Appendix B1: Gas Pool Pressure Review

Pool Name	Comments
Chard McMurray AAA	(included in Newby McMurray B review summary)
Chard McMurray BBB	(included in Newby McMurray B review summary)
Chard McMurray HHH	
Chard McMurray YY	(included in Newby McMurray B review summary)
Chard McMurray ZZ	(included in Newby McMurray B review summary)
Chard Wabiskaw O	
Chard Wabiskaw-McMurray A	
Corner McMurray A	
Corner McMurray G	
Corner McMurray NN	(included in Corner McMurray OO review summary)
Corner McMurray OO	
Corner McMurray T	
Corner McMurray U	
Corner McMurray Y	
Hangingstone McMurray BB	
Hangingstone McMurray CCC	
Hangingstone McMurray DDD	
Hangingstone McMurray E2E	
Hangingstone McMurray F2F	
Hangingstone McMurray G	
Hangingstone McMurray G2G	
Hangingstone McMurray H2H	(included in Hangingstone Wabiskaw-McMurray D review summary)
Hangingstone McMurray I	(included in Hangingstone McMurray CCC review summary)
Hangingstone McMurray NNN	(included in Hangingstone McMurray X review summary)
Hangingstone McMurray X	
Hangingstone McMurray YYY	
Hangingstone McMurray Z	
Hangingstone Wabiskaw J	
Hangingstone Wabiskaw K	(included in Hangingstone Wabiskaw-McMurray D review summary)
Hangingstone Wabiskaw-McMurray A	
Hangingstone Wabiskaw-McMurray B	
Hangingstone Wabiskaw-McMurray D	
Hangingstone Wabiskaw-McMurray E	

Pool Name	Comments
Kirby Upper Mannville B4B	(included in Kirby Upper Mannville J review summary)
Kirby Upper Mannville C4C	(included in Kirby Upper Mannville J review summary)
Kirby Upper Mannville F4F	(included in Kirby Upper Mannville J review summary)
Kirby Upper Mannville I	
Kirby Upper Mannville J	
Kirby Upper Mannville O3O	(included in Kirby Upper Mannville J review summary)
Kirby Upper Mannville U2U	(included in Kirby Upper Mannville J review summary)
Kirby Upper Mannville V2V	(included in Kirby Upper Mannville J review summary)
Kirby Upper Mannville Z3Z	(included in Kirby Upper Mannville I review summary)
Leismer McMurray H3H	
Leismer McMurray J4J	
Leismer McMurray TTT	(included in Leismer Wabiskaw-McMurray A review summary)
Leismer Undefined-377	(included in Leismer Wabiskaw-McMurray A review summary)
Leismer Wabiskaw-McMurray A	
Leismer Wabiskaw-McMurray C	
Newby McMurray A2A	(included in Newby McMurray B review summary)
Newby McMurray B	
Newby McMurray B2B	(included in Newby McMurray B review summary)
Newby McMurray C2C	
Newby McMurray D	(included in Newby McMurray B review summary)
Newby McMurray EEE	
Newby McMurray III	(included in Newby McMurray B review summary)
Newby McMurray L2L	(included in Newby McMurray B review summary)
Newby McMurray M2M	(included in Newby McMurray B review summary)
Newby McMurray XXX	(included in Newby McMurray B review summary)
Newby McMurray ZZZ	
Newby Wabiskaw FF	
Newby Wabiskaw GG	
Newby Wabiskaw N	(included in Newby Wabiskaw-McMurray J review summary)
Newby Wabiskaw-McMurray G	
Newby Wabiskaw-McMurray H	
Newby Wabiskaw-McMurray J	
Newby Wabiskaw-McMurray K	(included in Newby Wabiskaw-McMurray J review summary)
Resdeln McMurray JJ	(included in Newby Wabiskaw-McMurray J review summary)
Resdeln McMurray RR	(included in Newby Wabiskaw-McMurray J review summary)
Resdeln McMurray SS	(included in Newby Wabiskaw-McMurray J review summary)

Pool Name	Comments
Resdeln Wabiskaw-McMurray A	(included in Newby Wabiskaw-McMurray J review summary)
Thornbury McMurray A5A	
Thornbury McMurray E5E	
Thornbury McMurray F5F	
Thornbury McMurray G2G	
Thornbury McMurray GGG	
Thornbury McMurray K5K	
Thornbury McMurray M5M	
Thornbury McMurray Q5Q	
Thornbury McMurray R5R	
Thornbury McMurray T5T	
Thornbury McMurray X4X	
Thornbury McMurray XX	
Thornbury McMurray YY	

Appendix B2: Standard Algorithms for Bitumen Evaluations

1.1 Evaluation Technique

Shale Volume

Calculated from the Gamma Ray log using the Clavier method.

Linear Shale Volume = (GRLOG – MINGR) / (MAXGR – MINGR)
VSH Clavier Correction = 1.7-(3.38-(Linear Vsh +0.7) 2) 0.5

Where: GRLOG – Gamma log Reading
MINGR – Minimum Gamma
MAXGR – Maximum Gamma

Porosity

Calculated using one log Density method.

PHID = (RHOMA-RHOB)/(RHOMA-RHOF)

Shale Porosity = (RHOMA-RHOSH)/(RHOMA-RHOF)

Effective Porosity = PHID - (VSH * Shale Porosity)

Where:

	PHID	- Density Porosity
	RHOMA	- Matrix Density
	RHOB	- Bulk Density
	RHOF	- Fluid Density
	RHOSH	- Bulk Density of Shale
	VSH	- Shale Volume (from Clavier)

Water Saturation

Calculated using a Modified Simandoux Equation.

$1/ILD = [(PHIE^M * SW^N) / (A * RW * (1-VSH)] + [(VSH * SW) / (2 * RSH)]$

OR

$AA = A * RW * (1-VSH) / (PHIE^M)$
$BB = (AA * VSH) / (2 * RSH)$
$SW = [(BB2 + AA / ILD)0.5 – BB]^{(2/N)}$

Note: $^{(2/N)}$ is a correction where N<>2

Where:

	SW	- Water Saturation
	A	- Tortuosity Constant
	M	- Cementation Exponent
	N	- Saturation Exponent
	RW	- Formation Water Resistivity @ formation temp
	VSH	- Shale Volume
	PHIE	- Effective Porosity
	ILD	- Deep Resistivity Log
	RSH	- Resistivity of Shale

Weight Percent Bitumen

Weight Percent Bitumen (WTAR) is calculated as follows:

SO = (1-SW)

$$WTAR = \frac{(PHIE*SO*RHOHY)}{((1-VSH-PHIE)*RHOMA+(VSH*RHOSH)+PHIE*(SO*RHOHY+SW*RHOF)}$$

Where:	SO	- Oil Saturation
	SW	- Water Saturation
	PHIE	- Effective Porosity
	VSH	- Volume of Shale
	RHOMA	- Matrix Density
	RHOSH	- Shale Density
	RHOHY	- Hydrocarbon Density
	RHOF	- Fluid Density

1.2 Evaluation Parameters

The following Parameters are required to run the EUB oil sands programs in Geolog. Each of the parameters will be described along with typical values to use and methods of selection.

Parameter	Typical Value
MAXPHIE	0.39
OAL PHIE	0.42
LIME PHIE	0 – .15
LIME RT	15 – 100 ohmm
MINGR	10 – 30 API
MAXGR	90 – 120 API
RSH	6 – 20 ohmm
A	0.62
M	2.15
N	1.4 – 2.0
RW	0.3 – 1.5 ohmm
RHOHY	1000 kg/m^3
RHOF	1000 kg/m^3
RHOMA	2650 kg/m^3
RHOSH	2200 – 2400 kg/m^3