "1-out-of-4 4.0 w/o Fresh, With IFBA" Storage Configuration

Initial Enrichment (w/o ^{235}U)	Limiting Burnup (MWd/MTU)				
	0 yr decay[4]	5 yr decay[4]	10 yr decay[4]	15 yr decay[4]	20 yr decay[4]
1.60	0	0	0	0	0
3.0	21183	19794	18695	17901	17783
4.0	32793	30158	29062	27859	27471
5.0	42911	40512	38917	37611	36593

Note that the assembly burnups as a function of initial enrichment for each decay period are described by the following polynomials:

Assembly Burnup (0 yr decay) $= 212.05e^3 - 3290.58e^2 + 26798.27e - 35321.90$

Assembly Burnup (5 yr decay) $= 461.10e^3 - 5538.19e^2 + 32070.67e - 39023.97$

Assembly Burnup (10 yr decay) $= 290.71e^3 - 3744.49e^2 + 25822.24e - 32920.44$

Assembly Burnup (15 yr decay) $= 316.33e^3 - 3898.92e^2 + 25546.37e - 32188.62$

Assembly Burnup (20 yr decay) $= 286.15e^3 - 3716.74e^2 + 25117.81e - 31845.90$

[4] Decay time is defined as the number of years since the fuel assembly was last critical

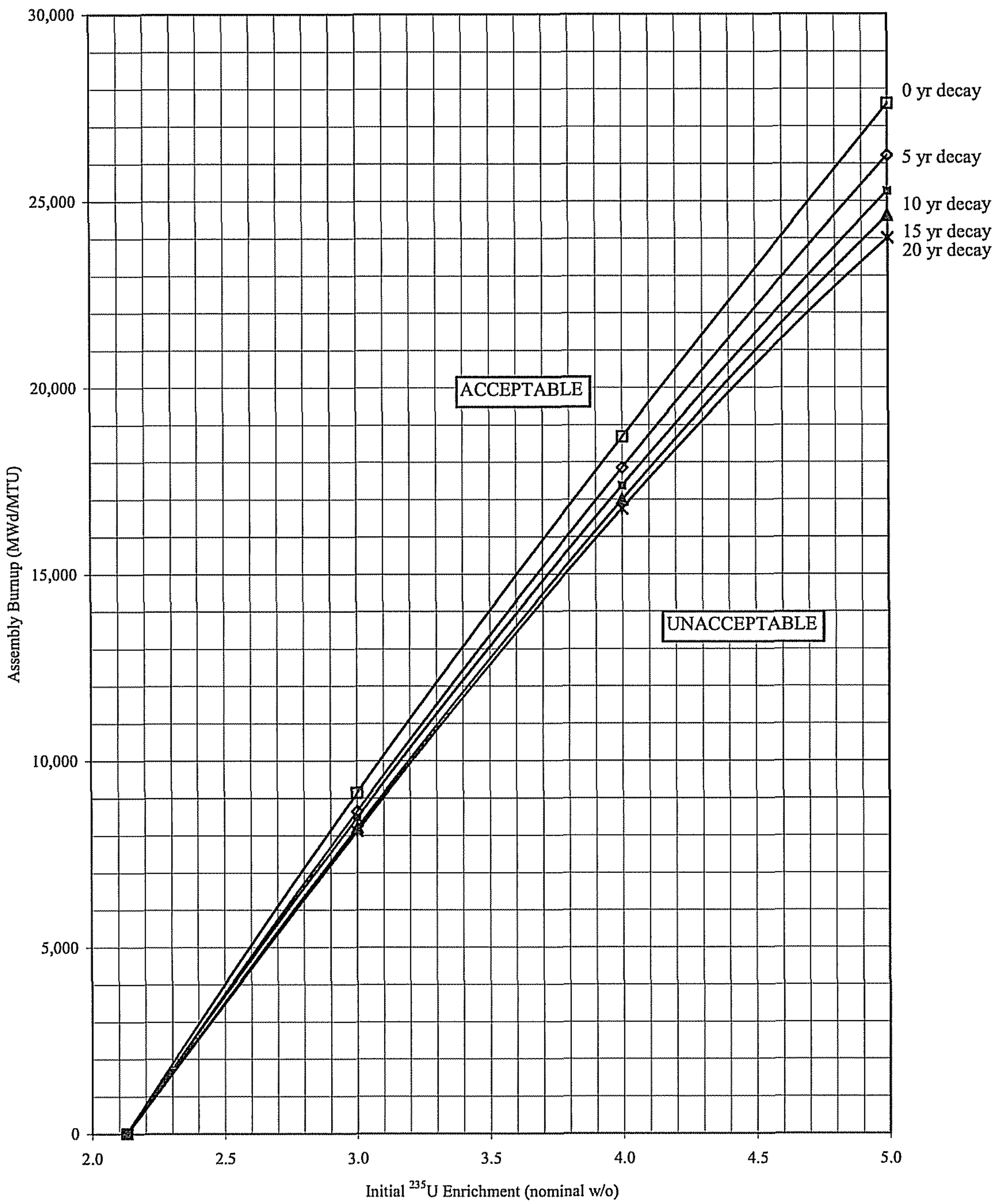


Figure 4-1 Fuel Assembly Burnup versus Initial Enrichment for the "All-Cell" Storage Configuration

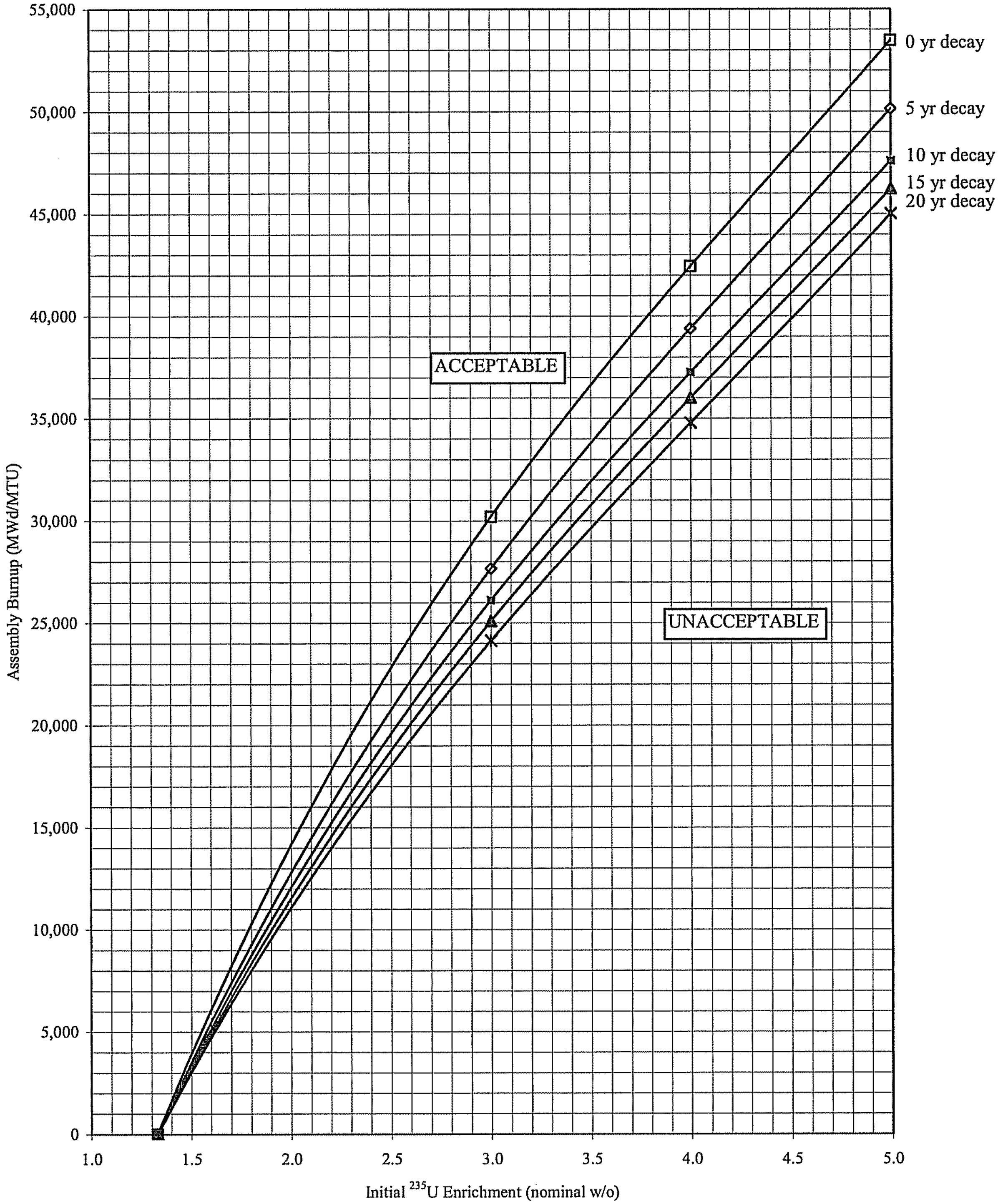


Figure 4-2 Fuel Assembly Burnup versus Initial Enrichment for the "1-out-of-4 5.0 w/o Fresh, No IFBA" Storage Configuration

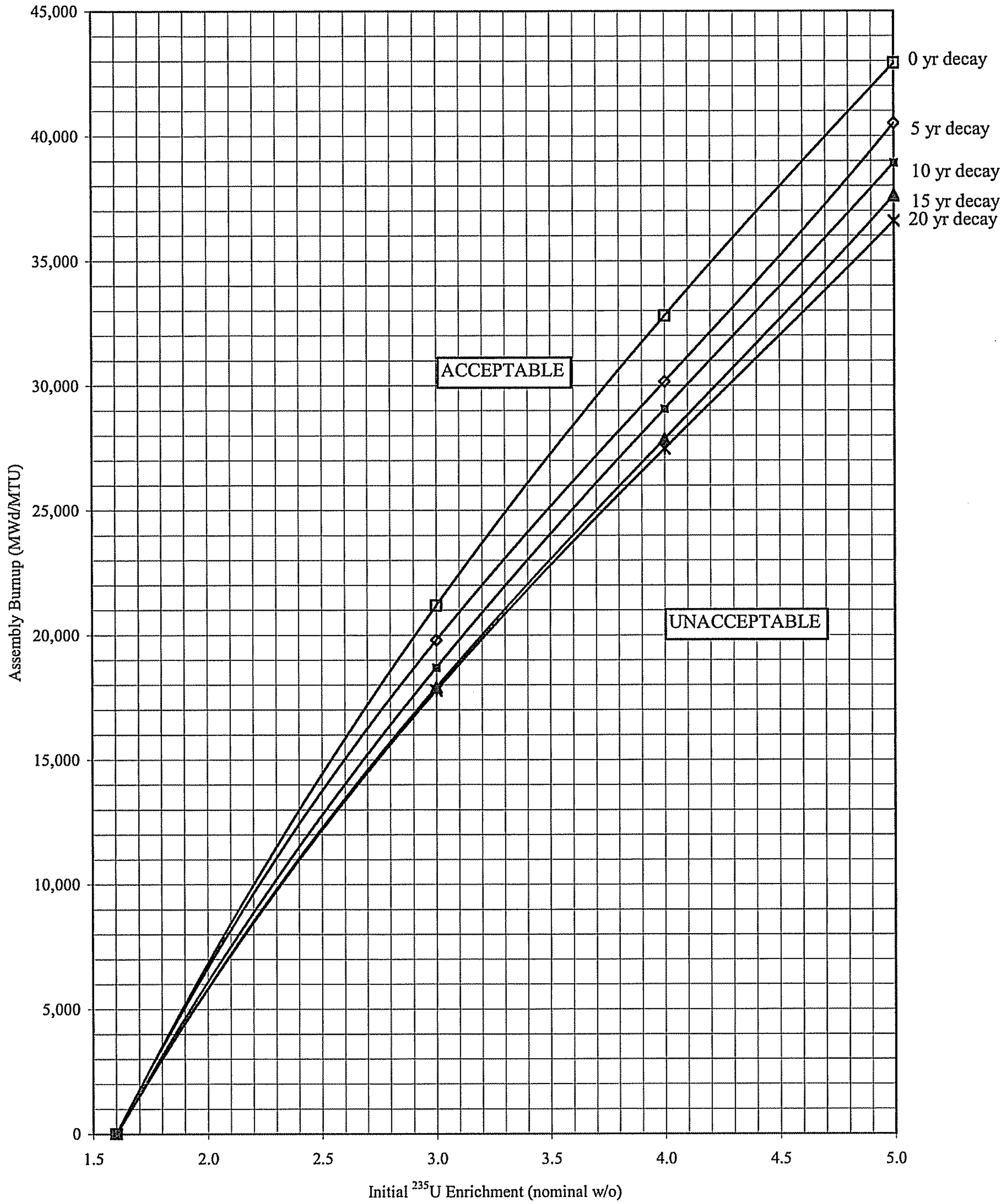


Figure 4-3 Fuel Assembly Burnup versus Initial Enrichment for the "1-out-of-4 4.0 w/o Fresh, With IFBA" Storage Configuration

5.0 References

1. Poole, J.C. (NRC), "Point Beach Nuclear Plant, Units 1 and 2 – Request for Additional Information from Reactor Systmes [sic] Branch Related to License Amendment Request No. 247 Spent Fuel Pool Storage Criticality Control – Round 3 (TAC NOS. MD9321 AND MD9322)", ML092930502, October 22, 2009.

2. Anness, M.G., et al, "Point Beach Units 1 and 2 Spent Fuel Pool Criticality Safety Analysis", WCAP-16541-NP, Rev. 2, June 2008.

3. Cushing, J. (NRC), "Acceptance Review for License Amendment Request Number 247 Spent Fuel Pool Criticality Control-Supplemental Information Required (TAC NOS. MD9321 AND MD9322)", ML082530171, September 10, 2008.

4. Meyer, L., "Supplement to License Amendment Request Number 247 Spent Fuel Pool Storage Criticality Control" ML082630114, September 19, 2008

5. Poole, J.C. (NRC), "Point Beach Nuclear Plant, Units 1 and 2 - Request for Additional Information from Reactor Systems Branch Related to License Amendment Request No. 247 Spent Fuel Pool Storage Criticality Control (TAC NOS. MD9321 AND MD9322), ML090900617, April 22, 2009

6. Meyer, L., "Response to Request for Additional Information License Amendment Request 247 Spent Fuel Pool Storage Criticality Control", ML091420436, May 22, 2009.

7. Poole, J.C. (NRC), "Point Beach Nuclear Plant, Units 1 and 2 – Request for Additional Information from Reactor Systems Branch Related to License Amendment Request No. 247 Spent Fuel Pool Storage Criticality Control – Round 2 (TAC NOS. MD9321 AND MD9322)", ML091770550, July 09, 2009.

8. Kopp, L. (NRC), "Guidance on the Regulatory Requirements for Criticality Analysis of Fuel Storage at Light-Water Reactor Power Plants", August 19, 1998.

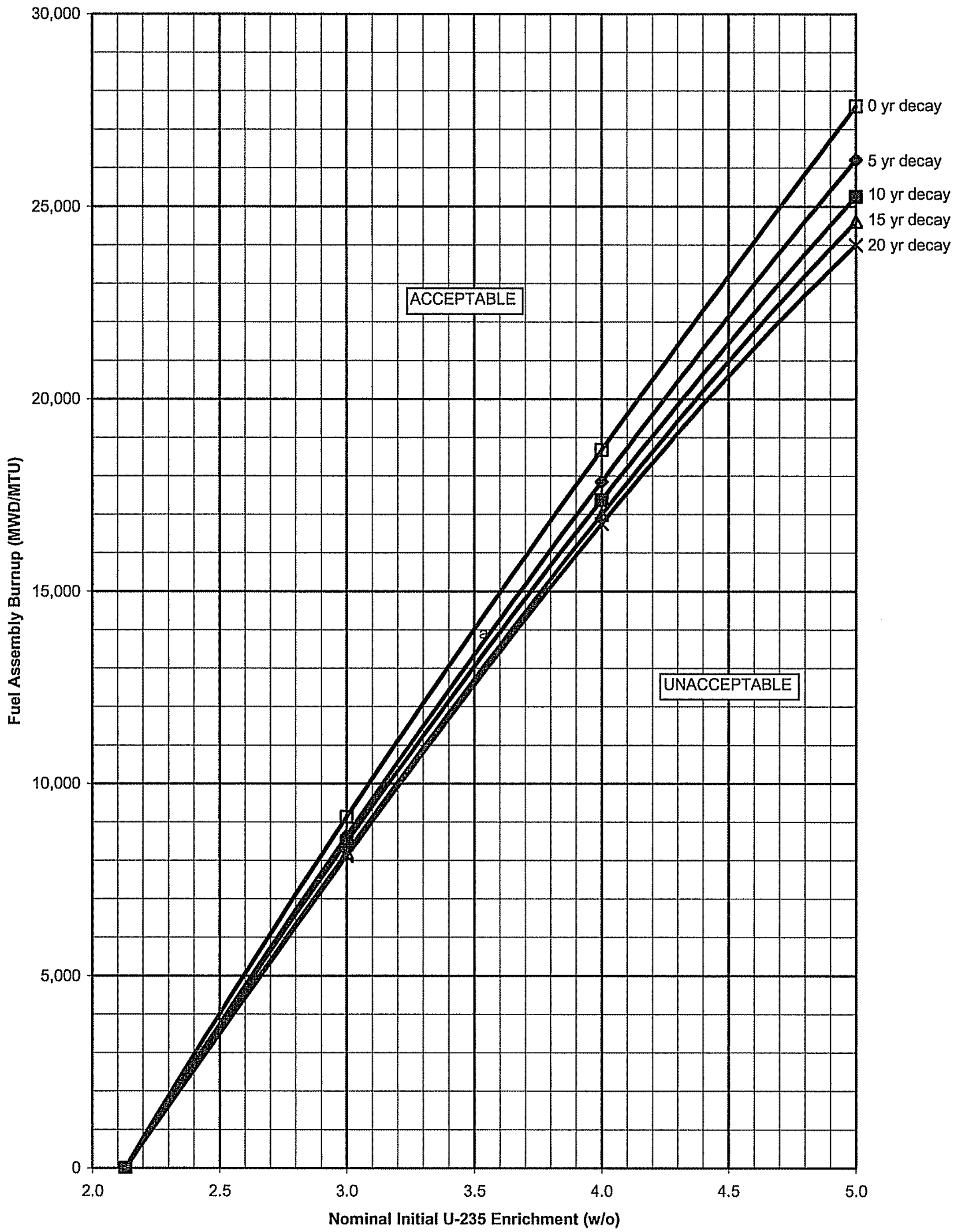
ENCLOSURE 3

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 247
SPENT FUEL POOL STORAGE CRITICALITY CONTROL

PROPOSED TECHNICAL SPECIFICATION CHANGES

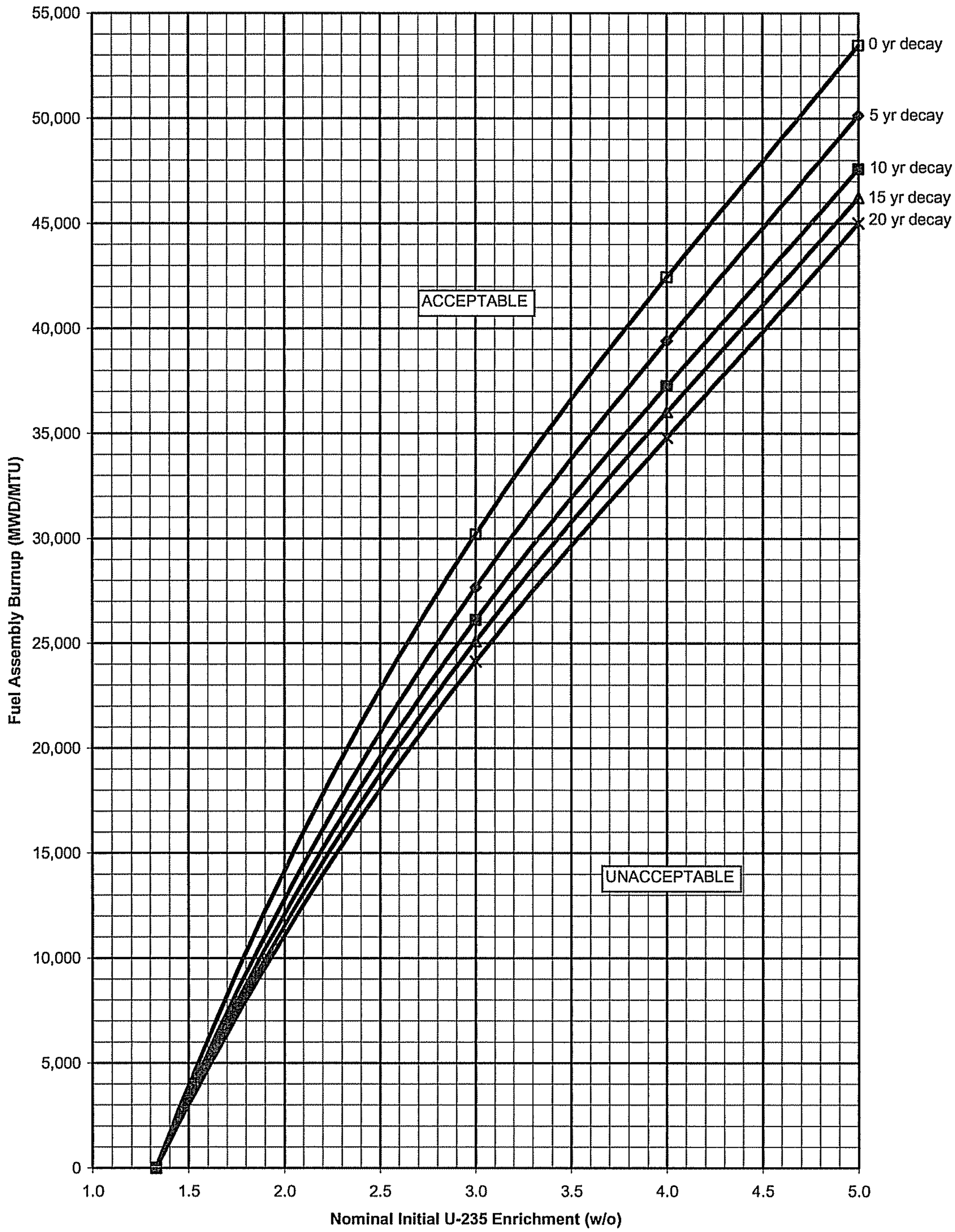
3 pages follow



$$0 \text{ yr decay} = 71.56e^3 - 1166.69e^2 + 15059.19e - 27474.43$$
$$5 \text{ yr decay} = -11.14e^3 - 287.32e^2 + 11630.42e - 23361.60$$
$$10 \text{ yr decay} = -16.28e^3 - 308.68e^2 + 11655.01e - 23267.42$$
$$15 \text{ yr decay} = -85.22e^3 + 436.68e^2 + 8884.52e - 20081.62$$
$$20 \text{ yr decay} = -113.81e^3 + 669.67e^2 + 8161.13e - 19321.65$$

Figure 3.7.12-1
Fuel Assembly Burnup Requirement of "All-Cell" Storage Configuration

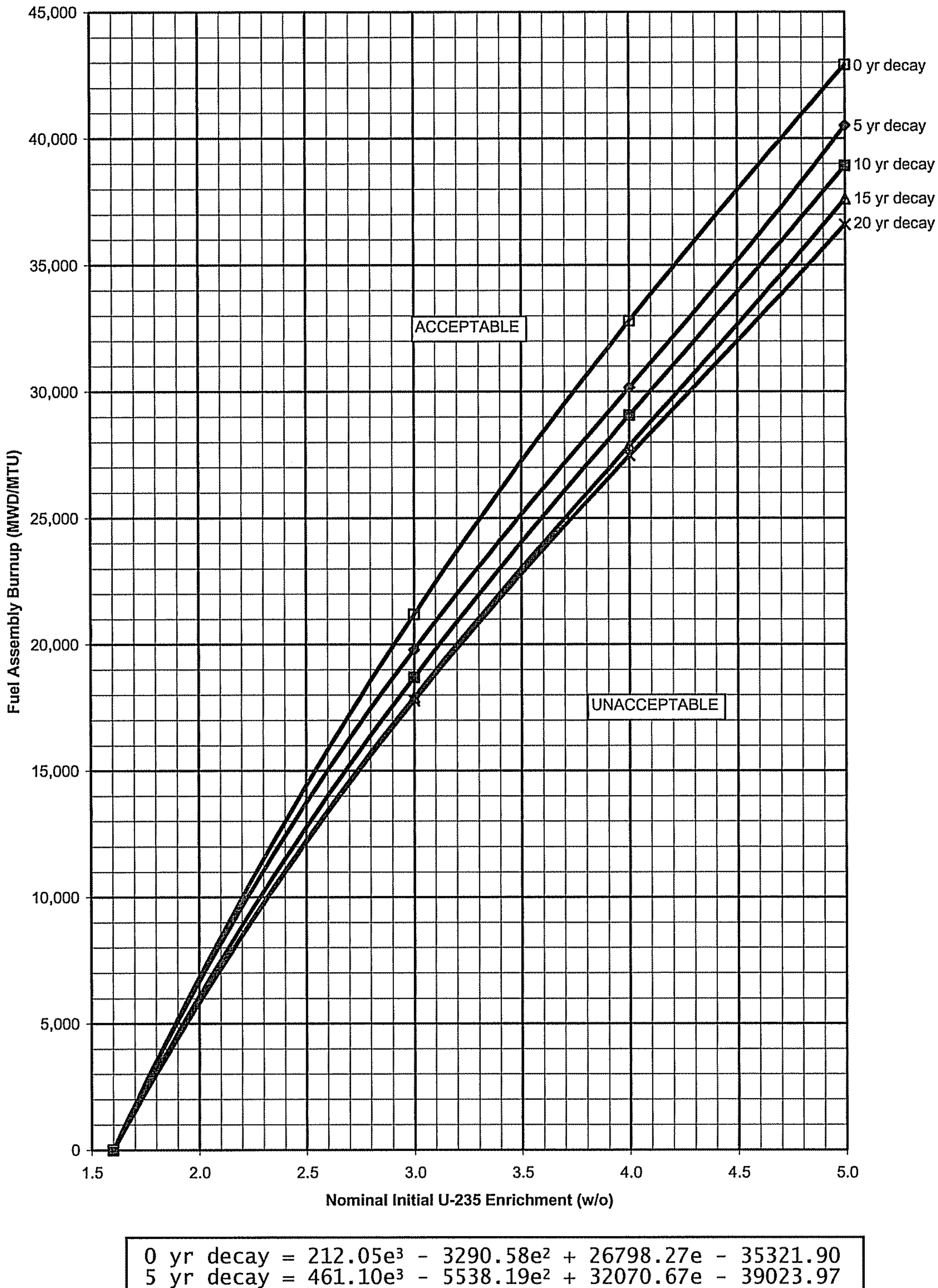
4.0 DESIGN FEATURES



0 yr decay	$= 428.92e^3 - 5757.04e^2 + 36677.22e - 39606.18$
5 yr decay	$= 354.71e^3 - 4760.55e^2 + 31941.49e - 34895.75$
10 yr decay	$= 346.35e^3 - 4566.17e^2 + 30296.34e - 33031.86$
15 yr decay	$= 321.26e^3 - 4212.08e^2 + 28522.05e - 31239.39$
20 yr decay	$= 326.36e^3 - 4138.31e^2 + 27551.88e - 30091.55$

Figure 4.3.1-6
Spent Fuel Assembly Burnup Requirements for 1-Out-of-4 for 5.0 w/o with no IFBA

4.0 DESIGN FEATURES



$$0\ yr\ decay = 212.05e^3 - 3290.58e^2 + 26798.27e - 35321.90$$
$$5\ yr\ decay = 461.10e^3 - 5538.19e^2 + 32070.67e - 39023.97$$
$$10\ yr\ decay = 290.71e^3 - 3744.49e^2 + 25822.24e - 32920.44$$
$$15\ yr\ decay = 316.33e^3 - 3898.92e^2 + 25546.37e - 32188.62$$
$$20\ yr\ decay = 286.15e^3 - 3716.74e^2 + 25117.81e - 31845.90$$

Figure 4.3.1-7
Spent Fuel Assembly Burnup Requirements for 1-Out-of-4 for 4.0 w/o with IFBA