

Center for Nuclear Waste Regulatory Analyses

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U. S. NUCLEAR REGULATORY COMMISSION
ATTN: Ms. Mary H. Mace
Div. of Contracts and Property Management
7920 Norfolk Ave.
Washington, D. C. 20814

Subject: Crosswalk Between 10 CFR Part 60 and the Standard Format and
Content Regulatory Guide - Table of Contents

Reference: Meeting with NRC and Center Staff on September 6, 1989.

Dear Ms. Mace:

Enclosed is the draft crosswalk between the regulatory text in the Code of Federal Regulations, Title 10 Part 60, (10 CFR Part 60) and the Format and Content Regulatory Guide - Table of Contents (FCRG-TOC) that the Nuclear Regulatory Commission requested.

To produce the crosswalk, the following criteria and considerations were applied:

1. A Program Architecture systematic approach was used to develop the relationships of the regulatory text of 10 CFR Part 60 to the FCRG-TOC. This crosswalk looked at all the regulatory texts in 10 CFR Part 60, as to their applicability to the License Application. This crosswalk also built upon the information gained by crosswalking 10 CFR 60.21 to Subpart E of Part 60. Particularly, 10 CFR Part 60.21 is part of the regulatory basis for the contents of the License Application and calls for General Information and a Safety Analysis Report. Also, this regulatory requirements crosswalk emphasized other regulatory texts which specify technical objectives and criteria for the ownership, siting, design, construction, operation, performance, etc. of the repository. The version of the FCRG-TOC that was used for the crosswalk was given to the Center, on September 6, 1989.
2. This crosswalk identified two primary types of relationships that the regulatory text may have with the FCRG-TOC.

The first type of relationship is that which requires DOE to demonstrate compliance in their License Application or in filing their License Application. This, in effect, would stipulate the regulatory basis for each section of the FCRG-TOC. These texts are listed in the second column of Table 1, attached. The section numbers of the FCRG-TOC are listed in the first column. Where no regulatory text appeared to fit into the second column of Table 1 the word "none" or the notation "n/a" appear.



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The second type of relationship for the FCRG-TOC crosswalk is text that helps to clarify what DOE should consider in preparing its License Application. This text is related to the appropriate FCRG-TOC section/s and adds dimension to what DOE should address in each section of their License Application. These texts are listed in the third column of Table 1. Where no regulatory text appeared to meet this type of relationship, the third column was left blank.

3. In conducting this crosswalk, only the lowest section levels of the FCRG-TOC were included. This was done because each higher level section should be the sum total of the lower section levels. For example, Section B.1 is a sum total of B.1.1, through B.1.6. In general, each higher level section of the FCRG-TOC is only a title and the technical information that falls under that title is contained in the subsequent lower level sections. Therefore, for all higher level sections of the FCRG-TOC the 10 CFR Part 60 citations are left blank in Table 1, because they are addressed by the citations in their lower level sections.
4. The crosswalk relationship listings were determined by examining the individual texts of 10 CFR Part 60 and comparing that text to the lowest level sections of the FCRG-TOC. It may be possible to derive different relationships if the crosswalk were also conducted by looking at specific sections of the FCRG-TOC first and then finding linkages to 10 CFR Part 60. This latter type of crosswalk was not conducted.
5. This crosswalk found what appear to be omissions from the FCRG-TOC and are presented in Table 2, attached. These potential omissions were derived from texts in 10 CFR Part 60 that appear to require DOE to demonstrate compliance in their License Application, but did not seem to have a corresponding section in the FCRG-TOC. These potential omissions may only exist because of the current lack of detail in the FCRG-TOC.
6. Texts in 10 CFR Part 60 that did not appear to require DOE to demonstrate compliance in their License Application or filing their License Application were identified in Table 3, attached. These regulatory texts may help to clarify what DOE should include in their License Application and may be included in the third column of citations in Table 1.

Using the above criteria led to some duplications and omissions in developing the regulatory citations for this FCRG-TOC crosswalk.

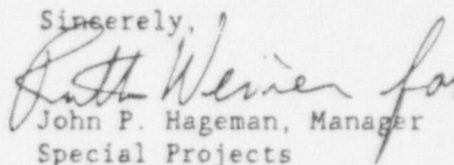
While conducting this crosswalk, it appeared that some minor clarifications may be beneficial to the FCRG-TOC. These are listed below, for your consideration:

- o Section B.2.1 was omitted by a typographical error
- o Check the numbers for FCRG-TOC Sections B.10.3.3 and B.10.3.4 for a typographical error; these should read B.10.2.3 and B.10.2.4, respectively.

- o For consistency, consider adding new Sections B.7.3.2 - Waste Form, and B.7.3.3 - Engineered Barrier System, and renumber the current Section B.7.3.2 as B.7.3.4.
- o Section B.5.2 is only followed by one entry (B.5.2.1), and seems redundant.
- o Section B.1.4 has its regulatory basis in 21(c)(6). This regulation is under 21(c) "The Safety Analysis Report Shall Include:" and therefore it may need to be moved below Section B.2, perhaps under section 5.3 - Overall System Performance.
- o A descriptive Section, B.4.1.5, Overall Engineered Barrier System, may need to be added for consistency.
- o A new Section, B.5.3.7, Evaluations of Favorable Conditions, may need to be added as a complementary section to B.5.3.6, and then renumber B.5.3.7 as B.5.3.8.
- o Because Section B.5.3.5 - Regulatory Compliance Assessment, seems to address all the Sections of B.5.3 - Overall System Performance, consider moving it to the last position under B.5.3.

We trust that the crosswalk and the above information will meet the needs of the NRC. If there are any questions, please do not hesitate to call me at (512) 522-5152 or Ruth Weiner at (703) 979-9129.

Sincerely,


John P. Hageman, Manager
Special Projects

/wo

cc: J. Funches
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CNWRA Element Managers

Table 1

FCRG TABLE OF CONTENTS SECTION	REGULATIONS IN 10CFR PART 60 THAT ARE APPLICABLE TO DOE'S COMPLIANCE REQUIREMENTS IN THEIR LICENSE APPLICATION, OR TO CLARIFYING TEXT APPROPRIATE TO NRC'S FCRG	
	Procedural or Technical Regulations Requiring Compliance by DOE	Other Regulatory Text Which Can Clarify the Contents of the FCRG
A		
A.1	n/a	
A.2	n/a	
A.3	n/a	
A.4	4(b), 21(a), 23, 24(a).	
A.5	22(a-e), 24(b, c), 33, 45(a), 46, 51.	
A.6	4(a), 10(a), 22(a-e), 24(a).	
A.7	none	4(b)
B		
B *	21(a).	
B.1		
B.1.1	21(b) (1, 5).	102(b) (2), 102(c, e), 112
B.1.2	3(b), 21(b) (2).	32(c), 102(d, e), 140(b).
B.1.3	21(a), 21(b) (3, 4).	21(c) (8), 31(b).
B.1.4	21(c) (6). (This should be in the SAR)	43.
B.1.5	21(b) (5).	15(a).
B.1.6	none	18(d).
B.2		
B.2.1	(Section B.2.1 is not included in the outline)	
B.2.1.1	21(c) (1), 21(c) (1) (i) (A,B,C,F)	122(a), 122(b) (1, 4, 5), 122(c) (4,10-16,20,21), 122(c) (24).
B.2.1.2	21(c) (1), 21(c) (1) (i) (B,D,F).	122(a), 122(b) (1,2,7,8) 122(c) (1-7, 9, 10,16,20,22,23).
B.2.1.3	21(c) (1), 21(c) (1) (i) (B,E,F).	122(a), 122(b) (1,3,4), 122(c) (8-10,17).
B.2.1.4	none	122(a), 122(b) (8) (v), 122(c) (3,5,6,22,23).
B.2.1.5	21(c) (1) (i) (F).	122(a).

B.2.2	21(c)(1)(i)(F).	
B.2.3		
B.2.3.1	21(c)(1), 21(c)(1)(ii)(ABCD F), 112, 113(a)(2), 122(a), 122(b)(1, 4), 122(b)(5), 122(c)(3, 4, 8, 10-21, 24).	
B.2.3.2	21(c)(1), 21(c)(1)(ii)(ABCD F), 112, 113(a)(2), 122(a), 122(b)(1, 2, 7, 8), 122(c)(1-7, 9, 10, 16, 20, 22, 23).	
B.2.3.3	21(c)(1), 21(c)(1)(ii)(ABCD F), 112, 113(a)(2), 122(a), 122(b)(1, 3, 4), 122(c)(7-10, 17, 24).	
B.2.3.4	21(c)(1), 21(c)(1)(ii)(ABCD F), 112, 122(a), 122(b)(8)(v), 122(c)(1, 5, 6, 22).	
B.2.3.5	21(c)(1), 21(c)(1)(ii)(ABCD F), 112, 113(a)(2), 122	
B.3		
B.3.1		
B.3.1.1	21(c)(2, 3+, 11).	21(c)(14), 111, 130-132, 137.
B.3.1.2	21(c)(2, 3+).	21(c)(14), 111, 112, 130, 131, 134, 137.
B.3.1.3	21(c)(2, 3+).	21(c)(14), 111, 130, 131, 133, 137.
B.3.1.4	21(c)(2, 3+).	21(c)(5, 7, 9), 131(a), 132, 133(a)(1), 133(g).
B.3.1.5	21(c)(2).	111, 130, 131, 132, 133, 134, 137.
B.3.2		
B.3.2.1	21(c)(3)+, 21(c)(14), 111(a) 111(b)(1, 3), 130, 131(a), 131(b)(1-10)+, 132, 137.	111(b)(2).
B.3.2.2	21(c)(1)(ii)(E), 21(c)(3), 21(c)(14), 111(a), 111(b)(1, 3), 112, 130, 131(a), 131(b)+, 132, 134(a, b), 137.	111(b), 112, 122(c)(20), 134.
B.3.2.3	21(c)(1)(ii)(E), 21(c)(3)+, 21(c)(14), 111(a), 111(b)(1, 3), 130, 131(a), 131(b)+, 133, 137.	111(b), 131(b), 133.

B.3.2.4	21(c)(3)+.	111, 131(a).
B.3.2.5	21(c)(1)(ii)(E)+, 21(c)(3)+, 111(a), 111(b)(1,3), 112, 130, 131(a), 131(b)+, 132-134, 137.	112.
B.4		
B.4.1		
B.4.1.1	21(c)(5)	21(c)(1)(ii)(D,F), 21(c)(14), 102(b)(4), 112, 135(a), 135(b)(1,2), 135(c,d).
B.4.1.2	none	21(c)(14), 112, 113(a)(1)(ii)(A), 135(a), 135(b)(1,4).
B.4.1.3	none	21(c)(1)(ii)(D,F), 21(c)(14), 112, 113(a)(1)(ii)(A), 122(c)(21), 133(e, h, i).
B.4.1.4	none	21(c)(1)(ii)(D,F), 21(c)(14), 111(a), 112, 113, 122, 131(a), 133(h,i), 135.
B.4.2	21(c)(1)(i)(F).	122(b)(4), 122(c)(2), 133(d,e,f,i), 134, 135(a).
B.4.3		
B.4.3.1	21(c)(1)(ii)(D,F), 21(c)(14), 112, 135(a), 135(b)(1,2), 135(c), 135(d).	
B.4.3.2	21(c)(1)(ii)(D,F), 21(c)(14), 112, 113(a)(1)(ii)(A), 135(a), 135(b)(1, 4).	21(c)(12).
B.4.3.3	21(c)(1)(ii)(D,F), 21(c)(14), 113(a)(1)(ii)(A), 112.	
B.4.3.4	21(c)(1)(ii)(D,F), 21(c)(14), 112, 113(a)(1)(i)(A,B), 113(a)(1)(ii)(B), 122, 133(h, i), 135.	
B.4.3.5	21(c)(1)(ii)(D,F).	21(c)(1)(ii)(F), 21(c)(7,9,12).
B.5		
B.5.1	none	21(c)(1)(ii), 122.

B.5.2		
B.5.2.1	21(c)(1)(ii)(F).	
B.5.3		
B.5.3.1	21(c)(1)(i)(F), 112, 122.	113(a, c).
B.5.3.2	21(c)(1)(ii)(B, F), 122.	
B.5.3.3	21(c)(1)(ii)(B, C, D, F), 122.	
B.5.3.4	21((c)(1)(ii)(B,C,D,F), 122.	
B.5.3.5	21((c)(1)(ii)(B,C,D,F), 112, 113(a, c), 122.	
B.5.3.6	21(c)(1)(ii)(B,C, D, F), 122(a)(2), 122(c).	
NOTE:	IS EVAL. OF FAVORABLE CONDI- TIONS MISSING - 122(a)(1), (b)?	
B.5.3.7	21(c)(1)(ii)(D, F).	
B.6		
B.6.1	21(c)(8, 10).	21(a), 21(b)(3,4,), 21(c)(15), 131(a).
B.6.2	21(c)(15)(v).	131(b)(6).
B.6.3	21(c)(7, 9), 21(c)(15)(vi).	111(a), 131(a).
B.6.4	21(c)(15)(i,ii).	
B.6.5	none	21(c)(15).
B.6.6	21(c)(15)(v), 74, 75(a), 75(c)(3).	131(b)(6).
B.6.7	4(a, b), 71, 72, 73, 75(b).	
B.7		
B.7.1		
B.7.1.1	140(a)(1), 140(b-d), 141.	
B.7.1.2	140(a)(2), 140(b-d), 141(a, b, d, e).	
B.7.1.3	140(a)(2), 140(b-d), 141.	
B.7.1.4	none	140(c), 141(c).

B.7.2		
B.7.2.1	140(a)(1), 140(b-d), 141.	
B.7.2.2	140(a)(1), 140(b-d), 141, 142.	
B.7.2.3	140(a)(1), 140(b-d), 141, 142.	
B.7.2.4	none	
B.7.3		
B.7.3.1	141(a)(2), 140(b-d), 141, 142(a), 143.	
NOTE	WASTE FORM SECTION MISSING [143(c)]	
NOTE	EBS SECTION MISSING [142]	
B.7.3.2	none	
B.7.4	140, 141, 142, 143.	
B.8		
B.8.1	none	111(b)(2).
B.8.2	none	111(b)(2).
B.8.3	21(c)(9, 11), 21(c)(15)(vi).	132(e).
B.8.4	4(b), 71, 72.	
B.8.5	21(c)(8).	
B.8.6	none	
B.9		
B.9.1	21(c)(8), 121(a, b).	21(b)(3,4).
B.9.2	21(c)(8), 121(a, b).	21(c)(15)(vii).
B.10		
B.10.1		
B.10.1.1	none	17(a)(2)(v), 150-152++.
B.10.1.2	21(c)(4)++, 150-152++.	
B.10.1.3	21(c)(4)++, 150-152++.	
B.10.1.4	21(c)(4)++, 150-152++.	

B.10.2		
B.10.2.1	150-152++.	21(c)(4).
B.10.2.2	150-152++.	21(c)(4).
B.10.2.3	150-152++.	21(c)(4).
B.10.2.4	150-152++.	21(c)(4).
B.11		
B.11.1	Subpart I	131(b)(1-5,7,8,9).
B.11.2	Subpart I	
NOTES	+ = APPLIES ONLY TO ITEMS IMPORTANT TO SAFETY. ++ = APPLIES ONLY TO ITEMS IMPORTANT TO SAFETY OR WASTE ISOLATION	

Table 2

FCRG TABLE OF CONTENTS SECTION	REGULATIONS IN 10CFR PART 60, THAT ARE APPLICABLE TO WHAT DOE MUST SHOW COMPLIANCE WITH IN THEIR LICENSE APPLICATION BUT WERE NOT INCLUDED IN THE FCRG - TOC *
none	5, 7, 9, 21(c)(5, 12, 13), 21(c)(15)(iii, iv, vii), 121(c).

* The FCRG - TOC did not have an appropriate section for these citations

Table 3

FCRG TABLE OF CONTENTS SECTION	REGULATORY TEXT IN 10CFR PART 60 NOT DIRECTLY APPLICABLE TO WHAT DOE MUST COMPLY WITH IN THEIR LICENSE APPLICATION *
n/a	1, 2, 6, 8, 10, 15, 16, 17, 18, 31, 32, 41, 42, 43, 44, 45(b), 52, 61, 62, 63, 64, 65, 75(c)(1, 2), 101, 102, 111(b)(2), 113(b), 160, 161, 162.

* The FCRG-TOC does not need a section for these citations.