BSC

Criteria/Basis Change Notice

Complete only applicable items.

1. QA: N/A
2. Page 1 of 3

3. Document Identifier:	4. Rev.:	5. CBCN:
000-3DR-MGR0-00100-000	007	010
6a. Title:	**6b. Safety Classification of SSC:**	
Project Design Criteria Document	Non-ITS & Non-ITWI	

7. Reason for Change:

ITEM 1:

The Rationale in PDC Rev 007, Section 6.1.7 states that the winter monthly mean for the surface external relative humidity is December. The cited DTN, MO0405SEPRHVMM.000, indicates that the winter monthly mean occurred in February. Table 1.2.2-2 of the YMP SAR identifies the month of February. No potential impact noted.

ITEM 2:

CR 11713 identified DTN MO0307MWDAC8MV.000 was referenced in PDC Revision 007, Section 4.2.13.5.7, Table 4.2-3, Note 1, after it had been removed from *IED Emplacement Drift Configuration and Environment*, 800-IED-MGR0- 00501-000 REV 00B (also referenced in the PDC). Approval and implementation of Technical Management Review Board (TMRB) Proposal TMRB-2007-026 "ELWS and Maximum Waste Package Thermal Limits for Handling" **[DIRS 185135]** changed the baseline thermal line load from 1.45 kW/m to a maximum of 2.0 kW/m. Subsequent analysis shows that the increase in thermal line load increases the temperature of the air exiting emplacement drifts. Data from DTN: MO0307MWDAC8MV.000 [DIRS 165395] is not valid as a reference because it has been removed from IED 800-IED-MGR0-00501-000-00A REV 00B. The reference was used to determine the fully loaded emplacement drift temperature ranges. Because implementation of the TMRB proposal only affects the exit temperature, the value for the temperature of the air entering the emplacement drift (23°C) is still valid. As a result, a different reference for the temperature of the air entering the emplacement drift is provided. This change affects certain values in Table 4.2.3. No potential impact noted. Potential impacts were noted prior to the initiation of their CBCN and are being addressed by Engineering.

8. Supersedes Change Notice: ☐ Yes If, Yes, Change Notice: _____ ☒ No

9. Disciplines/Organizations Affected by this Change:

Mechanical Discipline Engineering Manager 3/05/08	Nuclear Facilities Project Engineer 05 MAR 08	Balance of Plant Project Engineer 03.05.2008
Nuclear & Radiological Discipline Engineering Manager 3/4/08	Licensing & Nuclear Safety Document Review 3/5/08	
Preclosure Safety Analyses Manager NSO per e-mail	Environmental, Safety and Health Review Coordinator 3/05/08	
Civil/Structural/Architectural Discipline Engineering Manager 3/4/08	Subsurface Facilities Project Engineer 3/5/08	If 6b is ITS/ITWI: Quality Assurance:

10. Description of Change:

ITEM 1: Revise the following existing criteria:

6.1.7 Humidity

The repository facilities and SSCs shall be designed to withstand and operate in the surface external relative humidity environment including an annual mean humidity value of 30%, a minimum summer monthly mean value of 10%, and a maximum winter monthly mean value of 59%.

*[Humidity is considered to be a primary environmental parameter that can affect performance and anticipated life expectancy of SSCs. This criterion establishes the external humidity environment at the site. The site-specific values are based on an updated analysis of Site 1 records that includes the period from 1998 to 2002 (DTN: MO0405SEPRHVMM.000, Mean Relative Humidity Values for Meteorological Monitoring Site 1 from 1998-2002 [DIRS 170462]). The summer mean is from June and the winter mean is from ~~December~~ **February**. Values were adjusted to the nearest whole percentage that envelope the values in this DTN. Example: Min RH is 10.6 % in DTN adjusted to 10 %. Maximum is 58.1 % adjusted to 59 %. IED Surface Facility and Environment (BSC 2007 [DIRS ~~179915~~ **184152**]) now includes this DTN. CBCN~~008~~ **010** to Revision ~~6~~7provided reference to the IED. ~~This IED is currently under revision but will not be released in time for Rev 7 of the PDC but will be incorporated in Rev 8 through a CBCN~~.*

ITEM 2: Revise the following existing criteria:

4.2.13.5.7 Temperature Loads (T)

The design of SSCs shall include the effects of variations in temperatures. Air temperatures in emplacement and nonemplacement areas of the subsurface facility are not expected to fall outside the normal air temperature ranges listed in Table 4.2-3. Design temperatures for structural components shall consider these normal air temperature ranges in addition to deviations (temperature spikes for a given duration) that might occur during off-normal events affecting subsurface ventilation mechanical equipment or ventilation underground airways.

Table 4.2-3 Normal Range of Area Air Temperatures

Surface Facility Areas	Normal Air Temperature Range, °C	Comment
Access Mains (Habitable)and Turnouts (Uninhabitable)[e]	7–31 (~~average~~ inlet air temperature range) [a]	Habitable conditions – **The temperature range stated in the table is from a station located in the North Ramp**
Fully Loaded emplacement drifts [b] (Uninhabitable)	23 [b] ~~-74~~ **100**[c]	In-drift air temperatures vary per these parameters: location in drift (low values near drift entrance); emplacement drift length; and years of ventilation. NOTES: (1)23°C is the emplacement drift inlet design temperature**. The value (23) is rounded from the calculated value of 22.8 which is the calculated rock temperature at the repository horizon. The source document makes the assumption that the air temperature will be equal to the rock temperature.** (2) in-drift air temperatures are maintained below 50°C when emplacement equipment is operating. **(3) The value of the outlet temperature for the emplacement drifts is based on analytical results of the repository thermal environment after waste emplacement.**
Exhaust mains, shaft access drifts, and shafts [b] (Uninhabitable)	~~42 74~~ **Up to 100**[b]	Temperatures in these areas vary with extent of emplacement in a given area or panel, and years of ventilation. **The lower temperature that does affect design of the SSC's is (7) as listed in Access Mains and Turnouts. The outlet temperature of the emplacement drifts is changed to "Up to a 100°".**
Exhaust **Fans** ~~fans~~ [a]	~~32 64~~ **100 Max.**[b]	~~These temperatures reflect a 10-degree cooling for the vertical ascent~~ **The temperature at the shaft collar will be equal to the temperature of the air exhausting from the emplacement drift minus cooling for the vertical ascent** [d]

~~Sources:~~ [a] ~~DTN: MO0307MWDAC8MV.000 [DIRS 165395]~~ **DTN: GS030808312231.004 [DIRS 166735] TRH04**

[b] ~~*Mine Ventilation and Air Conditioning* (Hartman et al. 1997 [DIRS 101877]), Equation 16.2~~ **DTN: MO0701VENTCALC.000 [DIRS 179085]**

[c] ~~DTN: GS030808312231.004 [DIRS 166735], SEP Table S0332701~~ **800-KVC-VUE0-00700-000-00A [DIRS 184837], Table 9].**

[d] Mine Ventilation and Air Conditioning (Hartman et al. 1997 [DIRS 101877]), Equation 16.2

[Design peak wall temperatures in emplacement drifts and downstream airway openings are based on temperature limits that will preserve structural integrity of ground support and structural components for off-normal event conditions not to exceed a predetermined duration. DTNs ~~MO0307MWDAC8MV.000~~ ***MO0701VENTCALC.000****, ~~Analytical LA Coarse 800M Ventilation~~* ***Analytical Ventilation Calculation for the Base Case Analysis with a 1.45 KW/M Initial Line Load*** *[DIRS ~~165395~~* ***179085****] and GS030808312231.004, Moisture Monitoring in the Exploratory Studies Facility (ESF) from August 2000 to July 2002 [DIRS 166735], referenced as sources in Table 4.2-3 are included in IED Emplacement Drift Configuration and Environment (BSC 2007 [DIRS 180412]). ~~Although CBCN008 to Revision 6 provided the DTNs, the IED has since been revised and updated here~~* ***CR 11713 identified that DTN MO0307MWDAC8MV.000 was referenced in PDC Revision 007, Section 4.2.13.5.7, Table 4.2-3, Note 1, after it had been removed from IED Emplacement Drift Configuration and Environment, 800-IED-MGR0- 00501-000 REV 00B (also referenced in the PDC). In addition, approval and implementation of Technical Management Review Board (TMRB) Proposal TMRB-2007-026 "ELWS and Maximum Waste Package Thermal Limits for* **Handling***"[DIRS 185135] changed the baseline thermal line load from 1.45 kW/m to a maximum of 2.0 kW/m. Subsequent analysis shows that the increase in thermal line load increases the temperature of the air exiting emplacement drifts. This change affects certain values in Table 4.2.3. CBCN~~008~~010 to Revision ~~6~~7 provided this change.]*

11. REVIEWS AND APPROVAL			
Printed Name	**Title**	**Signature**	**Date**
11a. Preparer: David S. Rhodes	Discipline Engineering Manager		3-5-08
11b. Concurrence: Richard Foster	Manager of Discipline Engineering		3-5-08
11c. Concurrence: N/A	Project Engineering Manager		
11d. Approved: Barbara Rusinko	Engineering Manager		3/5/08