by

Operated for the U.S. Department of Energy

Sandia Corporation

Carlsbad, New Mexico 88220

date: January 23, 2012

to: Records Center

from: Patricia Johnson, SNL Contractor

subject: 2005 Calculated Densities

The groundwater densities for the WIPP Culebra monitoring wells were calculated for 2005 as described in the Activity/Project Specific Procedure (SP) 9-11 Calculation of Densities for Groundwater in WIPP Wells. The derivation of the data is explained in the following sections and the supporting data are attached.

#### 1. Calculation Process:

As stated in SP 9-11, for each calculation the observed water pressure is divided by the height of the water column. Specifically, the measured pressure value was divided by the Troll depth minus the closest corresponding depth to water (from or adjusted to the same measurement point elevation), and that result was then divided by 0.4335 (psi to feet of fresh water conversion at 4°C, at which temperature the density of pure water is 1.000 g/cm<sup>3</sup>). The individual calculated density results for each well were then averaged for a final density value.

The density data are included in the 2005 Calc Dens.xlsx spreadsheet file created in Excel. Within that spreadsheet, the worksheet 2005 Calc Dens summarizes the resulting density values and supporting information for the calculated densities, and the worksheet 2005 Calc Dens Formulas provides the formulas in the worksheet. In addition, the Excel file contains individual well worksheets that include the data used for the calculations and plots of the Troll pressure data. The columns in the worksheets and their contents are described below:

- A –Well ID Well name
- B 2005 Avg Calc Dens (g/cm<sup>3</sup>) Average Calculated Density Value for 2005
- C 2010 Avg Calc Dens (g/cm³) Average Calculated Density Value for 2010
- D 2010 less 2005 value Difference between 2010 and 2005 densities (Column C -Column B)
- E # of Dens Averaged number of density values averaged to get the final value
- F Troll Mini/Level, Vented (v)/Non-Vented (nv) the type of Troll and cable used to collect pressure measurements

- G Timeframe of Data Time period for pressure data used in calculations
- H Troll File Name(s) File names for pressure data
- I Troll Install Depth (ft BTOC/T) Depth below primary measuring point at which the Troll was installed, below top of casing or tubing
- J Troll Ideal Install Depth (ft BTOC/T) (ERMS 549564) Mid-Culebra depth below top of casing/tubing
- K Length Off Ideal Depth (ft) Depth in feet that the Troll is installed below/above ideal (Column I - Column J)
- L Date of Install Date the Troll was installed into the well
- M Installation Logbook Page Reference to the logbook and page where the Troll
  installation was documented
- N Comments/Explanations Comments and/or explanations regarding data

The spreadsheet entries were verified by Dale O. Bowman II, Organization 6212.

#### 2. Identification/Listing of Input, Input sources, and Output:

- Excel spreadsheet including the data 2005 Calc Dens.xlsx
  - ➤ Worksheet 1 2005 Calc Dens (printed copy attached)
  - ➤ Worksheet 2 2005 Calc Dens Formulas (printed copy attached)
  - ➤ Worksheet 3 C-2737
  - Worksheet 4 ERDA-9
  - ➤ Worksheet 5 H-2b2
  - ➤ Worksheet 6 H-3b2
  - ➤ Worksheet 7 H-4b
  - Worksheet 8 H-5b
  - ➤ Worksheet 9 H-6b
  - ➤ Worksheet 10 H-7b1
  - ➤ Worksheet 11 H-9c
  - ➤ Worksheet 12 H-11b4
  - ➤ Worksheet 13 H-12
  - Worksheet 14 H-15
  - ➤ Worksheet 15 H-17
  - ➤ Worksheet 16 H-19b0
  - ➤ Worksheet 17 IMC-461
  - ➤ Worksheet 18 P-17
  - ➤ Worksheet 19 SNL-1
  - Worksheet 20 SNL-2
  - Worksheet 21 SNL-3
  - ➤ Worksheet 22 SNL-5
  - Worksheet 23 SNL-8
  - ➤ Worksheet 24 SNL-9
  - ➤ Worksheet 25 SNL-12
  - Worksheet 26 SNL-13

### **Information Only**

- Worksheet 27 SNL-14
- ➤ Worksheet 28 SNL-15
- ➤ Worksheet 29 WIPP-11
- Worksheet 30 WIPP-12
- Worksheet 31 WIPP-13
- Worksheet 32 WIPP-25
- Worksheet 33 WIPP-26

#### 3. Data Qualification for Compliance Decision Analysis:

Data sources provided in Column H (Troll File Name(s)), Column M (Installation Logbook Page), and in the References Section.

#### 4. Software Used:

Intel® Xeon® CPU, Microsoft Windows 7, Microsoft Office Professional Plus 2010 Excel

#### 5. Reviews:

Technical: Dale O. Bowman II, 6212

QA: Shelly Nielsen, 6210

#### 6. References:

 Troll installation data and SNL water level data from the following logbooks (package ERMS 543277):

Troll Logbook 3 – Troll-3

Troll Logbook 4 - Troll-4

Troll Logbook 5 - Troll-5

Magenta Hydrology Notebook 6 – Magenta-6

WIPP Site Well Testing 2 - WSWT-2

WIPP Site Well Testing 7 - WSWT-7

WIPP 30-Day Pumping Test #1 - SNL-9

WIPP 30-Day Pumping Test #2 - WIPP-11

WIPP 30-Day Pumping Test #3 - SNL-14

- WRES Water Level Data submitted to SNL in monthly memoranda (package ERMS 525178)
- Johnson, Patricia B., Culebra Center Depths for Use in Calculating Equivalent Freshwater Heads of the Culebra Dolomite Member of the Rustler Formation near the WIPP Site, Revision 3, June 10, 2010 (ERMS 553781)

#### 7. List of Attachments:

- 1. Printout of Excel file worksheet 2005 Calc Dens.xlsx
- 2. Printout of Excel file worksheet 2005 Calc Dens Formulas.xlsx
- 3. CD including the Excel file and memorandum

## **Information Only**

#### **2005 Calculated Densities**

										.,		p.a 1	N
Α	В	С	D	E	F	G	Н	1	J J	K	L L	M	N
					Troll - Mini/Level,			Troll Install	Troll Ideal Install	Length Off			
	2005 Avg Calc	2010 Avg Calc	2010 less	# of Dens		Timeframe of	Troll File Name(s)	Depth (ft	Depth (ft BTOC/T)	Ideal	Date of Install	Installation Logbook	Comments/Explanations
Well ID	Dens (g/cm³)	Dens	2005 value	Averaged	Vented (v)/Non-	Data	How the Manie(s)		(ERMS 549564)	Depth (ft)		Page	
	Delia (g/ ciii /	265			Vented (nv)			BTOC/T)	(EKINS 549564)	Depth (It)			
AEC-7			- Season	10			No Troll Data						
			3 - March 12 - March 14 - 14 - 14 - 14 - 14 - 14 - 14 - 14	3500			SN12807 2004-12-16 104734 C-2737(C7).bin, SN17333 2005-06-28 140000 C-2737(C8).bin, SN17333 2005-07	701.0	691.0	10.00	3/23/2004	WSWT-2 (141)	
C-2737	1.019	1.025	0.006	8	mini(v)		27 120000 C-2737(C9).bin, SN17333 2005-11-14 150000 C-2737(C10).bin	701.5	691.0	10.50	6/28/2005	Troll LB-4 (104)	
							SN04580 2005-11-15 110000 ERDA-9(C3).bin, 5N12473 2004-10-11 130909 ERDA-9(C1).bin, SN04580 2006-	475.0	716.8	-241.78	3/22/2005	Troll LB-4 (49)	
ERDA-9	1.066	1.070	0.004	6	mini(v)	Apr - Nov			716.8	-240.98	11/15/2005	Troll LB-5 (12)	
LILDITS	1.000	1.070	0.00 /	,	(.,	<u> </u>	02-23 130000 ERDA-9(C4).bin, SN04580 2005-03-22 150000 ERDA-9(C2).bin	475.8				····	
H-2b2	1.020	1.011	-0.009	.7	mini(v)	Jan - Apr	SN07861 2004-07-19 125701 H-2b2(C2).bin	450.0	635.5	-185.50	7/19/2004	Magenta-6 (99)	
H-3b2	1.053	1.041	-0.012	11	mini(v)	Jan - Dec	SN17386 2005-01-17 143150 H-3b2(C3).bin, SN17386 2005-07-11 150000 H-3b2(C4).bin	500.0	687.7	-187.70	1/17/2005	Troll LB-4 (2)	
11 302	1.055	1.0.1	0.012					445.0	504.1	-59.10	11/10/2004	Troll LB-3 (127)	2010 density and ideal depth for H-4bR
H-4b	1.015	1.016	0.001	3	mini(v)	Jan, Jul	SN17716 2004-11-10 144039 H-4b (C1).bin, SN17334 2005-07-01 100000 H-4b(C1).bin	500.0	504.1	-4.10	7/1/2005	WSWT-7 (65)	
							200 4 40000 4 51 (02)		910.3	-310.30	4/6/2005	Troll LB-4 (61)	
H-5b	1.097	1.091	-0.006	9	mini(v)	Apr - Dec	SN08276 2005-04-06 160000 H-5b(C1).bin, SN08276 2005-10-21 130000 H-5b(C2).bin	600.0	910.5	-310.30	<del></del>	<del></del>	
					,	1 5	SN17353 2004-10-14 112016 H-6b(C3).bin, 5N17353 2005-10-04 130000 H-6b(C4).bin	450.8	617.5	-166.70	10/14/2004,	Troll LB-3 (111-2) Troll	
H-6b	1.040	1.035	-0.005	12	mini(v)	Jan - Dec	SN17353 2004-10-14 112016 H-6B(C3).BIN, SN17353 2005-10-04 130000 H-6B(C4).BIN	450.8	017.5	1 -100.70	10/4/2005	LB-4 (146)	
								275.0	269.9	5.10	1/19/2005	Troll LB-4 (9)	
H-7b1	1.008	1.004	-0.004	11	mini(v)	Feb - Dec	SN17716 2005-01-19 132045 H-7b1(C3).bin, SN17716 2005-11-22 150000 H-7b1(C4).bin	275.8	269.9	5.90	11/22/2005	Troll LB-5 (23)	
								273.0	205.5	3.50	11/22/2003	11011 20 3 (23)	
	4 000	4.004	0.034	1 11	mini(v)	Jan - Nov	SN11025 2005-01-18 153659 H-9c(C7).bin, SN11025 2005-11-23 100000 H-9c(C8).bin	500.0	663.5	-163.50	1/18/2005	Troll LB-4 (6-7)	
H-9c	1.028	1.004	-0.024	11	min(v)	Jan - NOV	3N11023 2003-01-18 133039 H-9c(c7).bill, 3N11023 2003 11 23 100000 H 3c(c6).bill			1			
H-11b4	1.088	1.049	-0.039	6	mini(v)	Jul - Dec	SN11231 2005-07-15 150000 H-11b4 (C2).bin	500.0	736.2	-236.20	7/15/2005	Troll LB-4 (107)	
11-1104	1.066	1.043	-0.033		17,111(4)	301 Dec	3.122.2	550.0	838.4	-288.40	4/29/2005	Troll LB-4 (87)	
H-12	1.106	1.105	-0.001	9	mini(v)	May - Dec	SN04558 2005-04-29 110000 H-12(C2).bin, SN04558 2005-12-22 150000 H-12(C3).bin	550.8	838.4	-287.60	12/22/2005	Troll LB-5 (47)	
11.45	4 000	4 4 4 7	0.035	_	mini(v)	Jul - Dec	SN07861 2005-07-18 100000 H-15(C14).bin, SN07861 2005-11-14 120000 H-15(C15).bin	600.0	872.5	-272.54	7/18/2005	WSWT-7 (89)	2010 density and ideal depth for H-15R
H-15	1.082	1.117	0.035	°	iiiii(v)	Jui - Dec	3107801 2003-07-18 100000 11-13(217).5111, 3107801 2003 11 14 120000 11 13(213).611	600.8	872.5	-271.74	11/14/2005	Troll LB-5 (9)	,
H-17	1.168	1.134	-0.034	8	mini(v)	May - Dec	SN18758 2005-04-28 120000 H-17(C1).bin	500.0	720.4	-220.40	4/28/2005	Troll LB-5 (85)	
				1	mini(v)		SN13475 2005-11-15 120000 H-19b0(C1).bin	500.8	754.0	-253.20	11/15/2005	Troll LB-5 (15)	
H-19b0	1.067	1.066	-0.001	1	mini(v)	Dec	3N13473 2005-11-13 120000 11-13B0(C1):Bill	-	<del>                                     </del>		1/26/2005,	WSWT-5 (139-140)	
IMC-461	1.015	1.003	-0.012	9	mini(v)	Feb - Oct	SN08268 2005-01-26 135912 IMC-461 (C7).bin	375.8	376.5	-0.70		1	
11010-401	1.015	1.003	-0.012							<b>_</b>	10/4/2005	Troll LB-4 (145)	
	1			_		Τ	SN17400 2004-10-12 150549 P-17(C2).bin, SN17400 2005-06-15 100000 P-17(C3).bin, SN17400 2005-06-21	550.0	570.5	-20.50	10/12/2004	Troll LB-3 (107)	Ideal depth is BGS
P-17	1.201			7	mini(v)	Jan - Jul	140000 P-17(C4).bin, SN17400 2005-06-29 170000 P-17(C5).bin	330.0	370.5	0.00	4/19/2005	Troll LB-4 (80)	Tacar acports 5 55
<del></del>		49.00	2 2 2 2	<del> </del>		NAS- Aug	SN13590 2005-03-21 130000 SNL-1(C7).bin	601.2	612.9	-11.67	3/21/2005	Troll LB-4 (47)	
SNL-1	1.032	1.026	-0.006	6	mini(v)	Mar - Aug	SN13562 2005-01-19 121756 SNL-2(C12pump).bin, SN13562 2005-01-25 093319 SNL-2(C13).bin, SN13562	475.1	470.7	4.40	9/24/2004	Troll LB-3 (97)	
												<del></del>	
SNL-2	1.003	1.007	0.004	9	mini(v)	Mar - Dec	2005-02-28 140000 SNL-2(C14).bin, SN12807 2005-07-27 090000 SNL-2(C15).bin, SN13590 2005-11-22	473.8	470.7	3.10	7/27/2005	WSWT-7 (101-2)	
	1				1		110000 SNL-2(C16).bin	474.6	470.7	3.90	11/22/2005	Troll LB-5 (18)	
								600.0	766 5	-166.50	5/3/2004	WSWT-3 (42)	
SNL-3	1.029	1.026	-0.003	12	mini(v)	Jan - Dec	SN11028 2004-05-03 111511 SNL-3(C2).bin, SN11028 2005-04-13 140000 SNL-3(C3).bin	600.0	766.5	-106.50	4/13/2005	Troll LB-4 (77)	
						<b>_</b>					8/18/04,	Troll LB-3 (72), Troll	
SNL-5	1.008	1.006	-0.002	12	mini(v)	Jan - Dec	SN04558 2004-09-10 134143 SNL-5(C3).bin, SN11306 2005-04-01 140000 SNL-5(C4).bin	450.0	649.0	-199.00	1		
JIVL-3	1.006	1.000	-0.002	**		Juli Dec			7.00		4/1/05	LB-4 (57)	
SNL-6			comments days				No Water Level Data Available in Hydrograph				and the second s		
	65.005 DEC 260.005		3,300,000	The state of the s			SN14199 2005-07-19 110000 SNL-8(C).bin, SN14199 2005-10-11 094500 SNL-8(C1).bin, SN14199 2005-10-11	_	1	1	- /+0 /0005		·
	1 1						165601 SNL-8(C2).bin, SN14199 2005-10-18 080000 SNL-8(C3).bin, SN14199 2005-11-16 091500 5NL-	650.0	969.7	-319.70	7/19/2005	WSWT-7 (94)	
SNL-8	1.039	1.092	0.053	5	mini(v)	Jul - Dec					<u> </u>		
3.112.5	1.055	1.032	0.000		, ,		8(C4).bin, SN14199 2005-11-16 145416 SNL-8(C5).bin, SN18778 2005-11-18 140000 SNL-8(C6).bin, 5N18778	650.2	969.7	-319.55	11/18/2005	Troll LB-5 (15)	
1							2005-11-23 120000 SNL-8(C7).bin						
SNL-9	1.025	1.016	-0.009	12	mini(v)	Jan - Dec	SN17621 2004-12-21 130313 SNL-9(C10).bin	521.7	567.2	-45.50	12/21/2004	SNL-9 (133)	
3111-3	1.023	1.010	-0.005	14.							10/1/2004	Troll LB-3 (104)	
SNL-12	1.000	1.003	0.003	12	mini(v)	Jan - Dec	SN11358 2004-12-15 142301 SNL-12(C5).bin, SN16771 2005-01-31 115614 SNL-12(C6).bin	575.0	570.9	4.10	1/31/2005	Troll LB-4 (17)	
								400.0	401.3	110	6/15/2005	WSWT-7 (52)	
SNL-13	1.035	1.021	-0.014	7	mini(v)	Jun - Dec	SN18823 2005-06-15 150000 SNL-13(C1).bin	400.0	401.2	-1.16	+-····		
GN:: 1.1	1.5.5	4 6	0.000	-		lun Dan	SN12473 2005-06-15 110000 SNL-14(C1).bin, SN17337 2005-07-15 140000 SNL-14(C2).bin, SN17337 2005-07		669.5	-219.50	6/15/2005	W5WT-7 (51)	·
SNL-14	1.042	1.044	0.002	6	mini(v)	Jun - Dec	26 110000 SNL-14(C4).bin, SN17337 2005-10-25 130000 SNL-14(C7).bin	642.5	669.5	-27.00	10/25/2005	SNL-14 (152)	
	<del>                                     </del>					· <del>  · · · · · · · · · · · · · · · · · ·</del>	SN18778 2005-06-23 140000 SNL-15(C).bin, SN18778 2005-07-07 150000 SNL-15(C1).bin, SN18778 2005-07-				- / /		
SNL-15	1.233	1.226	-0.007	2	mini(v)	Jun - Jul		931.0	922.8	8.20	6/23/2005	WSWT-7 (63)	
			and the state of t	1	STATE OF COMMENTS		14 110000 SNL-15(C2).bin					<u> </u>	
SNL-16							Not drilled yet				067231 <sup>13</sup>		
SNL-17A							Not drilled yet						
							Not drilled yet						
SNL-18	1985					<del>7 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </del>	Not drilled yet						
SNL-19			<b>1988</b>			<u> </u>		T 600	057.0	T 254.00	1/27/2005	WIDD 11 /13\	
WIPP-11	1.042	1.035	-0.007	9	mini(v)	Apr - Dec	SN17399 2005-04-04 140000 WIPP-11(C11).bin, SN17399 2005-04-13 130000 WIPP-11(C12).bin	603	857.8	-254.80	1/27/2005	WIPP-11 (13)	
WIPP-12	1.104	11		5	mini(v)	Jan - May	SN17333 2005-01-26 110831 WIPP-12(C).bin	600.0			1/26/2005	Troll LB-4 (16)	
	T			1		† · · · · · · · · · · · · · · · · · · ·		650	715.3	-65.30	10/14/2004	Troll LB-3 (113)	
WIPP-13	1.038	1.042	0.004	12	mini(v)	Jan - Dec	SN17310 2004-10-14 145956 WIPP-13(C2).bin, SN17310 2005-07-19 100000 WIPP-13(C3).bin	500	715.3	-215.30	7/19/2005	WSWT-7 (93)	
		L	Apple Nes	L Page 1		. ************************************	1	1 300	1				
WIPP-19				30,94			No Troll Data	2000		######################################	1 40/10/	1 141611-5-1	Little at the poor
WIPP-25	1.004			10	mini(v)	Jan - Oct	SN17457 2004-10-19 143756 WIPP-25(C6).bin	445.0	459.5	-14.50	10/19/2004	WSWT-4 (149)	Ideal depth is BGS
WIPP-26				10	mini(v)		SN11336 2005-02-23 104117 WIPP-26(C3).bin, SN11336 2005-03-28 160000 WIPP-26(C4).bin	170.0	197.5	-27.50	2/23/2005	Troll LB-4 (37)	Ideal depth is BGS
WIPP-ZO	1.055	NO.	487	a. 10	1 111111(V)	17101 DEC	Taylor and an indiana and an indiana and an indiana and an indiana.						

#### Notes:

ft BTOC = feet below top of casing ft BTOT = feet below top of tubing

NA = not applicable/available LTM = Long-Term Monitoring WSWT = WIPP Well Site Testing

BGS = below ground surface

# BGS = below ground surface Note - All Troll depths are presented as documented in the SN, universal compensation for Troll depth to sensor have not been made

#### 2005 Calculated Densities

							2005 Calculated Densities						
Α	В	С	D	E	F	G	Н	1	j j	K	L	M	N
- ''					Troll -								
	2005 Avg			1	Iroli -			Troll Install	Troll Ideal Install	Length Off			
i	1	2010 Avg	2010 less 2005	# of Dens	Mini/Level,	Timeframe of	- Hell 21 (2)				Data at Install	Installation	Comments/Euplanations
Well ID	Calc Dens	_					Troll File Name(s)	Depth (ft	Depth (ft BTOC/T)	Ideal Depth	Date of Install	Logbook Page	Comments/Explanations
	/_/3\	Calc Dens	value	Averaged	Vented (v)/Non-	Data	i	BTOC/T)	(ERMS 549564)	(ft)		topoon rage	
	(g/cm³)				Vented (nv)		i	,.,	(2				
A F.C. 7		2.00mm/s/	NAME OF TAXABLE PARTY.	40 (48)			No Troll Data		40000000	44000			
AEC-7	200								Land		120000		
6 2727		l			:_:/.a	Jan - Nov	SN12807 2004-12-16 104734 C-2737(C7).bin, SN17333 2005-06-28 140000 C-	701	691	=15-J5	38069	WSWT-2 (141)	
C-2737	1.019	1.025	=C5-B5	Q	mini(v)	Jan - Nov	2737(C8).bin, SN17333 2005-07-27 120000 C-2737(C9).bin, SN17333 2005-11-14	701.5	691	=16-J6	38531	Troll LB-4 (104)	
	1.015	1.023	-03-03	0									
5004.0				1		Apr - Nov	SN04580 2005-11-15 110000 ERDA-9(C3).bin, SN12473 2004-10-11 130909 ERDA-	475	716.78	=17-J7	38433	Troll LB-4 (49)	
ERDA-9	1 000	1.07	=C7-B7	c	mini(v)	Apr - Nov	9(C1).bin, SN04580 2006-02-23 130000 ERDA-9(C4).bin, SN04580 2005-03-22	475.8	716.78	=18-J8	38671	Troll LB-5 (12)	
	1.066			0									
H-2b2	1.02	1.011	=C9-B9	7	mini(v)	Jan - Apr	SN07861 2004-07-19 125701 H-2b2(C2).bin	450	635.5	=I9-J9	38187	Magenta-6 (99)	
							SN17386 2005-01-17 143150 H-3b2(C3).bin, SN17386 2005-07-11 150000 H-			1			
H-3b2	1				mini(v)	lan-Dec I			607.7	110 110	20200	Troll LB-4 (2)	
	1.053	1.041	=C10-B10	11	1		3b2(C4).bin	500	687.7	=I10-J10	38369		
							SN17716 2004-11-10 144039 H-4b (C1).bin, SN17334 2005-07-01 100000 H-	445	504.1	=I11-J11	38301	Troll LB-3 (127)	2010 density and ideal depth for H-4bR
H-4b					mini(v)	lan lul l							· · · · · · · · · · · · · · · · · · ·
	1.015	1.016	=C11-B11	3	1 '' 1	·	4b(C1).bin	500	504.1	=I12-J12	38534	WSWT-7 (65)	
							SN08276 2005-04-06 160000 H-5b(C1).bin, SN08276 2005-10-21 130000 H-						
H-5b				!	mini(v)	Anr. Dec 1			010.3		20440	Troll LB-4 (61)	
11 32	1.097	1.091	=C13-B13	19	'''''''		5b(C2).bin	600	910.3	=113-J13	38448		
												Troll LB-3 (111-	
	1			1			SN17353 2004-10-14 112016 H-6b(C3).bin, SN17353 2005-10-04 130000 H-		1		10/14/2004,		
H-6b					mini(v)	Jan - Dec		Į.			10/4/2005	2) Troll LB-4	
	1 04	1 025	=C14-B14	12	1		6b(C4).bin	450.8	617.5	=I14-J14	10/4/2003	(146)	
	1.04	1.035	=C14-B14	12									
		1	l	1		F-L -	SN17716 2005-01-19 132045 H-7b1(C3).bin, SN17716 2005-11-22 150000 H-	275	269.9	=I15-J15	38371	Troll LB-4 (9)	]
H-7b1	1,000	1 004	_C15 D15	111	mini(v)	Feb - Dec	7b1(C4).bin	275.8	269.9	=I16-J16	38678	Troll LB-5 (23)	
	1.008	1.004	=C15-B15	11				213.0	200.0	-110-310	33070	.1011 20-3 (23)	
			l				SN11025 2005-01-18 153659 H-9c(C7).bin, SN11025 2005-11-23 100000 H-			1		Troll ID 4/C 7	
H-9c	4 000	1.001	647.847	144	mini(v)	Jan - Nov	• • •	500	663.5	=I17-J17	38370	Troll LB-4 (6-7)	
	1.028	1.004	=C17-B17	11	<u> </u>		9c(C8).bin		~				
H-11b4	1.088	1.049	=C18-B18	16	mini(v)	Jul - Dec	SN11231 2005-07-15 150000 H-11b4 (C2).bin	500	736.2	=I18-J18	38548	Troll LB-4 (107)	1
11-1104	1.000	12.043	-010-010	ř	mont(v)	, a, Dec					+	Troll LB-4 (87)	
Ц 13	1	1	1	1	miniful	May Doc	SN04558 2005-04-29 110000 H-12(C2).bin, SN04558 2005-12-22 150000 H-	550	838.4	=l19-J19	38471		1
H-12	1.106	1.105	=C19-B19	ام	mini(v)	May - Dec	12(C3).bin	550.8	838.4	=I20-J20	38708	Troll LB-5 (47)	1
	1.106	1.105	-013-013	9					<del></del>		1		
			1	1	:-:6.3	Iul Dee	SN07861 2005-07-18 100000 H-15(C14).bin, SN07861 2005-11-14 120000 H-	600	=870.5+2.04	=I21-J21	38551	W5WT-7 (89)	2010 density and ideal depth for H-15R
H-15	1.000	1 117	=C21-B21	le .	mini(v)	Jul - Dec	15(C15).bin	600.8	=870.5+2.04	=I22-J22	38670	Troli LB-5 (9)	2010 delisity and idear depart for 11 15k
	1.082	1.117	=CZ1-BZ1	0					<del></del>		<del>-</del>		
H-17	1.168	1.134	=C23-B23	8	mini(v)	May - Dec	SN18758 2005-04-28 120000 H-17(C1).bin	500	720.4	=I23-J23	38470	Troll LB-5 (85)	
				14		_	SN13475 2005-11-15 120000 H-19b0(C1).bin	500.8	754	=124-J24	38671	Troll LB-5 (15)	
H-19b0	1.067	1.066	=C24-B24	1	mini(v)	Dec	3N13473 2003-11-13 120000 H-13B0(C1).BIII	300.6	1754	-124 324	30071		
					1				1	1	1/20/2005	WSWT-5 (139-	
				Į.		F-1- 0-1	CN002C0 2005 04 2C 425042 BMC 464 (C7) his			i	1/26/2005,	140) Troll LB-4	
IMC-461	ł .		1	1	mini(v)	Feb - Oct	SN08268 2005-01-26 135912 IMC-461 (C7).bin			1	10/4/2005	1 '	
	1.015	1.003	=C25-B25	9				375.8	376.5	=I25-J25	, .,	(145)	
	1.013	2.003	F8000000000000000000000000000000000000	<del> </del>			CN47400 2004 40 42 450540 D 47/C2) bi- CN47400 2005 06 45 100000 D			=I26-J26	38272	Troli LB-3 (107)	
P-17				1	mini(v)	Jan - Jul	SN17400 2004-10-12 150549 P-17(C2).bin, SN17400 2005-06-15 100000 P-						Ideal depth is BG5
r-1/	1.201			17	.,i(v)	3411 - 341	17(C3).bin, SN17400 2005-06-21 140000 P-17(C4).bin, SN17400 2005-06-29	550	570.5	=I27-J27	38461	Troll LB-4 (80)	<u>'</u>
		1,72,000	CMS-85-K25-	1.	1			601.2	612.87	=128-J28	38432	Troll LB-4 (47)	
SNL-1	1.032	1.026	=C28-B28	6	mini(v)	Mar - Aug	SN13590 2005-03-21 130000 SNL-1(C7).bin	601.2	+				
								475.1	470.7	=129-J29	38254	Troll LB-3 (97)	
							SN13562 2005-01-19 121756 SNL-2(C12pump).bin, SN13562 2005-01-25 093319		1			WSWT-7 (101-	
CNIC					mini(v)	Mar - Dec	SNL-2(C13).bin, SN13562 2005-02-28 140000 SNL-2(C14).bin, SN12807 2005-07-					3	
SNL-2					IIIIII(V)	IVIAI - DEC		473.8	470.7	=I30-J30	38560	2)	
			ļ				27 090000 5NL-2(C15).bin, 5N13590 2005-11-22 110000 5NL-2(C16).bin						
	1.003	1.007	=C29-B29	9				474.6	470.7	=(31-J31	38678	Troll LB-5 (18)	
							SN11028 2004-05-03 111511 SNL-3(C2).bin, SN11028 2005-04-13 140000 SNL-		1		38110	WSWT-3 (42)	
SNL-3					mini(v)	Jan - Dec		coo	766 5	122 122			
	1.029	1.026	=C32-B32	12			3(C3).bin	600	766.5	=132-J32	38455	Troll LB-4 (77)	
					1		SN04558 2004-09-10 134143 SNL-5(C3).bin, SN11306 2005-04-01 140000 SNL-		1		8/18/04,	Troll LB-3 (72),	
SNL-5					mini(v)			450	540	124 124			
	1.008	1.006	=C34-B34	12			5(C4).bin	450	649	=I34-J34	4/1/05	Troll LB-4 (57)	
SNL-6			を		- 1 A		No Water Level Data Available in H	drograph					
JIVL-0	1567 <b>30 18</b> 5	2000				- A - A - A - A - A - A - A - A - A - A		AND THE PERSON NAMED IN COLUMN TO TH	000 7	1-126 126	20552	2777-274 A SHIPPER ROOF TAKE	
CNLC	1	1	1	1	minited	Jul - Dec	SN14199 2005-07-19 110000 SNL-8(C).bin, SN14199 2005-10-11 094500 SNL-	650	969.7	=I36-J36	38552	WSWT-7 (94)	
SNL-8	1.039	1.092	=C36-B36	5	mini(v)	Jui - Dec	8(C1).bin, SN14199 2005-10-11 165601 SNL-8(C2).bin, SN14199 2005-10-18	650.15	969.7	=137-J37	38674	Troll LB-5 (15)	
				17.									
SNL-9	1.025	1.016	=C38-B38	12	mini(v)	Jan - Dec	SN17621 2004-12-21 130313 SNL-9(C10).bin	521.7	567.2	=138-138	38342	5NL-9 (133)	
	T	1			1		SN11358 2004-12-15 142301 SNL-12(C5).bin, SN16771 2005-01-31 115614 SNL-	1	1	1	38261	Troll LB-3 (104)	1
SNL-12	1.	1	l	1	mini(v)	Jan - Dec		-75	E70 0	-120 120		Troll LB-4 (17)	
	1	1.003	=C39-B39	12	1	<u> </u>	12(C6).bin	575	570.9	=I39-J39	38383		
SNL-13	1.035	1.021	=C41-B41	7	mini(v)	Jun - Dec	SN18823 2005-06-15 150000 SNL-13(C1).bin	400	401.16	=I41-J41	38518	WSWT-7 (52)	
2145.13	1	12.022	012 072	<del>'</del>	(*/				669.5	=I42-J42	38518	WSWT-7 (51)	
CNI 14	1	ł	1	1	mini(v)	Jun - Dec	SN12473 2005-06-15 110000 SNL-14(C1).bin, SN17337 2005-07-15 140000 SNL-	450					4
SNL-14	1.042	1.044	=C42-B42	16	initial(A)	Juli - Dec	14(C2).bin, SN17337 2005-07-26 110000 SNL-14(C4).bin, SN17337 2005-10-25	642.5	669.5	=I43-J43	38650	SNL-14 (152)	
	12.072	12.077	UTL UTL	1	<del>                                     </del>			<del>                                     </del>	1	t	1	` '	
CAU 45	1	1	1	1	minited	Jun - Jul	SN18778 2005-06-23 140000 SNL-15(C).bin, SN18778 2005-07-07 150000 SNL-	1	1	1	1	WSWT-7 (63)	
SNL-15	1.233	1.226	=C44-B44	2	mini(v)	Juli - Juli	15(C1).bin, SN18778 2005-07-14 110000 SNL-15(C2).bin	931	922.8	=144-J44	38526		
	12.23	1-:	MORE ANNUAL PROPERTY AND A STATE OF THE STAT	1-	NAME OF TAXABLE PARTY.			300	1000	060	1172		
SNL-16		La consideration			The second second		Not drilled yet			1.000		1087	
SNL-17A	300	1.00		78/86			Not drilled yet			r (Tillian Villa			
	700000		1277 T. 177	70000	200 To 100 To	Professional Profe			CALCULATION CARROLL	100000000000000000000000000000000000000		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
SNL-18						5000	Not drilled yet	- AMERICA 300				2018 15 15 15 15 15 15 15 15 15 15 15 15 15	
SNL-19					THE STATE OF THE S	78	Not drilled yet					10.00	
		21-10% TO 1988	SEMBLES SELF-PARTY	25.98%	200 C 100 C			CO2	The same transfer and	Luo las	20270	WIPP-11 (13)	
WIPP-11	1.042	1.035	=C49-B49	19	mini(v)	Apr - Dec	SN17399 2005-04-04 140000 WIPP-11(C11).bin, SN17399 2005-04-13 130000 WIPI	1003	857.8	=I49-J49	38379		
WIPP-12		2 48	1967.75	15	mini(v)	Jan - May	SN17333 2005-01-26 110831 WIPP-12(C).bin	600			38378	Troll LB-4 (16)	
**155-17	1.104	2000	massassis in the	1	(*)				715.3	_IE1 IE1			
14/100 45	1	1	1	1	mini(v)	Jan - Dec	SN17310 2004-10-14 145956 WIPP-13(C2).bin, SN17310 2005-07-19 100000 WIPP-	J65U	715.3	=I51-J51	38274	Troll LB-3 (113)	4
WIPP-13	1 020	1 042	=C51-B51	12	Lunui(A)	Jan - Dec	2411/2TO 5004-IO-I4 143230 AAILL-I3(CS)'DIII' 2411/3TO 5003-01-I3 100000 AAILL-	500	715.3	=I52-J52	38552	WSWT-7 (93)	
	1.038	1.042			STATES AND A STATE OF THE STATE	A CONTRACTOR OF THE CONTRACTOR		1	- ANALOGO CONTRACTOR - CONTRACT	39936786744	da:	CARREST SET SET SENS	
WIPP-19		456		화물. 설위			No Troll Data	176			200		
	T			1	The second secon	- ALL MAN TO THE REAL PROPERTY OF THE PARTY				I			
WIPP-25	1			5	mini(v)	Jan - Oct	SN17457 2004-10-19 143756 WIPP-25(C6).bin	L	1			W5WT-4 (149)	Ideal depth is BGS
VV IF P-23	1.004		392	10	initit(v)	Jan - Oct	01127 13. 2301 20 23 213/30 1111 20(00/10111	445	459.5	=154-J54	38279		,
	1	50 GC 83	323863	3				ī		1	T .		
	1		and the				SN11336 2005-02-23 104117 WIPP-26(C3).bin, SN11336 2005-03-28 160000 WIPP-		1	1	1		
WIPP-26	1		1 2000	ă .	mini(v)	Mar - Dec		1	1		1	Troll LB-4 (37)	Ideal depth is BG5
1 ***** -20	L		1 200	1.0			26(C4).bin	170	1075	=155-J55	38406	l '	· ·
	1.033	144 SOE	The state of the s	10	i i	1		170	197.5	1-122-132	30400		I
	1.033	2666	183221922										

Notes: ft BTOC = fe ft BTOT = fe BGS = below Note - All Tr

NA = not applicabl LTM = Long-Term WSWT = WIPP We

## Information Only