



Model Error Resolution Document

QA: QA
Page 1 of 4

Complete only applicable items.

INITIATION

1. Originator: Jim Houseworth/Ming Zhu	2. Date: 5/22/08	3. ERD No. MDL-NBS-HS-000007 ERD 01
4. Document Identifier: MDL-NBS-HS-000007 REV 03	5. Document Title: Mountain-Scale Coupled Processes (TH/THC/THM) Models	

6. Description of and Justification for Change (Identify applicable CRs and TBVs):

I Background Information Summary

This ERD is prepared to resolve CR 12142 associated with *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]).

CR 12142: During the extent of condition review for CR 12142, the same error identified in CR 12142 was found in Table 6.1-1 of *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]). Table 6.1-1 in *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]) correlates the UZ model layers with hydrogeologic units for the Paintbrush Group (layers beginning with “Tp”) as defined in Buesch et al. (1996 [DIRS 100106], Table 4). The lithostratigraphic unit at the base of the major unit “TSw” is shown as “Tptpv2.” The corresponding UZ model layer is listed as “tsw39 (vit,zeo)” and the corresponding hydrogeologic unit is listed as “PV2.” According to the source information in Buesch et al. (1996 [DIRS 100106], Table 4), the “PV2” (short for Tptpv2) is the uppermost lithostratigraphic unit in the major unit “CHn.” The error in the unit classification has no impact on the output from the mountain-scale TH/THC/THM models.

Other reports that have this same error are listed in ERD 01 of *Development of Numerical Grids for UZ Flow and Transport Modeling*, ANL-NBS-HS-000015 REV 02 (BSC 2004 [DIRS 169855]). There is no impact of this error in the mountain-scale report (BSC 2005 [DIRS 174101]) on any downstream technical products.

(see attached)

CONCURRENCE

	Printed Name	Signature	Date
7. Checker	Charles Haukwa		05/22/2008
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APPROVAL

9. Originator	Jim Houseworth Ming Zhu		05/22/2008 5/22/08
10. Responsible Manager	Paul Dixon		5-22-08

(Continued from Block 6)

The following documents that cite MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]) were checked for impacts as a result of this correction:

- ANL-EBS-MD-000049 REV 03 AD 01, *Multiscale Thermohydrologic Model*
- ANL-EBS-MD-000075 REV 01, *Thermal Management Flexibility Analysis*
- ANL-NBS-HS-000047 REV 01, *THC Sensitivity Study of Heterogeneous Permeability and Capillarity Effects*
- ANL-NBS-HS-000057 REV 00, *Postclosure Analysis of the Range of Design Thermal Loadings*
- ANL-WIS-MD-000027 REV 00, *Features, Events, and Processes for the Total System Performance Assessment: Analyses*
- MDL-NBS-HS-000001 REV 05, *Drift-Scale THC Seepage Model*
- MDL-NBS-HS-000020 REV 02, *Particle Tracking Model and Abstraction of Transport Processes*
- MDL-WIS-PA-000005 REV 00, *Total System Performance Assessment Model/Analysis for the License Application - Volume I*
- TDR-MGR-MD-000037 REV 02, *Postclosure Modeling and Analyses Design Parameters.*

II Inputs and/or Software

None

III Analysis and Results

In Table 6.1-1 in *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]), the lithostratigraphic unit at the base of the major unit “TSw” is shown as “Ttpv2”. The corresponding UZ model layer is listed as “tsw39 (vit, zeo).” According to the source information in Buesch et al. (1996 [DIRS 100106], Table 4), the “PV2” unit (short for Ttpv2) is the uppermost lithostratigraphic unit of the major unit “CHn.” This correction to Table 6.1-1 in *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]) is given in Table 1 below. Note also that the designation of “tsw39” as the top model layer for the Calico Hills nonwelded (CHn) major unit (see Table 1) has no effect on the development of the TH, THC, or THM coupled process models.

Table 1. GFM 2000 Lithostratigraphy, TH Model Layer, and Hydrogeologic Unit Correlation Used in the Mountain-Scale TH Model

Major Unit	Lithostratigraphic Nomenclature	TH Model Grid Layer
Tiva Canyon welded (TCw)	Tpcr	tcw11
	Tpcp	tcw12
	TpcLD	
	Tpcpv3	tcw13
	Tpcpv2	
Paintbrush nonwelded (PTn)	Tpcpv1	ptn21
	Tpbt4	ptn22
	Tpy (Yucca)	ptn23
		ptn24
	Tpbt3	
	Tpp (Pah)	ptn25
	Tpbt2	ptn26
	Tptrv3	
Topopah Spring Welded (TSw)	Tptrv2	
	Tptrv1	tsw31
	Tptrn	tsw32
	Tptrl, Tptf	tsw33
	Ttpul, RHHtop	
	Ttpmn	tsw34
	Ttppl	tsw35
	Ttplin	tsw36
		tsw37
	Ttpv3	tsw38
Calico Hills nonwelded (CHn)	Ttpv2	tsw39 (vit, zeo)*
	Ttpv1	ch1 (vit, zeo)
	Tpbt1	
	Tac (Calico)	ch2 (vit, zeo)
		ch3 (vit, zeo)
		ch4 (vit, zeo)
		ch5 (vit, zeo)
	Tacbt (Calicobt)	ch6 (vit, zeo)
	Tcpuv (Prowuv)	pp4
	Tcpuc (Prowuc)	pp3
	Tcpmd (Prowmd)	pp2
	Tcplc (Prowlc)	
	Tcplv (Prowlv)	pp1
	Tcpbt (Prowbt)	
Tcbuv (Bullfroguv)		
Crater Flat undifferentiated (CFu)	Tcbuc (Bullfroguc)	bf3
	Tcbmd (Bullfrogmd)	
	Tcblc (Bullfroglc)	
	Tcblv (Bullfroglv)	bf2
	Tcbbt (Bullfrogbt)	
	Tctuv (Tramuv)	
	Tctuc (Tramuc)	tr3
	Tctmd (Trammd)	
	Tctlc (Tramlc)	
	Tctlv (Tramlv)	tr2
	Tctbt (Trambt) and below	

Source: BSC 2004 [DIRS 169855], Table 6-5.

* The designation of "tsw39" as the top model layer for the Calico Hills nonwelded (CHn) major unit (see Table 1) has no effect on the development of the TH, THC, or THM coupled process models.

IV Impact Evaluation

This change corrects an error in Table 6.1-1 of *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]). The “Tptpv2” lithostratigraphic unit, and the corresponding “tsw39 (vit, zeo)” UZ model layer and “PV2” hydrogeologic unit have been moved from the “TSw” major unit to the “CHn” major unit. This placement has no impact because the “TSw” and “CHn” major units are not used for the development of hydrological properties. This change has no impact on the conclusions of *Mountain-Scale Coupled Processes (TH/THC/THM) Models*, MDL-NBS-HS-000007 REV 03 (BSC 2005 [DIRS 174101]), or on any downstream technical product.