

OPERATIONS PERMIT APPLICATION FOR DRILLING AND PRODUCTION AT THE NOBLES
GRADE AND TAMIAMI PROSPECTS, BIG CYPRESS NATIONAL PRESERVE

APPENDIX D:
**SPILL CONTROL AND EMERGENCY
PREPAREDNESS PLAN**



DRAFT SPILL CONTROL & EMERGENCY
PREPAREDNESS PLAN

Burnett Oil Co., Inc.
Nobles Grade and Tamiami Tank Batteries
Big Cypress National Preserve
Collier County, Florida



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Environmental solutions delivered uncommonly well

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1. INTRODUCTION & FACILITY DESCRIPTION

Burnett Oil Co., Inc. (Burnett) proposes the operation of a crude oil production facility at two locations within the Big Cypress Natural Preserve (BCNP), as follows;

Facility Name: Nobles Grade Tank Battery
Facility Location: 26.136451, -81.118.486
Section 1, Township 50S, Range 32E
Collier County, FL
Facility Phone Numbers: 817-332-5108
Owner Name: Burnett Oil Co., Inc.
Owner Address: 801 Cherry St. #9
Fort Worth, TX 76102
SIC Code: Oil and Gas Field Services (SIC Code 1389)
Receiving Waters: Ditches and erosional features to Mallet Slough, to the Turner River Canal, to the Turner River
Distance: Turner River Canal is approximately 24 miles southwest of the main facility operations

Facility Name: Tamiami Tank Battery
Facility Location: 25.982839, - 80.881219
Section 36, Township 51S, Range 34E
Collier County, FL
Facility Phone Numbers: 817-332-5108
Owner Name: Burnett Oil Co., Inc.
Owner Address: 801 Cherry St. #9
Fort Worth, TX 76102
SIC Code: Oil and Gas Field Services (SIC Code 1389)
Receiving Waters: Levee No. 28 Canal, to Dayhoff Slough, to Mullet Bay
Distance: Mullet Bay is approximately 26 miles southwest of the main facility operations

Appendix A includes location maps, proposed facility layouts and flow diagrams, as well as maps showing receiving waters.

1.1. PROCESS DESCRIPTION

Initially, an 8' x 20' vertical heater treater will be used to separate oil, water, gas from the first well. If water production increases to a point the heater treater cannot effectively separate fluids, a 6' x 20' free water knockout (FWKO) will be set to remove the bulk of free water from the production stream. Prior to water reaching the storage tanks, it will enter a gun barrel tank in order to allow for any oil carryover to accumulate and be recovered.

Once multiple wells are brought online, individual well testing will be carried out on a scheduled basis using a similar train of equipment. The well being tested will be produced through a smaller 6' x 10' FWKO, which will send oil to a dedicated 8' x 20' heater treater and water to the gun barrel tank. The second heater treater will also be available to support the bulk production stream should the main heater treater require maintenance. All gas will pass through a 3' x 10' scrubber. This scrubber is to prevent any liquid carryover through the gas stream. It will be equipped with a high-level liquid sensor that can shut off the pump in the event there is excessive liquid carryover into the gas stream. This will be crucial to both spill and fire prevention.

1.2. SPCC APPLICABILITY

The Nobles Grade and Tamiami facilities will be subject to the oil spill prevention requirements under 40 CFR 112. As such, Burnett will develop and complete a Spill prevention Control and Countermeasures (SPCC) Plan prior to beginning of operations. The SPCC will be fully implemented prior to the beginning of operations. The SPCC will be attached and made part of this spill contingency plan.

2. IDENTIFICATION OF SUBSTANCES

Burnett anticipates that during operations of producing oil and gas from the existing and drilling proposed wells, the substances listed in Table 2-1 will be used or expected to be encountered. Table 2-1 lists each substance by generic product name, its use in operations, its hazardous content, and its hazardous effects. A copy of the Safety Data Sheet (SDS) for each item listed in Table 2-1 is included in Appendix B. The SDS for each substance includes proper safety procedures and protective devices for using each product as well as first aid information in the event of exposure.

Production			
Product	Main Hazardous Ingredient	Potential Effects of Exposure	Use
Crude Oil	Crude oil, petroleum (95-100%)	Skin, eye, and respiratory irritation.	Produced during operations
Produced Water	Water (80-95%)	May cause respiratory irritation if inhaled.	Produced during operations
Drilling Operations			
Product	Main Hazardous Ingredient	Potential Effects of Exposure	Use
Nalco EC1317A	Methanol (30-60%)	Toxic if swallowed, in contact with skin or if inhaled.	Corrosion Inhibitor
SWG Biocide	Sodium hydroxide (<10%)	Harmful in contact with skin.	Biocide
ParaForce 2033	Proprietary fatty acid methyl ester (35-45%)	May cause skin, eye and respiratory irritation.	Paraffin dispersant
Emulsion Breaker 210	Xylene (15-22%)	Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin.	Emulsion breaker
Aquagel	Crystalline silica quartz	May cause cancer by inhalation. Causes damage to organs through prolonged or repeated exposure if inhaled.	Drilling mud additive
X-Tend II	Acrylic polymer	None listed	Drilling mud additive
Caustic/Soda Ash	Sodium carbonate	Eye and skin irritation.	Drilling mud additive
Baralube	None	None listed	Drilling mud additive
Baravis	Cellulose derivative	None listed	Drilling mud additive
Baracarb	None	None listed	Drilling mud additive

Appendix C includes a list of bulk containers holding oil substances at Nobles Grade and Tamiami.

3. IDENTIFICATION OF HAZARDOUS CONDITIONS

This section includes information related to identification of any abnormal pressure, temperature, or other hazardous condition existing on-site, or expected to be encountered during operations.

Lost circulation zones can occur throughout the well but are prevalent when drilling through the Boulder zone. This interval occurs between 3000-4000 ft. TVD and is the main waste injection interval in this geographic area. Lost circulation is mitigated by managing mud weights and the use of lost circulation material to help seal off thief zones. Once the Boulder zone has been drilled through, an intermediate casing string will be set and cemented in place to isolate this interval from the remaining drilling operations. Significantly over-pressured zones are not commonly encountered, however, there are some saltwater flows expected. The following BOP program outlines the equipment that will be used to contain well fluids:

Hole Size	Casing Size	Size/Pressure (Annular/Rams)	Bottom to Top Arrangement	Low/High Test Pressures Rams/Annular
17 1/2"	13 3/8" 54.5# J-55	21 3/4" 2M	A	N/A
12 1/4"	9 5/8" 36# J-55	21 3/4" 2M	A	N/A
8 3/4"	7" 26# L-80	13 5/8" 5M/10M	P/S/B/A	250-3500/250-2000
6 1/8"	5 1/2" FJ 17# L-80	13 5/8" 5M/10M	P/S/B/A	250-3500/250-2000

The proposed operations are located within a wooded area prone to forest fires. Severe drought conditions may raise the risk of fires. In addition, the BCNP conducts prescribed fires from time to time. Burnett's operations and the nature of material stored at the two locations may elevate the risk of fire, or complicate response efforts.

4. MANAGEMENT MEASURES

Burnett has established a number of procedures and strategies to prevent spills and contain substance spills during drilling and production operations.

Burnett's inspection procedure is set up as a monthly walk-around inspection of the facility. The inspection program provides a mechanism to prevent and detect system malfunctions, equipment deterioration, and operator errors. The inspection program is designed to discover the potential for spill events so that corrective and preventive actions can be taken in a timely manner. Inspection forms can be found in Appendix D.

4.1. INSPECTION PROGRAM

The Facility Manager, BOCI personnel, and Burnett employees have been assigned the responsibility to perform routine inspections of the site and oil handling equipment, as well as areas where hazardous substances are used or stored. The designated individuals have the training and authority to:

- Perform the required inspections;
- Perform necessary evaluations and hazard assessments; and
- Recommend appropriate corrective or remedial actions.

Burnett performs inspections according to the general inspection guidelines outlined below and based on operational experience with the systems and processes involved. The Facility Manager, BOCI personnel, or Burnett employees will evaluate each discovery that indicates a potential deficiency, malfunction, equipment deterioration, or operator error through regular observation of the process and procedures. The level of response and its timing is determined by the nature and severity of the problem identified with the protection of personnel and the prevention of adverse environmental impact being of paramount concern. Corrective actions, as applicable, are implemented to minimize the potential impact and risk.

The facility inspection activities encompass the facility perimeter and those items within the property that are common to all operations. The general inspection activities, include a daily walk-around inspection of:

- Oil and produced water containers and related equipment;
- Pumps, valves, and gauges;
- Containment areas;
- Loading/Unloading areas

4.1.1. Oil and Produced Water Containers and Related Equipment

The Facility Manager or his designated project personnel visually examine all oil and produced water storage containers and related equipment including flanges, pumps, valves, hoses, gauges, hatch covers, and gaskets on a monthly basis for indications of leaks, drips, sweating, damage, and corrosion. Repair of any such items are handled on a priority basis.

4.1.2. Pumps, Valves, and Gauges

Burnett employees regularly inspect and lubricate associated pump seals and replace seals as required for plant equipment. Valves, operating controls, and other items normally kept in a closed position are observed during operation to ensure they are properly secured. Gauges are inspected regularly and repaired/replaced as needed.

4.1.3. Containment Areas

The Facility Manager or his designated personnel inspect containment areas monthly for cracks, holes, and oil or pollutant accumulation. If signs of leaks, structural damage, or contamination appear, immediate action to remedy the situation will be taken. Any oil accumulated is disposed of properly as soon as possible.

4.1.4. Loading / Unloading Areas

Inspections of the various loading and unloading areas are completed on a monthly basis to ensure the areas remain neat, free of obstacles, and clean. Best Management Practices are utilized during loading and unloading activities to ensure oil is handled safely, as detailed in Appendix E.

4.1.5. Response Equipment

Emergency response equipment and materials are checked during operations to make sure an adequate supply is available for use. The inventory may include but is not limited to:

- Filter fabric and hay bales
- Neutralizing chemicals
- Suction pump trucks
- Oil-dry loose absorbent material
- Absorbent pads
- Nitrile gloves
- Sand bags

BOCI will store absorbent materials on-site to assist with spill containment and cleanup. Absorbent booms will be kept to contain any off-pad spills that may occur. These will be used to contain any oil slick on top of standing water from spreading until a vacuum truck arrives to recover the oil. Absorbent pads will also be kept to clean up any spills inside of containment areas or within the confines of the pad. Water tight chem-proof suits will be onsite in the event workers may have to don them to put absorbent boom material in place. Additional PPE and materials for spill cleanups will also be available, including but not limited to: rubber gloves, plastic boot covers, and bags for absorbent material disposal. A designated decontamination area will be available near the living quarters for personnel to utilize after a spill response effort.

In addition to the above resources, contracted service providers maintain an inventory of equipment to respond to spills.

4.2. DOCUMENTATION AND RECORDKEEPING

Completed inspection checklists and associated reports are provided to the Facility Manager, or other designated personnel, who then ensure that corrective actions are tracked to completion. The inspection checklist includes important administrative information such as the scope of the inspection, name of the inspector, signature of the inspector, and the date of the inspections. The assessment includes notations of the major observations, actions taken, and the urgency of the required response. The inspector signs the inspection report.

Burnett accumulates and files all completed forms and attachments at the facility. These forms are retained at the facility for a minimum period of three (3) years from the date of inspection.

Burnett trains the Nobles Grade and Tamiami facility's oil-handling personnel on spill prevention and response, good housekeeping, and material management practices. A record of training and attendees are kept at the facility for a minimum period of three (3) years from the date of the training. Appendix F includes a training log that can be used to maintain records.

4.3. PERSONNEL TRAINING

Oil-handling personnel are trained in the following:

1. Operation and maintenance of equipment to prevent oil discharges;
2. Oil discharge procedure protocols; and
3. Applicable oil pollution control laws, rules, and regulations.

The spill procedures and the contents of the Spill Plan are discussed on an annual basis.

4.4. EMERGENCY COORDINATOR & EMERGENCY CONTACTS

The Facility Manager is accountable for discharge prevention. The Facility Manager reports to Burnett upper management.

Emergency Contacts are as follows:

Facility Manager – TBD Florida	O: M:
Kevin Vermillion VP of Special Services Fort Worth, Texas	O: 817-332-5180
Wesley Hanna Engineering Manager	O: 817-332-5108
Leslie Garvis Regulatory & Government Affairs Manager	O: 817-332-5108

4.5. SPILL PREVENTION BRIEFINGS

At a minimum, the facility trains oil-handling personnel at least once per year on:

- > Operation and maintenance of equipment;
- > Spill response procedures and reporting protocol;
- > Prevention measures, including spill prevention, preventive maintenance, and any recently developed precautionary measures;
- > Pollution control laws and regulations;
- > Brief review of the goals and components of this Spill Plan; and
- > Brief review of known past discharges and failed or malfunctioning components.

4.6. MEASURES FOR BULK STORAGE CONTAINERS

4.6.1. Compatibility of Containers and Product Stored

All containers are fully compatible with the material held and the environmental conditions to which they can reasonably be expected to be subjected. Drilling fluid additives will be stored on pallets with plastic wrap on top of plastic liners to prevent any contact with the pad surface.

4.6.2. Good Engineering Practices for Discharge Prevention

Burnett has considered good engineering practices within the design of the Nobles Grade and Tamiami facilities to prevent discharges. These practices are as follows:

- The storage capacity of the crude oil tanks and produced water tanks are adequate to ensure that none of these containers would overflow if a pumper is delayed in making regularly scheduled rounds.
- Burnett has installed high level sensors to generate and transmit an alarm signal to a data system that controls production.
- Tanks and vessels will be placed inside impermeable secondary containments. The tank batteries will be set within a firewall constructed of 24-gauge steel that is 36" in height. The area inside area of the firewalls will be lined with a 60 mil polyurea liner that has a 10 oz. geotextile backing. The vessel containments may utilize a shorter wall (18-24"). Sumps will be installed to pump rainwater out of containments and into gun barrel tanks. There it will make its way to our disposal system.
- Whenever possible, chemical totes/tanks will be stored inside the larger containments and will have smaller containments beneath each tote or tank.
- Transfer pumps will be placed within the boundaries of the large secondary containments on stands. Burnett personnel will place small plastic containments underneath to catch minor drips and keep the larger containment area clean. There will be level and pressure controls installed on certain equipment to shut down pumps and equipment to prevent or minimize spill impacts. There will also be a berm around the pad.

4.7. FACILITY TRANSFER OPERATIONS

4.7.1. Aboveground Valves and Piping

Burnett inspects all valves and piping associated with transfer operations for the general condition of flange joints, valve glands and bodies, drip pans, pipe supports, pumping well polish rod stuffing boxes, bleeder and gauge valves, and other such items on a monthly basis.

4.7.2. Maintenance for Flowline and Intra-facility Gathering Lines

Burnett will implement a written program of flowline and intra-facility gathering line maintenance. The maintenance program addresses procedures to:

- Ensure that flowlines and intra-facility gathering lines and associated valves and equipment are compatible with the type of production fluids, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment;
- Visually inspect and/or test flowlines and intra-facility gathering lines and associated appurtenances on a monthly basis for leaks, oil discharges, corrosion, or other conditions that could lead to a discharge. For flowlines and intra-facility gathering lines that are not provided with secondary containment in accordance with 112.7(c), the frequency and type of testing must allow for the implementation of a contingency plan.
- Take corrective action or make repairs to any flowlines and intra-facility gathering lines and associated appurtenances as indicated by regularly scheduled visual inspections, tests, or evidence of a discharge.
- Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with flowlines, intra-facility gathering lines, and associated appurtenances.

5. CONTINGENCY ACTIONS FOR SPILLS

This section details Burnett’s oil and hazardous substance spill response procedures based on the Burnett Spill Response Plan and general best practices during a spill. Burnett trains employees to attempt to stop the continuation of the discharge (closing valves, turning off pumps, isolating a line leak, etc.) if safe to do so. Employees use sorbent materials to contain and dispose of the oil or substance. The discoverer shall respond to the situation based on their knowledge, level of training, and an assessment that the initial response will not put them or others in harm’s way or make the situation worse.

5.1. DISCOVERY OF A SPILL (ALL EMPLOYEES & CONTRACTORS)

In the event of an oil spill, the discoverer (“PIC”, Person in Charge) will immediately:

1. Contact the Incident Commander (IC):
 - a. Primary: Facility Manager, Wesley Hanna– (817) 332-5108
 - b. Backup: VP of Special Services, Kevin Vermillion – (817) 332-5108
2. The IC will determine what level of action must be taken based on the type of spill:
 - If the IC determines that the incident can be managed with on-site resources by BOCI (Level 3 incident), the below actions will be taken by the PIC.
 - Stop the source of the spill and/or contain the spill if it is safe to do so. The emphasis for the initial spill response is to prevent oil from discharging off-site. This may include:
 - a. Creating berms/barriers with sorbent material, dirt/gravel, or other similar materials; and/or
 - b. Turning off pumps.
 - Ensure the area is safe for all nearby employees. This may include:
 - a. Turning off nearby ignition sources;
 - b. Informing nearby employees of the spill;
 - c. Designating an employee to stand nearby the spill area to warn others until remediation occurs; and/or
 - d. Taping off the area and/or posting signage to warn others.
 - The IC will maintain contact with the PIC until the incident has been resolved.
 - If the IC determines that the incident exceeds facility capabilities to manage the incident (Level 2 incident), the IC activates the necessary members of the Burnett Spill Response Team and Service Providers.
 - If the IC determines that the incident exceeds facility capabilities to manage the incident and extends beyond the site’s lease boundary resulting in disruption of local commerce, the IC activates the entire Incident Management Team (IMT).

The Regulatory and Government Affairs Manager will handle official notification of outside contractors and the appropriate government agencies under normal circumstances. Appropriate agencies and phone numbers are included in Appendix G. Depending upon the type of emergency, the Regulatory and Government Affairs Manager may not contact all of these outside agencies.

Table 5-1. Emergency Notification Information

Facility Manager Phone Number (TBD): ((817) 332-5108 (24-hour)

If someone calls the Facility Manager (primary contact) or TBD (back-up) with an emergency, collect the following information from the caller. Do not let the caller disconnect until all of the following information is collected. **Note: the caller shall not put themselves in harm's way to collect the information.**

1. Date and time the emergency event discovered: _____

2. Exact location of the emergency event:

3. Type and description of the emergency:

4. Estimate of the amount of material released:

5. Extent of injury or property damage incurred:

6. Extent of the actual or potential environmental damage:

7. Remedial action taken, if any:

8. Name of Notifier/Discoverer:

5.2. REPORTING

Oil spills that meet the following criteria do not need reporting to government agencies assuming the release does not physically enter waters of the State, and it is immediately contained, removed, and disposed of in accordance with Florida regulations:

- 10 barrels (420 gallons) or less of crude oil, petroleum condensate, produced water, or a combination thereof, or
- 25 gallons or less of refined crude oil products, including but not limited to, gasoline, diesel motor fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil, and derivatives of mineral, animal, or vegetable oils.

Unreportable releases must be reported internally to Burnett management to ensure that the causes of the incident are investigated and corrective actions, as applicable, are implemented to prevent recurrence.

Unreportable releases will be verbally reported to NPS within 24 hours followed by written notice within 15 days.

Reportable spills to the NPS, NRC and FDEP discharges of oil that meet any of the following criteria:

- Discharges to navigable waters that:
 - Violate applicable water quality standards;
 - Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines; or
 - Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.
- Releases that threaten to enter waters of the State, including spills in excess of:
 - 10 barrels (420 gallons) of crude oil, petroleum condensate, produced water, or a combination thereof, or
 - 25 gallons of refined crude oil products, including but not limited to, gasoline, diesel motor fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil, and derivatives of mineral, animal, or vegetable oils.

Typically, any amount of oil that reaches a navigable waterway will trigger reporting to government agencies.

In the event of a reportable spill, the Facility Manager (primary) or back-up will notify the following agencies:

1. Call 911 for the Fire Department if immediate response assistance is required (i.e fire associated with spill).
2. Local spill response contractor will be notified if assistance is required to respond to spill.
3. For reportable discharges to navigable waters:
 - a. Call the National Response Center at 1-800-424-8802. After telling them that you want to report a spill, be prepared to supply the following information:
 - i. Your name, company name, company address, and telephone number;
 - ii. Date and time the incident discovered;
 - iii. Location of the incident;
 - iv. Source and cause of the release or spill;
 - v. Types of material(s) released or spilled;
 - vi. Quantity of materials released or spilled;
 - vii. Description of all affected media;
 - viii. Damage or injuries caused by the release;
 - ix. Actions being used to stop, remove, and mitigate the effects of the release;

- x. Whether an evacuation may be needed;
 - xi. Names of individuals and/or organizations who have also been contacted and at what times;
 - xii. Weather conditions at the incident location; and
 - xiii. Any other information that may help emergency personnel respond to the incident.
- b. Submit an Public Notice of Pollution to FDEP using the form on this website:
<https://floridadep.gov/pollutionnotice>
3. Contained spills equal to or greater than ten (10) barrels
- a. Verbal report to the NPS, FDEP and WOGCC no later than the next business day following discovery of the incident; and,
 - b. Submit a written report within fifteen (15) working days of the spill.

For releases of oil to navigable waters of over 1,000 gallons in a single discharge or more than 42 gallons in each of two discharges within a 12-month period that cause a sheen on surface waters of shoreline, or sludge or emulsion in waters, submit the SPCC Plan to EPA Region IV office within 60 days from the time of the discharge. Provide a description of the spill and detail corrective action taken to prevent a recurrence.

5.3. SPILL CLEAN-UP AND DISPOSAL

After the appropriate government agencies have been notified, then the Facility Manager and the Incident Commander will oversee clean-up operations, disposal activities, incident investigation procedures, and ensure corrective actions are implemented as necessary. Specifically, the Facility Manager will do the following:

1. Oversee and coordinate clean-up operations. Remove any residual substances from the waters of the State within in a timely and diligent manner. This may include:
 - a. Working with Burnett personnel or off-site contractors to clean-up the spill area; or
 - b. Ensuring the spill area remains safe and contained during clean-up operations.
2. Evaluate the recovered material for disposal options. The material should be evaluated to determine if it meets hazardous waste characteristics, which may include review of Safety Data Sheet information or analytical testing. Disposal options may include:
 - a. Hazardous waste
 - i. Store waste in a closed container;
 - ii. Label the container "Hazardous Waste";
 - iii. Evaluate additional Resource Conservation and Recovery Act (RCRA) regulation implications (e.g., generator status, notification requirements, etc.); and/or
 - iv. Contact a waste management company to properly dispose of the waste.
 - b. Non-hazardous waste
 - i. Store waste in a container such that it will not commingle with storm water;
 - ii. Label the container "Non-hazardous Waste"; and/or
 - iii. Contact a waste management company to properly dispose of the waste.
3. Replenish on-site emergency response materials, as necessary.

4. Complete an incident investigation to determine the cause of the spill and whether corrective actions are needed to prevent a reoccurrence of the incident. An incident investigation may include:
 - a. Meeting(s) with Burnett personnel directly involved with the incident;
 - b. Review of equipment inspection / maintenance procedures;
 - c. Review of process / operating conditions at the time of the spill; and/or
 - d. Review of the Spill Plan.

5. Implement corrective actions to prevent a reoccurrence of the incident. Corrective actions may include:
 - a. Updating inspection / maintenance procedures;
 - b. Developing new oil-handling procedures; and/or
 - c. Updating the Spill Plan.

6. CONTINGENCY PLAN FOR OTHER EMERGENCIES

6.1. FIRE

The Nobles Grade and Tamiami tank batteries are located within a wooded area subject to occasional prescribed burns. Burnett will maintain constant coordination with BCNP park personnel and be aware of plans related to any prescribed burn in the area.

In the event a fire could reasonably be expected to reach the Nobles Grade or Tamiami facilities, Burnett will lower crude stocks to a minimum, make sure firebreaks are clear of vegetation or other flammable materials, and wrap-up or hold-off on any non-routine work. Only personnel essential to daily operations will then remain onsite. The Site Manager will maintain communications with the fire's incident command team.

Should the fire become an imminent threat to pass through/around operations, all equipment will be powered down, and wells shut by closing all wellhead valves. Field personnel will evacuate the area as directed by the Site Manager in communication with the incident command.

Should a fire start within the boundaries of Burnett's pad, every effort to safely extinguish it will be made. Fire extinguishers will be placed strategically around the location and inspected regularly. If safely accessible, the pumps will be powered off and wellhead valves closed to cease the flow of the production stream to the facility. Any remote shut down capabilities will be used in the event the site is inaccessible. If the fire is not able to be extinguished quickly by on-site personnel, Burnett's Emergency Response Plan (ERP) will be enacted.

Once Burnett personnel has given clearance to re-enter the site, the Site Manager will take full inventory of the facility and make any repairs necessary.

6.2. FLOODS

The following outlines general guidelines to be considered during flood emergencies. As with other emergencies, they involve employee safety, protection of the operations, limiting damage, and returning to normal operations as quickly as possible.

In case a flood emergency is declared by local government, or anticipated due to inclement weather, this plan shall go into effect.

6.2.1. Preparing for Floods

In preparation for a potential flood event, the following actions should be taken, as appropriate to the anticipated event:

- Flammable liquid tanks in the expected flood area will be pumped out and filled with water, where practical, to prevent floating. Suction and fill lines shall be closed.
- Gas supplies, pilot flames, and utilities to flood areas will be shut off.
- Designated electric motors will be removed from flood potential areas.
- Vehicles containing flammable liquids will be moved away from flood area.

6.2.2. During Floods

Even shallow flood waters present a serious hazard since they may hide trenches, washed out areas, pits, etc. For this reason, any personnel entering any flooded area must work in pairs with a safety rope.

6.2.3. After Floods

All piping, tanks and equipment containing hazardous materials that were affected by the flood shall be inspected and tested prior to being placed back in service.

Salvage / Repair for floods shall work according to the following considerations:

- Salvage work following any emergency is an extremely hazardous task. Consideration must be given to damaged lines, flexed structural members, undermined areas, etc. before beginning the job.
- Personnel performing salvage work shall be instructed in potential hazards prior to each day's work.

6.3. HURRICANES AND TROPICAL DISTURBANCES

The Atlantic Hurricane Season spans from June 1st through November 30th each year. During this season, Burnett will continuously monitor any developing system, and assess the risk of impacts to the operations.

Implementation of the emergency actions outlined in this section will depend on the level of risk posed by the system and the following advisories;

- Hurricane/Tropical Storm “Watch” - Hurricane/tropical storm conditions are possible in the specified area, usually within 36 hours.
- Hurricane/Tropical Storm “Warning” - Hurricane/tropical storm conditions are expected in the specified area, usually within 24 hours.

6.3.1. Storm Stages and Potential Damages

The Nobles Grade and Tamiami tank batteries are located within an area prone to impacts from tropical disturbances. These disturbances range in intensity and potential damage as shown in the table below.

Type of System	Characteristics	Potential Damages
Tropical Depression	Max. sustained surface wind of 38 mph	No significant damage to structures.
Tropical Storm	Max. sustained surface wind of 39-73 mph	Minor damage to structures, damage to trees, some fences and signs.
Cat 1 Hurricane	Max. sustained surface wind of 74-95 mph	Damage primarily to unanchored mobile homes, shrubbery, trees, poorly constructed signs. No real damage to most building structures. Some coastal road flooding and minor pier damage.
Cat 2 Hurricane	Max. sustained surface wind of 96-110 mph	Some roofing material, door, and window damage of buildings.

		<p>Considerable damage to shrubbery and trees with some trees blown down causing power outages.</p> <p>Considerable damage to mobile homes, poorly constructed signs, and piers.</p> <p>Flooding on coastal and low-lying escape routes 2-4 hours before arrival of the hurricane center.</p>
Cat 3 Hurricane	Max. sustained surface wind of 111-129 mph	<p>Structural damage to residences and utility buildings.</p> <p>Damage to shrubbery and trees</p> <p>Mobile homes and poorly constructed signs are destroyed.</p> <p>Low-lying escape routes are cut by rising water 3-5 hours before arrival of the center of the hurricane.</p> <p>Flooding near the coast destroys smaller structures with larger structures damaged by battering from floating debris.</p> <p>Terrain continuously lower than 5 ft above mean sea level may be flooded inland 8 miles (13 km) or more.</p> <p>Extensive power outages for several days possible.</p>
Cat 4 Hurricane	Max. sustained surface wind of 130-156 mph	Catastrophic damage
Cat 5 Hurricane	Max. sustained surface wind of >156 mph	

6.3.2. Stages of Hurricane Alert and Actions

Standard daily operation will include weather monitoring. In the event of a hurricane developing in the Gulf of Mexico, Florida Operations personnel in Naples, Florida and at the corporate headquarters in Fort Worth, Texas will closely monitor the storm track and implement the following stages of emergency preparedness and response beginning four days out from potential impact or landfall.

1. 96 Hours before Possible South Florida Landfall

- BOCI operations and safety personnel put on alert by phone and email. Local and national weather channels will be monitored continuously.
- Develop plans and timetable for suspending operations within 48 hours. NPS and DEP will be notified of the timetable for suspending operations.

- BOCI will stay in close contact with NPS for updates on Preserve protocols.

2. **72 Hours Before Possible South Florida Landfall**

- Continuous monitoring of local and national weather.
- Plans underway to suspend operations based on timetable.
- Status updates to NPS and DEP.

3. **48 Hours Before Possible South Florida Landfall**

- Continuous monitoring of local and national weather.
- Plans underway to suspend operations based on timetable.
- Status updates to NPS and DEP.

4. **24 Hours Before Possible South Florida Landfall**

- Continuous monitoring of local and national weather.
- Preparations for evacuation of any remaining personnel at Nobles Grade and Tamiami
- Operations suspended and all personnel evacuated.
- Notification of operations shutdown and status to NPS and DEP

6.3.3. Operation Procedures for Impending South Florida Landfall

Upon notice of an impending hurricane landfall, BOCI will implement the following procedures:

1. **Routine Field Operations**

- Suspend pumping operations
- Close and flag all block valves at wellhead
- Secure all additional tanks
- Secure or remove all loose equipment, tools, and vehicles
- Secure all hazardous material storage areas, and remove/relocate hazardous materials to a safe location
- For Category 3 and above, empty storage tanks, if possible.
- Secure all wellheads, valves, and other appurtenances
- Evacuate personnel

2. **Pipeline Operations**

- Close all manifold valves

3. **Well Pad and Production Facility**

- Inspect and secure company trailer and any storage facilities
- Fill all tanks to at least 30% capacity, if possible
- Fill wastewater holding tank with fresh water to capacity, if possible
- Remove any portable toilets
- Remove vehicles from premises

- Secure any communications towers and related equipment

4. **Drilling Operations**

- Notify contactors of shut down schedule and begin shut down and removal of equipment within 48 hours projected landfall.
- Pull drill pipe, fill well bore with drilling fluid and close BOP
- Lay down rig and secure or remove offsite
- Secure all loose equipment and materials or remove to an offsite secure location
- Remove all portable toilets and secure all field trailers
- Top off all diesel tanks and fill holding tanks with water.

5. **Workover Operations**

- Notify contactors of shut down schedule and begin shut down and removal of equipment within 48 hours projected landfall.
- Remove tools and equipment, close BOP or main block valve on tree
- Lay down, secure or remove rig to an off site safe location
- Secure all loose materials and equipment or remove from location
- Remove all portable toilets and secure all field trailers

6.3.4. **Resumption of Operations**

After storm has passed, Burnett personnel will contact the NPS to determine if conditions are safe for the return of personnel in the Preserve. Personnel will return to the sites once conditions are deemed safe to conduct inspections to determine extent of any damages.

1. **Inspections**

- Burnett will conduct inspection of the facility and all equipment to determine type and severity of damage
- All tanks will be inspected to ensure integrity of vessels is intact

2. **Repairs**

- All necessary equipment repairs will be made as soon as possible.
- If any storage tanks received damage during the storm, all fluid will be removed from compromised tank until repairs can be made or tank replaced.

3. **Spills & Environmental Impacts**

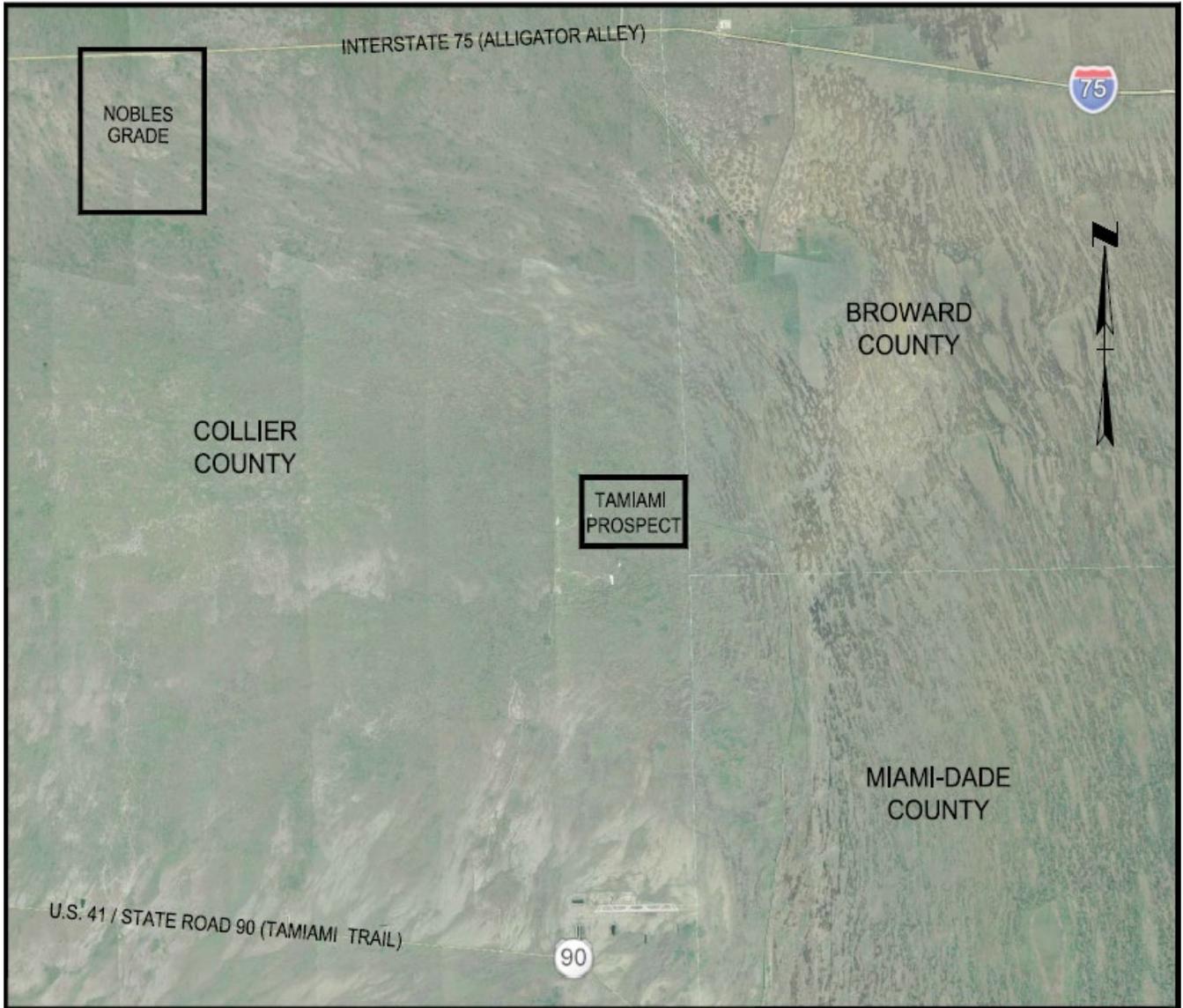
- Immediate steps will be taken to contain any spills that resulted from hurricane damage
- Any environmental impacts from storm damage will be assessed immediately and steps taken to minimize and control any impacts.

4. **Resuming Production**

- Verify adequate storage levels and takeaway capacity is available.
- Prior to starting up pump(s), verify no leaks are present and all necessary valves are in their correct position for operation.
- Monitor levels, pressures, and control valve operation until it is verified all equipment is working properly.

APPENDIX A: FACILITY MAPS

Nobles Grade and Tamiami Facilities- Location Map



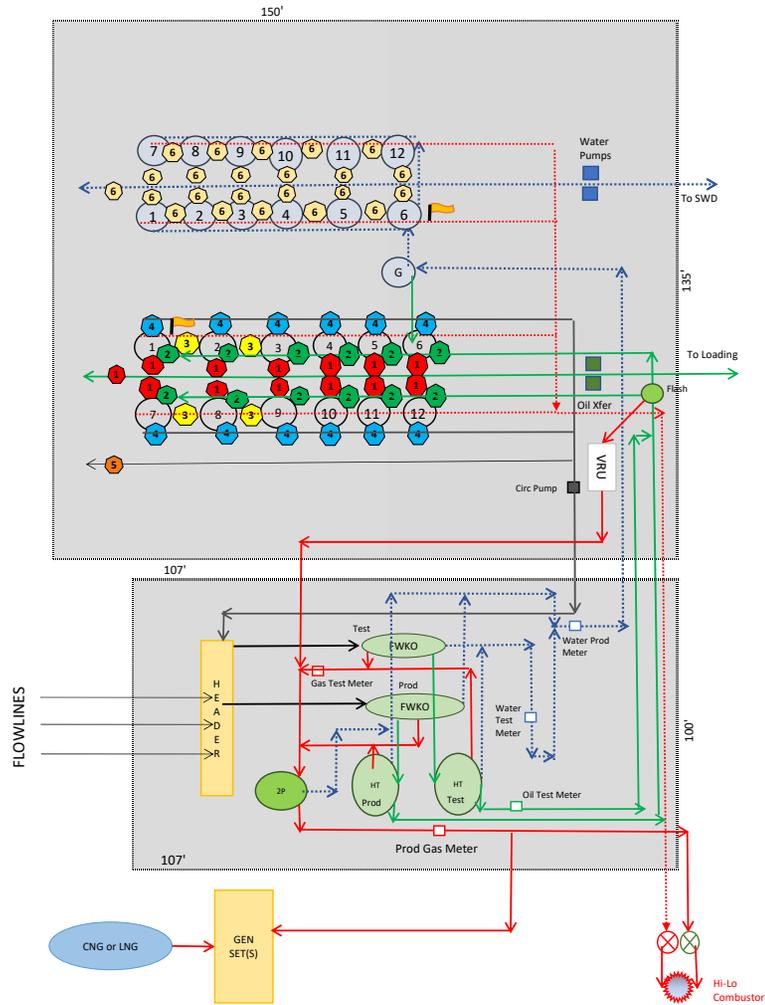
LOCATION MAP

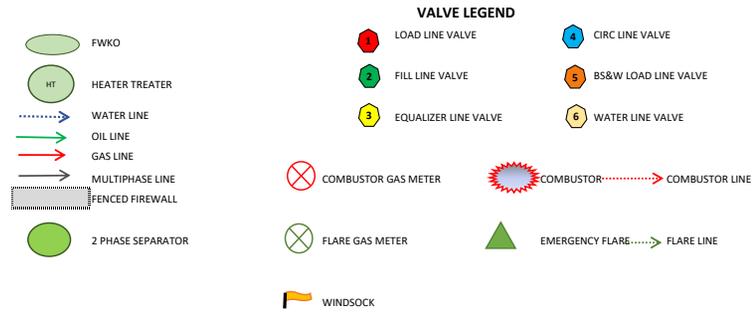
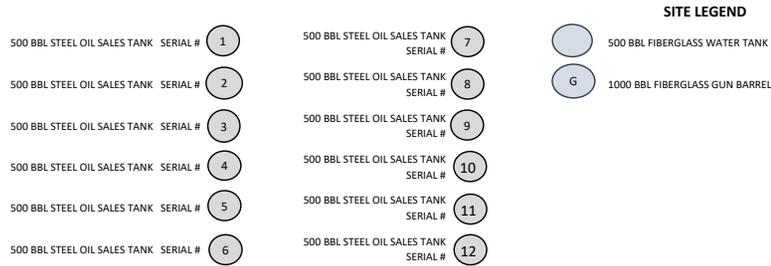
DRAFT

NOBLES GRADE PRODUCTION FACILITY PAD



Not to scale
 For flow process reference only
 Exact equipment placement may vary





Burnett Oil Co., Inc.
NOBLES GRADE BATTERY
SECTION 4, T50S, R32E, COLLIER CO., FL.

ATTACHMENT TO SITE FACILITY DIAGRAM

General sealing of valves, sales by tank guage

Production Phase:

Load Line Valves sealed closed. Fill valve to tank that is in production will be open. Equalizer valve to tank that is in production will be open. Circulation valves will be opened as necessary, then resealed. BS&W Load Line valve will be sealed at all times, unless cleaning tanks, then resealed once tank maintenance is complete.

Sales Phase:

The tank from which sales are being made will be isolated by sealing closed the fill line valve, circulating valve, and the equalizer valve during sales and opening the sales valve. Upon completion of the sale, the sales valve will be resealed. Sales by truck will be by tank gauge. Sales by LACT will be by LACT meter.

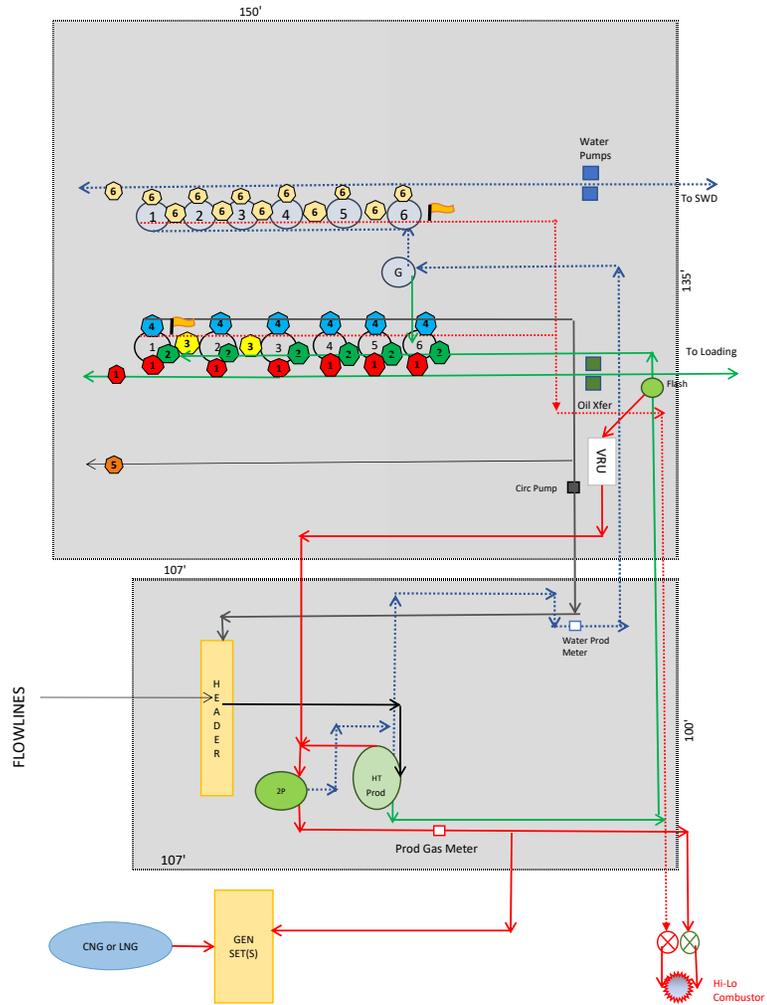
VALVE		PRODUCTION PHASE	SALES PHASE	CIRCULATING	NOTE
	LOAD LINE VALVE	CLOSED	OPEN	CLOSED	
	PRODUCTION FILL LINE VALVE	OPEN OR CLOSED	CLOSED	CLOSED OR OPEN	
	EQUALIZER LINE VALVE	OPEN	CLOSED	CLOSED OR OPEN	
	CIRCULATING LINE VALVE	OPEN OR CLOSED	CLOSED	OPEN	
	BS&W LOAD LINE VALVE	CLOSED	CLOSED	CLOSED	OPEN FOR TANK MAINTENANCE, RESEALED ONCE MAINTENANCE IS COMPLETE
	WATER LINE VALVE	OPEN	NA	NA	WATER TANKS ARE ISOLATED FROM OIL PRODUCTION TANKS

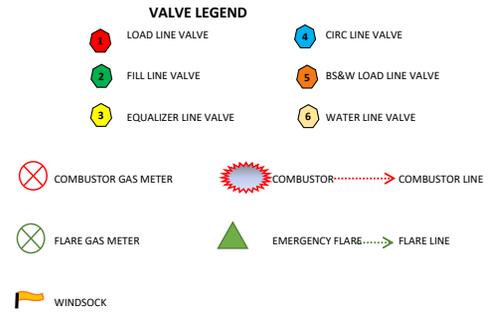
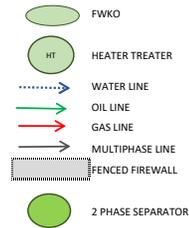
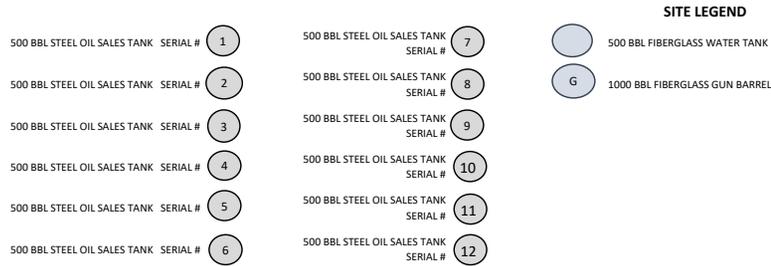
DRAFT

NOBLES GRADE PRODUCTION FACILITY PAD



Not to scale
For flow process reference only
Exact equipment placement may vary





Burnett Oil Co., Inc.
NOBLES GRADE BATTERY
SECTION 4, T50S, R32E, COLLIER CO., FL.

ATTACHMENT TO SITE FACILITY DIAGRAM

General sealing of valves, sales by tank guage

Production Phase:

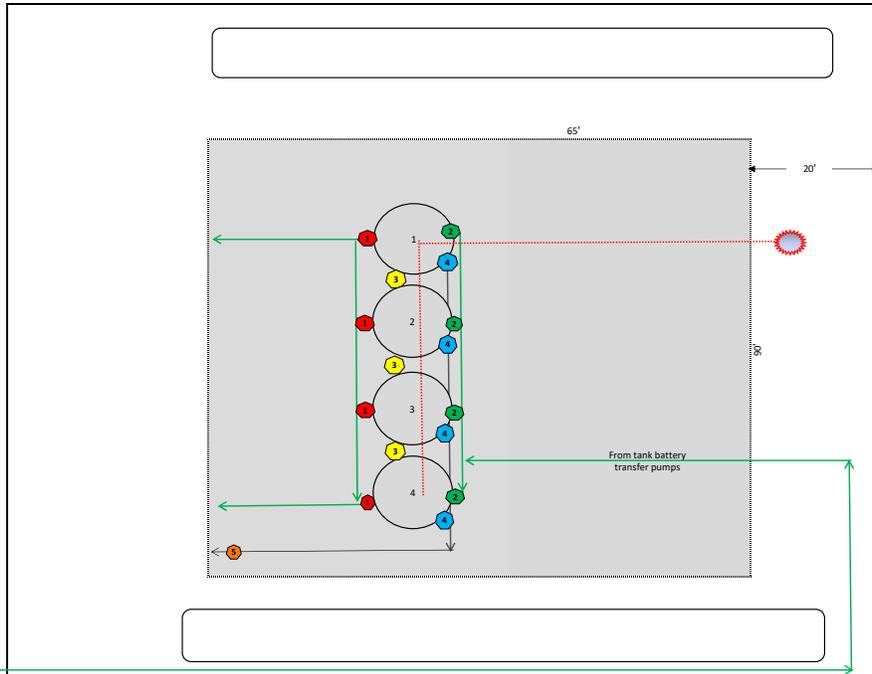
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Sales Phase:

The tank from which sales are being made will be isolated by sealing closed the fill line valve, circulating valve, and the equalizer valve during sales and opening the sales valve. Upon completion of the sale, the sales valve will be resealed. Sales by truck will be by tank gauge. Sales by LACT will be by LACT meter.

VALVE		PRODUCTION PHASE	SALES PHASE	CIRCULATING	NOTE
	LOAD LINE VALVE	CLOSED	OPEN	CLOSED	
	PRODUCTION FILL LINE VALVE	OPEN OR CLOSED	CLOSED	CLOSED OR OPEN	
	EQUALIZER LINE VALVE	OPEN	CLOSED	CLOSED OR OPEN	
	CIRCULATING LINE VALVE	OPEN OR CLOSED	CLOSED	OPEN	
	BS&W LOAD LINE VALVE	CLOSED	CLOSED	CLOSED	OPEN FOR TANK MAINTENANCE, RESEALED ONCE MAINTENANCE IS COMPLETE
	WATER LINE VALVE	OPEN	NA	NA	WATER TANKS ARE ISOLATED FROM OIL PRODUCTION TANKS

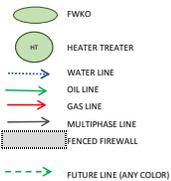
NOBLES GRADE OIL LOADING STATION



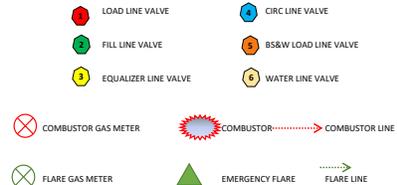
- 1
- 2
- 3
- 4

500 BBL STEEL OIL SALES TANK SERIAL #
 500 BBL STEEL OIL SALES TANK SERIAL #
 500 BBL STEEL OIL SALES TANK SERIAL #
 500 BBL STEEL OIL SALES TANK SERIAL #

SITE LEGEND



VALVE LEGEND



ATTACHMENT TO SITE FACILITY DIAGRAM

General sealing of valves, sales by tank guage

Production Phase:

Load Line Valves sealed closed. Fill valve to tank that is in production will be open. Equalizer valve to tank that is in production will be open. Circulation valves will be opened as necessary, then resealed. BS&W Load Line valve will be sealed at all times, unless cleaning tanks, then resealed once tank maintenance is complete.

Sales Phase:

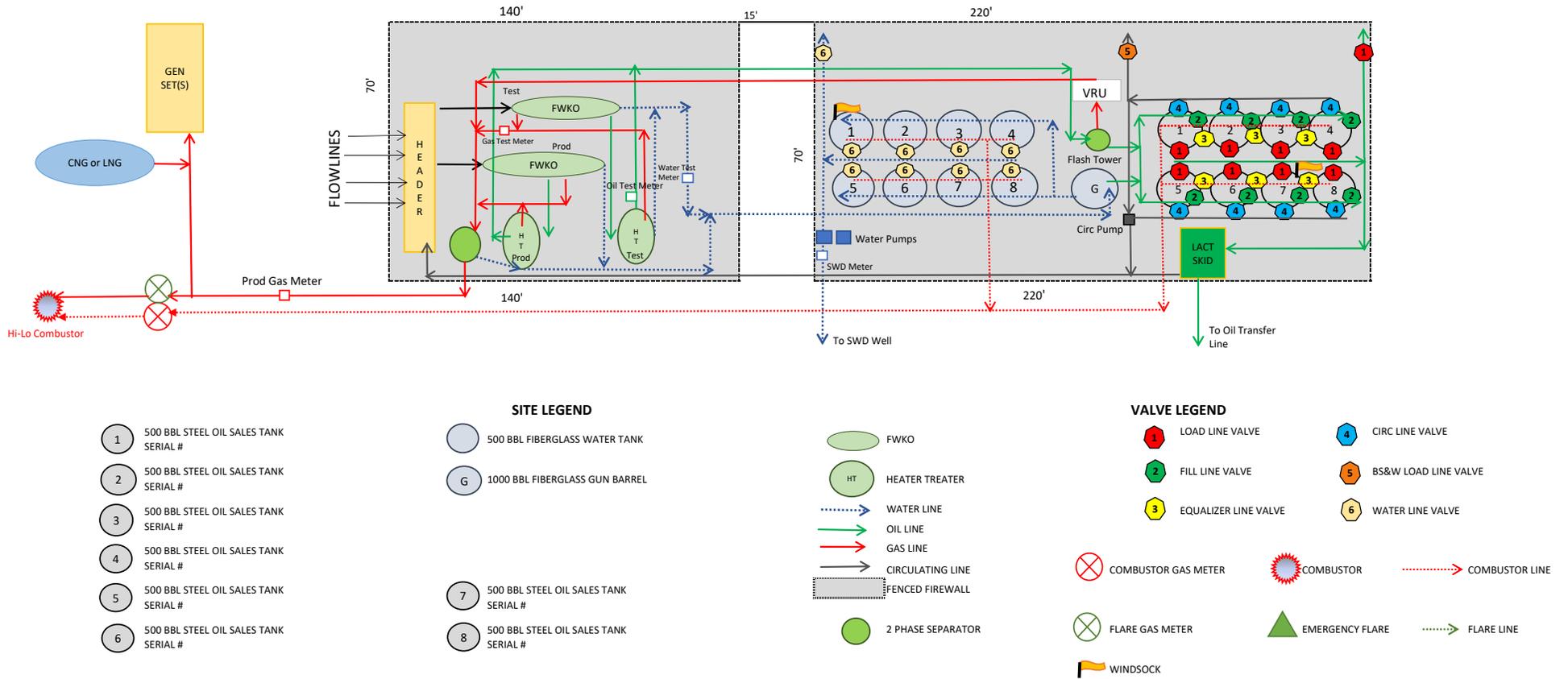
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VALVE		PRODUCTION PHASE	SALES PHASE	CIRCULATING	NOTE
1	LOAD LINE VALVE	CLOSED	OPEN	CLOSED	
2	PRODUCTION FILL LINE VALVE	OPEN OR CLOSED	CLOSED	CLOSED OR OPEN	
3	EQUALIZER LINE VALVE	OPEN	CLOSED	CLOSED OR OPEN	
4	CIRCULATING LINE VALVE	OPEN OR CLOSED	CLOSED	OPEN	
5	BS&W LOAD LINE VALVE	CLOSED	CLOSED	CLOSED	OPEN FOR TANK MAINTENANCE, RESEALED ONCE MAINTENANCE IS COMPLETE
6	WATER LINE VALVE	OPEN	NA	NA	WATER TANKS ARE ISOLATED FROM OIL PRODUCTION TANKS

TAMIAMI PRODUCTION FACILITY PAD



Not to scale
 For flow process reference only
 Exact equipment placement may vary



- 1 500 BBL STEEL OIL SALES TANK SERIAL #
- 2 500 BBL STEEL OIL SALES TANK SERIAL #
- 3 500 BBL STEEL OIL SALES TANK SERIAL #
- 4 500 BBL STEEL OIL SALES TANK SERIAL #
- 5 500 BBL STEEL OIL SALES TANK SERIAL #
- 6 500 BBL STEEL OIL SALES TANK SERIAL #

- SITE LEGEND**
- 500 BBL FIBERGLASS WATER TANK
 - G 1000 BBL FIBERGLASS GUN BARREL
 - 7 500 BBL STEEL OIL SALES TANK SERIAL #
 - 8 500 BBL STEEL OIL SALES TANK SERIAL #

- VALVE LEGEND**
- FWKO
 - HT HEATER TREATER
 - WATER LINE
 - OIL LINE
 - GAS LINE
 - CIRCULATING LINE
 - FENCED FIREWALL
 - 2 PHASE SEPARATOR

- 1 LOAD LINE VALVE
- 2 FILL LINE VALVE
- 3 EQUALIZER LINE VALVE
- 4 CIRC LINE VALVE
- 5 BS&W LOAD LINE VALVE
- 6 WATER LINE VALVE
- COMBUSTOR GAS METER
- COMBUSTOR
- COMBUSTOR LINE
- FLARE GAS METER
- EMERGENCY FLARE
- FLARE LINE
- WINDSOCK

Burnett Oil Corp., Inc.
TAMIAMI BATTERY
SECTION 36, T51S, R31E, COLLIER CO., FL.

ATTACHMENT TO SITE FACILITY DIAGRAM

General sealing of valves, sales by LACT transfer

Production Phase:

Load Line Valves will be open unless tank is isolated for test. Fill valve to tank that is in production will be open. Equalizer valve to tank that is in production will be open. Circulation valves will be opened as necessary for maintenance. BS&W Load Line valve will be sealed at all times, unless cleaning tanks, then resealed once tank maintenance is complete.

Sales Phase:

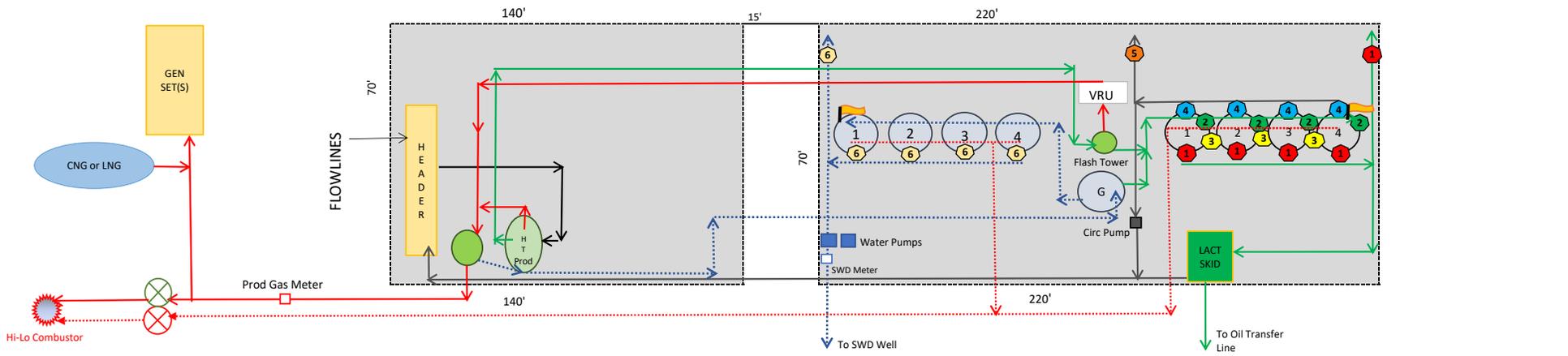
All sales from this battery will be conducted via LACT unit and sold via pipeline. Load line valves will be opened and closed as needed and are only open to sales through the LACT. In most cases, they will all be open unless a tank is isolated for individual well test purposes or oil is being treated.

<u>VALVE</u>	<u>PRODUCTION PHASE</u>	<u>SALES PHASE</u>	<u>CIRCULATING</u>	<u>NOTE</u>
 1 LOAD LINE VALVE	CLOSED OR OPEN	OPEN	CLOSED	ALL VALVES ON SUCTION SIDE OF LACT. NO LOAD LINE PRESENT.
 2 PRODUCTION FILL LINE VALVE	OPEN OR CLOSED	CLOSED	CLOSED OR OPEN	
 3 EQUALIZER LINE VALVE	OPEN	CLOSED OR OPEN	CLOSED OR OPEN	NOT SELLING BY TRUCK. KEPT OPEN TO PREVENT OVERFLOW.
 4 CIRCULATING LINE VALVE	OPEN OR CLOSED	CLOSED	OPEN	
 5 BS&W LOAD LINE VALVE	CLOSED	CLOSED	CLOSED	OPEN FOR TANK MAINTENANCE, RESEALED ONCE MAINTENANCE IS COMPLETE
 6 WATER LINE VALVE	OPEN	NA	NA	WATER TANKS ARE ISOLATED FROM OIL PRODUCTION TANKS

TAMIAMI PRODUCTION FACILITY PAD



Not to scale
 For flow process reference only
 Exact equipment placement may vary



- | | |
|---|--|
| <p>SITE LEGEND</p> <ul style="list-style-type: none"> ① 500 BBL STEEL OIL SALES TANK SERIAL # ② 500 BBL STEEL OIL SALES TANK SERIAL # ③ 500 BBL STEEL OIL SALES TANK SERIAL # ④ 500 BBL STEEL OIL SALES TANK SERIAL # ⑤ 500 BBL STEEL OIL SALES TANK SERIAL # ⑥ 500 BBL STEEL OIL SALES TANK SERIAL # ⑦ 500 BBL STEEL OIL SALES TANK SERIAL # ⑧ 500 BBL STEEL OIL SALES TANK SERIAL # ○ 500 BBL FIBERGLASS WATER TANK G 1000 BBL FIBERGLASS GUN BARREL | <p>VALVE LEGEND</p> <ul style="list-style-type: none"> ① LOAD LINE VALVE ② FILL LINE VALVE ③ EQUALIZER LINE VALVE ④ CIRC LINE VALVE ⑤ BS&W LOAD LINE VALVE ⑥ WATER LINE VALVE |
|---|--|
-
- | | |
|---|--|
| <ul style="list-style-type: none"> FWKO HT HEATER TREATER Water Line Oil Line Gas Line CIRCULATING LINE FENCED FIREWALL 2 PHASE SEPARATOR | <ul style="list-style-type: none"> ⊗ COMBUSTOR GAS METER ⊗ FLARE GAS METER ⊗ COMBUSTOR ▲ EMERGENCY FLARE ⋯→ COMBUSTOR LINE ⋯→ FLARE LINE |
|---|--|
- ⚡ WINDSOCK

Burnett Oil Corp., Inc.
TAMIAMI BATTERY
SECTION 36, T51S, R31E, COLLIER CO., FL.

ATTACHMENT TO SITE FACILITY DIAGRAM

General sealing of valves, sales by LACT transfer

Production Phase:

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Sales Phase:

All sales from this battery will be conducted via LACT unit and sold via pipeline. Load line valves will be opened and closed as needed and are only open to sales through the LACT. In most cases, they will all be open unless a tank is isolated for individual well test purposes or oil is being treated.

<u>VALVE</u>	<u>PRODUCTION PHASE</u>	<u>SALES PHASE</u>	<u>CIRCULATING</u>	<u>NOTE</u>
 1 LOAD LINE VALVE	CLOSED OR OPEN	OPEN	CLOSED	ALL VALVES ON SUCTION SIDE OF LACT. NO LOAD LINE PRESENT.
 2 PRODUCTION FILL LINE VALVE	OPEN OR CLOSED	CLOSED	CLOSED OR OPEN	
 3 EQUALIZER LINE VALVE	OPEN	CLOSED OR OPEN	CLOSED OR OPEN	NOT SELLING BY TRUCK. KEPT OPEN TO PREVENT OVERFLOW.
 4 CIRCULATING LINE VALVE	OPEN OR CLOSED	CLOSED	OPEN	
 5 BS&W LOAD LINE VALVE	CLOSED	CLOSED	CLOSED	OPEN FOR TANK MAINTENANCE, RESEALED ONCE MAINTENANCE IS COMPLETE
 6 WATER LINE VALVE	OPEN	NA	NA	WATER TANKS ARE ISOLATED FROM OIL PRODUCTION TANKS

Location of Receiving Waters and Anticipated Flow Paths



APPENDIX B: SAFETY DATA SHEETS

MATERIAL SAFETY DATA SHEET

CRUDE OIL

MSDS No.
RS296

Version: 5

Rev. Date
05/13/2002

IMPORTANT: Read this MSDS before handling and disposing of this product and pass this information on to employees, customers, and users of this product.

1. PRODUCT and COMPANY IDENTIFICATION

Material Identity	Crude Oil		
Trade Name(s)	Oriente, Cano Limon, Line 63, Shell-Ventura, SJV Light, Rainbow, West Texas Inter-Cushing, Peace River-Canadian, Federated Crude-Canadian, Pembina Crude-Canadian, Forcados, Cabinda, Basrah Light, Basrah, Arab Medium, Elang Crude, Girassol		
Other Name(s)	Earth Oil, Petroleum Oil, Rock Oil, Zafiro		
Chemical Description	This material is a C1 to C50 hydrocarbon liquid which contains approximately .9 to 2.8 wt% sulfur compounds		
Manufacturer's Address	BP West Coast Products LLC Carson Business Unit 1801 E. Sepulveda Boulevard Carson, California 90749-6210	BP West Coast Products LLC Cherry Point Business Unit 4519 Grandview Road Blaine, Washington 98230	
Telephone Numbers	Emergency Health Information:	1 (800) 447-8735	
	Emergency Spill Information:	1 (800) 424-9300 CHEMTREC (USA)	
	Other Product Information:	1 (866) 4BP-MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com	

2. COMPONENTS and EXPOSURE LIMITS

<u>Component</u> ¹	<u>CAS No.</u>	<u>% Composition By Volume</u> ²		<u>ACGIH TLV</u>	<u>OSHA PEL</u> ³	<u>Units</u>	<u>Type</u>
CRUDE OIL, PETROLEUM	8002-05-9	EQ	100	N/AP	N/AP		
which contains:							
BUTANE	106-97-8	AP	0.8 to 1	800	800	pm	TWA
HEXANE (N-HEXANE)	110-54-3	AP	0.3 to 1	50 skin	50	ppm	TWA
ISOPENTANE	78-78-4	AP	0.3 to 1.5	N/AP 600	750 600	ppm ppm	STEL TWA
PENTANE	109-66-0	AP	1.5 to 2.5	N/AP 600	750 600	ppm ppm	STEL TWA
Other applicable exposure guidelines:							
COAL TAR PITCH VOLATILES, AS BENZENE SOLUBLES ⁽⁴⁾	65996-93-2			0.2	0.2	mg/m3	TWA
OIL MIST, MINERAL	8012-95-1			10 5	N/AP 5	mg/m3 mg/m3	STEL TWA
STODDARD SOLVENT	8052-41-3			100	100	ppm	TWA

Stoddard Solvent exposure limits are listed as an exposure guideline for hydrocarbon vapors that may be similar to those derived from crude oil.

Since specific exposure standards or control limits have not been established for this material, the exposure limits shown here are suggested as minimum control guidelines.

¹ Carcinogen displayed after Component Name. Listed by ⁽¹⁾ NTP, ⁽²⁾ IARC, ⁽³⁾ OSHA, ⁽⁴⁾ Other

² See Abbreviations on last page

³ The OSHA exposure limits were changed in 1993 due to a federal court ruling. ARCO has chosen to list the 1989 OSHA exposure limits in this document as they are generally more stringent and therefore more protective than the current exposure limits. (Refer to 29 CFR 1910.1000).

3. HAZARD IDENTIFICATION

IMMEDIATE HAZARDS

DANGER

HIGHLY FLAMMABLE! OSHA/NFPA Class 1B flammable liquid. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME! CONTAINS PETROLEUM DISTILLATES! Avoid breathing vapors or mists. Use only with adequate ventilation. If swallowed, do not induce vomiting since aspiration into the lungs may cause chemical pneumonia. Obtain prompt medical attention.

May cause irritation or more serious skin disorders! May be harmful if inhaled! May cause irritation of the nose, throat, and lungs, headache, dizziness, drowsiness, loss of coordination, fatigue, nausea and labored breathing. May cause irregular heartbeats. Avoid prolonged or repeated liquid, mist, and vapor contact with eyes, skin, and respiratory tract.

Wash hands thoroughly after handling.

Sulfur compounds in this material may decompose to release hydrogen sulfide gas which may accumulate to potentially lethal concentrations in enclosed air spaces. Vapor concentrations of hydrogen sulfide above 50 ppm, or prolonged exposure at lower concentrations, may saturate human odor perceptions so that the smell of gas may not be apparent. **DO NOT DEPEND ON THE SENSE OF SMELL TO DETECT HYDROGEN SULFIDE!**

Long-term tests show that similar crude oils have produced skin tumors on laboratory animals.

Crude oils contain some polycyclic aromatic hydrocarbons which have been shown to be carcinogenic after prolonged or repeated skin contact in laboratory animals.

Routes of Exposure

Signs and Symptoms

Inhalation (Primary)

Vapors or mists from this material, at concentrations greater than the recommended exposure limits in Section 2, can cause irritation of the nose, throat, and lungs, headache, dizziness, drowsiness, loss of coordination, fatigue, nausea and labored breathing. Airborne concentrations above the recommended exposure limits are not anticipated during normal workplace activities due to the slow evaporation of this material at ambient temperatures.

Exposure to moderate airborne concentrations of hydrogen sulfide (less than 50 ppm) can result in irritation of the eyes, nose and throat, headache, dizziness, shortness of breath, nausea and nervousness. Exposure to hydrogen sulfide vapor above 200 ppm may cause irritation of mucous membranes, inflammation of the lungs, accumulation of fluid in the lungs, irregular heartbeats, unconsciousness with convulsions or impaired breathing with suffocation. Exposure to higher concentrations of hydrogen sulfide vapor (above 500 ppm) may cause rapid death.

Eye Contact

May cause slight eye irritation.

Skin Contact

Moderate skin irritation may occur upon short-term exposure.

Exposure to sunlight may increase the degree of skin irritation.

Absorption through the skin may occur and produce toxic effects (see Summary of Chronic Hazards).

Ingestion

May cause irritation of the mouth, throat and gastrointestinal tract leading to nausea, vomiting, diarrhea, and restlessness. May cause headache, dizziness, drowsiness, loss of coordination, fatigue, nausea and labored breathing.

ASPIRATION HAZARD: Aspiration into the lungs may cause chemical pneumonia. This material can enter the lungs during swallowing or vomiting and may cause lung inflammation and damage which in severe cases may be fatal.

Summary of Chronic Hazards and Special Health Effects

Personnel with preexisting central nervous system (CNS) disease, skin disorders, or chronic respiratory diseases should be evaluated by an appropriate health professional before exposure to this material.

Prolonged/repeated skin exposure, inhalation or ingestion of this material may result in adverse dermal or systemic effects. Avoid prolonged or repeated exposure. May be harmful if absorbed through the skin. Prolonged or repeated contact may create cancer risk, organ damage, and adversely affect reproduction, fetal development and fetal survival. Avoid all skin contact.

Neurotoxic effects have been associated with n-hexane, a component of this material. Avoid prolonged or repeated exposure.

See Section 11 for Additional Toxicological Information.

4. EMERGENCY and FIRST AID

Inhalation	Immediately remove personnel to area of fresh air. For respiratory distress, give oxygen, rescue breathing, or administer CPR (cardiopulmonary resuscitation) if necessary. Obtain prompt medical attention.
Eye Contact	Flush eyes with clean, low-pressure water for at least 15 minutes, occasionally lifting the eyelids. If pain or redness persists after flushing, obtain medical attention.
Skin Contact	Immediately remove contaminated clothing. Wash affected skin thoroughly with soap and water. If irritation persists, obtain medical attention.
Ingestion	Do not induce vomiting since aspiration into the lungs may cause lipid pneumonia. Obtain prompt medical attention.

Emergency Medical Treatment Procedures

See above procedures. Personnel with pre-existing central nervous system disease, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure to this product.

5. FIRE and EXPLOSION

Flash Point (Method)* Based on NFPA Petroleum, Crude	AP 20°F to 90°F	NFPA Hazard Rating: Health: 2 = Moderate Fire: 3 = High Reactivity: 0 = Insignificant Special:
Autoignition Temperature (Method)*	N/DA	
Flammable Limits (% Vol. in Air*)	Lower AP 1 + Upper AP 8 +	
	* Based on NFPA 325	

* At Normal Atmospheric Temperature and Pressure

Fire and Explosion Hazards

HIGHLY FLAMMABLE! This material releases flammable vapors at or below ambient temperatures. When mixed with air in certain proportions and exposed to an ignition source, these vapors can burn in the open or explode in confined spaces.

Flammable vapors may travel long distances along the ground before reaching a point of ignition and flashing back.

Open top tanks involved in a fire have a potential for "boil-over" if water or water-in-oil emulsion is at the bottom of the tank. Boil-over may result in a large expulsion of burning oil from the tank, greatly increasing the fire area.

Extinguishing Media

Foam, Dry chemical, Carbon dioxide (CO₂)

Water and water fog can cool the fire but may not extinguish the fire.

Special Firefighting Procedures

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of combustion products and oxygen deficiencies. Cool tanks and containers exposed to fire with water. If firefighters cannot work upwind to the fire, respiratory protective equipment must be worn unless and until atmospheric monitoring indicates that such protection is not required. Improper use of water and extinguishing media containing water may cause frothing which can spread the fire over a larger area. Water fog or spray are of value for cooling tank shells and surfaces exposed to fire, but may not achieve extinguishment.

6. ACCIDENTAL RELEASE MEASURES

Precautions if Material is Spilled or Released Contain spill, evacuate non-essential personnel, and safely stop flow. On hard surfaces, spilled material may create a slipping hazard. Equip cleanup crews with proper protective equipment (as specified in Section 8) and advise of hazards. Clean up by recovering as much spilled or contaminated materials as possible and placing into closed containers. Consult with an environmental professional for the federal, state and local cleanup and reporting requirements for spills and releases.

7. HANDLING and STORAGE

Handling, Storage and Decontamination Procedures Store and transport in accordance with all applicable laws. KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME! KEEP CONTAINERS CLOSED, PLAINLY LABELED AND OUT OF CLOSED VEHICLES! Containers should be able to withstand pressures expected from warming or cooling in storage. Ground all drums and transfer vessels when handling. Store in cool (80°F or below), well-ventilated location. All electrical equipment in storage and/or handling areas should be installed in accordance with applicable requirements of the National Electrical Code (NEC).

KEEP OUT OF REACH OF CHILDREN!

Empty containers retain some liquid and vapor residues, and hazard precautions must be observed when handling empty containers.

For determining National Electrical Code (NEC) Hazardous (Classified) location requirements for electrical installations, consider this material Class 1, Group D.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls Where possible, use adequate ventilation to keep vapor and mist concentrations of this material below the Occupational Exposure Limits shown in Section 2. Electrical equipment should comply with National Electrical Code (NEC) standards (see Section 7).

Respiratory Where there is potential for exposure to hydrogen sulfide gas in excess of the permissible exposure limit, a NIOSH/MSHA-approved supplied-air respirator operated in positive pressure mode should be worn.

If hydrogen sulfide gas is not present in excess of permissible exposure limits, a NIOSH/MSHA-approved air-purifying respirator with an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations of hydrocarbon vapor may exceed the exposure limits in Section 2. Where work conditions may generate airborne mists of the material, also use a high-efficiency particulate pre-filter. Consult a health and safety professional for guidance in respirator selection. Respirator use should comply with OSHA 29 CFR 910.134.

CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of the air-purifying respirator.

Eyes Eye protection should be worn. If there is potential for splashing or spraying, chemical protective goggles and/or a face shield should be worn. If contact lenses are worn, consult an eye specialist or a safety professional for additional precautions. Suitable eye wash water should be available in case of eye contact with this material.

Skin Avoid all skin contact with this material. If conditions of use present any potential for skin contact, clean and impervious clothing such as gloves, apron, boots, and facial protection should be worn. Neoprene, Nitrile, Butyl Rubber or Viton glove material is recommended. When working around equipment or processes which may create the potential for skin contact, full body coverage should be worn, which consist of impervious boots and oil-resistant coated Tyvek suit or other impervious jacket and pants.

Non-impervious clothing which accidentally becomes contaminated with this material should be removed promptly and not reworn until the clothing is washed thoroughly and the contamination is effectively removed. Discard soaked leather goods.

Other Hygienic and Work Practices

Use good personal hygiene practices. If skin contact should occur, material should be removed from the skin with a waterless hand cleaner, and the affected area should then be washed with a mild soap and water. Wash hands and other exposed areas thoroughly before eating, drinking, smoking or using toilet facilities.

9. PHYSICAL and CHEMICAL PROPERTIES

Boiling Point:	AP -54°F to 1100°F
Viscosity Units, Temp. (Method):	N/DA
Dry Point:	N/AP
Freezing Point:	N/DA
Vapor Pressure, Temp. (Method):	AP 1 to 2 at 100°F (REID-PSIA)
Volatile Characteristics:	Appreciable
Specific Gravity (H₂O = 1 @ 39.2°F):	AP 0.88
Vapor Sp. Gr. (Air = 1.0 @ 60°F - 90°F):	N/DA
Solubility in Water:	Negligible
PH:	N/AP
Appearance and Odor:	Thick light yellow to dark black colored liquid. Petroleum hydrocarbon odor.
Other Physical and Chemical Properties:	Total sulfur = approx. 1.1% - 2.8% Hydrogen sulfide content is less than 5 ppm dissolved in liquid Vanadium = approx. 210 ppm

10. STABILITY and REACTIVITY

Stability	Stable
Hazardous Polymerization	Not expected to occur.
Other Chemical Reactivity	N/AP

Conditions to Avoid	Heat, sparks, and open flame.
Materials to Avoid	Strong acids, alkalis, and oxidizers such as liquid chlorine and oxygen.
Hazardous or Decomposition Products	Burning or excessive heating may produce carbon monoxide and other harmful gases or vapors including oxides of sulfur and nitrogen.

11. TOXICOLOGICAL INFORMATION

Toxicological Information	The information found in this section is written for medical, toxicology, occupational health and safety professionals. This section provides technical information on the toxicity testing of this or similar materials or its components. If clarification of the technical content is needed, consult a professional in the areas of expertise listed above.
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Prolonged/ Repeated Exposures	IARC has determined there is "limited evidence for the carcinogenicity in experimental animals of crude oil" and "inadequate evidence for the carcinogenicity in humans of crude oil." IARC concludes that "crude oil is not classifiable as to its carcinogenicity to humans (Group 3)." Crude oil administered orally to pregnant rats during gestation produced increased number of resorptions and decrease in fetal weight and length.
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Exposure to N-hexane at concentrations considerably higher than the current permissible exposure limit has reportedly been associated with peripheral neuropathy.

12. ECOLOGICAL INFORMATION

Not Available

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods Maximize recovery for reuse or recycling. Consult environmental professional to determine if state or federal regulations would classify spilled or contaminated materials as a hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities. Comply with all federal, state and local laws pertaining to waste management.

14. TRANSPORT INFORMATION

UN Proper Shipping Name	Petroleum crude oil
UN Hazard Class	3
UN Number	UN1267
UN Packing Group	PGI

15. REGULATORY INFORMATION

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA), TITLE III

Section 311/312 Hazard Categories:

Immediate (acute) health hazard
 Delayed (chronic) health hazard
 Fire hazard

No chemicals in this product exceed the threshold reporting level established by SARA Title III, Section 313 and 40 CFR 372.

TOXIC SUBSTANCES CONTROL ACT (TSCA)

All components of this product are listed on the TSCA Inventory.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA)

This material is covered by CERCLA's PETROLEUM EXEMPTION.

(Refer to 40 CFR 307.14)

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 65

PROP 65 WARNING LABEL:

Chemicals known to the State to cause cancer, birth defects, or other reproductive harm are found in gasoline, crude oil, and many other petroleum products and their vapors, or result from their use. Read and follow label directions and use care when handling or using all petroleum products.

WARNING:

This product contains the following chemical(s) listed by the state of California as known to cause cancer or birth defects or other reproductive harm.

MINERAL OILS, UNTREATED ^(C)

Other Prop 65 chemicals will result under certain conditions from the use of this material. For example, burning fuels produces combustion products including carbon monoxide, a Prop 65 reproductive toxin.

^(C) = Carcinogen

16. OTHER INFORMATION

**General
Comments**

The information and conclusions herein reflect normal operating conditions and may be from sources other than direct test data on the mixture itself.

Abbreviations:	EQ = Equal	AP = Approximately	N/P = No Applicable Information Found
	LT = Less Than	UK = Unknown	N/AP = Not Applicable
	GT = Greater Than	TR = Trace	N/DA = No Data Available

Prepared by: Product Stewardship

Disclaimer of Liability

The information in this MSDS was obtained from sources which we believe are reliable. **HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.**

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. **FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.**

This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Section 1: IDENTIFICATION

Product Name: Produced Water
Synonyms: Not available.
Product Use: Waste stream.
Restrictions on Use: Not available.
Manufacturer/Supplier: Pengrowth Energy Corporation
 2100, 222 – 3rd Avenue S.W.
 Calgary, AB T2P 0B4
Phone Number: (403) 233-0224
Emergency Phone: CANUTEC (613) 996-6666
Date of Preparation of SDS: August 30, 2013

Section 2: HAZARD(S) IDENTIFICATION
GHS INFORMATION

Classification: Not hazardous according to OSHA criteria (29 CFR 1910.1200).

LABEL ELEMENTS

Hazard: None.

Pictogram(s):

Signal Word: None.

Hazard Statements: Not applicable.

Precautionary Statements

Prevention: Not applicable.

Response: Not applicable.

Storage: Not applicable.

Disposal: Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is not considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Water	Not available.	7732-18-5	80 - 95
Hydrogen sulfide (H ₂ S)	Not available.	7783-06-4	< 0.7
Petroleum	Not available.	8002-05-9	0.1 - 0.3

Section 4: FIRST-AID MEASURES

- Inhalation:** If inhaled: Call a poison center or doctor if you feel unwell.
- Acute and delayed symptoms and effects:** May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product may contain small amounts of Hydrogen sulphide which may accumulate in confined spaces. Hydrogen sulphide may cause symptoms such as digestive upset and loss of appetite, loss of sense of smell and pulmonary edema. At 500-1000 ppm Hydrogen sulphide may cause respiratory paralysis, collapse and death without rescue.
- Eye Contact:** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center or doctor if you feel unwell.
- Acute and delayed symptoms and effects:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.
- Skin Contact:** If on skin: Wash with plenty of soap and water. Call a poison center or doctor if you feel unwell.
- Acute and delayed symptoms and effects:** May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.
- Ingestion:** If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
- Acute and delayed symptoms and effects:** May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.
- General Advice:** In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).
- Note to Physicians:** Symptoms may not appear immediately. For inhalation of Hydrogen Sulphide, consider oxygen.

Section 5: FIRE-FIGHTING MEASURES**FLAMMABILITY AND EXPLOSION INFORMATION**

Not flammable or combustible by OSHA/WHMIS criteria. When heated, this material may evolve toxic and flammable Hydrogen sulphide.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is not sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO₂, water spray or regular foam.

Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media:	Not available.
Products of Combustion:	Oxides of carbon. Oxides of sulphur. Aldehydes.
Protection of Firefighters:	Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. Hydrogen sulphide is heavier than air and may collect in low lying areas and confined spaces. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures:	Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
Personal Precautions:	Do not touch or walk through spilled material. Use personal protection recommended in Section 8. Don full-face, positive pressure, self-contained breathing apparatus.
Environmental Precautions:	Keep out of drains, sewers, ditches, and waterways.
Methods for Containment:	Stop leak if without risk. Do not flush to sewer or allow to enter waterways.
Methods for Clean-Up:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE**Handling:**

Do not swallow. Harmful concentrations of hydrogen sulfide (H₂S) gas can accumulate in excavations and low-lying areas as well as the vapour space of storage and bulk transport compartments. See Section 8 for information on Personal Protective Equipment.

Storage:

Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children. Head spaces in storage containers may contain toxic hydrogen sulphide gas. Structural materials and lighting and ventilation systems should be corrosion resistant.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**Exposure Guidelines****Component**

Water [CAS No. 7732-18-5]

ACGIH: No TLV established.

OSHA: No PEL established.

Hydrogen sulphide [CAS No. 7783-06-4]

ACGIH: 1 ppm (TWA); 5 ppm (STEL); (2009)

OSHA: 20 ppm (C); 50 ppm (Peak) (Maximum duration: 10 mins. once only if no other meas. exp. occurs.)

10 ppm (TWA); 15 ppm (STEL) [Vacated]

Crude oil [CAS No. 8002-05-9]

ACGIH: A2; Exposure by all routes should be carefully controlled to levels as low as possible (2009); For Mineral oil, excluding metal working fluids; Poorly and mildly refined

OSHA: 500 ppm (TWA), 2000 mg/m³ (TWA);
400 ppm (TWA) [Vacated];

PEL: Permissible Exposure Limit

TLV: Threshold Limit Value

TWA: Time-Weighted Average

STEL: Short-Term Exposure Limit

C: Ceiling

Engineering Controls:

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection:

Safety glasses are recommended. Use equipment for eye protection that meets the standards referenced by OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection:

Wear protective gloves. Consult manufacturer specifications for further information.

Skin and Body Protection:

Wear protective clothing.

Respiratory Protection:

If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

General Hygiene Considerations:

Handle according to established industrial hygiene and safety practices.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dirty coloured liquid.
Colour:	Grey to black.
Odour:	“Rotten egg” smell when dissolved hydrogen sulphide gas is present.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH (as supplied):	4.9
Melting Point / Freezing Point:	0 °C (32 °F)
Initial Boiling Point:	Not available.
Boiling Point:	100 °C (212 °F)
Flash Point:	Not available.
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapor Pressure:	6.13 kPa at 24 °C (75.2 °F)
Vapor Density:	Not available.
Relative Density:	1 to 1.2 (Water = 1) at 15 °C (59 °F)
Solubilities:	Soluble in water.
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	70 to 100
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	> 1

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Strong oxidizers.
Hazardous Decomposition Products:	Hazardous sulphur dioxide, and related oxides of sulphur may be generated upon combustion.

Section 11: TOXICOLOGICAL INFORMATION
EFFECTS OF ACUTE EXPOSURE
Product Toxicity

Oral:	Not available.
Dermal:	Not available.
Inhalation:	Not available.

Component Toxicity

Component	CAS No.	LD₅₀ oral	LD₅₀ dermal	LC₅₀
Water	7732-18-5	Not available.	Not available.	> 90000 µl/kg (rat); 4H
Hydrogen sulphide	7783-06-4	Not available.	Not available.	444 ppm (rat); 4H
Crude oil	8002-05-9	4300 mg/kg (rat)	Not available.	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Reproductive system. Nervous system.

Symptoms (including delayed and immediate effects)

Inhalation:	May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. This product may contain small amounts of Hydrogen sulphide which may accumulate in confined spaces. Hydrogen sulphide may cause symptoms such as digestive upset and loss of appetite, loss of sense of smell and pulmonary edema. At 500-1000 ppm Hydrogen sulphide may cause respiratory paralysis, collapse and death without rescue.
Eye:	May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin: May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Reproductive system. Nervous system.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation. Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation: damage to cardiovascular system. Repeated dermal application of crude oils in rats produced systemic toxicity in blood, liver, thymus and bone marrow.

Carcinogenicity: Product is not classified as a carcinogen. See Component Carcinogenicity table below for information on individual components. Lifetime skin painting studies in animals with whole crude oils and crude oil fractions have produced tumours in animals following prolonged and repeated skin contact.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Crude oil	A2	Group 3	List 1	OSHA Carcinogen.	Listed.

Mutagenicity: Not available.

Reproductive Effects: Studies exist which report a link to crude oil and reproductive effects including menstrual disorders.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Repeated dermal application of crude oils to pregnant rats produced maternal toxicity and fetal developmental toxicity and fetal tumours.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.**Mobility in Environment:** Not available.**Other Adverse Effects:** Not available.**Section 13: DISPOSAL CONSIDERATIONS****Disposal Instructions:** Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.**Section 14: TRANSPORT INFORMATION****U.S. Department of Transportation (DOT)****Proper Shipping Name:** Not regulated.**Class:** Not applicable.**UN Number:** Not applicable.**Packing Group:** Not applicable.**Label Code:** Not applicable.**Canada Transportation of Dangerous Goods (TDG)****Proper Shipping Name:** Not regulated.**Class:** Not applicable.**UN Number:** Not applicable.**Packing Group:** Not applicable.**Label Code:** Not applicable.**Section 15: REGULATORY INFORMATION****Chemical Inventories****US (TSCA)**

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations**Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification: Not a controlled product.**Hazard Symbols:** None.



Produced Water

SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

Date of Preparation: August 30, 2013

United States

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Hydrogen sulphide	500	100	100	313s	U135	10000

State Regulations

Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Hydrogen sulphide	7783-06-4	E
Crude oil	8002-05-9	Listed.

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Hydrogen sulphide	7783-06-4	SHHS
Crude oil	8002-05-9	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Water	7732-18-5	Not listed.
Hydrogen sulphide	7783-06-4	E
Crude oil	8002-05-9	Listed.

Note: E = Environmental Hazard

California

California Prop 65: WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Component	Type of Toxicity
Crude oil	cancer

Section 16: OTHER INFORMATION**Disclaimer:**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use.

Date of Preparation of SDS: August 30, 2013
SDS Expiry Date (Canada): August 29, 2016
Version: 1.0
GHS SDS Prepared by: **Deerfoot Consulting Inc.**
Phone: (403) 720-3700

SAFETY DATA SHEET

Product Trade Name: AQUAGEL GOLD SEAL®

Revision Date: 01-Feb-2018

Revision Number: 41

1. Identification

1.1. Product Identifier

Product Trade Name: AQUAGEL GOLD SEAL®
Synonyms None
Chemical Family: Mineral
Internal ID Code HM003470

1.2 Recommended use and restrictions on use

Application: Viscosifier
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Halliburton Energy Services, Inc.
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Carcinogenicity	Category 1A - H350
Specific Target Organ Toxicity - (Repeated Exposure)	Category 1 - H372

2.2. Label Elements

Hazard Pictograms



Signal Word:	Danger
Hazard Statements	H350 - May cause cancer by inhalation H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
Precautionary Statements	
Prevention	P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P260 - Do not breathe dust/fume/gas/mist/vapors/spray P264 - Wash face, hands and any exposed skin thoroughly after handling P270 - Do not eat, drink or smoke when using this product P280 - Wear protective gloves/protective clothing/eye protection/face protection
Response	P308 + P313 - IF exposed or concerned: Get medical advice/attention P314 - Get medical attention/advice if you feel unwell
Storage	P405 - Store locked up
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Hazards not otherwise classified

This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface. Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz. A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer. In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Crystalline silica, quartz	14808-60-7	1 - 5%	Carc. 1A (H350) STOT RE 1 (H372)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

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

4.2 Most important symptoms/effects, acute and delayed

Breathing crystalline silica can cause lung disease, including silicosis and lung cancer. Crystalline silica has also been associated with scleroderma and kidney disease.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire

None anticipated

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing.

Ensure adequate ventilation.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

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

7.1. Precautions for safe handling

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.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

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. Store locked up. Product has a shelf life of 24 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Crystalline silica, quartz	14808-60-7	TWA: 50 µg/m ³	TWA: 0.025 mg/m ³

Exposures to crystalline silica that result from bentonite or other sorptive clays are exempt from the PEL in §1910.1053. The PEL in §1910.1000 Table Z-3 (i.e., the formula that is approximately equivalent to 100 µg/m³) applies to occupational exposures to respirable crystalline silica from sorptive clays.

8.2 Appropriate engineering controls

Engineering Controls Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment

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 If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection 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.

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

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Powder **Color** Tan
Odor: Mild earthy **Odor** No information available
Threshold:

Property	Values
Remarks/ - Method	
pH:	8-10
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.6
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available

Explosive Properties	No information available
Oxidizing Properties	No information available
9.2. Other information	
VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Hydrofluoric acid.

10.6. Hazardous decomposition products

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

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation

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).

Eye Contact

May cause mechanical irritation to eye.

Skin Contact

May cause mild skin irritation.

Ingestion

May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity

This product contains a suspected carcinogen. May cause damage to organs through prolonged or repeated exposure. This product contains Wyoming bentonite or other sorptive clays. Crystalline silica forms found in this particular clay are limited to quartz. Extreme temperatures that can generate cristobalite or tridymite are not expected to occur under realistic conditions. In addition, all quartz found in sorptive clays are considered "occluded", i.e., strongly coated with an amorphous silica surface (Wendlandt et al., 2007; Hochella and Muryama, 2010; SMI, 2014). Occluded quartz has been experimentally-determined to be relatively non-toxic compared to unoccluded quartz (Geh et al., 2006; Creutzenberg et al., 2008). A lack of health effects found in several studies examining occupational exposure to sorptive clays also suggest that chronic inhalation of sorptive clays is not expected to result in silicosis or cancer (Waxweiler et al., 1988; ACGIH, 1991;

USEPA, 1996; IARC, 2005). In light of these findings OSHA has recently exempted Wyoming bentonite and other sorptive clays from the crystalline silica PEL in §1910.1053(a)(1)(iii).

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crystalline silica, quartz	14808-60-7	> 15000 mg/kg (human)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the skin

Substances	CAS Number	Serious eye damage/irritation
Crystalline silica, quartz	14808-60-7	Non-irritating to the eye

Substances	CAS Number	Skin Sensitization
Crystalline silica, quartz	14808-60-7	No information available.

Substances	CAS Number	Respiratory Sensitization
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	Mutagenic Effects
Crystalline silica, quartz	14808-60-7	Not regarded as mutagenic.

Substances	CAS Number	Carcinogenic Effects
Crystalline silica, quartz	14808-60-7	Contains crystalline silica which may cause silicosis, a delayed and progressive lung disease. The IARC and NTP have determined there is sufficient evidence in humans of the carcinogenicity of crystalline silica with repeated respiratory exposure.

Substances	CAS Number	Reproductive toxicity
Crystalline silica, quartz	14808-60-7	No information available

Substances	CAS Number	STOT - single exposure
Crystalline silica, quartz	14808-60-7	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Crystalline silica, quartz	14808-60-7	Causes damage to organs through prolonged or repeated exposure if inhaled: (Lungs)

Substances	CAS Number	Aspiration hazard
Crystalline silica, quartz	14808-60-7	Not applicable

12. Ecological Information

12.1. Toxicity

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Crystalline silica, quartz	14808-60-7	EC50 (72 h) =440 mg/L (Selenastrum capricornutum)(similar substance)	LL0 (96 h) =10000 mg/L (Danio rerio)(similar substance)	No information available	LL50 (24 h) >10000 mg/L (Daphnia magna)(similar substance)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Crystalline silica, quartz	14808-60-7	The methods for determining biodegradability are not applicable to inorganic substances.

12.3. Bioaccumulative potential

Does not bioaccumulate.

Substances	CAS Number	Log Pow
Crystalline silica, quartz	14808-60-7	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Crystalline silica, quartz	14808-60-7	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods****Disposal methods**

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. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations. Contaminated packaging may be disposed of by: rendering packaging incapable of containing any substance, or treating packaging to remove residual contents, or treating packaging to make sure the residual contents are no longer hazardous, or by disposing of packaging into commercial waste collection.

14. Transport Information**US DOT**

UN Number: Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

Canadian TDG

UN Number: Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

IMDG/IMO

UN Number: Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

IATA/ICAO

UN Number: Not restricted
 UN proper shipping name: Not restricted
 Transport Hazard Class(es): Not applicable
 Packing Group: Not applicable
 Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information

US Regulations

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

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Crystalline silica, quartz	14808-60-7	Not applicable

EPA SARA (311,312) Hazard Class

Chronic Health Hazard

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Crystalline silica, quartz	14808-60-7	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Crystalline silica, quartz	14808-60-7	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

Substances	CAS Number	California Proposition 65
Crystalline silica, quartz	14808-60-7	carcinogen

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Crystalline silica, quartz	14808-60-7	Carcinogen Extraordinarily hazardous	1660	Present

NFPA Ratings: Health 0, Flammability 0, Reactivity 0

HMIS Ratings: Health 0*, Flammability 0, Physical Hazard 0, PPE: E

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By

Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date:	01-Feb-2018
Reason for Revision	Change to composition SDS sections updated: 2 3 8 11

Additional information

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

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

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/
NZ CCID

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 Safety Data Sheet

SAFETY DATA SHEET

Product Trade Name: BARACARB® 5

Revision Date: 03-Jan-2017

Revision Number: 29

1. Identification

1.1. Product Identifier

Product Trade Name: BARACARB® 5
Synonyms None
Chemical Family: Mineral
Internal ID Code HM003487

1.2 Recommended use and restrictions on use

Application: Bridging Agent
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton
P.O. Box 1675
Houston, TX 77251

Halliburton Energy Services
645 - 7th Ave SW Suite 1800
Calgary, AB
T2P 4G8
Canada

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazard(s) Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

2.2. Label Elements

Hazard Pictograms

Signal Word: Not Classified

Hazard Statements Not Hazardous

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not classified

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures**4.1. Description of first aid measures**

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

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures**5.1. Extinguishing media****Suitable Extinguishing Media**

All standard fire fighting media

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture**Special exposure hazards in a fire**

None anticipated

5.3 Special protective equipment and precautions for fire-fighters**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment. Avoid creating and breathing dust.
See Section 8 for additional information

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

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

7.1. Precautions for safe handling

Handling Precautions

Avoid creating or inhaling dust.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from acids. Store in a cool, dry location. 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 60 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls

Use in a well ventilated area. Use approved industrial ventilation and local exhaust as required to maintain exposures below applicable exposure limits.

8.3 Individual protection measures, such as personal protective equipment

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

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.

Dust/mist respirator. (N95, P2/P3)

Hand Protection

Normal work gloves.

Skin Protection

Normal work coveralls.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid Powder	Color	White
Odor: Odorless	Odor	No information available
	Threshold:	

<u>Property</u>	<u>Values</u>
<u>Remarks/ - Method</u>	
pH:	8-9
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	2.7
Water Solubility	Insoluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%)	No data available
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10. Stability and Reactivity**10.1. Reactivity**

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong acids.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information**11.1 Information on likely routes of exposure**

Principle Route of Exposure	Eye or skin contact, inhalation.
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11.2 Symptoms related to the physical, chemical and toxicological characteristics**Acute Toxicity**

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mechanical irritation to eye.
Skin Contact	None known.
Ingestion	None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data**Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available

12. Ecological Information**12.1. Toxicity****Substance Ecotoxicity Data**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

Disposal methods Bury in a licensed landfill according to federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information**US DOT**

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information**US Regulations**

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

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Contains no hazardous substances in concentrations	NA	Not applicable

above cut-off values according to the competent authority		
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EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	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.

NFPA Ratings: Health 0, Flammability 0, Reactivity 0
HMIS Ratings: Health 0, Flammability 0, Reactivity 0, PPE: B

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

Revision Date: 03-Jan-2017

Reason for Revision SDS sections updated:
 2
 11
 15

Additional information

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

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

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

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 Safety Data Sheet

SAFETY DATA SHEET

Product Trade Name: BaraLube® NAF Ultra

Revision Date: 09-Jan-2020

Revision Number: 1

1. Identification

1.1. Product Identifier

Product Trade Name: BaraLube® NAF Ultra
Synonyms None
Chemical Family: Polyol mixture
Internal ID Code HM009285

1.2 Recommended use and restrictions on use

Application: Lubricant
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Halliburton Group Canada
645 - 7th Ave SW Suite 1800
Calgary, AB, T2P 4G8, Canada
Telephone: 1-403-231-9300

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number 1-866-519-4752 or 1-760-476-3962 (accessible 24 hours a day / 7 days a week)
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

2.2. Label Elements

Hazard Pictograms

Signal Word: Not Classified

Hazard Statements Not Hazardous

Precautionary Statements

Prevention None
Response None
Storage None
Disposal None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	60 - 100%	Not classified

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures

4.1. Description of first aid measures

Inhalation Move person to fresh air.
Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin Wash with soap and water.
Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media
 Water fog, carbon dioxide, foam, dry chemical.
Extinguishing media which must not be used for safety reasons
 None known.

5.2 Specific hazards arising from the substance or mixture

Special exposure hazards in a fire
 Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters
 Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Ensure adequate ventilation. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 36 months.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls Use in a well ventilated area.

8.3 Individual protection measures, such as personal protective equipment

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 necessary.

Hand Protection Impervious rubber gloves.

Skin Protection Normal work coveralls.

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

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid	Color Light yellow
Odor: Odorless	Odor No information available
	Threshold:

<u>Property</u> <u>Remarks/ - Method</u>	<u>Values</u>
pH:	6-9
Freezing Point / Range	-25 °C / -13 °F
Melting Point / Range	No data available
Pour Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	204 °C / 400 °F (PMCC)
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.23
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	1.3
Autoignition Temperature	380 °C / 715 °F
Decomposition Temperature	No data available
Viscosity	17,000 cps @ 20 C
Explosive Properties	No information available
Oxidizing Properties	No information available
9.2. Other information	
VOC Content (%)	No data available
Liquid Density	10.2 lbs/gal @ 20 C

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Acrolein. Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation None known.
Eye Contact None known.
Skin Contact None known.
Ingestion None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No data available	No data available	No data available

12. Ecological Information

12.1. Toxicity

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal methods Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

US DOT

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Canadian TDG

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Special Precautions for User None

15. Regulatory Information

US Regulations

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

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2	TSCA Section 5(E) Consent Orders
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	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

Substances	CAS Number	California Proposition 65
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Contains no hazardous substances in concentrations above cut-off values according to the competent authority	NA	Not applicable	Not applicable	Not applicable

NFPA Ratings: Health 1, Flammability 0, Reactivity 0

HMIS Ratings: Health 1, Flammability 0, Reactivity 0

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By: Chemical Stewardship
 Telephone: 1-281-871-6107
 e-mail: fdunexchem@halliburton.com

Revision Date: 09-Jan-2020

Reason for Revision Initial Release

Additional information

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

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

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

d - day

EC50 – Effective Concentration 50%

ErC50 – Effective Concentration growth rate 50%

h - hour

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL50 – Lethal Loading 50%

mg/kg – milligram/kilogram

mg/L – milligram/liter

mg/m³ - milligram/cubic meter

mm - millimeter

mmHg - millimeter mercury

NIOSH – National Institute for Occupational Safety and Health

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PEL – Permissible Exposure Limit

ppm – parts per million

STEL – Short Term Exposure Limit

TWA – Time-Weighted Average

UN – United Nations

w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

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 Safety Data Sheet

SAFETY DATA SHEET

Product Trade Name: BARAVIS (HEC) SA

Revision Date: 23-May-2019

Revision Number: 2

1. Identification

1.1. Product Identifier

Product Trade Name: BARAVIS (HEC) SA
Synonyms None
Chemical Family: Carbohydrate
Internal ID Code HM008833

1.2 Recommended use and restrictions on use

Application: Viscosifier
Uses advised against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton Energy Services, Inc.
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 871-4000

Halliburton Group Canada
645 - 7th Ave SW Suite 1800
Calgary, AB, T2P 4G8, Canada
Telephone: 1-403-231-9300

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number:

Emergency Telephone Number 1-866-519-4752 or 1-760-476-3962 (accessible 24 hours a day / 7 days a week)
Global Incident Response Access Code: 334305
Contract Number: 14012

2. Hazards Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Combustible dust

Combustible dust

2.2. Label Elements

Hazard Pictograms

Signal Word: Warning

Hazard Statements

May form combustible dust concentrations in air.

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Cellulose derivative	Proprietary	60 - 100%	Combustible Dust

The specific chemical identity of the composition has been withheld as proprietary. The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First Aid Measures**4.1. Description of first aid measures**

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.
Skin	Wash with soap and water. Get medical attention if irritation persists.
Ingestion	Rinse mouth with water many times. Get medical attention, if symptoms occur

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed**Notes to Physician** Treat symptomatically.**5. Fire-fighting measures****5.1. Extinguishing media****Suitable Extinguishing Media**

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

Avoid creating dust clouds with extinguishers.

5.2 Specific hazards arising from the substance or mixture**Special exposure hazards in a fire**

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

5.3 Special protective equipment and precautions for fire-fighters**Special protective equipment for firefighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Avoid creating and breathing dust. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Take precautionary measures against static discharges All equipment used when handling the product must be grounded Slippery when wet. See Section 8 for additional information

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for safe handling

Handling Precautions

Use appropriate protective equipment. Ensure adequate ventilation. Avoid dust accumulations. Avoid contact with eyes, skin, or clothing. Ground and bond containers when transferring from one container to another.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Store in a dry location. Use good housekeeping in storage and work areas to prevent accumulation of dust. Close container when not in use. Avoid contact with heat, sparks, open flame, and static discharge.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Cellulose derivative	Proprietary	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls

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

8.3 Individual protection measures, such as personal protective equipment

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

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional.
Dust/mist respirator. (N95, P2/P3)

Hand Protection

Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

Skin Protection

Wear protective clothing appropriate for the work environment.

Eye Protection

Wear safety glasses or goggles to protect against exposure.

Other Precautions

None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Powder	Color	White to off white
Odor: Mild	Odor	No information available
	Threshold:	

<u>Property</u>	<u>Values</u>
Remarks/ - Method	
pH:	6-8.5 (1%)
Freezing Point / Range	290 °C / 554 °F
Melting Point / Range	No data available
Pour Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	221 °C / 430 °F
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.38 - 1.4
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	400 °C / 752 °F
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	>1,000,000 g/mol
VOC Content (%)	No data available
Bulk Density	37 lbs/ft ³

10. Stability and Reactivity

10.1. Reactivity

May form combustible dust concentrations in air.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mechanical irritation to eye.
Skin Contact	None known.
Ingestion	May cause abdominal pain, vomiting, nausea, and diarrhea.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Cellulose derivative	Proprietary	> 2000 mg/kg > 23,070 mg/kg (Rat)	> 5000 mg/kg (Rabbit) (similar substance)	> 0.285 mg/L (4h) (dust)

Substances	CAS Number	Skin corrosion/irritation
Cellulose derivative		Not irritating to skin in rabbits.

Substances	CAS Number	Serious eye damage/irritation
Cellulose derivative		Non-irritating to rabbit's eye

Substances	CAS Number	Skin Sensitization
Cellulose derivative		Patch test on human volunteers did not demonstrate sensitization properties

Substances	CAS Number	Respiratory Sensitization
Cellulose derivative		No information available

Substances	CAS Number	Mutagenic Effects
Cellulose derivative		In vivo tests did not show mutagenic effects. In vitro tests did not show mutagenic effects. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Cellulose derivative		No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Cellulose derivative		No data of sufficient quality are available.

Substances	CAS Number	STOT - single exposure
Cellulose derivative		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Cellulose derivative		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Cellulose derivative		Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity effects

Product is not classified as hazardous to the environment.

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Cellulose derivative	Proprietary	No information available	No information available	No information available	TLM96: > 1,000,000 ppm (Mysidopsis bahia)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Cellulose derivative	Proprietary	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Bioaccumulation
Cellulose derivative	Proprietary	No information available

12.4. Mobility in soil

Substances	CAS Number	Mobility
Cellulose derivative	Proprietary	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal methods Follow all applicable community, national or regional regulations regarding waste management methods.

Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

US DOT

- UN Number Not restricted
- UN proper shipping name: Not restricted
- Transport Hazard Class(es): Not applicable
- Packing Group: Not applicable
- Environmental Hazards: Not applicable

Canadian TDG

- UN Number Not restricted
- UN proper shipping name: Not restricted
- Transport Hazard Class(es): Not applicable
- Packing Group: Not applicable
- Environmental Hazards: Not applicable

IMDG/IMO

- UN Number Not restricted
- UN proper shipping name: Not restricted
- Transport Hazard Class(es): Not applicable
- Packing Group: Not applicable
- Environmental Hazards: Not applicable

IATA/ICAO

UN Number Not restricted
UN proper shipping name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable
Special Precautions for User None

15. Regulatory Information

US Regulations

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

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2	TSCA Section 5(E) Consent Orders
Cellulose derivative	Proprietary	Not applicable	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Cellulose derivative	Proprietary	Not applicable

EPA SARA (311,312) Hazard Class

Combustible dust

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Cellulose derivative	Proprietary	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Cellulose derivative	Proprietary	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

Substances	CAS Number	California Proposition 65
Cellulose derivative	Proprietary	Not applicable

U.S. State Right-to-Know Regulations

Substances	CAS Number	MA Right-to-Know Law	NJ Right-to-Know Law	PA Right-to-Know Law
Cellulose derivative	Proprietary	Not applicable	Not applicable	Not applicable

NFPA Ratings: Health 1, Flammability 1, Reactivity 0
HMIS Ratings: Health 1, Flammability 1, Physical Hazard 0, PPE: E

Canadian Regulations

Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 23-May-2019

Reason for Revision SDS sections updated:
2

Additional information

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

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

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight
CAS – Chemical Abstracts Service
d - day
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
h - hour
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
w/w - weight/weight

Key literature references and sources for data

www.ChemADVISOR.com/

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 Safety Data Sheet

**CHEMIPHASE LTD
SAFETY DATA SHEET**



EMULSION BREAKER 210

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY UNDERTAKING

PRODUCT NAME: EMULSION BREAKER 210

PRODUCT Description: Concentrated Oil Based Demulsifier **-NEW FORMULATION MARCH 2005**

APPLICATION BIO DIESEL PRODUCTION

SUPPLIER Chemiphase Ltd
PO Box 168
Ormskirk
L40 6ZX
Tel: 00 44 1744 886622
Fax: 00 44 1744 886633

EMERGENCY TELEPHONE (24 HR) 00 44 (0) 1744 886622

2. COMPOSITION INFORMATION ON INGREDIENTS

NAME	EC No	CAS No	CONTENT	CLASSIFICATION
2-BUTOXYETHANOL	203-905-0	111-76-2	8-15%	XnR20/21/22 Xi,R36/38
XYLENE	215-535-7	1330-20-7	15-22%	R10 Xn, R10/R20/21 Xi, R38 & S16

The Full Text for all R- Phrases are displayed in Section 16

3. HAZARDS IDENTIFICATION

Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin.

CLASSIFICATION Xn; R20/21/22. Xi;R36/38

4. FIRST AID MEASURES

GENERAL INFORMATION

Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

INHALATION

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Keep the affected person warm and at rest. Get prompt medical attention.

INGESTION

NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Remove victim immediately from source of exposure. Rinse mouth thoroughly. Promptly get affected person to drink large volumes of water to dilute the swallowed chemical. **DO NOT** induce vomiting. Get medical attention immediately.

SKIN CONTACT

Remove affected person from source of contamination. Promptly wash contaminated skin with soap or mild detergent and water. Promptly remove clothing if soaked through and wash as above. Get medical attention immediately.

EYE CONTACT

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eyelids. Continue to rinse for at least 15 minutes and get medical attention.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Use: Powder, Carbon dioxide (CO₂). Water spray. Foam

SPECIAL FIRE FIGHTING PROCEDURES

Avoid water in straight hose stream; will scatter and spread fire. Use water to keep fire exposed containers cool and disperse vapours. Keep run-off water out of sewers and water sources. Dike for water control.

SPECIFIC HAZARDS

By heating and fire, irritating vapours/gases may be formed.

PROTECTIVE MEASURES IN FIRE

Wear personal protective equipment. Wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet. Avoid contact with skin and eyes. Provide adequate ventilation.

ENVIRONMENTAL PRECAUTIONS

Do not discharge into drains, watercourses or onto the ground.

SPILL CLEAN UP METHODS

Stop leak if possible without risk. Absorb in vermiculite, dry sand or earth and place into containers. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Do not contaminate water sources or sewer.

7. HANDLING AND STORAGE

Usage precautions

Avoid spilling, skin and eye contact. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level.

STORAGE PRECAUTIONS

Store in tightly closed original container in a cool dry well-ventilated place. Use container made of : Stainless steel. Suitable plastic material. Do NOT use container made of: Carbon steel.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Name	Std	LT - ppm	LT – mg/m ³	ST - ppm	ST – mg/m ³
XYLENE	OES	50 ppm (Sk)	220 mg/m ³ (Sk)	100 ppm(Sk)	441 mg/m ³ (Sk)
2-BUTOXYETHANOL	OES	25 PPM(Sk)		50 ppm(Sk)	

INGREDIENT COMMENTS

OES = Occupational Exposure Standard. 2 – Butoxyethanol (EGMBE) has a Biological Monitoring Guidance Value. See UK HSE EH40 Table 3

PROTECTIVE EQUIPMENT

Goggles and Gloves

ENGINEERING MEASURES

Provide adequate general and local exhaust ventilation

RESPIRATORY EQUIPMENT

No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive air contamination exists. Wear respiratory protection with combination filter (dust and gas filter).

HAND PROTECTION

Use protective gloves. Rubber, neoprene or PVC. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

EYE PROTECTION

Wear approved safety goggles.

OTHER PROTECTION

Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact.

HYGIENE MEASURES

DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly with soap and water if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid		
COLOUR	Slightly hazy		
ODOUR:	Slight Aromatic	Boiling Point/ range (°C)	137-143
MELTING POINT (°C)	Pour Point , -20	RELATIVE DENSITY	· 0.990 @ 20°C
Ph, VALUE, DILUTED SOLUTION	6.5-8.5, 5% in water	VISCOSITY	< 100 mPas @ 20°C
FLASH POINT (°C)	25	AUTOFlammability (°C)	480

10. STABILITY AND REACTIVITY

STABILITY

Stable under normal temperature conditions.

CONDITIONS TO AVOID

Avoid heat, flames and other sources of ignition

MATERIAL TO AVOID

Strong oxidising substances. Strong acids

HAZARDOUS DECOMPOSITION PRODUCTS

During fire, toxic gases (CO, CO₂) are formed.

11. TOXICOLOGICAL INFORMATION

TOXIC DOSE 1 – LD50 >4000 mg/kg (oral rat)

INHALATION

Harmful by inhalation. In high concentrations, vapours are anaesthetic and may cause headache, fatigue, dizziness and central nervous system effects. Upper respiratory irritation. Vapours may cause headache, fatigue, dizziness and nausea.

INGESTION

Harmful if swallowed. Gastrointestinal symptoms, including upset stomach. May cause nausea, headache, dizziness and intoxication.

SKIN CONTACT

Harmful in contact with skin. Irritating to skin.

EYE CONTACT

Irritating to eyes. Spray and vapour in the eyes may cause irritation and smarting.

Other Health Effects

No sensitising effects known.

12. ECOLOGICAL INFORMATION

ECOTOXICITY

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

MOBILITY

The product is insoluble in water

BIOACCUMULATION

No data available

DEGRADABILITY

The product is expected to be biodegradable

WATER HAZARD CLASSIFICATION

WGK 1

13. DISPOSAL CONSIDERATIONS

GENERAL INFORMATION

Empty containers should be taken for local recycling, recovery or waste disposal

DISPOSAL METHODS

Recover and reclaim or recycle, if practical. Do not allow runoff to sewer, waterway or ground. Dispose of waste and residues in accordance with local authority requirements.

WASTE CLASS

For this product, in accordance with the European Waste Catalogue (EWC), a catalogue number cannot be given because the customer has to lay down the purpose first. The catalogue number has to be given according to the local waste removal processes.

14. TRANSPORT INFORMATION

GENERAL

ADR/RID

UN no: 1307

ADR Class: 3

Packing Group: III

Classification code: F1

Shipping name n/a

Labelling: 3
IMDG/IMO

Hazard ID no: 30
UN no: 1307 Class: 3

Packing Group: III

EMS:F-E, S-D

Marine Pollutant: NO

Labelling: 3

IATA/ICAO

UN no: 1307 Class: 3

Packing Group: III

Packing Instructions; 309(p&CA):310(CAO)

Marine Pollutant: NO

Labelling: 3

15. REGULATORY INFORMATION

LABELLING



Harmful

CONTAINS

2-BUTOXYETHANOL, Xylene

RISK PHRASES

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed

R10 Flammable
R36/38 Irritating to eyes and skin

SAFETY PHRASES

S36/37 Wear suitable protective clothing and gloves

S16 Keep away from sources of ignition—NO SMOKING
S60 This material and its container must be disposed of as hazardous waste

S23 Do not breathe vapour/spray

S26 In case of contact with eyes, rinse immediately with plenty of water and see medical advice

S51 Use only in well-ventilated areas

S24/25 Avoid contact with skin and eyes

UK REGULATORY REFERENCES

Approved Supply List

STATUTORY INSTRUMENTS

Chemicals (Hazard Information and Packaging) Regulations

APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply. Safety Data Sheets for Substances and Preparations.

GUIDANCE NOTES

Occupational Exposure Limits EH40. Approved guide to the classification and labelling of substances and preparations dangerous for supply.

16. OTHER INFORMATION

REVISION COMMENTS

General revision

ISSUED BY

CES

REVISION DATE MARCH 2008

REVISED SDS GENERATED MARCH 2005

RISK PHRASES IN FULL

R10	Flammable
R20/21	Harmful by inhalation and in contact with skin
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed
R36/38	Irritating to eyes and skin
R38	Irritating to skin

DISCLAIMER

The information provided in this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : EC1317A CORROSION INHIBITOR

Other means of identification : Not applicable.

Recommended use : CORROSION INHIBITOR

Restrictions on use : Refer to available product literature or ask your local Sales Representative for restrictions on use and dose limits.

Company : Nalco Champion Company
7705 Highway 90-A
Sugar Land, Texas 77478
USA
TEL: (281) 263-7000

Emergency telephone number : (800) 424-9300 (24 Hours) CHEMTREC

Issuing date : 03/06/2015

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 3

Acute toxicity (Inhalation) : Category 3

Acute toxicity (Dermal) : Category 3

Skin corrosion : Category 1B

Serious eye damage : Category 1

Skin sensitization : Category 1

Specific target organ toxicity - single exposure : Category 1 (Eyes)

Specific target organ toxicity - single exposure : Category 2

Specific target organ toxicity - single exposure : Category 3 (Central Nervous System)

GHS Label element

Hazard pictograms :



Signal Word : Danger

Hazard Statements : Flammable liquid and vapour.
Toxic if swallowed, in contact with skin or if inhaled
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause drowsiness or dizziness.
Causes damage to organs (Eyes).
May cause damage to organs.

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

Precautionary Statements : **Prevention:**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ ventilating/ lighting/ equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe dust/fume/gas/mist/vapours/spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed: Call a POISON CENTER or doctor/ physician. Immediately call a POISON CENTER or doctor/ physician. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse. In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:
Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Concentration: (%)
Methanol	67-56-1	30 - 60
Tall Oil, DETA Imidazoline Acetates	68140-11-4	5 - 10
Benzyl-Dimethyl-Dodecyl-Ammonium Chloride	139-07-1	1 - 5
Thioglycolic Acid	68-11-1	1 - 5
Benzyl-Dimethyl-Tetradecyl-Ammonium Chloride	139-08-2	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes. Use a mild soap if available. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

If swallowed : Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

	immediately.
If inhaled	: Remove to fresh air. Treat symptomatically. Get medical attention immediately.
Protection of first-aiders	: In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.
Notes to physician	: Treat symptomatically.
Most important symptoms and effects, both acute and delayed	: See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: None known.
Specific hazards during firefighting	: Fire Hazard Keep away from heat and sources of ignition. Flash back possible over considerable distance. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.
Hazardous combustion products	: Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NOx) Sulphur oxides
Special protective equipment for firefighters	: Use personal protective equipment.
Specific extinguishing methods	: Use water spray to cool unopened containers. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. In the event of fire and/or explosion do not breathe fumes.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. Avoid inhalation, ingestion and contact with skin and eyes. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.
Environmental precautions	: Do not allow contact with soil, surface or ground water.
Methods and materials for containment and cleaning up	: Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth,

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

vermiculite) and place in container for disposal according to local / national regulations (see section 13). For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Flush away traces with water.

Section: 7. HANDLING AND STORAGE

- Advice on safe handling : Open drum carefully as content may be under pressure. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Do not ingest. Keep away from fire, sparks and heated surfaces. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Use only with adequate ventilation.
- Conditions for safe storage : Keep away from heat and sources of ignition. Keep in a cool, well-ventilated place. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labeled containers. Connections must be grounded to avoid electrical charges. Avoid direct sunlight. At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H₂S).
- Suitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Stainless Steel 304, Stainless Steel 316L, Nitrile, EPDM, Perfluoroelastomer, PTFE, TFE, FEP (encapsulated), Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.
- Unsuitable material : The following compatibility data is suggested based on similar product data and/or industry experience: Neoprene, Carbon Steel C1018, Fluoroelastomer

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m ³	NIOSH REL
		STEL	250 ppm 325 mg/m ³	NIOSH REL
Thioglycolic Acid	68-11-1	TWA	200 ppm 260 mg/m ³	OSHA Z1
		TWA	1 ppm 4 mg/m ³	ACGIH NIOSH REL

- Engineering measures : Effective exhaust ventilation system Maintain air concentrations below occupational exposure standards.

Personal protective equipment

SAFETY DATA SHEET

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Eye protection	: Safety goggles Face-shield
Hand protection	: Wear the following personal protective equipment: Standard glove type. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	: Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Liquid
Colour	: clear
Odour	: Alcoholic, Pungent
Flash point	: 30 °C Method: ASTM D 93, Pensky-Martens closed cup
pH	: 3.4, 100 %
Odour Threshold	: no data available
Melting point/freezing point	: POUR POINT: -46 °C
Initial boiling point and boiling range	: no data available
Evaporation rate	: no data available
Flammability (solid, gas)	: no data available
Upper explosion limit	: no data available
Lower explosion limit	: no data available
Vapour pressure	: 12.7 kPa (38 °C)
Relative vapour density	: no data available
Relative density	: 0.95 (15.6 °C)
Density	: 0.95 g/cm ³ 7.9 lb/gal
Water solubility	: completely soluble
Solubility in other solvents	: no data available
Partition coefficient: n-octanol/water	: no data available
Auto-ignition temperature	: no data available

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

Thermal decomposition temperature	: no data available
Viscosity, dynamic	: no data available
Viscosity, kinematic	: 2 mm ² /s (38 °C) Method: ASTM D 445
VOC	: no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability	: At temperatures greater than 30°C a component of this product may degrade leading to the production of hydrogen sulfide (H ₂ S).
Possibility of hazardous reactions	: No dangerous reaction known under conditions of normal use.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.
Hazardous decomposition products	: Decomposition products may include the following materials: Carbon oxides nitrogen oxides (NO _x) Sulphur oxides May evolve toxic fumes. Hydrogen sulfide (H ₂ S)

Section: 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation, Eye contact, Skin contact

Potential Health Effects

Eyes	: Causes serious eye damage.
Skin	: Toxic in contact with skin. Causes severe skin burns. May cause allergic skin reaction.
Ingestion	: May cause blindness if swallowed. Toxic if swallowed. Causes digestive tract burns.
Inhalation	: Toxic if inhaled. May cause nose, throat, and lung irritation. Inhalation may cause central nervous system effects.
Chronic Exposure	: May cause damage to organs.

Experience with human exposure

Eye contact	: Redness, Pain, Corrosion
Skin contact	: Redness, Pain, Irritation, Corrosion, Allergic reactions
Ingestion	: Corrosion, Abdominal pain
Inhalation	: Respiratory irritation, Cough, Dizziness, Drowsiness

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

Toxicity

Product

Acute oral toxicity	: Acute toxicity estimate : 262.63 mg/kg
Acute inhalation toxicity	: Acute toxicity estimate : 3.08 mg/l Exposure time: 4 h
Acute dermal toxicity	: Acute toxicity estimate : 800.53 mg/kg
Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: no data available
Respiratory or skin sensitization	: no data available
Carcinogenicity	: no data available
Reproductive effects	: no data available
Germ cell mutagenicity	: no data available
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: no data available

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

Environmental Effects	: Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
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Product

Toxicity to fish	: LC50 Fish: 0.85 mg/l Exposure time: 96 hrs Test substance: Hazardous component
Toxicity to daphnia and other aquatic invertebrates	: EC50 Daphnia magna (Water flea): 0.02 mg/l Exposure time: 48 hrs Test substance: Hazardous component
Toxicity to algae	: LC50 Algae: < 1 mg/l Exposure time: 72 hrs Test substance: Hazardous component

Components

Toxicity to bacteria	: Methanol
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> 1,000 mg/l

Tall Oil, DETA Imidazoline Acetates
175 mg/l

Components

Toxicity to fish (Chronic toxicity) : Methanol
NOEC: 7,900 mg/l
Exposure time: 8.3 d

Persistence and degradability

The organic portion of this preparation is expected to be readily biodegradable.

Mobility

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models.

If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air : <5%
Water : 30 - 50%
Soil : 70 - 90%

The portion in water is expected to be soluble or dispersible.

Bioaccumulative potential

The product will not bioaccumulate.

Other information

no data available

Section: 13. DISPOSAL CONSIDERATIONS

The information presented only applies to the material as supplied. The classification or waste code may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Hazardous Waste: : D001

Disposal methods : The product should not be allowed to enter drains, water courses or the soil. Where possible recycling is preferred to disposal or incineration. If recycling is not practicable, dispose of in compliance with local regulations. Dispose of wastes in an approved waste disposal facility.

Disposal considerations : Dispose of as unused product. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

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EC1317A CORROSION INHIBITOR

Section: 14. TRANSPORT INFORMATION

The shipper/consignor/sender is responsible to ensure that the packaging, labeling, and markings are in compliance with the selected mode of transport.

Land transport (DOT)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s) : METHANOL, QUATERNARY AMMONIUM COMPOUND
UN/ID No. : UN 2924
Transport hazard class(es) : 3, 8
Packing group : III
Reportable Quantity (per package) : 14,280 lbs
RQ Component : METHANOL

Air transport (IATA)

The presence of an RQ component (Reportable Quantity for U.S. EPA and DOT) in this product causes it to be regulated with an additional description of RQ for road, or as a class 9 for road and air, ONLY when the net weight in the package exceeds the calculated RQ for the product.

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s) : METHANOL, QUATERNARY AMMONIUM COMPOUND
UN/ID No. : UN 2924
Transport hazard class(es) : 3, 8
Packing group : III
Reportable Quantity (per package) : 14,280 lbs
RQ Component : METHANOL

Sea transport (IMDG/IMO)

Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
Technical name(s) : METHANOL, QUATERNARY AMMONIUM COMPOUND
UN/ID No. : UN 2924
Transport hazard class(es) : 3, 8
Packing group : III

Section: 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Methanol	67-56-1	5000	14286

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Methanol	67-56-1	30 - 60 %
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California Prop 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Methanol

67-56-1

INTERNATIONAL CHEMICAL CONTROL LAWS :

TOXIC SUBSTANCES CONTROL ACT (TSCA)

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The substance(s) in this preparation are included in or exempted from the Domestic Substance List (DSL).

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

CHINA

All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

JAPAN

All substances in this product comply with the Law Regulating the Manufacture and Importation Of Chemical Substances and are listed on the Existing and New Chemical Substances list (ENCS).

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)

PHILIPPINES

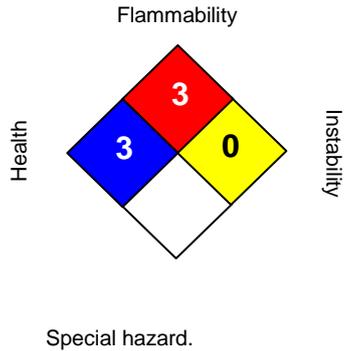
All substances in this product comply with the Republic Act 6969 (RA 6969) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).

Section: 16. OTHER INFORMATION

SAFETY DATA SHEET

EC1317A CORROSION INHIBITOR

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	3
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date : 03/06/2015
Version Number : 1.0
Prepared By : Regulatory Affairs

REVISED INFORMATION: Significant changes to regulatory or health information for this revision is indicated by a bar in the left-hand margin of the SDS.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

For additional copies of an MSDS visit www.nalco.com and request access.

M S D S

ParaForce 2033

Date Effective 09/12/2013

Paraffin & Asphaltene Dispersant

Section One: Product Identification

Trade Name	ParaForce 2033
Chemical Family	Paraffin & Asphaltene Dispersant
Chemical Formula	Confidential
CAS Number	Proprietary Blend

Section Two: Composition Information on Hazardous Ingredients

CAS Number	Component Common Name	TWA	STEL	PEL	Weight Percent
Confidential	Methyl Amyl Alcohol	NE	NE	NE	5 – 10%
52624-57-4	Polyoxyalkylene Glycol	NE	NE	NE	5 – 10%
Confidential	Proprietary Ingredients/Trade Secret	NE	NE	NE	15 – 25%
8008-20-6	Low Aromatic Feedstock Solvent	200 mg/m ³	NE	NE	25 – 35%
64742-95-6	Petroleum Solvent	NE	NE	NE	25 – 35%
Confidential	Proprietary Fatty Acid Methyl Ester	NE	NE	NE	35 – 45%

Schedule B, Harmonized Tariff Number for Import/Export

3402903000 Surface-active preparations, containing any aromatic or modified aromatic surface active agents

Section Three: Hazards Identification

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Potential Health Effects	This product may cause eye, skin, or respiratory irritation.
Carcinogenicity (NTP)	This product is not believed to be carcinogenic.
Carcinogenicity (IARC)	Possible; human evidence inadequate.
Carcinogenicity (OSHA)	This product is not believed to be carcinogenic.

Section Four: First Aid Measures

Eyes	Flush eyes with water for at least 15 minutes. Seek medical attention.
Skin	Remove contaminated clothing. Flush skin with water.
Ingestion	Drink 3-4 glasses of water. Do not induce vomiting. Seek medical help immediately.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and call a physician.

Section Five: Fire Fighting Measures

Flammable Limits, Flash Point	144° F, PMCC
Flammable Limits in Air - LEL	>1.0%
Flammable Limits in Air – UEL	>10.0%
Auto Ignition Temperature	>650° F
General Hazards	Flammable; keep away from heat, sparks, and open flames.
Extinguishing Media	Dry chemical, carbon dioxide or water spray.
Fire Fighting Equipment	Wear self-contained breathing apparatus and protective clothing.
Fire and Explosion Hazards	Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Disclaimer For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

M S D S

ParaForce 2033

Date Effective 09/12/2013

Paraffin & Asphaltene Dispersant

Hazardous Combustion Products	Not available.
Sensitivity to Static Discharge	This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe).
Additional Information	No additional information.

Section Six: Accidental Release Measures

Accidental Release Measures	Eliminate all ignition sources. Contain spill and salvage as much material as possible. Then pick up the remaining with absorbent.
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Section Seven: Handling and Storage

Handling and Storage Guidelines	Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharged. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.
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Section Eight: Exposure Control/Personal Protection

Personal Protective Equipment	Wear appropriate equipment to prevent probability of exposure.
Eye Protection	Goggles or glasses with side shields.
Skin Protection	Wear impervious gloves as a standard handling procedure.
Respiratory Protection	Use NIOSH approved respiratory protection with certified air purifying respirator containing an organic vapor cartridge where exposure levels exceed 8 hour regulatory limits of 19 ppm.
Engineering Controls	Do not aerosolize.
Mechanical Exhaust	Required in confined spaces.
Local Exhaust	Recommended to keep fumes from concentrating.
Emergency Response Protection	No additional specialized equipment should be required.

Section Nine: Physical and Chemical Properties

Physical Form	Liquid
Color	Light Amber
Odor	Solvent; Pungent
Boiling Point	>200° F
Melting Point	NA
Freezing Point	<-20° F
Specific Gravity	0.90 (+/- 0.02)
Bulk Density	7.55 lbs. / gallon
pH	6.5 – 8.5 (5% in IPA/Water)
Solubility in Water	Insoluble
Evaporation Rate	ND (n-Butyl Acetate = 1)
Vapor Pressure	<2 (mm Hg @ 68 °F)
Vapor Density	>3.0 (Air = 1)
Volatile Organic(s)	<800 gm/1000 ml.

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M S D S

ParaForce 2033

Date Effective 09/12/2013

Paraffin & Asphaltene Dispersant

Section Ten: Stability and Reactivity

Stability	Stable at normal temperatures and operating conditions.
Incompatibilities	Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite, calcium hypochlorite, etc.
Decomposition	The use of hydrocarbon fuels in an area without adequate ventilation may result in hazardous levels of combustion products.
Polymerization	Polymerization will not occur.

Section Eleven: Toxicological Information

Eye Irritation	Eye contact may be irritating; rinse with water.
Skin Irritation	Skin contact may be irritating; wash affected area.
Inhalation Toxicity	Remove victim to fresh air; seek medical attention.
Sensitization	Not evaluated.
Chronic/Carcinogenicity	Not evaluated.
Reproduction	Not evaluated.
Mutagenicity	Not evaluated.
Acute Oral Effects	Not evaluated.
Acute Dermal Toxicity	Not evaluated.
Additional Information	If swallowed call physician or poison control center.

Section Twelve: Ecological Information

Ecotoxicity	Bluegill (freshwater) TLm = 2,990 ppm/24 Hr.
Biological Oxygen Demand (BOD⁵)	>50% biodegraded in soil in 28 days.
Chemical Oxygen Demand	Not evaluated.
Activated Sludge Respiration Inhibition Test	Not evaluated.
Additional Information	When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material may biodegrade to a moderate extent. This material may bioaccumulate to some extent. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

Section Thirteen: Disposal Considerations

Container Disposal Management	Dispose of in accordance with local, state, and federal regulations.
RCRA Hazard Class	D001 – Ignitability, D002, U220 – Toluene, & U239 – Xylenes
Waste Disposal Method	Dispose of in accordance with local, state, and federal regulations.

Section Fourteen: Transport Information

DOT Hazard Class	Combustible Liquid.
DOT Proper Shipping Name	Combustible Liquid N.O.S., (Contains Petroleum Solvent), NA 1993, PG III, Guide 128
Packaging Group	III
UN Number	NA
NA Number	NA 1993
Packaging Size	Carboys/Pails, Drums, and Bulk.

Disclaimer For further information, please contact the manufacturer listed above. This information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made with respect to the information contained herein. This Material Safety Data Sheet was prepared to comply with OSHA Hazardous Communication Standard (29 CFR 1910.1200) and the Workplace Hazardous Materials Information System (WHIMS).

ParaForce 2033
 Date Effective 09/12/2013

Paraffin & Asphaltene Dispersant

Section Fifteen: Regulatory Information

SARA 302/304 RQ	NA
SARA 302/304 TPQ	NA
SARA 311/312 Acute	Yes
SARA 311/312 Chronic	Yes
SARA 311/312 Fire	Yes
SARA 311/312 Pressure	NA
SARA 311/312 Reactivity	NA
SARA 313 List	NA
CERCLA RQ	NA
TSCA Status	All components are registered on TSCA inventory.
CAA	NA
CWA	NA
Additional Information	No additional information available.

Section Sixteen: Other Information

HMIS Hazard Classification	Health	Flammability	Reactivity	Personal Protection
Classification Code	2	2	0	D
NFPA Hazard Classification	Health	Flammability	Instability	Special Hazards
Classification Code or Markings	2	2	0	

Explanation of NFPA Special Symbols

	Oxidizer; a chemical that can increase the rate of combustion or fire.
	Reactive with water; avoid using water when fighting a fire involving material.
	Corrosive material(s); can be corrosive in either an acid or alkaline state.
	Poison or highly toxic material(s).
	Explosive material(s); redundant notation of instability.
	Marine Pollutant(s); extremely harmful to aquatic environments.

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M S D S

ParaForce 2033
 Date Effective 09/12/2013

Paraffin & Asphaltene Dispersant

Explanation of Abbreviations

ASTM	American Society For Testing and Materials.
BOD⁵	Biological Oxygen Demand, 5-Day Test Standard.
CAA	Clean Air Act.
CAS	Chemical Abstracts Service.
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act.
CONF	Confidential.
CWA	Clean Water Act.
DOT	U.S. Department of Transportation.
EPA	U.S. Environmental Protection Agency.
HMIS	Hazardous Materials Identification System.
IARC	International Agency for Research on Cancer.
LEL	Lower Explosive Limits.
Mg/M³	Milligrams per Cubic Meter.
Mm/Hg	Millimeters of Mercury; Measurement of Air Pressure.
NA	Not Applicable.
ND	Not Determined.
NE	None Established.
NFPA	National Fire Protection Association.
NTP	National Toxicology Program.
OSHA	U.S. Occupational Health and Safety Administration.
PEL	Permissible Exposure Limit.
pH	Negative Logarithm of the Hydrogen Ion; Measurement of Acidity or Alkalinity.
PMCC	Pensky-Martens Closed Cup Flash Point Test.
PPM	Parts per Million.
RCRA	Resource Conservation and Recovery Act.
RQ	Release Quantity.
SARA	Superfund Amendments and Reauthorization Act.
STEL	Short-Term Exposure Limit.
TLV	Threshold Limit Value.
TPQ	Threshold Planning Quantities.
TSCA	Toxic Substances Control Act.
TWA	Time-Weighted Average or Absolute Value.
UEL	Upper Explosive Limits.
VOC	Volatile Organic Compounds.

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Safety Data Sheet (SODA ASH (Sodium Carbonate))

1 – PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:..... SODA ASH (Sodium Carbonate)
CHEMICAL NAME/
CLASS/SYNONYMS: None
PRODUCT NUMBER: SODA ASH (Sodium Carbonate)
UN/NA NUMBER: None
CHEMICAL FAMILY: Disodium carbonate
CAS NUMBER: 497-19-8
FORMULA: Na₂CO₃

COMPANY:..... **JMN Specialties, Inc.**
1100 Victory Drive – Westwego, Louisiana USA 70094
Phone (504) 341-3749, Fax (504) 341-5868
www.jmnspecialties.com

EMERGENCY PHONE: CALL CHEMTEL: Toll Free US & Canada: (800) 255-3924, Outside
USA +01-813-248-0585.

DATE PREPARED: February 28, 2019

2 – HAZARDS IDENTIFICATION

GHS HAZARD CLASSIFICATION:

Physical Hazards

Flammable Liquids:..... . No hazard statement

Health Hazards

Acute Toxicity (Oral): Category 4 - Harmful if swallowed, in contact with skin, inhaled

Skin Corrosion/Irritation: Category 2 - Causes skin irritation

Serious Eye Damage/Irritation: Category 2A - Causes eye irritation

Aspiration Hazard:..... . Category 3 (respiratory tract irritation)

WARNING LABEL ITEMS INCLUDING PRECAUTIONARY STATEMENTS:

Pictograms:



SIGNAL WORD:..... WARNING!

GHS HAZARD AND PRECAUTIONARY STATEMENTS:

H303 H313 H333: May be harmful if swallowed, in contact with skin or if inhaled

P101+102+103: If medical advice is needed, have product container or label at hand. Keep out of the reach of children. Read label before use.

P202+270+280+281: Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Use personal protective equipment as required.



Safety Data Sheet (SODA ASH (Sodium Carbonate))

P501: Dispose of contents/container: Treatment, storage, transportation and disposal must be in accordance with Federal, State/Provincial and Local Regulations. Regulations may vary in different locations. Characterization and compliance with applicable laws are the responsibility solely of the generator. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

TOTAL VOC's: None

3 – COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT	PERCENT	CAS NUMBER
Soda Ash (Sodium Carbonate)	> 99.8	497-19-8

4 – FIRST-AID MEASURES

BREATHING (INHALATION): Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial resuscitation. Keep person warm and at rest. Treat symptomatically and supportively. Seek medical attention immediately. Qualified medical personnel should consider administering oxygen.

SWALLOWING (INGESTION): Give large amounts of fresh water or milk immediately. Do not give anything by mouth if person is unconscious or otherwise unable to swallow. If vomiting occurs, keep head below hips to prevent aspiration. Treat symptomatically and supportively. Seek medical attention immediately.

EYES: Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

SKIN (DERMAL):..... Remove contaminated clothing and wash affected skin with soap and water. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop.

NOTE TO PHYSICIAN: May cause burns to the mouth, throat or stomach if swallowed. After swallowing danger of stomach perforation. On inhalation: Irritation of mucous membrane, coughing and shortness of breath. All treatments should be based on observed signs and symptoms of distress in the patient. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

5 – FIRE-FIGHTING MEASURES

GENERAL FIRE HAZARDS: Fire fighters should wear full protective clothing, including self-contained breathing equipment.

AUTOIGNITION TEMP:..... NA

EXTINGUISHING MEDIA: Determined by surrounding material. In case of fire, use water fog, dry chemical, CO₂, or "alcohol" foam.



Safety Data Sheet (SODA ASH (Sodium Carbonate))

SPECIAL FIRE FIGHTING

PROCEDURES: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. Spilled product may be slippery.

UNUSUAL FIRE AND

EXPLOSION HAZARDS: Containers may explode from internal pressure if confined to fire. Cool with water spray.

6 – ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES: Wear appropriate personal protective equipment before approaching spill site. For small spills, dilute with water to sewer if allowed by local and state regulations. If unable to wash product with water, absorb with inert material (sand or other approved material) and dispose of in accordance with applicable regulations.

WASTE DISPOSAL: Treatment, storage, transportation and disposal must be in accordance with Federal, State/Provincial and Local Regulations. Regulations may vary in different locations. Characterization and compliance with applicable laws are the responsibility solely of the generator. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

RCRA STATUS: If discarded in its purchased form, it is not a RCRA hazardous waste. It is the responsibility of the product user to determine at the time of disposal, whether a material containing the product should be classified as a hazardous waste. (40CFR261.20-24).

7 – HANDLING and STORAGE

STORAGE: Keep in a tightly closed container, stored in a cool, dry, ventilated area below 44°C (110°F). Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Drum must not be washed out or used for other purposes.

HANDLING: Avoid contact with eyes, skin and clothing. Do not inhale vapors and fumes. Wash thoroughly after handling. Use only with adequate ventilation. Do not take internally. For industrial use only.



Safety Data Sheet (SODA ASH (Sodium Carbonate))

8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

HAZARDOUS INGREDIENT	PEL	TLV-TWA
Soda Ash (Sodium Carbonate)	None Established	None Established



EXPOSURE CONTROLS: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

RESPIRATORY PROTECTION: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

PROTECTIVE CLOTHING: **Eye/face protection:** Wear chemical goggles; face shield (if splashing is possible). **Skin protection:** Chemical resistant, impermeable gloves. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron or chemical suit and chemical resistant boots are recommended.

ADDITIONAL MEASURES: Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Safety shower and eye wash should be available close to work areas.

9 – PHYSICAL / CHEMICAL PROPERTIES

BOILING POINT: Not Applicable
FREEZING POINT: NA
FLASHPOINT:..... Non-flammable material
UPPER FLAME LIMIT (%): NA
LOWER FLAME LIMIT (%): ... NA
VAPOR PRESSURE:..... ND
VAPOR DENSITY (AIR=1):..... ND



Safety Data Sheet (SODA ASH (Sodium Carbonate))

SPECIFIC GRAVITY: 2.53
pH: 1% solution 11.0 - 11.3
SOLUBILITY IN WATER:..... Complete
VOLATILITY
INCLUDING WATER: None
MOLECULAR WEIGHT: NA
EVAPORATION RATE:..... NA
PHYSICAL STATE: Granular solid
COLOR: White
ODOR:..... Bland

10 – STABILITY and REACTIVITY

STABILITY: Stable
HAZARDOUS DECOMP.:..... Will not occur
INCOMPATIBILITY: Avoid direct contact with strong acids. Add slowly to water or acids with dilution and agitation to avoid exothermic reaction. Avoid extended contact with aluminum, tin, zinc, leather, and organic materials. Contact with metals such as aluminum, magnesium, tin, and zinc may cause formation of flammable hydrogen gas. Precautions should be taken including monitoring the tank atmosphere for hazardous gases to ensure safety of personnel before vessel entry.
HAZARDOUS REACTIONS: Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).

11 – TOXICOLOGICAL INFORMATION

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. **ACGIH:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. **NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. **OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

THRESHOLD LIMIT VALUE:.. None Established for this Product
OSHA PEL: None
LISTED CARCINOGEN: This product IS NOT listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions) or found to be a potential carcinogen by OSHA.
MEDICAL CONDITION
AGGRAVATED: Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Respiratory system. Eyes. Skin.



Safety Data Sheet (SODA ASH (Sodium Carbonate))

INFORMATION ON ACUTE TOXICOLOGICAL EFFECTS

ORAL

Product:..... Ingestion may cause a burning sensation in the mouth, irritation of the lips, mouth, tongue and pharynx, and esophageal and abdominal pain, vomiting, nose bleeds, and bloody diarrhea.

DERMAL

Product:..... Prolonged contact with wet material or by moist skin may cause irritation.

INHALATION

Product: Inhalation of dusts may cause irritation of the upper respiratory tract with sore throat, coughing and shortness of breath. May cause severe irritation of the respiratory tract with coughing, choking, pain and irritation of the mucous membranes.

REPEATED DOSE TOXICITY

Product:..... No Data Available

SKIN CORROSION / IRRITATION

Product:..... Effects are dependent upon concentration and duration of exposure. Dermatitis or effects similar to those for acute exposure may occur.

SERIOUS EYE DAMAGE / IRRITATION

Product:..... Dust or mist may cause severe irritation, redness, lachrymation, or swelling of tissue. The full extent of the injury may not be immediately apparent.

RESPIRATORY OR SKIN SENSITIZATION

Product:..... Not expected to be sensitizing based on tests of this product, components, or similar products.

MUTAGENICITY

IN VITRO

Product:..... No Data Available

IN VIVO

Product:..... No Data Available

Specified Substance(s)

Information as provided by manufacturer

Sodium Carbonate

No Data Available

CARCINOGENICITY

Product:..... This product is not classified as a carcinogen by NTP, IARC or OSHA.

REPRODUCTIVE TOXICITY

Product:..... Based on available data the classification criteria are not met. Not classified as hazardous.

SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE

Product: **GENERAL:** Dusts or particles may be irritating to skin, eyes, or mucous membranes.

INHALATION: Inhalation of dusts or particles may cause irritation of the respiratory tract, experienced as nasal discomfort and discharge, with chest pain and coughing. Headache, nausea, vomiting, dizziness, and drowsiness may occur. **EYES:** May cause slight to severe irritation experienced as discomfort or pain, excess tear production, with possible redness and swelling of the conjunctiva. **SKIN:** Brief contact may cause slight irritation with itching and local redness. Prolonged contact may cause more severe irritation, with discomfort or pain. **SWALLOWING:** May cause headache, dizziness, nausea, vomiting, diarrhea, and general weakness.

SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE

Product:..... The effects of long-term, low-level exposures to this product have not been determined. Safe handling of this material on a long-term basis should emphasize the avoidance of all effects from repetitive acute exposure. This product may aggravate existing eye, skin, and respiratory conditions.



Safety Data Sheet (SODA ASH (Sodium Carbonate))

ASPIRATION HAZARD

Product:..... Droplets of the product aspirated into the lungs through ingestion or vomiting may cause chemical pneumonia.

OTHER ADVERSE EFFECTS

Product:..... No data available

12 – ECOLOGICAL INFORMATION

ACUTE TOXICITY

FISH

Product:..... This material has exhibited slight toxicity to terrestrial organisms.

AQUATIC INVERTEBRATES

Product:..... This material has exhibited slight toxicity to terrestrial organisms.

CHRONIC TOXICITY

FISH

Product:..... This material has exhibited slight toxicity to terrestrial organisms.

AQUATIC INVERTEBRATES

Product:..... This material has exhibited slight toxicity to terrestrial organisms.

TOXICITY TO AQUATIC PLANTS

Product:..... Freshwater algae are destroyed above pH 8.5.

PERSISTENCE AND DEGRADABILITY

BIODEGRADATION

Product:..... The methods for determining the biological degradability are not applicable to predominately inorganic substances.

BIOLOGICAL OXYGEN DEMAND

Product:..... No data available

CHEMICAL OXYGEN DEMAND

Product:..... No data available

BOD / COD RATIO

Product:..... No data available

BIOACCUMULATIVE POTENTIAL

Product:..... Soda Ash (Sodium Carbonate) does not bioaccumulate due to its high solubility in water. It is considered slightly toxic to aquatic organisms unless there is a significant pH shift outside the range of 5 – 10; this change may be toxic to aquatic organisms.

MOBILITY IN SOIL

Product:..... Expected to partition to water. The pH effect of sodium carbonate in water is naturally reduced by the absorption of atmospheric carbon dioxide. This reduction is also effected by dilution with water and by the natural acidity of a given water body. There is no degradation of sodium carbonate in waters, only loss by absorption or through chemical neutralization.

RESULTS OF PBT AND mPvB ASSESSMENT

Product:..... Not fulfilling PBT (persistent/bioaccumulative/toxic) criteria. Not fulfilling vPvB (very persistent, very bioaccumulative) criteria.

OTHER ADVERSE EFFECTS

Product:..... This material is believed to persist in the environment.



Safety Data Sheet (SODA ASH (Sodium Carbonate))

13 –DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Treatment, storage, transportation and disposal must be in accordance with Federal, State/Provincial and Local Regulations. Regulations may vary in different locations. Characterization and compliance with applicable laws are the responsibility solely of the generator. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

RCRA STATUS:..... If discarded in its purchased form, it is not a RCRA hazardous waste. It is the responsibility of the product user to determine at the time of disposal, whether a material containing the product should be classified as a hazardous waste. (40CFR261.20-24).

14 – TRANSPORTATION INFORMATION

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

UN/NA NUMBER: None

PROPER SHIPPING NAME: Non-Regulated

HAZARD CLASS:..... None

PACKAGING GROUP :..... None

LETTER:..... None

ENVIRONMENTAL HAZARD: Sodium Carbonate is not expected to bioaccumulate due to its high solubility in water. It is considered slightly toxic to aquatic organisms unless there is a significant pH shift outside the range of 5 – 10, which may be toxic to aquatic organisms.

REPORTABLE QUANTITY: None



Safety Data Sheet (SODA ASH (Sodium Carbonate))

15 - REGULATIONS

This Safety Data Sheet conforms to ANSI Z400.5, and to the format requirements and the International Chemical Safety Cards of the Global Harmonizing System. This SDS complies with 29 CFR 1910.1200 (HAZARD COMMUNICATION STANDARD). **IMPORTANT:** Read this SDS before handling & disposing of this product. Pass this information on to employees, customers, & users of this product.

EPA SRA Title III Chemical Listings:

TSCA STATUS:..... This product is listed on the TSCA inventory. If this product is a blend, all ingredients in the product are listed on the TSCA Inventory List. Any impurities present in this product are exempt from listing.

SECTION 302:..... None

SECTION 304:..... None

SECTION 312: **SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):** None

SARA SECTION 313: **SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):**
This product does not contain any toxic chemicals subject to the reporting requirements of Section 313, Title III of the SARA (Superfund Amendments and Reauthorization Act) of 1986.

ACUTE:..... Yes

CHRONIC: No

FIRE: No

PRESSURE:..... No

REACTIVE:..... No

CLEAN WATER ACT: None

IMDG – International Marine Dangerous Goods Code

Class Non Regulated - Possible Shipping Description(s): Non Regulated

IATA

Class Non Regulated - Possible Shipping Description(s): Non Regulated

DEA Chemical Trafficking Act:.. No



Safety Data Sheet (SODA ASH (Sodium Carbonate))

16 – OTHER INFORMATION

HMIS*

HEALTH	1
FLAMMABILITY	0
REACTIVITY	0
PERSONAL PROTECTION	B

**HMIS®HAZARD INDEX: 0=Minimal Hazard, 1=Slight Hazard, 2=Moderate Hazard, 3=Serious Hazard, 4=Severe Hazard. HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this SDS and product label must be considered.*

ND = No Data, NA = Not Applicable/Not Available, ≤ = Less than or equal to, ≥ = Greater than or equal to

REVISION STATEMENT: Changes have been made throughout this Safety Data Sheet (SDS). Please read the entire document. Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and The Globally Harmonized System of Classification and Labeling of Chemicals (GHS) by the Company Health and Risk Assessment Unit.

DISCLAIMER:

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, the Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving this Safety Data Sheet (SDS) will make their own determination as to its suitability for their intended purposes prior to use. Since the product is within the exclusive control of the user, it is the user's obligation to determine the conditions of safe use of this product. Such conditions should comply with all Federal and State Regulations concerning the Product. It must be recognized that the physical and chemical properties of any product may not be fully understood and that new, possibly hazardous products may arise from reactions between chemicals. The information given in this data sheet is based on our present knowledge and shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. **NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.**

*****This is the last page of this SDS*****

SAFETY DATA SHEET

Product Trade Name: X-TEND® II

Revision Date: 11-Dec-2015

Revision Number: 13

1. Identification

1.1. Product Identifier

Product Trade Name: X-TEND® II
Synonyms: None
Chemical Family: Polymer
Internal ID Code: HM003790

1.2 Recommended use and restrictions on use

Application: Viscosifier
Uses Advised Against: No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier

Baroid Fluid Services
Product Service Line of Halliburton
P.O. Box 1675
Houston, TX 77251
Telephone: (281) 575-5000
Emergency Telephone: 1-866-519-4752 (US, Canada, Mexico) or 1-760-476-3962

Halliburton Energy Services
645 - 7th Ave SW Suite 2200
Calgary, AB
T2P 4G8
Canada

Prepared By: Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number: 1-866-519-4752 or 1-760-476-3962

2. Hazard(s) Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

As adopted by the competent authority, this product does not require an SDS or hazard warning label.

Not classified

2.2. Label Elements

Hazard Pictograms:

Signal Word: Warning

Hazard Statements: Not Hazardous

May form combustible dust concentrations in air.

Precautionary Statements

Prevention	None
Response	None
Storage	None
Disposal	None

2.3 Hazards not otherwise classified

None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Acrylic polymer	Proprietary	60 - 100%	Combustible Dust

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures

4.1. Description of first aid measures

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

4.2 Most important symptoms/effects, acute and delayed

No significant hazards expected.

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2 Specific hazards arising from the substance or mixture

Special Exposure Hazards

Decomposition in fire may produce harmful gases.

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Spills of this product are very slippery.
See Section 8 for additional information

6.2. Environmental precautions

None known.

6.3. Methods and material for containment and cleaning up

Scoop up and remove.

7. Handling and storage

7.1. Precautions for Safe Handling

Handling Precautions

Avoid creating or inhaling dust.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store away from oxidizers. Store in a cool, dry location.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Acrylic polymer	Proprietary	Not applicable	Not applicable

8.2 Appropriate engineering controls

Engineering Controls Use in a well ventilated area.

8.3 Individual protection measures, such as personal protective equipment

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. (N95, P2/P3)

Hand Protection Normal work gloves.

Skin Protection Normal work coveralls.

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

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Solid **Color:** White
Odor: Odorless **Odor** No information available
Threshold:

Property Values
Remarks/ - Method

pH:	No data available
Freezing Point/Range	No data available
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	> 100 °C / > 212 °F Cleveland Open Cup (COC)
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	0.8 - 1
Water Solubility	Miscible with water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

VOC Content (%) No data available

10. Stability and Reactivity**10.1. Reactivity**

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

Strong oxidizers.

10.6. Hazardous Decomposition Products

Carbon monoxide and carbon dioxide.

11. Toxicological Information**11.1 Information on likely routes of exposure**

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics**Acute Toxicity**

Inhalation	May cause mild respiratory irritation.
Eye Contact	May cause mild eye irritation.
Skin Contact	Prolonged or repeated contact may cause slight skin irritation.
Ingestion	None known.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1%

are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acrylic polymer	Proprietary	> 2000 mg/kg (Rat)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Acrylic polymer		Non-irritating to the skin (Rabbit)

Substances	CAS Number	Eye damage/irritation
Acrylic polymer		Non-irritating to the eye (Rabbit)

Substances	CAS Number	Skin Sensitization
Acrylic polymer		Not regarded as a sensitizer.

Substances	CAS Number	Respiratory Sensitization
Acrylic polymer		No information available

Substances	CAS Number	Mutagenic Effects
Acrylic polymer		In vitro tests did not show mutagenic effects

Substances	CAS Number	Carcinogenic Effects
Acrylic polymer		No data of sufficient quality are available.

Substances	CAS Number	Reproductive toxicity
Acrylic polymer		Did not show teratogenic effects in animal experiments.

Substances	CAS Number	STOT - single exposure
Acrylic polymer		No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Acrylic polymer		No data of sufficient quality are available.

Substances	CAS Number	Aspiration hazard
Acrylic polymer		Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Acrylic polymer	Proprietary	No information available	No information available	No information available	No information available

12.2. Persistence and degradability

Biodegradable.

Substances	CAS Number	Persistence and Degradability
Acrylic polymer	Proprietary	No information available

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
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Acrylic polymer	Proprietary	No information available
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12.4. Mobility in soil

Substances	CAS Number	Mobility
Acrylic polymer	Proprietary	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations**13.1. Waste treatment methods**

Disposal Method Bury in a licensed landfill according to federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information**US DOT**

UN Number: Not restricted
UN Proper Shipping Name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

US DOT Bulk

DOT (Bulk) Not applicable

Canadian TDG

UN Number: Not restricted
UN Proper Shipping Name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number: Not restricted
UN Proper Shipping Name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

IATA/ICAO

UN Number: Not restricted
UN Proper Shipping Name: Not restricted
Transport Hazard Class(es): Not applicable
Packing Group: Not applicable
Environmental Hazards: Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Special Precautions for User: None

15. Regulatory Information**US Regulations**

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

TSCA Significant New Use Rules - S5A2

Substances	CAS Number	TSCA Significant New Use Rules - S5A2
Acrylic polymer	Proprietary	Not applicable

EPA SARA Title III Extremely Hazardous Substances

Substances	CAS Number	EPA SARA Title III Extremely Hazardous Substances
Acrylic polymer	Proprietary	Not applicable

EPA SARA (311,312) Hazard Class

None

EPA SARA (313) Chemicals

Substances	CAS Number	Toxic Release Inventory (TRI) - Group I	Toxic Release Inventory (TRI) - Group II
Acrylic polymer	Proprietary	Not applicable	Not applicable

EPA CERCLA/Superfund Reportable Spill Quantity

Substances	CAS Number	CERCLA RQ
Acrylic polymer	Proprietary	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.

NFPA Ratings: Health 1, Flammability 1, Reactivity 0

HMIS Ratings: Health 1, Flammability 1, Physical Hazard 0, PPE: B

Canadian Regulations

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

16. Other information

Preparation Information

Prepared By Chemical Stewardship
Telephone: 1-281-871-6107
e-mail: fdunexchem@halliburton.com

Revision Date: 11-Dec-2015

Reason for Revision SDS sections updated:
2

Additional information

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

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

Key or legend to abbreviations and acronyms

bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
h - hour
mg/m³ - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

Key literature references and sources for data

www.ChemADVISOR.com/

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 Safety Data Sheet

APPENDIX C: BULK CONTAINERS

Nobles Grade Bulk Containers

Tank ID	Contents	Volume (barrels)	Tank Construction Material
1	Crude Oil	1,000	Steel
2	Crude Oil	1,000	Steel
3	Crude Oil	1,000	Steel
4	Crude Oil	1,000	Steel
5	Crude Oil	1,000	Steel
6	Crude Oil	1,000	Steel
7	Produced Water	1,000	Fiberglass
8	Produced Water	1,000	Fiberglass
9	Produced Water	1,000	Fiberglass
10	Produced Water	1,000	Fiberglass
11	Produced Water	1,000	Fiberglass
12	Produced Water	1,000	Fiberglass

Tamiami Bulk Containers

Tank ID	Contents	Volume (barrels)	Tank Construction Material
1	Crude Oil	1,000	Steel
2	Crude Oil	1,000	Steel
3	Crude Oil	1,000	Steel
4	Crude Oil	1,000	Steel
5	Produced Water	1,000	Fiberglass
6	Produced Water	1,000	Fiberglass
7	Produced Water	1,000	Fiberglass
8	Produced Water	1,000	Fiberglass

APPENDIX D: INSPECTION FORMS

FACILITY: CONTAINER I.D. # <small>use one form for multiple tanks within same secondary containment area and enter tank numbers above</small>	ABOVEGROUND STORAGE TANK VISUAL INSPECTION FORM
---	--

YEAR:				PIPING					
MONTH	DAY	*SECONDARY CONTAINMENT INTEGRITY	**TANK EXTERIOR INTEGRITY	EXTERIOR INTEGRITY ***TANK VALVE	DRAIN VALVE SECURE	LIQUID ACCUMULATION REMOVAL	STAINED SOIL AROUND CONTAINMENT AREA	INSPECTOR NAME	SIGNATURE
JANUARY									
FEBRUARY									
MARCH									
APRIL									
MAY									
JUNE									
JULY									
AUGUST									
SEPTEMBER									
OCTOBER									
NOVEMBER									
DECEMBER									

* check interstitial space on double-wall tank, note any signs of cracking or degradation of concrete secondary containment
 ** note any signs of wetting, discoloration, blistering, corrosion or other signs of structural damage or leaks
 ***valve on pump station tank must be closed and locked when pump is not in use
For any deficiency found, enter description of problem, how and when it was resolved and initials of person confirming resolution:

APPENDIX E: LOADING/UNLOADING PROCEDURES

These oil handling procedures are designed to prevent oil spills and discharges as described in 40 CFR 110.3, including discharges of oil that meet any of the following criteria:

- Violate applicable water quality standards;
- Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines; and
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

Prior to unloading or loading of oil, facility personnel should check:

- Spill equipment is present at the transfer location and is adequate to prevent an off-site discharge of oil;
- Receiving vessel has enough capacity to hold volume of liquids being transferred;
- Liquid level indicator on transfer vehicle is operating properly; and
- Transfer pump shows no signs of leaking.

During unloading or loading of oil, facility personnel will oversee vendors. Vendors and facility personnel must comply with the minimum requirements for loading and unloading, including, but not limited to:

- No smoking;
- Engine stopped and handbrake set;
- Wheel chock utilization;
- Attendance required; and
- Proper PPE (steel toed shoes, gloves, and/or goggles).

Delivery personnel must ensure bulk oil storage tanks are not overfilled by using one of the following:

- High liquid level alarms with an audible or visual signal (an audible air vent will suffice);
- High liquid level pump cutoff devices to stop flow at a predetermined container content level;
- Direct audible or code signal communication between the container gauge and the pumping station;
- A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers; or
- Regularly test liquid level sensing devices.

Prior to departing, the vendor is required to examine the lowest drain and other outlets for leakage. Prior to driving, vendor must ensure all equipment (transfer lines, valves, grounding and bonding equipment, etc.) has been disconnected or removed.

Spill Response

In the event of an oil spill, the employee on duty (discoverer) will immediately:

1. **Stop the source of the spill and/or contain the spill if it is safe to do so.** The emphasis for the initial spill response is to **prevent oil from discharging off-site.**
2. Ensure the **area is safe for all nearby employees.**
3. Notify your Shift Supervisor and/or the Facility Manager as described in **Section 5.1.**

**BURNETT OIL CO., INC. – NOBLES GRADE AND TAMIAMI FACILITIES
TRAINING LOG**

Date:
Start Time:
Stop Time:
Training Type:
Speaker/Instructor:
Description of the Training:
Attendee(s):

General Comments:

APPENDIX G: AGENCY CONTACTS

Outside Agencies' Contact Information

Agency	Address	Phone Number
National Park Service – Big Cypress National Preserve	33100 Tamiami Trail East Ochopee, FL 34141	(239) 695-2000
Collier County Sheriff's Office	3319 Tamiami Trail East Naples, FL 34112	Emergency: 911 Normal: (239) 252-9300
Collier County Emergency Management	8075 Lely Cultural Pkwy. Naples, FL 34113	Emergency: 911 Normal: (239) 252-3600
Greater Naples Fire District	2700 Horseshoe Dr. Naples, FL 34104	Emergency: 911 Normal: (239) 774-2800
City of Naples Fire-Rescue	355 Riverside Circle Naples, FL 34102	Emergency: 911 Normal: (239) 213-4900
Collier County Medical Services	8075 Lely Cultural Pkwy., Suite 267 Naples, FL 34113	Emergency: 911 Normal: (239) 252-3740
Florida Department of Environmental Protection – South District	2295 Victoria Ave., Suite 364 Fort Myers, FL 33901	(239) 344-5600
Florida Department of Environmental Protection – State Watch Office	Online reporting: https://floridadep.gov/pollutionnotice	(800) 320-0519
National Response Center (NRC)	c/o United States Coast Guard (CG-5335) – Stop 7581 2100 2nd Street, Southwest Washington, D.C. 20593	(800) 424-8802

APPENDIX H: NOTIFICATION FORMS



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

Pollution Notice

You are submitting a Public Notice of Pollution in accordance with [Section 403.077, F.S.](#) which is intended to prevent harm to human health, welfare, or property by assisting the control of pollution. This rule specifies that "reportable releases" are required to be reported to the Department.

Please be aware that while submission of a Notice through this form complies with the requirements of Section 403.077, F.S., it does not relieve you of any obligation to report to the State Watch Office or other authority required by your permit or state law.

Fields marked with * are required. After completion, please e-mail the form to pollution.notice@dep.state.fl.us.

If you are reporting a new release, please select "Initial Notice" below.

If you have previously reported this incident, have obtained a DEP Incident ID, and wish to update your Notice, please select "Updated Notice of Pollution" and enter the DEP Incident ID.

NOTICE TYPE *

- Initial Notice of Pollution
- Updated Notice of Pollution

If this is an updated Notice, DEP Incident ID: _____

INCIDENT INFORMATION

Please enter a name for the Incident: _____

State Watch Office Incident Number or Case ID: _____

Incident Report (Please enter a complete description of the incident. If you have a summary e-mail from the State Watch Office, you may copy that and paste it here): *

Incident Location (in Decimal Degrees): *

Latitude: _____ **Longitude:** _____

Please select all counties directly affected by the Incident: *

<input type="checkbox"/> Alachua	<input type="checkbox"/> Duval	<input type="checkbox"/> Holmes	<input type="checkbox"/> Miami-Dade	<input type="checkbox"/> Seminole
<input type="checkbox"/> Baker	<input type="checkbox"/> Escambia	<input type="checkbox"/> Indian River	<input type="checkbox"/> Monroe	<input type="checkbox"/> St. Johns
<input type="checkbox"/> Bay	<input type="checkbox"/> Flagler	<input type="checkbox"/> Jackson	<input type="checkbox"/> Nassau	<input type="checkbox"/> St. Lucie
<input type="checkbox"/> Bradford	<input type="checkbox"/> Franklin	<input type="checkbox"/> Jefferson	<input type="checkbox"/> Okaloosa	<input type="checkbox"/> Sumter
<input type="checkbox"/> Brevard	<input type="checkbox"/> Gadsden	<input type="checkbox"/> Lafayette	<input type="checkbox"/> Okeechobee	<input type="checkbox"/> Suwannee
<input type="checkbox"/> Broward	<input type="checkbox"/> Gilchrist	<input type="checkbox"/> Lake	<input type="checkbox"/> Orange	<input type="checkbox"/> Taylor
<input type="checkbox"/> Calhoun	<input type="checkbox"/> Glades	<input type="checkbox"/> Lee	<input type="checkbox"/> Osceola	<input type="checkbox"/> Union
<input type="checkbox"/> Charlotte	<input type="checkbox"/> Gulf	<input type="checkbox"/> Leon	<input type="checkbox"/> Palm Beach	<input type="checkbox"/> Volusia
<input type="checkbox"/> Citrus	<input type="checkbox"/> Hamilton	<input type="checkbox"/> Levy	<input type="checkbox"/> Pasco	<input type="checkbox"/> Wakulla
<input type="checkbox"/> Clay	<input type="checkbox"/> Hardee	<input type="checkbox"/> Liberty	<input type="checkbox"/> Pinellas	<input type="checkbox"/> Walton
<input type="checkbox"/> Collier	<input type="checkbox"/> Hendry	<input type="checkbox"/> Madison	<input type="checkbox"/> Polk	<input type="checkbox"/> Washington
<input type="checkbox"/> Columbia	<input type="checkbox"/> Hernando	<input type="checkbox"/> Manatee	<input type="checkbox"/> Putnam	
<input type="checkbox"/> DeSoto	<input type="checkbox"/> Highlands	<input type="checkbox"/> Marion	<input type="checkbox"/> Santa Rosa	
<input type="checkbox"/> Dixie	<input type="checkbox"/> Hillsborough	<input type="checkbox"/> Martin	<input type="checkbox"/> Sarasota	

Start Date and Time of Incident: * _____

Is the Incident on-going?: * Yes No

If No, End Date and Time of Incident: _____

Has the pollution migrated off-site from the Incident?: Yes No

If Yes, please select any county(ies) to which the Incident has migrated: *

<input type="checkbox"/> Alachua	<input type="checkbox"/> Duval	<input type="checkbox"/> Holmes	<input type="checkbox"/> Miami-Dade	<input type="checkbox"/> Seminole
<input type="checkbox"/> Baker	<input type="checkbox"/> Escambia	<input type="checkbox"/> Indian River	<input type="checkbox"/> Monroe	<input type="checkbox"/> St. Johns
<input type="checkbox"/> Bay	<input type="checkbox"/> Flagler	<input type="checkbox"/> Jackson	<input type="checkbox"/> Nassau	<input type="checkbox"/> St. Lucie
<input type="checkbox"/> Bradford	<input type="checkbox"/> Franklin	<input type="checkbox"/> Jefferson	<input type="checkbox"/> Okaloosa	<input type="checkbox"/> Sumter
<input type="checkbox"/> Brevard	<input type="checkbox"/> Gadsden	<input type="checkbox"/> Lafayette	<input type="checkbox"/> Okeechobee	<input type="checkbox"/> Suwannee
<input type="checkbox"/> Broward	<input type="checkbox"/> Gilchrist	<input type="checkbox"/> Lake	<input type="checkbox"/> Orange	<input type="checkbox"/> Taylor
<input type="checkbox"/> Calhoun	<input type="checkbox"/> Glades	<input type="checkbox"/> Lee	<input type="checkbox"/> Osceola	<input type="checkbox"/> Union
<input type="checkbox"/> Charlotte	<input type="checkbox"/> Gulf	<input type="checkbox"/> Leon	<input type="checkbox"/> Palm Beach	<input type="checkbox"/> Volusia
<input type="checkbox"/> Citrus	<input type="checkbox"/> Hamilton	<input type="checkbox"/> Levy	<input type="checkbox"/> Pasco	<input type="checkbox"/> Wakulla
<input type="checkbox"/> Clay	<input type="checkbox"/> Hardee	<input type="checkbox"/> Liberty	<input type="checkbox"/> Pinellas	<input type="checkbox"/> Walton
<input type="checkbox"/> Collier	<input type="checkbox"/> Hendry	<input type="checkbox"/> Madison	<input type="checkbox"/> Polk	<input type="checkbox"/> Washington
<input type="checkbox"/> Columbia	<input type="checkbox"/> Hernando	<input type="checkbox"/> Manatee	<input type="checkbox"/> Putnam	
<input type="checkbox"/> DeSoto	<input type="checkbox"/> Highlands	<input type="checkbox"/> Marion	<input type="checkbox"/> Santa Rosa	
<input type="checkbox"/> Dixie	<input type="checkbox"/> Hillsborough	<input type="checkbox"/> Martin	<input type="checkbox"/> Sarasota	

FACILITY INFORMATION

Facility/Installation Name: * _____

Address Line 1: _____

Address Line 2: _____

Directions: _____

City: _____

State: * _____

Zip Code: _____

REPORTER DETAILS

Name: * _____

Title: * _____

Phone: * _____ Ext: _____

E-mail Address: * _____

Relationship: * Operator of the Facility/Installation Owner of the Facility/Installation

Other (Please specify relationship): _____

CONTACT DETAILS

Name: * _____

Phone: * _____ Ext: _____

E-mail Address: * _____

NRC Discharge Notification Form

Discharge/Discovery Date		Time	
Facility Name	Burnett Oil Co., Inc. - Durham Ranch Facility		
Facility Location (Address/Lat-Long/Section Township Range)	Lat-Long: 43.88493, -105.46736 Section 11, Township 45N, Range 72W Campbell County, WY		
Name of reporting individual		Telephone #	
Type of material discharged		Estimated total quantity discharged	Gallons/Barrels
Source of the discharge		Media affected	<input type="checkbox"/> Soil
			<input type="checkbox"/> Water (specify)
			<input type="checkbox"/> Other (specify)
Actions taken			
Damage or injuries	<input type="checkbox"/> No <input type="checkbox"/> Yes (specify)	Evacuation needed?	<input type="checkbox"/> No <input type="checkbox"/> Yes (specify)
Organizations and individuals contacted	<input type="checkbox"/> National Response Center 800-424-8802 Time		
	<input type="checkbox"/> Cleanup contractor (Specify) Time		
	<input type="checkbox"/> Facility personnel (Specify) Time		
	<input type="checkbox"/> State Agency (Specify) Time		
	<input type="checkbox"/> Other (Specify) Time		