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OVERNIGHT MAIL

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RESPONSE TO ADDRESS KEY TECHNICAL ISSUE (KTI) AGREEMENTS CONTAINER LIFE AND SOURCE TERM (CLST) 5.03, 5.04, 5.05, EVOLUTION OF NEAR FIELD ENVIRONMENT (ENFE) 5.03, RADIONUCLIDE TRANSPORT (RT) 4.03, AND GENERAL (GEN) 1.01, COMMENTS 21 AND 64

This letter transmits a response to KTI Agreements CLST 5.03, 5.04, 5.05, ENFE 5.03, RT 4.03 and GEN 1.01, Comments 21 and 64.

The U.S. Department of Energy considers KTI Agreements CLST 5.03, 5.04, 5.05, ENFE 5.03, RT 4.03 and GEN 1.01, Comments 21 and 64, to be addressed. Pending U.S. Nuclear Regulatory Commission (NRC) review, including, if NRC determines necessary, review of the *Screening Analysis for Criticality, Features, Events, and Process for License Application*, ANL-EBS-NV-000008, Revision 01, available October 2004, the subject agreements should be considered closed.

There are no new regulatory commitments in the body or the enclosure to this letter. If you have any questions concerning this letter and its enclosure, please contact Neal K. Hunemuller at (702) 794-5081 or e-mail neal_hunemuller@ymp.gov, or Paige R.Z. Russell at (702) 794-1315 or e-mail paige_russell@ymp.gov.

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OLA&S:NKH-1690

Enclosure:
Response to Address Key Technical Issue(KTI) Agreements Container Life and Source Term (CLST) 5.03, CLST 5.04, CLST 5.05, Evolution of Near-Field Environment (ENFE) 5.03, and Radionuclide Transport (RT) 4.03 and GEN 1.01, Comments 21 and 64

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ENCLOSURE

RESPONSE TO ADDRESS KEY TECHNICAL ISSUE (KTI) AGREEMENTS CONTAINER LIFE AND SOURCE TERM (CLST) 5.03, CLST 5.04, CLST 5.05, EVOLUTION OF NEAR FIELD ENVIRONMENT (ENFE) 5.03, RADIONUCLIDE TRANSPORT (RT) 4.03 AND GEN 1.01 COMMENTS 21 AND 64

CONTAINER LIFE AND SOURCE TERM (CLST) 5.03, AND GEN 1.01 COMMENTS 21 AND 64

BACKGROUND

Agreements were reached for CLST 5.03 during the Technical Exchange and Management Meeting on Subissues Related to Criticality held October 23 and 24, 2000 in Las Vegas, Nevada. The U.S. Nuclear Regulatory Commission (NRC) documented the agreements in a letter dated October 27, 2000 (Schlueter 2000).

DOE provided information to NRC for KTI agreement CLST 5.03 in letters dated November 1, 2000 (Brocoum 2000), February 2, 2001 (Brocoum 2001a), and March 22, 2001 (Brocoum 2001b). NRC responded to DOE on the status of the agreement based on the information received from DOE in a letter dated February 14, 2002 (Schlueter 2002).

GEN 1.01 comments 21 and 64 were discussed with DOE, and DOE provided initial responses during the Technical Exchange and Management Meeting on Range of Thermal Operating Temperatures held on September 18-19, 2001 (Reamer and Gil 2001).

The wording of agreement CLST 5.03 and GEN 1.01 Comments 21 and 64 are as follows:

CLST 5.03

> DOE will provide an updated technical basis for screening criticality from the post-closure performance assessment. The technical basis will include (1) a determination of whether the formation of condensed water could allow liquid water to enter the waste package without the failure of the drip shield, and (2) an assessment of improper heat treatment, if it is shown to result in early failure of waste packages, considering potential failure modes. The documentation of the technical basis is comprised of (1) Analysis of Mechanisms for Early Waste Package Failure AMR, (2) Probability of Criticality Before 10,000 years calculation, and (3) Features, Event, and Process System Level and Criticality AMR. The first documents will be provided to NRC in FY02, the second and third documents will be provided in FY03.

GEN 1.01 Comment 21

The basis for screening criticality from the postclosure performance assessment is contained in a DOE AMR, "Features, Events, and Processes-System Level and Criticality" that references a document "Probability of Criticality Before 10,000 years". This screening argument relies upon the conclusion that failure of waste packages due to corrosion is not credible during the 10,000 year compliance period. However, analysis in the SSPA indicate that early failure of the waste package is credible due to the possibility of improper heat treatment of the closure welds. Therefore, there isn't a sufficient basis to screen criticality from the TSPA calculations. There are not models to evaluate the consequences of a criticality event in the TSPA.

GEN 1.01 Comment 64

Criticality has been screened from the SSPA, without an appropriate technical basis.

Basis:

The DOE screening argument in the System Level and Criticality FEPs AMR was based on the conclusion that no waste packages would fail in the first 10,000 years except as a result of igneous events. The SSPA identifies the possibility of early waste package failure due to improper heat treatment of the closure lid, but does not provide an appropriate screening argument for criticality given this failure.

Initial Response to GEN 1.01 Comments 21 and 64 (from September 18-19, 2001 meeting)

The SSPA assumed a non-mechanistic failure mode (improper heat treatment of weld areas) that allowed for early waste package failures (SSPA, Volume 1, Section 7.3.6, 2nd paragraph, last sentence). The SSPA also noted that the postulated failure mode for the early waste package failures (e.g., cracks in the closure weld) is not sufficient for criticality to occur (SSPA Volume 1, Section 9.3, 4th paragraph, 3rd sentence). The SSPA then provided a qualitative basis for screening criticality out, even with early waste package failures. The point of the qualitative basis for screening out criticality is that, in order to have a criticality within the 10,000 year period of regulatory concern, a significant amount of water must enter the waste package (i.e., water vapor in the air is not sufficient). [1]

In addition:

- It is already in our planning to revise the "Analysis of Mechanisms for Early Waste Package Failure."
- It is already in our planning to revise the "Probability of Criticality Before 10,000 Years" calculation (KTI agreement CLST 5.3) - originally provided 11/2000, revision to be provided FY02.
- The "Features, Events, and Process System Level and Criticality" AMR will be reevaluated based on the revised inputs.
- The "What-If" criticality evaluation, per KTI agreement CLST 5.6, will follow the Topical Report methodology after assuming an early waste package failure.

- DOE will consider whether the formation of condensed water could allow liquid water to enter the waste package without the failure of the drip shield.
- In the assessment of improper heat treatment, DOE will consider the potential for stress corrosion cracking initiation/arrest (KTI agreement TSPAI 3.03), possibility of patch failure (KTI agreements CLST 1.1, CLST 1.2, CLST 1.9, CLST 1.11) as a result of intergranular corrosion, and mitigation process of improper heat treatment (pre-closure agreements PRE 7.04 and PRE 7.05).

Note 1 - The information presented herein does not, at this time, represent a commitment to perform additional work. DOE is currently considering and scoping the appropriateness of a lower temperature operating mode for potential LA, should the site be approved.

RESPONSE TO CLST 5.03 AND GEN 1.01 COMMENTS 21 AND 64

To comprehensively address criticality events and their potential influence on repository performance, DOE developed Features, Events, and Processes (FEPs) for criticality; *Screening Analysis for Criticality Features, Events, and Processes for License Application* ANL-EBS-NU-000008 REV 01c, (BSC 2004) which is used for this response. The final report will be available by October, 2004. The Probability of Criticality Before 10,000 years calculation, and the Features, Event, and Process System Level and Criticality AMR described in the agreement have been replaced with this screening analysis.

Additionally, the *Analysis of Mechanisms for Early Waste Package / Drip Shield Failure* CAL-EBS-MD-000030 REV 00C, which will be available October, 2004, replaces the Analysis of Mechanisms for Early Waste Package Failure AMR initially described in the agreement.

BASIS FOR THE RESPONSE TO CLST 5.03 AND GEN 1.01 COMMENTS 21 AND 64

The FEPs address criticality separately by location (in-package intact, in-package degraded, near-field, and far-field) for scenario cases (nominal, seismic (including faulting), rockfall, and igneous). Condensation and improper heat treatment are addressed as part of this analysis. The probabilities of each of these FEPs are determined and reported separately, then the individual probabilities are summed to determine the total probability of criticality that is then compared against the criterion of less than one chance in 10,000 over the 10,000 year regulatory period [10 CFR 63.114(d)].

The probability estimates generated for criticality events considered behavior of the repository natural (including seepage/infiltration and seismic, rockfall, and igneous events) and engineered systems (degradation, deterioration, and alteration in the repository environments). The probabilities were determined using the methodology from the *Disposal Criticality Analysis Methodology Topical Report* (YMP 2003). The criticality topical report contains the risk-informed, performance-based methodology for analyzing postclosure nuclear criticality events. The criticality topical report contains generalized master degradation scenarios and the overall methodology for identifying potential configurations, determining a configuration's criticality potential, establishing the probability of criticality, and analyzing the consequences of a criticality event, should one occur. The topical report also contains the process for validating the criticality specific models to implement the methodology. The Screening Analysis of Criticality Features, Events, and Processes for License Application contains the criticality probability analysis. The results of the analysis show that the probability of occurrence

for each of the 16 criticality FEPs is below the regulatory criterion of less than one chance in 10,000 over the 10,000 year regulatory period and may be screened out. Furthermore, the total probability of criticality, determined by summing the probabilities of the 16 criticality FEPs, is below the regulatory criterion and criticality may be screened out from further evaluation in the total system performance assessment. The 16 criticality FEPs that were evaluated and their probabilities are given in the table below. Evaluation of the configuration generator by the software allows for the truncation of sequences based on their in-process probability value. If the probability of a sequence falls below the truncation value, continued processing of the sequence is halted and a value of zero assigned.

FEPs Related To Criticality	PROBABILITY (Note 1)
In package criticality (intact configuration)	0.0
In package criticality (degraded configuration)	0.0
Near field criticality	0.0
Far field criticality	0.0
In package criticality resulting from a seismic event (intact configuration)	0.0
In package criticality resulting from a seismic event (degraded configuration)	8.71×10^{-10}
Near field criticality resulting from a seismic event	0.0
Far field criticality resulting from a seismic event	0.0
In package criticality resulting from rockfall (intact configuration)	0.0
In package criticality resulting from rockfall (degraded configuration)	0.0
Near field criticality resulting from rockfall	0.0
Far field criticality resulting from rockfall	0.0
In package criticality resulting from an igneous event (intact configuration)	0.0
In package criticality resulting from an igneous event (degraded configuration)	3.08×10^{-9}
Near field criticality resulting from an igneous event	0.0
Far field criticality resulting from an igneous event	0.0
TOTAL PROBABILITY OF CRITICALITY [1]	3.95×10^{-9}

Note1: Represents the integrated probability of occurrence over the 10,000 year regulatory period

CONTAINER LIFE AND SOURCE TERM CLST 5.04, EVOLUTION OF NEAR FIELD ENVIRONMENT (ENFE) 5.03, AND RADIONUCLIDE TRANSPORT (RT) 4.03

BACKGROUND

Agreements were reached for CLST 5.04, ENFE 5.03 and RT 4.03 during the Technical Exchange and Management Meeting on Subissues Related to Criticality held October 23 and 24, 2000 in Las Vegas, Nevada. The U.S. Nuclear Regulatory Commission (NRC) documented the agreements in a letter dated October 27, 2000 (Schlueter 2000).

DOE provided information to NRC for KTI agreements CLST 5.04, ENFE 5.03 and RT 4.03 in letters dated October 12, 2001 (Brocoum 2001c), July 14, 2003 (Ziegler 2003a), and September 12, 2003 (Ziegler, 2003b). NRC responded to DOE on the status of the agreement based on the information received from DOE in a letter dated October 29, 2003 (Schlueter 2003b).

The wording for CLST 5.04, ENFE 5.03 and RT 4.03 are as follows:

CLST 5.04

Provide the list of validation reports and their schedules. DOE stated that the geochemical model evaluation reports for 'Geochemistry Model Validation Report: Degradation and Release" and "Geochemistry Model Validation Report: Material Accumulation" are expected to be available during 2001. The remainder of the reports are expected to be available during FY2002 subject to the results of detailed planning and scheduling. DOE understands that these reports are required to be provided prior to LA. A list of model validation reports was provided during the technical exchange, and is included as an attachment to the meeting summary.

ENFE 5.03

Provide the list of validation reports and their schedules. DOE stated that the geochemical model evaluation reports for 'Geochemistry Model Validation Report: Degradation and Release" and "Geochemistry Model Validation Report: Material Accumulation" are expected to be available during 2001. The remainder of the reports are expected to be available during FY2002 subject to the results of detailed planning and scheduling. DOE understands that these reports are required to be provided prior to LA. A list of model validation reports was provided during the technical exchange, and is included as an attachment to the meeting summary.

RT 4.03

Provide the list of validation reports and their schedules. DOE stated that the geochemical model evaluation reports for 'Geochemistry Model Validation Report: Degradation and Release" and "Geochemistry Model Validation Report: Material Accumulation" are expected to be available during 2001. The remainder of the reports are expected to be available during FY2002 subject to the results of detailed planning and scheduling. DOE understands that these reports are required to be provided prior to LA. A list of model validation reports was provided during the technical exchange, and is included as an attachment to the meeting summary.

RESPONSE TO CLST 5.04, ENFE 5.03 AND RT 4.03

DOE has continued to develop and provide information to the NRC to support these KTI agreements reached during the Technical Exchange and Management Meetings.

BASIS FOR THE RESPONSE

Initially there were to be 17 reports issued to support the review and closure of these KTI agreements (Schlueter 2000). This initial list of 17 was consolidated to a list of 9 reports (Brocoum 2001c). Correspondence to NRC provided updated information on the consolidated list of 9 reports (Ziegler 2003a). Table 1 provides a cross-walk of the information provided in the referenced correspondence and the reports that support these agreements.

Configuration Generator Model (CAL-DSO-NU-000002) Table 1 item 3; *Criticality Model* (CAL-DSO-NU-000003) Table 1, item 4; and *Isotopic Model for Commercial SNF Burnup Credit* (CAL-DSO-NU-000007) Table 1, item 5, are scheduled to be submitted in November, 2004. Because post-closure criticality is screened out on the basis of low total probability of occurrence, the remaining reports concerned with criticality consequence are not planned prior to license application submittal and may not be necessary to be developed or completed.

CONTAINER LIFE AND SOURCE TERM CLST 5.05

BACKGROUND

Agreements were reached for CLST 5.05 during the Technical Exchange and Management Meeting on Subissues Related to Criticality held October 23 and 24, 2000 in Las Vegas, Nevada. The U.S. Nuclear Regulatory Commission (NRC) documented the agreements in a letter dated October 27, 2000 (Schlueter 2000).

DOE provided information for KTI agreement CLST 5.05 in a letter dated September 27, 2002 (Ziegler 2002). NRC responded to DOE on the status of the agreements based on the information received from DOE in letters dated February 14, 2002 (Schlueter 2002) and March 5, 2003 (Schlueter 2003a).

In the letter dated March 5, 2003 (Schlueter 2003a), NRC provided their reasoning for determining that closure of CLST 5.05 was not appropriate. NRC determined that Preliminary analysis performed by DOE indicate that radiolysis from criticality events may affect the performance of the waste forms. Therefore, DOE needs to further evaluate the effects of radiolysis from a criticality event to determine whether radiolysis should be included in the criticality consequence analysis methodology or to provide a basis for excluding it.

The wording for CLST 5.05 is as follows:

CLST 5.05

> Provide information on how the increase in the radiation fields due to the criticality event affects the consequence evaluation because of increased radiolysis inside the waste package and at the surfaces of nearby waste packages or demonstrate that the current corrosion and dissolution models encompass the range of chemical conditions and corrosion potentials that would result from this increase in radiolysis. DOE stated that the preliminary assessment (calculation) of radiolysis effects from a criticality event will be available to NRC during February 2001. The final assessment of these conditions will be available to NRC prior to LA.

RESPONSE TO CLST 5.05

The screening analysis of criticality features, events, and processes demonstrates that nuclear criticality events for the Yucca Mountain repository have a low total probability of occurrence and may be excluded (i.e. screened out) from further evaluation in the total system performance assessment. The *Screening Analysis for Criticality Features, Events, and Processes for License Application* ANL-EBS-NU-000008 REV 01c (BSC 2004) will be available by October, 2004

BASIS FOR THE RESPONSE

With criticality being screened out on the basis of low probability of occurrence, the potential local adverse changes to the repository system performance are not important to performance and therefore, no further evaluation is necessary.

The information in this enclosure is responsive to agreement CLST 5.03, 5.04, and 5.05, ENFE 5.03, RT 4.03 and GEN 1.01 comments 21 and 64 made between DOE and NRC. This enclosure contains the information that DOE considers necessary for NRC review for closure of this agreement.

REFERENCES:

Schlueter, J.R. 2000. US Nuclear Regulatory Commission/US Department OF ENERGY Technical Exchange and Management Meeting on Subissues Related to Criticality (October 23-24, 2000). Letter J. R. Schlueter to S. Brocoum, 10/27/2000. ACC: MOL.20010730.0231

Brocoum, S. 2000. Transmittal of Calculation CAL-EBS-NU-0000014 Revision 00, "Probability of Criticality Before 10,000 Years." Letter S. Brocoum to C.W. Reamer, 11/01/2000. ACC: MOL.20001128.0194

Brocoum, S. 2001a. Transmittal of Analysis and Model Reports (AMR), Process Model Reports, Calculations and Other Documents Addressing Key Technical Issues (KTI) Technical Exchanges. Letter S. Brocoum to C.W. Reamer, 02/02/2001. ACC: MOL.20010405.0126

Brocoum, S. 2001b. Transmittal of Features, Events, and Processes (FEP) Analysis Model Reports (AMR), and Database Addressing Key Technical Issues (KTI) Technical Exchanges. Letter S. Brocoum to C.W. Reamer, 03/22/2001. ACC: MOL.20010518.0242

Brocoum, S. 2001c. Transmittal of Reports Addressing Key Technical Issues (KTI). Letter S. Brocoum to C.W. Reamer, 10/12/2001. ACC: MOL.20011214.0178

Ziegler, J. D. 2002. Transmittal of Report Addressing Key Technical Issue (KTI) Agreement Container Life and Source Term (CLST) 5.05. Letter J.D. Ziegler to J.R. Schlueter, 09/27/2002 ACC: MOL.20021111.0005

Ziegler, J.D. 2003a. Transmittal of Information Addressing Key Technical Issue (KTI) Agreement Items Container Life and Source Term (CLST) 5.04, Evolution of the Near-Field Environment (ENFE) 5.03, and Radionuclide Transport (RT) 4.03. Letter J.D. Zeigler to Document Control Desk, 07/14/2003. ACC: MOL.20030812.0005

Ziegler, J.D. 2003b. Transmittal of Isotopic, Criticality and Configuration Generation Model Reports. Letter J.D. Ziegler to Document Control Desk, 09/12/2003. ACC: MOL.20031203.0117

Schlueter, J.R. 2002. Key Technical Issues Related to Criticality. Letter J.R. Schlueter to S. Brocoum 02/14/2002. ACC: MOL.20020607.0085

Schlueter, J.R. 2003a. Container Life and Source Term Agreement 5.05 – Partly Received. Letter J.R. Schlueter to Z J.D. Ziegler 03/5/2003. ACC: MOL.20030929.0328

Schlueter, J.R. 2003b. Pre-Licensing Evaluation of Container Life and Source Term (CLST) 5.03, Evolution of the Near-Field Environment (ENFE) 5.03 and radionuclide Transport (RT) 4.03 Key Technical Issue Agreements. Letter J.R. Schlueter to J.D. Ziegler 10/29/2003. ACC: MOL.20031121.0154

Reamer, C.W. and Gil, A.V. 2001. Summary Highlights of NRC/DOE Technical Exchange and Management Meeting of Range on Thermal Operating Temperatures, September 18-19, 2001. Washington, D.C.: U.S. Nuclear Regulatory Commission. ACC: MOL.20020107.0162

YMP (Yucca Mountain Site Characterization Project) 2003. *Disposal Criticality Analysis Methodology Topical Report.* YMP/TR-004Q, Rev. 02. Las Vegas, Nevada: Yucca Mountain Site Characterization Office. ACC: DOC.20031110.0005

BSC (Bechtel SAIC Company) 2004. *Screening Analysis for Criticality Features, Events, and Processes for License Application.* ANL-EBS-NU-000008 REV 01c. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20040827.0156

TABLE 1

Model Reports Supporting the Disposal Criticality Analysis Methodology Topical Report

	Original List of Reports 10/23-24/2000		Consolodated List [a] 10/12/2001		Consolidated List Updated Information [a] 7/14/2003		Revised Consolidated List Current Model Titles [a] 7/26/2004
1	Geochemistry Model Validation Report: Degradation and Release Model	1	Geochemistry Model Valuation Report: Degradation and Release Model ANL-EBS-GS-000001	1	Geochemistry Model Valuation Report: Degradation and Release Model ANL-EBS-GS-000001	1	Geochemistry Model Report: Material Degradation and Release Model MDL-EBS-GS-000001
			Rev 0 Flooded Waste Package Model		Rev 0 Flooded Waste Package Model		Rev 0 Submitted 10/21/2001
			Rev 1 Film Degradation Model		Rev 1 Film Degradation Model		Rev 1 Film & Vapor Degradation Model
2	Geochemistry Model Validation Report: External Accumalation Model	2	Geochemistry Model Valuation Report: External Acumulation Model ANL-EBS-GS-000002	2	Geochemistry Model Valuation Report: External Acumulation Model ANL-EBS-GS-000002	2	Geochemistry Model Report: External Accumulation Model MDL-EBS-GS-000002
			Rev 0 Accumulation in Fractured Tuft Model		Rev 0 Accumulation in Fractured Tuff Model		Rev 0 Submitted 10/21/2001
			Rev 1 Accumulation in the Invert Model		Rev 1 Accumulation in the Invert Model		Rev 1 Accumulation in the Invert Model
3	Configuration Generator Model Validation Report: CSNF Waste packages	3	Configuration Generator Model Validation Report: Internal Configurations MDL-EBS-NU-000001	3	Configuration Generator Model for In-package criticality MDL-EBS-NU-000001	3	Configuration Generator Model: CAL-DSO-NU-000002
4	Configuration Generator Model Validation Report: DOE-SNF Codisposal Waste Packages		Rev 0 (CNSF)		Commercial SNF (PWR & BWR)		Rev 0 CNSF (PWR & BWR), DOE SNF Co-Disposal, Near-Field/In-Drift Configurations, and Far-Field Configurations
5	Configuration Generator Model Validation Report: Immobilized Pu Codisposal Waste Packages		Rev 1 (DOE SNF)		DOE SNF Co-Disposal		
			Rev 2 (IWPF)				
6	Configuration Generator Model Validation Report: Near-Field/In Drift Configurations	4	Configuration Generator Model Validation Report: External Configurations	4	Configuration Generator Model Report: External		
7	Configuration Generator Model Validation Report: Far Field Configurations		Rev 0 (Far Field)		Rev 0 Near-Field/In-Drift Configurations		
			Rev 1 (Near-Field/In-Drift)		Rev 1 Far-Field Configurations		
8	Criticality Model Validation Report: PWR	5	Criticality Model Validation Report: Internal MDL-EBS-NU-000003	5	Criticality Model Report MDL-EBS-NU-000003	4	Criticality Model: CAL-DSO-NU-000003
9	Criticality Model Validation Report: BWR		Rev 0 (PWR)		PWR SNF		
10	Criticality Model Validation Report: DOE SNF Codisposal		Rev 1 (BWR)		BWR SNF		Rev 0 PWR SNF, DOE-EM SNF, BWR SNF & External
11	Criticality Model Validation Report: Immobilized Plutonium Codisposal		Rev 2 (DOE SNF)		DOE SNF Co-Disposal		
			Rev 3 (IPWF)				
12	Criticality Model Validation Report: External	6	Criticality Validation Report: External	6	Criticality Validation Report: External		
13	Isotopics Model Validation Report: PWR	7	Isotopics Model Validation Report MDL-DSU-NU-000001 Rev 0 (PWR)	7	Isotopic Model Report for Commercial SNF Burnup Credit MDL-DSU-NU-000001 PWR SNF	5	Isotopic Model for Commercial SNF Burnup Credit CAL-DSO-NU-000007 Rev 0 LWR (PWR BWR) SNF
14	Isotopics Model Validation Report: BWR		Rev 1 (BWR)		BWR SNF		
15	Steady-State Criticality Consequence Model Validation Report: Internal and External	8	Steady-State Criticality Consequence Model Validation Report: Internal and External MDL-EBE-NU-000005	8	Steady-State Criticality Consequence Model Report	6	Steady-State Criticality Consequence Model: CAL-DSO-NU-000001
16	Transient Criticality Consequence Model Validation Report: Internal	9	Transient Criticality Consequence Model Validation Report MDL-EBE-NU-000006	9	Transient Criticality Consequence Model Report	7	Transient Criticality Consequence Model: Internal CAL-DSO-NU-000004
17	Transient Criticality Consequence Model Validation Report: External		Rev 0 (Internal)		Rev 0 Internal	8	Transient Criticality Consequence Model: External
			Rev 1 (External)		Rev 1 External		

a Previously listed revisions have been removed for waste forms no longer in the baseline for License Application