

Hydraulic Fracturing Fluid Product Component Information Disclosure

Last Fracture Date:	December 05, 2016
Last Submission Date:	January 20, 2017
Province:	AB
AER Field Centre:	St. Albert
Surface location:	02-04-062-22W5
Well Licence Number:	0479483
Licensee Name:	Chevron Canada Limited
Unique Well Identifier:	00/13-09-062-22W5/2
Well Name:	CHEVRON HZ GRIZZLY 13-9-62-22
Number of Stages:	31
Bottom Hole Latitude:	54.354970
Bottom Hole Longitude:	-117.246651
Lat/Long Projection:	NAD 83
Production Fluid Type:	SHALE GAS ONLY
True Vertical Depth (TVD):	3,454.44
Total Water Volume (m3):	35,862

Hydraulic Fracturing Fluid Composition:

Fracture Start/End Date:	Component Type	Trade Name	Supplier	Purpose	Ingredient/Family Name	CAS # / HMIRC #	Concentration in Component (% by mass)	Concentration in HFF (% by mass)
Nov 20 2016 - Dec 5 2016	CARRIER FLUID				Fresh Water	Not Available	100.000000%	88.261575%
	CARRIER FLUID				water	Not Available	95.000000%	0.444431%
	CARRIER FLUID				Hydrochloric acid	Not Available	5.000000%	0.023391%
	PROPPANT	SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton		Crystalline silica, quartz	14808-60-7	100.000000%	1.272068%
	PROPPANT	SAND-PREMIUM WHITE-40/70, BULK	Halliburton		Crystalline silica, quartz	14808-60-7	100.000000%	9.702058%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Inert ingredient(s)	Not Available	100.000000%	0.001628%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Glutaraldehyde	111-30-8	42.500000%	0.000692%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Quaternary ammonium compounds	68424-85-1	7.500000%	0.000122%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Ethanol	64-17-5	1.000000%	0.000016%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Methanol	67-56-1	0.420000%	0.000006%

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Nov 20 2016 - Dec 5 2016	ADDITIVE	OPTIFLO-III DELAYED RELEASE BREAKER	Halliburton	Breaker	Ammonium persulfate	7727-54-0	100.000000%	0.004806%
	ADDITIVE	OPTIFLO-III DELAYED RELEASE BREAKER	Halliburton	Breaker	Crystalline silica, quartz	14808-60-7	30.000000%	0.001442%
	ADDITIVE	OPTIFLO-III DELAYED RELEASE BREAKER	Halliburton	Breaker	Proprietary ingredient(s)	Trade Secret	0.010000%	0.000001%
	ADDITIVE	MO-67	Halliburton	Buffer	Inert ingredient(s)	Not Available	100.000000%	0.065727%
	ADDITIVE	MO-67	Halliburton	Buffer	Sodium hydroxide	1310-73-2	30.000000%	0.019522%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Methanol	67-56-1	60.000000%	0.000232%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Fatty acids, tall oil	8943	30.000000%	0.000116%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	propargyl alcohol	107-19-7	10.000000%	0.000038%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Proprietary ingredient(s)	Trade Secret	0.010000%	0.000001%
	ADDITIVE	CL-31 CROSSLINKER	Halliburton	Crosslinker	Inert ingredient(s)	Not Available	100.000000%	0.023274%
	ADDITIVE	CL-22 UC	Halliburton	Crosslinker	Proprietary ingredient(s)	Trade Secret	100.000000%	0.063397%
	ADDITIVE	CL-22 UC	Halliburton	Crosslinker	Potassium formate	590-29-4	60.000000%	0.037661%
	ADDITIVE	CL-31 CROSSLINKER	Halliburton	Crosslinker	Potassium metaborate	13709-94-9	60.000000%	0.013826%
	ADDITIVE	CL-31 CROSSLINKER	Halliburton	Crosslinker	Potassium hydroxide	1310-58-3	5.000000%	0.001152%
	ADDITIVE	CL-22 UC	Halliburton	Crosslinker	Inert ingredient(s)	Not Available	0.010000%	0.000006%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Inert ingredient(s)	Not Available	100.000000%	0.032581%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.000000%	0.009677%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	ammonium chloride	12125-02-9	5.000000%	0.001613%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Ethoxylated alcohols	9068	5.000000%	0.001613%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Fatty nitrogen derived amides	9068	5.000000%	0.001613%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Proprietary ingredient(s)	Trade Secret	0.010000%	0.000003%
	ADDITIVE	WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.000000%	0.095631%

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Nov 20 2016 - Dec 5 2016	ADDITIVE	FERCHEK FERRIC IRON INHIBITOR	Halliburton	Iron Control	Isoascorbic acid, sodium salt	6381-77-7	100.000000%	0.002798%
	ADDITIVE	MC S-2730	Halliburton	Scale Inhibitor	Inert ingredient(s)	Not Available	100.000000%	0.007678%
	ADDITIVE	MC S-2730	Halliburton	Scale Inhibitor	Methyl Alcohol	67-56-1	30.000000%	0.002303%
	ADDITIVE	MC S-2730	Halliburton	Scale Inhibitor	Phosphonic acid...	22042-96-2	20.000000%	0.001535%
	ADDITIVE	Oil Perm A	Halliburton	Surfactant	Ethanol	64-17-5	60.000000%	0.000236%
	ADDITIVE	Oil Perm A	Halliburton	Surfactant	Heavy aromatic petroleum naphtha	64742-94-5	30.000000%	0.000118%
	ADDITIVE	Oil Perm A	Halliburton	Surfactant	Naphthalene	91-20-3	5.000000%	0.000019%
	ADDITIVE	Oil Perm A	Halliburton	Surfactant	Poly(oxy-1,2-ethanediyl)	127087-87-0	5.000000%	0.000019%
	ADDITIVE	Oil Perm A	Halliburton	Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.000000%	0.000004%

Comments:

*Information provided in this form is submitted in accordance with the requirements of AER Directive 59 Well Drilling and Completion Data Filing Requirements.

*Total Water Volume sources may include fresh water, produced water, recycled water, and/or other water types as listed in The "DDS Well Drilling Completion Data Submission System: A User Guide - Appendix D".

*CAS # - Chemical Abstract Service Number. Individual chemical ingredients have a unique CAS #. Specific ingredient names are shown for each CAS #. "Not Available" indicates the ingredient CAS # is not available.

*HMIRC # - Hazardous Material Information Review Commission (registry) number. The HMIRC # indicates the (hazardous) additive ingredient is considered to be confidential business information and is subject to a Hazardous Material Information Review Act claim exemption. General chemical family names are shown for each HMIRC #. "Not Available" indicates the ingredient HMIRC # is not available.

**"Trade Secret" indicates the (non-hazardous) additive ingredient is considered to be confidential business information. General chemical family names are reported for ingredients considered "Trade Secret".

*Any public concerns related to this information should be directed to the AER Field Centre shown on the report.

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