

Appendix 11: Fracture Chemical and Fluid Disclosure Information

Client: PetroFrontier
 Well: Baldwin 2Hst1
 Basin / Field: Southern Georgina
 Country: Australia
 State: Northern Territory
 Case: Prep Frac
 Disclosure: Prejob
 Well Completed: -
 Date Prepared: 4/3/2012 4:42 PM
 Report ID: RPT-JPL-2279

Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
Acid Spearhead 2,500 Gal	L401	Acetic Acid	100.0 Gal / 1000 Gal	250 Gal
	U042	Chelating Agent	10.0 Gal / 1000 Gal	25 Gal
	L058	Iron Control	10.0 lb / 1000 Gal	25 lb

Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
Slickwater 374,000 Gal	M275	Bactericide	0.5 lb / 1000 Gal	187 lb
	L401	pH Buffer	0.5 Gal / 1000 Gal	187 Gal
	L064	Clay Stabilizer	2.0 Gal / 1000 Gal	748 Gal
	J580	Friction Reducer	0.5 Gal / 1000 Gal	187 Gal
	F110	Surfactant	0.75 Gal / 1000 Gal	281 Gal

Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
WF120 84,600 Gal	M275	Bactericide	0.5 lb / 1000 Gal	42 lb
	L401	pH Buffer	0.5 Gal / 1000 Gal	42 Gal
	L064	Clay Stabilizer	2.0 Gal / 1000 Gal	169 Gal
	J580	Gelling Agent	20.0 lb / 1000 Gal	1,692 lb
	F110	Surfactant	0.75 Gal / 1000 Gal	64 Gal
	J218	Breaker	1.2 lb / 1000 Gal	103 lb
	J479	Encapsulated Breaker	2.0 lb / 1000 Gal	169 lb

Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
YF120LG 158,000 Gal	M275	Bactericide	0.5 lb / 1000 Gal	79 lb
	L401	pH Buffer	0.5 Gal / 1000 Gal	79 Gal
	L064	Clay Stabilizer	2.0 Gal / 1000 Gal	316 Gal
	J580	Gelling Agent	20.0 lb / 1000 Gal	3,160 lb
	L010	Crosslinker	2.0 lb / 1000 Gal	316 lb
	M003	Soda Ash	5.0 lb / 1000 Gal	790 lb
	J494	pH Control	12.0 lb / 1000 Gal	1,896 lb
	F110	Surfactant	0.75 Gal / 1000 Gal	119 Gal
	J218	Breaker	4.0 lb / 1000 Gal	632 lb
	J479	Encapsulated Breaker	2.0 lb / 1000 Gal	316 lb
	S022	40/70 Mesh Sand	Varied	191,600 lb
	S020	20/40 Mesh Sand	Varied	470,200 lb

The total volume listed in the tables above represents the summation of water and additives. Water is supplied by client.

CAS Number	Chemical Name	Mass Fraction
-	Water (including Mix Water Supplied by Client)*	~ 88%
14808-60-7	Crystalline silica	~ 11%
75-57-0	Tetramethylethylenediamine chloride	< 0.1%
9000-30-0	Guar gum	< 0.1%
64-18-7	Acetic acid	< 0.1%
533-96-0	Carbonic acid, sodium salt (2:3)	< 0.1%
7727-54-0	Diammonium peroxydisulphate	< 0.1%
112-34-5	Buryl diplycol	< 0.1%
67-56-1	Methanol	< 0.1%
497-19-8	Sodium carbonate	< 0.1%
67-63-0	Propan-2-ol	< 0.1%
1592-23-0	Calcium Stearate	< 0.1%
34398-01-1	Alcohol, C11 linear, ethoxylated	< 0.01%
10043-35-3	Boric acid	< 0.01%
68439-46-3	Alcohol, C9-C11, Ethoxylated	< 0.01%
91053-39-3	Diatomaceous earth, calcined	< 0.01%
64-02-8	Tetra sodium ethylenediaminetetraacetate	< 0.01%
25038-72-6	Vinylidene chloride/methylacrylate copolymer	< 0.001%
10377-60-3	Magnesium nitrate	< 0.001%
6381-77-7	Sodium erythorbate	< 0.001%
38193-60-1	1-Propanesulfonic acid, 2-methyl-2-[(1-oxo-2-propenyl)amino]-, monosodium salt,	< 0.001%
26172-55-4	5-chloro-2-methyl-2H-isothiazol-3-one	< 0.001%
7786-30-3	Magnesium chloride	< 0.001%
7631-86-9	Non-crystalline silica	< 0.001%
2836-32-0	Sodium Glycolate (impurity)	< 0.001%
2682-20-4	2-methyl-2H-isothiazol-3-one	< 0.0001%
9004-62-2	Hydroxy-propyl cellulose	< 0.0001%
14464-46-1	Crystallite	< 0.0001%
1310-73-2	Sodium hydroxide	< 0.0001%
139-33-3	Disodium Ethylene Diamine Tetra Acetate (impurity)	< 0.0001%
150-38-9	Trisodium Ethylenediaminetetraacetate (impurity)	< 0.0001%
14807-96-6	Magnesium silicate hydrate (talc)	< 0.0001%
5064-31-3	Trisodium nitrotriacetate (impurity)	< 0.0001%
	Total	100%

Owen 3H Completion and Testing Operations - Environmental Management Plan

Client: PetroFrontier
 Well: MacIntyre 2
 Basin / Field: Southern Georgina
 Country: Australia
 State: Northern Territory
 Case: Prop Frac
 Disclosure: Prejob
 Well Completed: -
 Date Prepared: 4/3/2012 4:44 PM
 Report ID: RPT-JPL-2281

Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
Slickwater 374,000 Gal	M275	Bactericide	0.5 lb / 1000 Gal	187 Lb
	L401	pH Buffer	0.5 Gal / 1000 Gal	187 Gal
	L064	Clay Stabilizer	2.0 Gal / 1000 Gal	748 Gal
	J568	Friction Reducer	0.5 Gal / 1000 Gal	187 Gal
	F110	Surfactant	0.75 Gal / 1000 Gal	281 Gal
Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
WF120 84,600 Gal	M275	Bactericide	0.5 lb / 1000 Gal	42 Lb
	L401	pH Buffer	0.5 Gal / 1000 Gal	42 Gal
	L064	Clay Stabilizer	2.0 Gal / 1000 Gal	169 Gal
	J580	Gelling Agent	20.0 lb / 1000 Gal	1,692 Lb
	F110	Surfactant	0.75 Gal / 1000 Gal	64 Gal
	J218	Breaker	1.2 lb / 1000 Gal	103 Lb
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Fluid Name & Volume	Additive	Additive Description	Concentration	Volume
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	J580	Gelling Agent	20.0 lb / 1000 Gal	3,160 Lb
	L010	Crosslinker	2.0 lb / 1000 Gal	316 Lb
	M003	Soda Ash	5.0 lb / 1000 Gal	790 Lb
	J494	pH Control	12.0 lb / 1000 Gal	1,896 Lb
	F110	Surfactant	0.75 Gal / 1000 Gal	119 Gal
	J218	Breaker	4.0 lb / 1000 Gal	632 Lb
	J479	Encapsulated Breaker	2.0 lb / 1000 Gal	316 Lb
	S022	40/70 Mesh Sand	Varied	191,600 Lb
	S020	20/40 Mesh Sand	Varied	470,200 Lb

The total volume listed in the tables above represents the summation of water and additives. Water is supplied by client.

CAS Number	Chemical Name	Mass Fraction
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9000-30-0	Guar gum	< 0.1%
64-19-7	Acetic acid	< 0.1%
533-96-0	Carbonic acid, sodium salt (2:3)	< 0.1%
7727-54-0	Diammonium peroxodisulphate	< 0.1%
112-94-5	Butyl diglycol	< 0.1%
67-56-1	Methanol	< 0.1%
497-19-8	Sodium carbonate	< 0.1%
1592-23-0	Calcium Stearate	< 0.1%
34398-01-1	Alcohol, C11 linear, ethoxylated	< 0.01%
67-63-0	Propan-2-ol	< 0.01%
10043-35-3	Boric acid	< 0.01%
68439-46-3	Alcohol, C9-C11, Ethoxylated	< 0.01%
91053-39-3	Diatomaceous earth, calcined	< 0.01%
25038-72-6	Vinylidene chloride/methylacrylate copolymer	< 0.001%
10377-60-3	Magnesium nitrate	< 0.001%
38193-60-1	1-Propanesulfonic acid, 2-methyl-2-[[1-oxo-2-propenyl]amino], monosodium salt, polymer	< 0.001%
26172-55-4	5-chloro-2-methyl-2h-isothiazol-3-one	< 0.001%
7786-30-3	Magnesium chloride	< 0.001%
7631-86-9	Non-crystalline silica	< 0.001%
2682-20-4	2-methyl-2h-isothiazol-3-one	< 0.0001%
9004-62-2	Hydroxy-propyl cellulose	< 0.0001%
14464-46-1	Cristobalite	< 0.0001%
14807-96-6	Magnesium silicate hydrate (tafc)	< 0.0001%
Total		100%

Name		CAS #	Chemical Name	Mass Fraction
Spectrachem Tracer	Proprietary	Proprietary, chemical family: Sodium salt and water	<0.0001%	
Aluminium Sulphate	10043-01-3	Aluminium Sulphate	<0.0036%	

Appendix 13: List of Material Safety Data Sheets

Name	Components
Breaker J134	Hemicellulase enzyme
Breaker J218	Diammonium peroxydisulphate
EB-Clean* J479 LT Encapsulated Breaker	Diammonium peroxydisulphate
pH Control J494	Inorganic salt
Water Gelling Agent J580	Carbohydrate polymer
Crosslinker L10	Boric acid
Temporary Clay Stabiliser L64	Tetramethylammonium chloride
Soda Ash M3	Sodium carbonate
BIOCIDE BPA 68915	Magnesium nitrate, reaction mass of: 5-chloro-2methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2h-isothiazol-3-one [EC no. 220-239-6]
L401	Acetic Acid, Propan-2-ol
U042	Tetrasodium ethylenediaminetetraacetate, Sodium hydroxide, Trisodium nitrilotriacetate (impurity)
L058	Sodium erythorbate
M275	Magnesium nitrate reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one[EC no. 247-500-7]and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)
J568	Butyl diglycol
F110	Methanol, Alcohol, C11 linear, ethoxylated
Aluminium sulphate (floculant)	Aluminium sulphate
Spectrachem Tracer CFT1000, 1100, 1200, 1300, 1500, 1900, 2100, 2200, 1600, 1700)	Proprietary – Chemical family Sodium Salt