

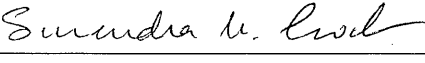
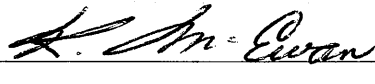
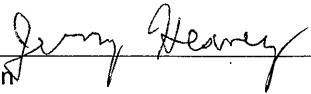

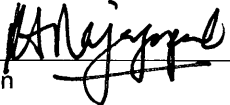
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Technical Report Administrative Change Notice

 QA:QA
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Complete only applicable items.

1. Document Number: 000-30R-MGR0-02000-000	2. Revision: 001	3. ACN: 01
4. Title: Seismic analysis and Design Approach Document		

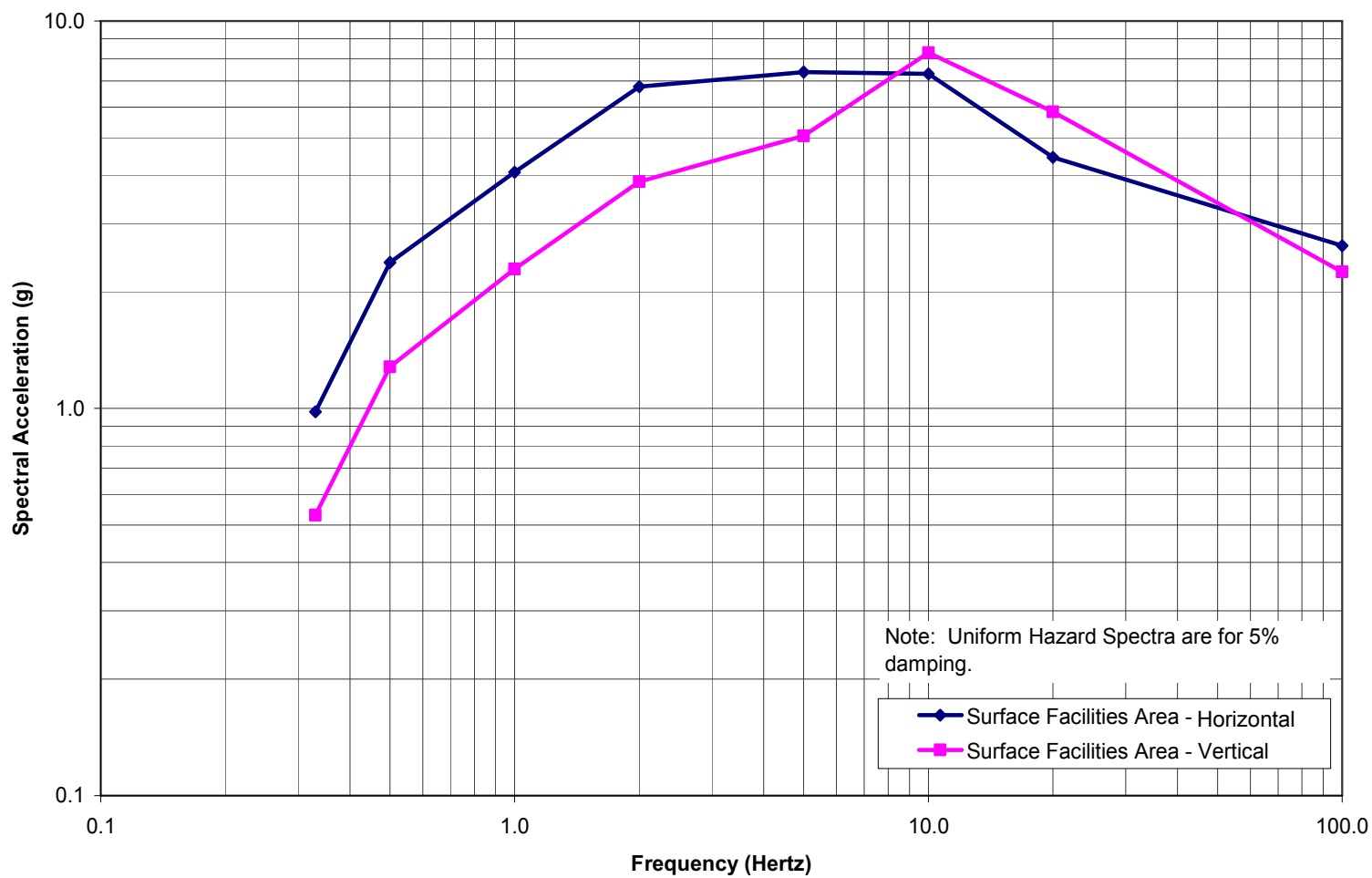
5. Approvals:		
Originator:	Surendra K. Goel  Print name and sign	3/6/2008 Date
Checker:	T.K. McEwen  Print name and sign	3/6/2008 Date
QER:	Jerry Heaney  Print name and sign	3/6/08 Date
Lead or Supervisor:	Thomas Frankert  Print name and sign	3/7/08 Date
Responsible Manager or Project Engineer:	Raj Rajagopal  Print name and sign	3/7/08 Date
6. Affected Pages	7. Reason for, and Description of Change:	
Page 2	Paragraph 1, 4th sentence, revise it to read: The geotechnical input is given in the <i>Supplemental Soils Report</i> (BSC 2007 [DIRS 184595]).	
Page 7	Paragraph 2, 2nd sentence, change it to read: The duration of the pre-closure period for subsurface facilities is 100 years (BSC 2008 [DIRS 185025], Section 2.2.2.7).	
Page 8	Section 3.2.2, revise the last sentence to read: The facility isolates radioactive material from the environment and monitors the underground area (BSC 2008 [DIRS185025], Section 8.1).	
Page 11	Section 4.3, revise the 2nd sentence to read: The methodology described in this report will be used for the design of facilities classified as ITS in the <i>Basis of Design for the Canister Based Design Concept</i> (BOD) (BSC 2008 [DIRS 185025]).	
Page 14	Section 5.2, Revise the 1st sentence to read: The seismic design basis for ITS SSCs shall be in accordance with the <i>Basis of Design for the Canister Based Design Concept</i> (BSC 2008 [DIRS 185025]). Revise the notes to Table 5-2 as follows: ^a <i>Basis of Design for the TAD Canister-Based Repository Design Concept</i> (BSC 2008 [DIRS 185025]). ^b <i>Basis of Design</i> (BSC 2008 [DIRS 185025]), Section 7.1.2 classifies EDGF as a non-ITS structure. Conservatively, it will be designed for DBGM-2 similar to ITS structures but not evaluated for BDBGM.	
Page 14	Section 6.2.1, Paragraph 1, next to last sentence, revise to read: A summary of the geotechnical investigation is presented in <i>Supplemental Soils Report</i> (BSC 2007 [DIRS 184595]).	

6. Affected Pages	7. Reason for, and Description of Change:
Page 15	<p>Revise the footnote to Table 6-1 to read: Source: <i>Supplemental Soils Report</i> (BSC 2007 [DIRS 184595]).</p> <p>Revise the footnote to Table 6-2 to read: Source: <i>Supplemental Soils Report</i> (BSC 2007 [DIRS 184595]), Tables 2-1 and 2-2.</p> <p>Revise Paragraph 2 as follows:</p> <p>The dynamic soil properties for soil structure interaction (SSI) analyses are provided in DTN: MO0801SCSPS5E4.003 [DIRS 184682] for 5×10^{-4} annual exceedance probability, and in DTN: MO0801SCSPS1E4.003 [DIRS 184683] for 10^{-4} annual exceedance probability. These properties include the effect of soil nonlinearity by developing the strain-compatible soil properties obtained from free-field analysis using the design motions. In addition, the strain-compatible damping values (DTNs: MO0801SCSPS5E4.003 [DIRS 184682] and MO0801SCSPS1E4.003 [DIRS 184683]) were developed for use in a system for analysis of soil structure interaction (SASSI). (See also Appendix C.)</p>
Page 16	<p>Revise at the end of Paragraph 1: <i>Supplemental Soils Report</i> (BSC 2007 [DIRS 184595]).</p> <p>Revise at the end of the 1st sentence of Section 6.2.3 as follows: <i>Supplemental Soils Report</i> (Figure B6-2) (BSC 2007 [DIRS 184595])</p>
Page 17	<p>Add a new sentence in a new paragraph at the end of Section 6.3.2: For a cautionary note on the use of these response spectra, see Section 6.3.5.</p> <p>Add a new sentence in a new paragraph at the end of Section 6.3.3: For a cautionary note on the use of these time histories, see Section 6.3.5.</p> <p>Add a new sentence in a new paragraph at the end of Section 6.3.4: For a cautionary note on the use of these time histories, see Section 6.3.5.</p> <p>Add a new section 6.3.5 as follows:</p> <p>6.3.5 Cautionary Note on Use of Design Response Spectra/Time Histories</p> <p>The design response spectra in DTNs MO0706DSDR1E3A.000 [DIRS 181423], MO0706DSDR5E4A.001 [DIRS 181422], and MO0706DSDR1E4A.001 [DIRS 181421] listed in Section 6.3.1; DTN MO0707DSRB5E4A.000 [DIRS 183130] listed in Section 6.3.2; the uniform ground acceleration spectra DTN MO0801HCUHSSFA.001 [DIRS 184802] listed in Appendix F, Figure F-1 and Table F2; time histories MO0706TH1E3APE.000 [DIRS 182460], MO0706TH5E4APE.001 [DIRS 181961], and MO0706TH1E4APE.001 [DIRS 181960] listed in Section 6.3.3, all are qualified with a caveat that the results are valid for SSCs with periods under 2.0 seconds or beyond frequencies of 0.5 hertz.</p>
Pages 18 through 30	<p>Add the following cautionary note at the bottom of Figures 6-1 through 6-7 and Tables 6-3 through 6-8, each</p> <p>On limitation of the use of this figure/table, see Section 6.3.5</p>
Page 33	<p>Revise the source of Figure 6-9 as follows:</p> <p>Source: BSC 2007 [DIRS 184192], Figure 3</p>
Page 37	<p>Revise the last sentence of the last paragraph of Section 7.2.1.2 as follows:</p> <p>The strain-compatible soil properties using the equivalent linear method are provided in DTN: MO0801SCSPS5E4.003 [DIRS 184682] and in DTN: MO0801SCSPS1E4.003 [DIRS 184683].</p>
Page 38	<p>Revise Section 7.2.3 as follows:</p> <p>Poisson's ratio and total density will be obtained from the site specific <i>Supplemental Soils Report</i> (BSC 2007 [DIRS 184595]). Dynamic soil properties in terms of shear and compression wave velocities and low-strain shear wave velocity will be as given in DTN: MO0801SCSPS5E4.003 [DIRS 184682] and DTN: MO0801SCSPS1E4.003 [DIRS 184683]. The strain-compatible soil properties will be used in the SSI analysis.</p>

6. Affected Pages	7. Reason for, and Description of Change:
Page 48	Revise the reference in Section 7.7, bottom of the page from BSC 2007 [DIRS 182131] to BSC 2008 [DIRS 185025]
Page 65	<p>Replace the 3rd reference [DIRS 182131] in it entirety with the following:</p> <p>185025 BSC (Bechtel SAIC Company) 2008. <i>Basis of Design of TAD Canister-Based Repository Design Concept</i>, 000-3DR-MGR0-00300-000-002. Las Vegas, Nevada: Bechtel SAIC Company. ACC ENG20080229.0007.</p> <p>Delete the 8th reference [DIRS 184154] in it entirety.</p> <p>Replace the 9th reference [DIRS 182582] in it entirety with the following:</p> <p>184595 BSC (Bechtel SAIC Company) 2007. <i>Supplemental Soils Report</i>. 100-S0C-CY00-00100-000-00D. Las Vegas, Nevada: Bechtel SAIC Company. ACC 20080102.0045.</p>
Page 69	<p>In Section 13.3, replace the 1st reference [DIRS 181618] in it entirety with the following:</p> <p>184683 MO0801SCSPS1E4.003 Strain Compatible Material Properties for the Surface Facilities Area at 1E-4 Annual Probability of Exceedance. Submittal Date: 1/11/2008.</p> <p>In Section 13.3, replace the 2nd reference [DIRS 181616] in it entirety with the following:</p> <p>184682 MO0801SCSPS5E4.003 Strain Compatible Material Properties for the Surface Facilities Area at 5E-4 Annual Probability of Exceedance. Submittal Date: 1/11/2008</p>
Page 70	<p>In Section 13.3, replace the next to last reference [DIRS 182465] in it entirety with the following:</p> <p>184802 MO0801HCUHSSFA.001. Mean Hazard Curves and Mean Uniform Hazard Spectra for the Surface Facilities Area. Submittal date: 01/11/2008.</p>
Page 81	<p>In Section B3.2, change the 4th line as follows:</p> <p>BDBGM = Beyond design basis ground motion for which the structure has been evaluated.</p>
Page 84	<p>At the end of Section B4.2 METHODOLOGY, add the following:</p> <p>NOTE: In the above steps, instead of BDBGM, the DBGM-2, or any other level of ground motion for which the structures are analyzed, may be used.</p>
Page 97	<p>10. Section B4.5 ENERGY DISSIPATION FACTOR AND CONFINEMENT:</p> <ol style="list-style-type: none"> Add at the end of Paragraph 1 the 1st sentence of the 2nd paragraph ,”In some cases ... energy dissipation factor F_{μ} of 1.0,” and remove it from the 2nd paragraph.” Delete the 2nd sentence of the 2nd paragraph in it entirety. Continue the 1st paragraph with the statement: For this limit state, the <i>Basis of Design of TAD Canister-Based Repository Design Concept</i>, (BSC 2008 [DIRS 185025]) specifies the following requirements:
Page 106	<p>Paragraph with the 1st bullet under the additional caveats for the bounding calculations:</p> <p>Revise DTN: MO0706SCSPS5E4.002 [DIRS 181616] to MO0801SCSPS5E4.003 [DIRS 184682].</p> <p>Revise the last sentence of the paragraph as follows:</p> <p>Use Poisson’s ratio of 0.3 as recommended in the <i>Supplemental Soils Report</i> (BSC 2007 [184595]) for both alluvium and the tuff in these calculations.</p>
Page 137	<p>Revise the last paragraph of Section F2 as follows:</p> <p>Figure F1 shows the horizontal and vertical response spectra for the extreme seismic event (APE 2E-6 MO0801HCUHSSFA.001 [DIRS 184802]). Table F1 lists the seismic requirements for selected mechanical equipment. Table F2 shows the digitized response spectra for the extreme seismic event (APE 2E-6 MO0801HCUHSSFA.001 [DIRS 184802]).</p>
Page 138	Replace the existing Figure F-1 with the attached new figure F-1
Page 140	Replace the existing table F2 with the attached new Table F2.

ATTACHMENT

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Source: MO0801HCUHSSFA.001 [DIRS 184802]

Figure F-1. Uniform Hazard Ground Acceleration Spectra for Extreme Seismic Event (APE 2E-6) – Surface Facilities area – 5% Damping

ATTACHMENT

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Table F2. Uniform Hazard Spectra

Uniform Hazard Ground Acceleration Spectra for Extreme Seismic Event
for 2E-6 annual probability of exceedance, Surface Facilities Area

Site-Wide Uniform Hazard Spectra HORIZONTAL			Site-Wide Uniform Hazard Spectra VERTICAL		
PERIOD(S)	FREQ(HZ)	GMOTION	PERIOD(S)	FREQ(HZ)	GMOTION
0.01	100.00	.26285E+01	0.01	100.00	.22468E+01
0.05	20.00	.44529E+01	0.05	20.00	.58259E+01
0.10	10.00	.72967E+01	0.10	10.00	.82847E+01
0.20	5.00	.73820E+01	0.20	5.00	.50482E+01
0.50	2.00	.67650E+01	0.50	2.00	.38465E+01
1.00	1.00	.40652E+01	1.00	1.00	.22883E+01
2.00	0.50	.23753E+01	2.00	0.50	.12786E+01
3.00	0.33	.97774E+00	3.00	0.33	.53177E+00

Source: MO0801HCUHSSFA.001 [DIRS 184802]