

DATE of SPILL  DATE REPORTED  SPILL ID   
 REPORTABLE

AREA  LOCATION       REPORTED BY

COMPANY  PHONE NUM.

CODE  REPORTER

SUBSTANCE  STATUS  SURFACE 1

SIZE (m<sup>2</sup>)  SURFACE 2

SOURCE  % OFF LEASE  SURFACE 3

LINE LICENSE	LINE TYPE	LINE MATERIAL	LINE DESCRIPTION	BreakCount
	PIPELINE	STEEL	FROM 14-33-51-25-w3	
			TO 15-32-51-25-w3	
LINE CAUSE	LINE PROTECTION	LINE SIZE	BREAK PT	
HUMAN ERROR	EXTERNAL		60.0m OE of 15-32-51-25-w3	
			LAT & LONG	
			53° 27' 07.2" N	109° 39' 01.5" W NAD 83

SPILLED TOTAL	<input type="text" value="8.00"/>	RECOV TOTAL	<input type="text" value="7.60"/>	LOST TOTAL	<input type="text" value="0.40"/>
SPILLED OIL	<input type="text" value="0.00"/>	RECOV OIL	<input type="text" value="0.00"/>	LOST OIL	<input type="text" value="0.00"/>
SPILLED WATER	<input type="text" value="0.00"/>	RECOV WATER	<input type="text" value="0.00"/>	LOST WATER	<input type="text" value="0.00"/>
SPILLED COND	<input type="text" value="0.00"/>	RECOV COND	<input type="text" value="0.00"/>	LOST COND	<input type="text" value="0.00"/>
RELEASED GAS	<input type="text" value="0.00"/>	RECOV GAS	<input type="text" value="0.00"/>	LOST GAS	<input type="text" value="0.00"/>
SPILLED CHEM	<input type="text" value="8.00"/>	RECOV CHEM	<input type="text" value="7.60"/>	LOST CHEM	<input type="text" value="0.40"/>
REF. CHEM TYPE	<input type="text" value="Bentonite Drilling Fluid"/> <i>( Company to Report to Sask. Environment )</i>				

LANDOWNER  LO PHONE  CONTACTED   
 OCCUPANT  OC PHONE   
 LO COMMENT

COMMENTS:



Spill ID : 16663  
Date of Spill : 9/20/2014  
15-32-51-25-W3  
HUSKY OIL  
OPERATIONS LIMITED



CLEANUP PROCEDURE	SOIL REMOVED	START DATE	9/24/2014
REPORT SUBMITTED	YES	INITIAL INSPECTION	30-Oct-15
MATERIAL MOVED TO	Tervita Unity Caverns 15-04-40-22-W3	FINAL INSPECTION	30-Oct-15
REPAIRS CONDUCTED	N/A		
SUMMARY DETAILS	Scrape up drilling mud and transport to disposal pit. Inspected and satisfactory, no further cleanup required. 2015 oct 30 LZ		



## Kaura, Priyanka ECON

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**From:** Brian Slater [bslater@Summitls.ca]  
**Sent:** Thursday, October 16, 2014 1:23 PM  
**To:** Lloydminster Field ECON  
**Cc:** Dan Sherling; twoakes@hotmail.ca  
**Subject:** SK ECON Spill Report - 18417-001 - Husky Tangleflags A14-33-51-25W3M to A15-32-51-25W3M Pipeline Project  
**Attachments:** SK ECON Spill Report - 18417-001 - Husky Tangleflags A14-33-51-25W3M to A15-32-51-25W3M Pipeline Project.pdf

Please find the attached spill report for the above noted pipeline project.

Regards,

**BRIAN SLATER, AT**

Environmental Specialist – Environmental Assessment Services

“Summit's vision is to be the most respected environmental solutions company, admired for its people and innovation.”

### SUMMIT LIABILITY SOLUTIONS INC.

5006-18<sup>th</sup> Street, Lloydminster AB, T9V 1V4  
Main 780.875.4700 | Direct 780.875.4700 (ext. 214) | Cell 780.872.4848  
Fax 403.802.3684 | Toll Free 1.877.264.2872  
[www.summitls.ca](http://www.summitls.ca)

CORE VALUES | Integrity | Leadership | Safety | Customer Service | Innovation | Freedom |

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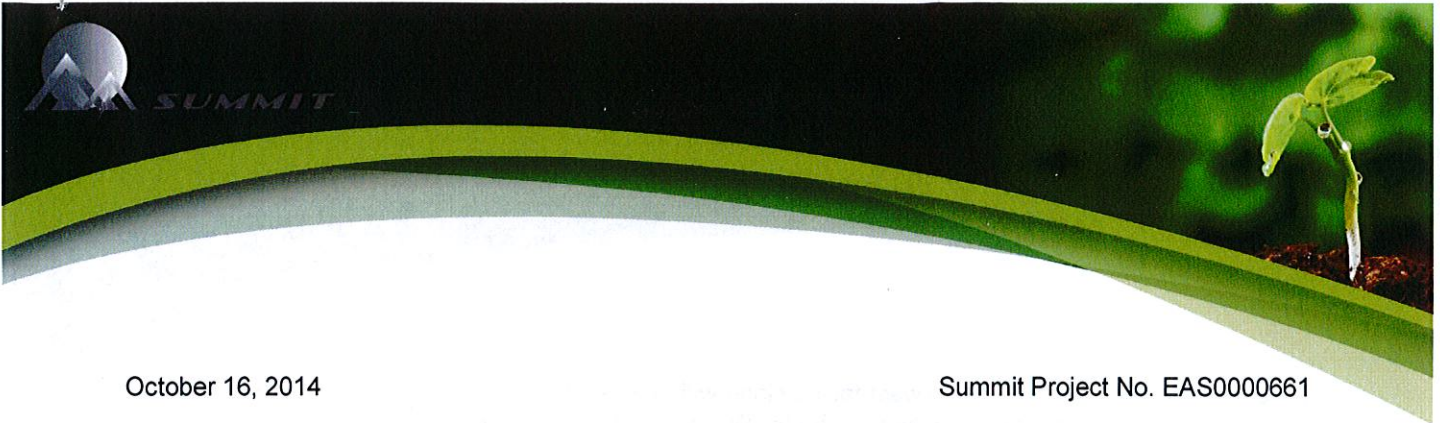


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October 16, 2014

Summit Project No. EAS0000661

Saskatchewan Ministry of Economy  
 4815 50<sup>th</sup> Street  
 Lloydminster, Saskatchewan, S9V 0M8

**Attention: Terry Brisbane**

**Subject: Husky Oil Operations Ltd. – Tangleflags A14-33-51-25W3M to A15-32-51-25W3M Pipeline Project (PARF# 18417-001) Spill Report**

Dear Terry,

Under the authorization of Husky Oil Operations Ltd. (Husky), Summit Liability Solutions Inc. (Summit) completed a Saskatchewan Ministry of Economy (ECON) Spill Report for the above-referenced pipeline project.

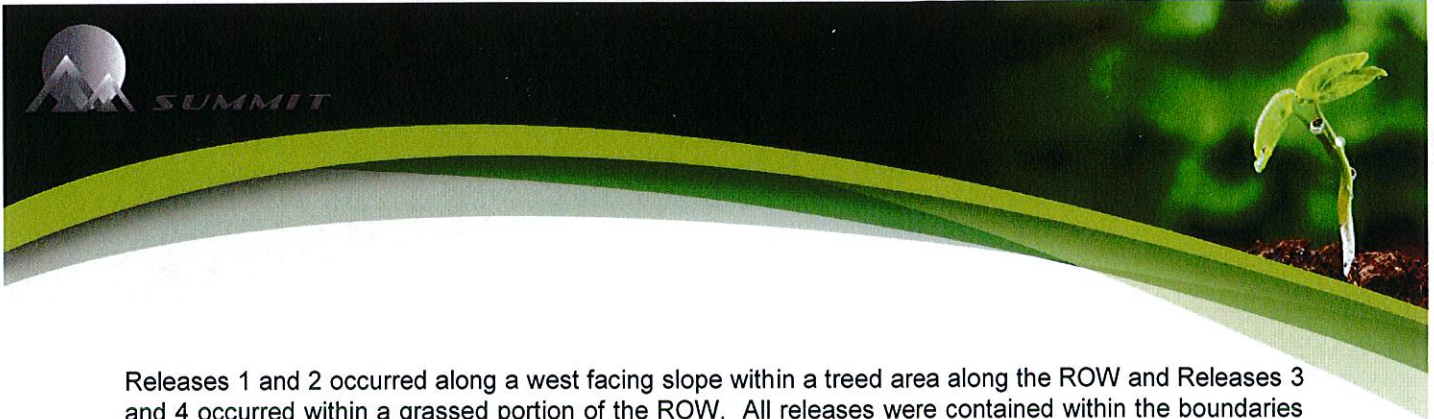
The pipeline project is located on Crown owned rolling native prairie, in the Rural Municipality of Britannia (#502), approximately 4.4 km northeast of Hillmond, Saskatchewan. The pipeline was installed via directionally bore to reduce the amount of surface disturbance within the native prairie.

On September 20, 2014, during the pipeline bore the drilling pressure forced drilling fluid to the surface in four locations within the right-of-way (ROW). The drilling fluid released consisted of bentonite-based drilling fluid mixed with fresh water. The MSDS for the drilling fluid and additives are included within the attachments. Table 1 illustrates the details of the fluid releases.

**Table 1: Fluid Release Details**

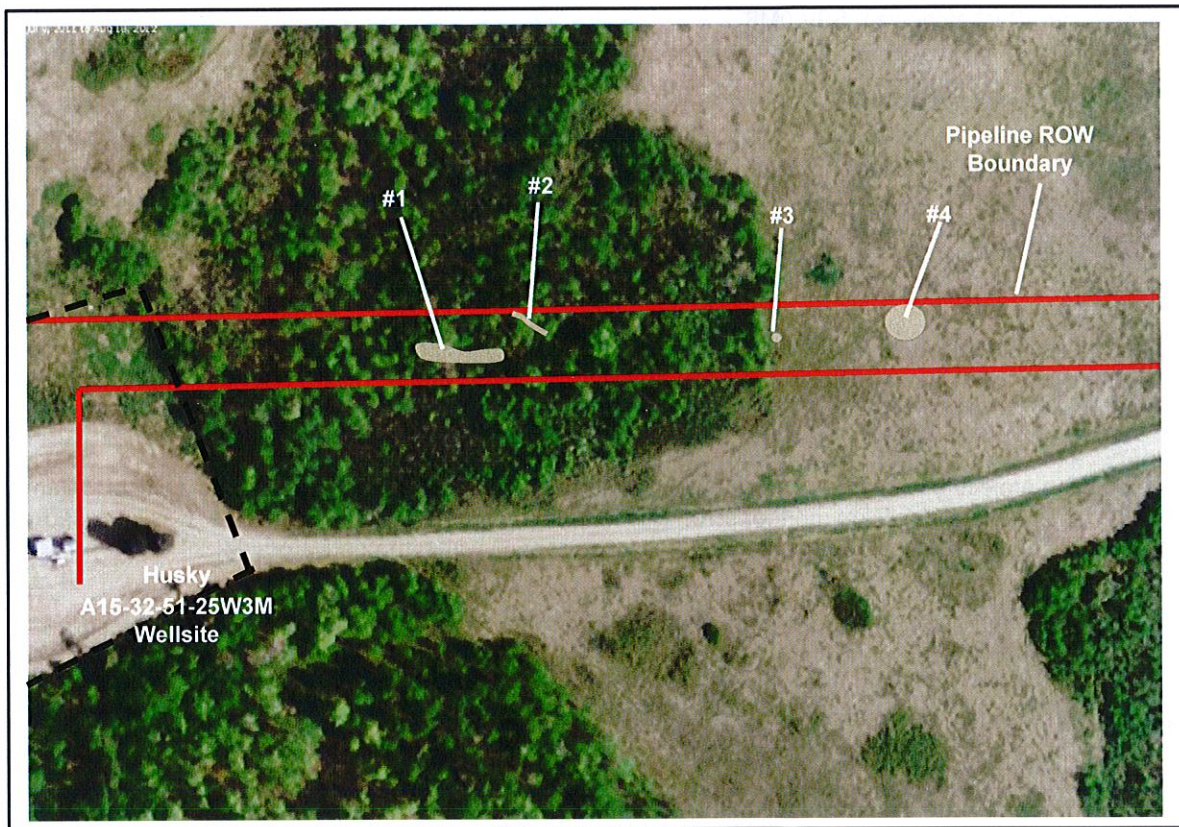
Release Number	Distance east of A15-32-51-25W3M Wellsite (m)	Dimensions (m)	Coordinates (NAD83 12U)	
			Easting	Northing
1	60	75 3 x 25	589620	5923403
2	83	3.5 0.5 x 7	589643	5923409
3	150	0.25 0.5 x 0.5	589709	5923405
4	180	15 3 x 5	589738	5923408

53° 27' 07.24"  
 109° 39' 01.47"  
 11 11 07.112  
 00.24  
 11 27' 07.25"  
 38' 56.67"  
 11 11 07.33"  
 55.09"



Releases 1 and 2 occurred along a west facing slope within a treed area along the ROW and Releases 3 and 4 occurred within a grassed portion of the ROW. All releases were contained within the boundaries of the ROW. Figure 1 illustrates the release locations.

**Figure 1: Release Locations Sketch**



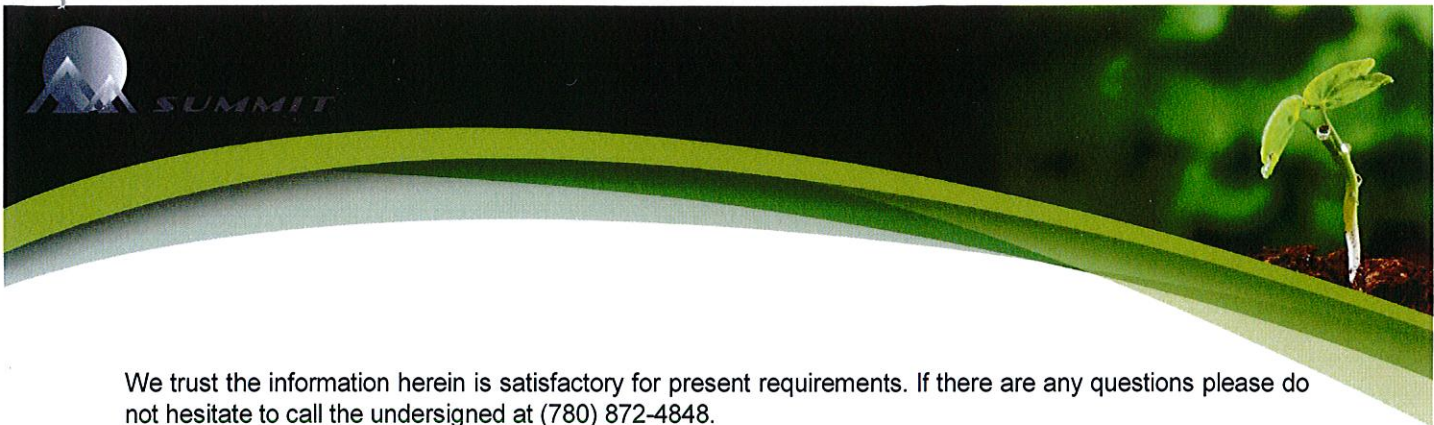
The onsite hydrovac truck removed the fluid from the surface and remained in the area to contain any additional fluid releases during drilling. The cleanup activity was completed on September 24, 2014. The fluid was taken to the Tervita Unity Caverns disposal facility located at 15-04-040-22W3M. Photos of the releases and cleanup activity are included within the attachments.

The Saskatchewan Ministry of Environment (MOE) and Saskatchewan Ministry of Agriculture (MOA) were notified of the releases on September 20, 2014. The release details will be outlined in the Environmental As-built Impact Report once the project has been completed.

**Summit Liability Solutions Inc.**

M: 306.821.7767 F: 403.802.3666 Toll Free: 1.877.264.2872 Website: [www.summitls.ca](http://www.summitls.ca)  
110, 855 – 42<sup>nd</sup> Avenue S.E., Calgary, Alberta, T2G 1Y8





We trust the information herein is satisfactory for present requirements. If there are any questions please do not hesitate to call the undersigned at (780) 872-4848.

Sincerely,

A handwritten signature in blue ink that reads "Brian Slater". The signature is written in a cursive, flowing style.

Brian Slater, AT.  
Environmental Specialist

CC: Travis Oakes, Husky Oil Operations Ltd.

Attachments: Photo Documentation  
Drilling Fluid MSDS

**Photo Documentation**

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Husky Oil Operations Ltd.  
Tangleflags A14-33-51-25W3 to A15-32-51-25W3 Pipeline  
Spill Report Photo Documentation  
EAS0000661

Photo 1: Viewing west toward the migration of Release #1 down the slope.



Photo 2: Viewing Release #1 cleanup.



Husky Oil Operations Ltd.  
Tangleflags A14-33-51-25W3 to A15-32-51-25W3 Pipeline  
Spill Report Photo Documentation  
EAS0000661

Photo 3: Viewing west toward Release #1 area post-cleanup.



Photo 4: Viewing northwest toward Release #2 migration down the slope.



Husky Oil Operations Ltd.  
Tangleflags A14-33-51-25W3 to A15-32-51-25W3 Pipeline  
Spill Report Photo Documentation  
EAS0000661

Photo 5: Viewing north toward Release #2 area post-cleanup.



Photo 6: Viewing north toward Release #3.



Husky Oil Operations Ltd.  
Tangleflags A14-33-51-25W3 to A15-32-51-25W3 Pipeline  
Spill Report Photo Documentation  
EAS0000661

Photo 7: Viewing north toward Release #3 cleanup.



Photo 8: Viewing east toward Release #4.



Husky Oil Operations Ltd.  
Tangleflags A14-33-51-25W3 to A15-32-51-25W3 Pipeline  
Spill Report Photo Documentation  
EAS0000661

Photo 9: Viewing east toward the Release #4 cleanup.



Photo 10: Viewing north toward Release #4 area post-cleanup.



## **Drilling Fluid MSDS**

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## MATERIAL SAFETY DATA SHEET

**Product Trade Name:**           **BORE-GEL®**

**Revision Date:**                   16-Mar-2012

<b>1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION</b>
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**Product Trade Name:**           BORE-GEL®  
**Synonyms:**                       None  
**Chemical Family:**               Mineral  
**Application:**                    Viscosifier

**Manufacturer/Supplier**           Baroid Fluid Services  
   Product Service Line of Halliburton  
   P.O. Box 1675  
   Houston, TX 77251  
   Telephone: (281) 871-4000  
   Emergency Telephone: (281) 575-5000

**Prepared By**                       Chemical Compliance  
   Telephone: 1-580-251-4335  
   e-mail: fdunexchem@halliburton.com

<b>2. COMPOSITION/INFORMATION ON INGREDIENTS</b>
--

Substances	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Bentonite	1302-78-9	60 - 100%	Not applicable	Not applicable
Crystalline silica, tridymite	15468-32-3	0 - 1%	0.05 mg/m <sup>3</sup>	1/2 x 10 mg/m <sup>3</sup> %SiO <sub>2</sub> + 2
Crystalline silica, cristobalite	14464-46-1	0 - 1%	0.025 mg/m <sup>3</sup>	1/2 x 10 mg/m <sup>3</sup> %SiO <sub>2</sub> + 2
Crystalline silica, quartz	14808-60-7	1 - 5%	0.025 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> %SiO <sub>2</sub> + 2

<b>3. HAZARDS IDENTIFICATION</b>
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**Hazard Overview**

**CAUTION! - ACUTE HEALTH HAZARD**  
 May cause eye and respiratory irritation.

**DANGER! - CHRONIC HEALTH HAZARD**  
 Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposures below recommended exposure limits. Wear a NIOSH certified, European Standard EN 149, or equivalent respirator when using this product. Review the Material Safety Data Sheet (MSDS) for this product, which has been provided to your employer.

#### 4. FIRST AID MEASURES

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Ingestion	Under normal conditions, first aid procedures are not required.
Notes to Physician	Treat symptomatically.

#### 5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (F):	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

Fire Extinguishing Media All standard firefighting media.

Special Exposure Hazards Not applicable.

Special Protective Equipment for Fire-Fighters Not applicable.

NFPA Ratings: Health 0, Flammability 0, Reactivity 0  
HMIS Ratings: Health 0\*, Flammability 0, Physical Hazard 0 , PPE: At

#### 6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures None known.

Procedure for Cleaning / Absorption Collect using dustless method and hold for appropriate disposal. Consider possible toxic or fire hazards associated with contaminating substances and use appropriate methods for collection, storage and disposal.

#### 7. HANDLING AND STORAGE

Handling Precautions This product contains quartz, cristobalite, and/or tridymite which may become airborne without a visible cloud. Avoid breathing dust. Avoid creating dusty conditions. Use only with adequate ventilation to keep exposure below recommended exposure limits. Wear a NIOSH certified, European Standard En 149, or equivalent respirator when using this product. Material is slippery when wet.

Storage Information Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Do not reuse empty container. Product has a shelf life of 12 months.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Engineering Controls</b>	Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits listed in Section 2.
<b>Personal Protective Equipment</b>	If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.
<b>Respiratory Protection</b>	Not normally needed. But if significant exposures are possible then the following respirator is recommended: Dust/mist respirator. (95%)
<b>Hand Protection</b>	Normal work gloves.
<b>Skin Protection</b>	Wear clothing appropriate for the work environment. Dusty clothing should be laundered before reuse. Use precautionary measures to avoid creating dust when removing or laundering clothing.
<b>Eye Protection</b>	Wear safety glasses or goggles to protect against exposure.
<b>Other Precautions</b>	None known.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Powder
<b>Color:</b>	Light brown or Gray
<b>Odor:</b>	Mild earthy
<b>pH:</b>	8-10
<b>Specific Gravity @ 20 C (Water=1):</b>	2.5
<b>Density @ 20 C (lbs./gallon):</b>	Not Determined
<b>Bulk Density @ 20 C (lbs/ft<sup>3</sup>):</b>	53 - 80
<b>Boiling Point/Range (F):</b>	Not Determined
<b>Boiling Point/Range (C):</b>	Not Determined
<b>Freezing Point/Range (F):</b>	Not Determined
<b>Freezing Point/Range (C):</b>	Not Determined
<b>Vapor Pressure @ 20 C (mmHg):</b>	Not Determined
<b>Vapor Density (Air=1):</b>	Not Determined
<b>Percent Volatiles:</b>	Not Determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	Not Determined
<b>Solubility in Water (g/100ml):</b>	Slightly soluble
<b>Solubility in Solvents (g/100ml):</b>	Not Determined
<b>VOCs (lbs./gallon):</b>	Not Determined
<b>Viscosity, Dynamic @ 20 C (centipoise):</b>	Not Determined
<b>Viscosity, Kinematic @ 20 C (centistokes):</b>	Not Determined
<b>Partition Coefficient/n-Octanol/Water:</b>	Not Determined
<b>Molecular Weight (g/mole):</b>	Not Determined

## 10. STABILITY AND REACTIVITY

<b>Stability Data:</b>	Stable
<b>Hazardous Polymerization:</b>	Will Not Occur
<b>Conditions to Avoid</b>	None anticipated
<b>Incompatibility (Materials to Avoid)</b>	Hydrofluoric acid.

**Hazardous Decomposition Products** Amorphous silica may transform at elevated temperatures to tridymite (870 C) or cristobalite (1470 C).

**Additional Guidelines** Not Applicable

## 11. TOXICOLOGICAL INFORMATION

**Principle Route of Exposure** Eye or skin contact, inhalation.

**Inhalation** Inhaled crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC, Group 1). There is sufficient evidence in experimental animals for the carcinogenicity of tridymite (IARC, Group 2A).

Breathing silica dust may cause irritation of the nose, throat, and respiratory passages. Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may also have serious chronic health effects (See "Chronic Effects/Carcinogenicity" subsection below).

**Skin Contact** May cause mechanical skin irritation.

**Eye Contact** May cause eye irritation.

**Ingestion** None known

**Aggravated Medical Conditions** Individuals with respiratory disease, including but not limited to asthma and bronchitis, or subject to eye irritation, should not be exposed to quartz dust.

**Chronic Effects/Carcinogenicity** Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling, and sometimes-fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness, and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop tuberculosis.

Cancer Status: The International Agency for Research on Cancer (IARC) has determined that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources can cause lung cancer in humans (Group 1 - carcinogenic to humans) and has determined that there is sufficient evidence in experimental animals for the carcinogenicity of tridymite (Group 2A - possible carcinogen to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (June 1997) in conjunction with the use of these minerals. The National Toxicology Program classifies respirable crystalline silica as "Known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by scarring of the lungs, skin, and other internal organs) and kidney disease.

**Other Information** For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768 (1997).

**Toxicity Tests**

<b>Oral Toxicity:</b>	Not determined
<b>Dermal Toxicity:</b>	Not determined
<b>Inhalation Toxicity:</b>	Not determined
<b>Primary Irritation Effect:</b>	Not determined
<b>Carcinogenicity</b>	Refer to <u>IARC Monograph 68, Silica, Some Silicates and Organic Fibres</u> (June 1997).
<b>Genotoxicity:</b>	Not determined
<b>Reproductive / Developmental Toxicity:</b>	Not determined

## 12. ECOLOGICAL INFORMATION

<b>Mobility (Water/Soil/Air)</b>	Not determined
<b>Persistence/Degradability</b>	Not determined
<b>Bio-accumulation</b>	Not determined

### Ecotoxicological Information

<b>Acute Fish Toxicity:</b>	TLM96: 10000 ppm (Oncorhynchus mykiss)
<b>Acute Crustaceans Toxicity:</b>	Not determined
<b>Acute Algae Toxicity:</b>	Not determined
<b>Chemical Fate Information</b>	Not determined
<b>Other Information</b>	Not applicable

## 13. DISPOSAL CONSIDERATIONS

<b>Disposal Method</b>	If practical, recover and reclaim, recycle, or reuse by the guidelines of an approved local reuse program. Should contaminated product become a waste, dispose of in a licensed industrial landfill according to federal, state, and local regulations.
<b>Contaminated Packaging</b>	Follow all applicable national or local regulations.

## 14. TRANSPORT INFORMATION

### Land Transportation

**DOT**  
Not restricted

**Canadian TDG**  
Not restricted

**ADR**  
Not restricted

### Air Transportation

ICAO/IATA  
Not restricted

## Sea Transportation

IMDG  
Not restricted

## Other Transportation Information

Labels: None

## 15. REGULATORY INFORMATION

### US Regulations

US TSCA Inventory All components listed on inventory or are exempt.

EPA SARA Title III Extremely Hazardous Substances Not applicable

EPA SARA (311,312) Hazard Class Acute Health Hazard  
Chronic Health Hazard

EPA SARA (313) Chemicals This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).

EPA CERCLA/Superfund Reportable Spill Quantity Not applicable.

EPA RCRA Hazardous Waste Classification If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.

California Proposition 65 The California Proposition 65 regulations apply to this product.

MA Right-to-Know Law One or more components listed.

NJ Right-to-Know Law One or more components listed.

PA Right-to-Know Law One or more components listed.

### Canadian Regulations

Canadian DSL Inventory All components listed on inventory or are exempt.

WHMIS Hazard Class D2A Very Toxic Materials  
Crystalline silica

## 16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS  
Not applicable

**Additional Information**

For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

**Disclaimer Statement**

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

**\*\*\*END OF MSDS\*\*\***

# MATERIAL SAFETY DATA SHEET

Product Trade Name: **QUIK-TROL GOLD LV**

Revision Date: 30-Mar-2012

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: QUIK-TROL GOLD LV  
Synonyms: None  
Chemical Family: Carbohydrate  
Application: Fluid Loss Additive

Manufacturer/Supplier: Baroid Fluid Services  
Product Service Line of Halliburton  
P.O. Box 1675  
Houston, TX 77251  
Telephone: (281) 871-4000  
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Compliance  
Telephone: 1-580-251-4335  
e-mail: fdunexchem@halliburton.com

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Polysaccharide		60 - 100%	Not applicable	Not applicable

## 3. HAZARDS IDENTIFICATION

Hazard Overview: May cause eye, skin, and respiratory irritation. Airborne dust may be explosive.

## 4. FIRST AID MEASURES

**Inhalation**: If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Skin**: Wash with soap and water. Get medical attention if irritation persists.

**Eyes**: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Ingestion**: Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

**Notes to Physician**: Not Applicable



## 5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (F):	> 698
Autoignition Temperature (C):	> 370
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

**Fire Extinguishing Media** Water fog, carbon dioxide, foam, dry chemical.

**Special Exposure Hazards** Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

**Special Protective Equipment for Fire-Fighters** Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**NFPA Ratings:** Health 1, Flammability 1, Reactivity 0  
**HMS Ratings:** Health 1, Flammability 1, Physical Hazard 0 , PPE: A

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures** Avoid creating and breathing dust. Slippery when wet.

**Environmental Precautionary Measures** None known.

**Procedure for Cleaning / Absorption** Scoop up and remove.

## 7. HANDLING AND STORAGE

**Handling Precautions** Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust. Avoid dust accumulations. Slippery when wet. Ground and bond containers when transferring from one container to another. Wash hands after use. Launder contaminated clothing before reuse. Do NOT consume food, drink, or tobacco in contaminated areas.

**Storage Information** Store away from oxidizers. Keep container closed when not in use. Store in a cool, dry location. Store away from direct sunlight. Keep from heat, sparks, and open flames. Store in a well ventilated area. Product has a shelf life of 36 months.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls** A well ventilated area to control dust levels. Local exhaust ventilation should be used in areas without good cross ventilation.

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Not normally needed. But if significant exposures are possible then the following respirator is recommended:  
Dust/mist respirator. (95%)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection**                      Wear safety glasses or goggles to protect against exposure.

**Other Precautions**                      Eyewash fountains and safety showers must be easily accessible.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State:</b>	Powder
<b>Color:</b>	White to off white
<b>Odor:</b>	Odorless
<b>pH:</b>	5-9 (1%)
<b>Specific Gravity @ 20 C (Water=1):</b>	Not Determined
<b>Density @ 20 C (lbs./gallon):</b>	Not Determined
<b>Bulk Density @ 20 C (lbs/ft3):</b>	37-56
<b>Boiling Point/Range (F):</b>	Not Determined
<b>Boiling Point/Range (C):</b>	Not Determined
<b>Freezing Point/Range (F):</b>	Not Determined
<b>Freezing Point/Range (C):</b>	Not Determined
<b>Vapor Pressure @ 20 C (mmHg):</b>	Not Determined
<b>Vapor Density (Air=1):</b>	Not Determined
<b>Percent Volatiles:</b>	Not Determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	Not Determined
<b>Solubility in Water (g/100ml):</b>	Forms gel
<b>Solubility in Solvents (g/100ml):</b>	Not Determined
<b>VOCs (lbs./gallon):</b>	Not Determined
<b>Viscosity, Dynamic @ 20 C (centipoise):</b>	Not Determined
<b>Viscosity, Kinematic @ 20 C (centistokes):</b>	Not Determined
<b>Partition Coefficient/n-Octanol/Water:</b>	Not Determined
<b>Molecular Weight (g/mole):</b>	Not Determined

**10. STABILITY AND REACTIVITY**

<b>Stability Data:</b>	Stable
<b>Hazardous Polymerization:</b>	Will Not Occur
<b>Conditions to Avoid</b>	None known.
<b>Incompatibility (Materials to Avoid)</b>	Strong oxidizers.
<b>Hazardous Decomposition Products</b>	Carbon monoxide and carbon dioxide.
<b>Additional Guidelines</b>	Not Applicable

**11. TOXICOLOGICAL INFORMATION**

<b>Principle Route of Exposure</b>	Eye or skin contact, inhalation.
<b>Inhalation</b>	May cause mild respiratory irritation.
<b>Skin Contact</b>	May cause mild skin irritation. May cause an allergic skin reaction.
<b>Eye Contact</b>	May cause mild eye irritation.
<b>Ingestion</b>	May cause allergic reaction.
<b>Aggravated Medical Conditions</b>	None known.

**Chronic Effects/Carcinogenicity** No data available to indicate product or components present at greater than 1% are chronic health hazards.

**Other Information** None known.

**Toxicity Tests**

**Oral Toxicity:** Not determined

**Dermal Toxicity:** Not determined

**Inhalation Toxicity:** Not determined

**Primary Irritation Effect:** Not determined

**Carcinogenicity** Not determined

**Genotoxicity:** Not determined

**Reproductive /  
Developmental Toxicity:** Not determined

**12. ECOLOGICAL INFORMATION**

**Mobility (Water/Soil/Air)** Not determined

**Persistence/Degradability** Will not ferment

**Bio-accumulation** Not determined

**Ecotoxicological Information**

**Acute Fish Toxicity:** TLM96: 100-1000 ppm (Lepomis macrochirus)  
TLM96: 100-1000 ppm (Oncorhynchus mykiss)

**Acute Crustaceans Toxicity:** Not determined

**Acute Algae Toxicity:** Not determined

**Chemical Fate Information** Not determined

**Other Information** Not applicable

**13. DISPOSAL CONSIDERATIONS**

**Disposal Method** Disposal should be made in accordance with federal, state, and local regulations.

**Contaminated Packaging** Follow all applicable national or local regulations.

**14. TRANSPORT INFORMATION**

**Land Transportation**

**DOT**  
Not restricted

**Canadian TDG**  
Not restricted

# MATERIAL SAFETY DATA SHEET

Product Trade Name: SODA ASH

Revision Date: 25-Oct-2012

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Trade Name: SODA ASH  
Synonyms: None  
Chemical Family: Carbonate  
Application: Buffer

Manufacturer/Supplier: Halliburton Energy Services  
P.O. Box 1431  
Duncan, Oklahoma 73536-0431  
Emergency Telephone: (281) 575-5000

Prepared By: Chemical Compliance  
Telephone: 1-580-251-4335  
e-mail: fdunexchem@halliburton.com

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Sodium carbonate	497-19-8	60 - 100%	Not applicable	Not applicable

## 3. HAZARDS IDENTIFICATION

Hazard Overview: May cause eye, skin, and respiratory irritation.

## 4. FIRST AID MEASURES

**Inhalation** If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

**Skin** Wash with soap and water. Get medical attention if irritation persists.

**Eyes** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

**Ingestion** Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

**Notes to Physician** Not Applicable

## 5. FIRE FIGHTING MEASURES

Flash Point/Range (F):	Not Determined
Flash Point/Range (C):	Not Determined
Flash Point Method:	Not Determined
Autoignition Temperature (F):	Not Determined
Autoignition Temperature (C):	Not Determined
Flammability Limits in Air - Lower (%):	Not Determined
Flammability Limits in Air - Upper (%):	Not Determined

**Fire Extinguishing Media** Water fog, carbon dioxide, foam, dry chemical.

**Special Exposure Hazards** Decomposition in fire may produce toxic gases.

**Special Protective Equipment for Fire-Fighters** Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**NFPA Ratings:** Health 2, Flammability 0, Reactivity 0  
**HMIS Ratings:** Health 2, Flammability 0, Reactivity 0

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures** Use appropriate protective equipment. Avoid creating and breathing dust.

**Environmental Precautionary Measures** Prevent from entering sewers, waterways, or low areas.

**Procedure for Cleaning / Absorption** Scoop up and remove.

## 7. HANDLING AND STORAGE

**Handling Precautions** Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust.

**Storage Information** Store away from acids. Store in a cool, dry location. Product has a shelf life of 36 months.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls** Use in a well ventilated area. Localized ventilation should be used to control dust levels.

**Personal Protective Equipment** If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

**Respiratory Protection** Dust/mist respirator. (N95, P2/P3)

**Hand Protection** Normal work gloves.

**Skin Protection** Normal work coveralls.

**Eye Protection** Dust proof goggles.

**Other Precautions** Eyewash fountains and safety showers must be easily accessible.

ICAO/IATA  
Not restricted

## Sea Transportation

IMDG  
Not restricted

## Other Transportation Information

Labels: None

## 15. REGULATORY INFORMATION

### US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	Acute Health Hazard
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	Not applicable.
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	Does not apply.
NJ Right-to-Know Law	Does not apply.
PA Right-to-Know Law	Does not apply.

### Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.
WHMIS Hazard Class	Un-Controlled

## 16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS

Not applicable

**Additional Information** For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

## **Disclaimer Statement**

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**\*\*\*END OF MSDS\*\*\***

