Field Plan for Water-Column Profiling to Measure Dissolved-Phase Aromatic Hydrocarbons and Free Oil Droplets as a Function of Depth and Location Relative to the Subsurface Oil Release

May 3, 2010 (Revised May 7, 2010)

Prepared by: James R. Payne, Ph.D. (PECI, for NOAA)

Reviewed by W. Barry Gillespie, Jr., Ph.D. (ENTRIX, for BP)

Objectives

1. Use data collected during this cruise to calibrate 3-dimensional modeling of subsurface oil plume structure, fate (dissolution behavior), and transport, by:

    a. Measuring discrete, free-oil droplet concentrations at multiple depths 2 Km up-current from the release site and at three locations (2, 4, and 8 km) down-current, or further as needed to collect water samples beyond the apparent leading edge of the plume based on updated and most accurate information at the time of sampling), and

    b. Measuring dissolved phase (BTEX and water-soluble lower-molecular-weight PAH (naphthalenes and phenanthrenes/anthracenes) at the same stations (nominally 2 Km up-current and 2, 4, and 8 Km down-current).

2. In subsequent cruise(s), use the same approach to obtain data on the effects of *in situ* dispersant injection on water quality and exposure issues. If possible, this effort will be combined with the proposed sampling associated with response monitoring undertaken for the testing of dispersant injected at depth.

Approach

1. All operations will be completed from a CSA International, Inc. (a Continental Shelf Associates company) chartered 165 ft vessel capable of working in the oiled zone (all personnel BP Safety or HAZWOPER trained). The vessel is capable of dynamic positioning and will remain in the area overnight to facilitate operations (reducing transit time from port), but due to safety and cost considerations, sampling operations will not be undertaken after dark.

2. Vessels will not operate closer than approximately 2 km of the release site, and a BP industrial hygienist will be present to ensure that OHSA-permitted exposures to benzene and other volatile hydrocarbons will not be exceeded. If levels are observed to spike above regulated levels, sampling operations will be safely terminated and the vessel will be repositioned further from the release point before sampling is resumed.

3. Upon arrival at the station locations up-current of the release site, a series of continuous Conductivity-Temperature-Depth (CTD) casts will be completed to determine the water column structure (vertical profile) for selection of water-sampling depths.[1]

4. Water samples will be collected at four depths (near bottom, just below the thermocline, mid mixed-layer (between thermocline and surface), and just below water surface, (a total of 4 samples at 4 stations = 16 total)[2] using:

    a. A remotely operated vehicle (ROV) for collecting the near-bottom samples with a 4-5 L Go Flow Bottle and

    b. A conventional hydrowire with six 5 L Go Flow Bottles and pressure controlled trip mechanisms (certified to 0.05% of specified sampling depth) to collect water samples just below the surface, in the middle of the upper mixed layer, and just below the thermocline (see separate QA Plan for NRDA Chemistry Cruise).

    c. Split or duplicate samples will be collected on 50% of the samples (VOAs (x2), dissolved-phase, and filtered oil) as specified in the QA Plan for NRDA Chemistry Cruise. These will be transferred to Entrix/BP under full chain-of-custody at the conclusion of the sampling effort. With these duplicates the total number of samples will be 24 plus associated trip, field, and equipment blanks as specified in Table 1 and the QA Plan.

    d. As available, occasional grab samples of surface oil/mousse will be collected with a jar or bucket from the sampling vessel. This will assess surface oil weathering behavior as a function of distance from the release point.

5. Immediately after sample retrieval a Portable Large Volume Water Sampling System (PLVWSS) (Payne et al., 1999; see separate PLVWSS Sampling Protocol and Water Sample Handling Procedures) will be employed on the research vessel to separate the particulate/oil phase trapped on 0.7 µm glass fiber filter and capture the dissolved phase (filtrate) in 3.8 L (1 gal) I-Chem Certified Clean amber glass jugs.

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[1] If available, a series of telemetry-equipped Acoustic Doppler Current Profilers (ADCPs) will be deployed 24 hours before the cruise to provide near-real time data on currents in the area to further guide sample station selection and positioning.

[2] It would be ideal if we could increase sampling frequency in known biologically active layers where impacts to plankton, turtles, fish, and mammals might be. If time and supplies permit, this will be attempted by increasing sampling intensity in the upper 40 feet of water or an appropriate depth based on previous data sets. This will be facilitated by an *in situ* fluorometer (with telemetry back to the sampling vessel) placed on the hydrowire just below the Go Flow Bottle.

6. The PLVWSS requires ~3.5 L of sample (for enhanced detection limits above the usual 1 L sample size, see Water Sample Handling Procedures), so before filter processing the bulk of the sample, duplicate 40 mL aliquots will be drained from the Go Flow bottle directly into VOA vials for analysis of BTEX and other alkylated benzenes. Then, after the majority of the rest of the sample is processed through the PLVWSS, the remaining 4-500 mL will be saved unfiltered for microscopic (or other) enumeration of droplet sizes and number density.

7. Maintaining complete Chain-of-Custody, freeze the filter containing the finite oil droplets and refrigerate the water sample on the research vessel.

8. Upon returning to port, transfer the NRDA samples under complete chain-of-custody to Alpha Analytical Laboratories in Mansfield, MA and the BP/Entrix duplicate/splits to B&B Laboratories [or if needed, to another lab similarly selected by the trustees and the responsible party (BP represented by ENTRIX)] for analyses of alkylated PAH by Selected Ion Monitoring and Volatile Organic Analytes (VOA) by purge and trap GC/MS.

Vessel:

All operations will be completed on the *M/V Jack Fitz* (165 ft) out of Golden Meadow, LA. This vessel has been chartered by CSA International, Inc. The ROV is a Super Mohawk 10,000 fsw rated ROV with twin manipulators, and a tether management system. It is based in Morgan City, LA and is available at this time.

The cruise is planned for Sunday and Monday (May 9 and 10, 2010).

Safety Plan:

A separate operations and safety plan has been prepared for review and approval before any planned operations.

Estimated Total Costs for Equipment and Ship time:

M/V Jack Fitz ~$22K per day (assuming 12 hr/day operations)

ROV ~$14K per day (assuming 12 hr/day operations)

The sampling activities are currently planned for daylight operations only. Additional boat personnel (crew and captain/pilot) would be required for 24 hr/day operations and this would increase the daily costs by ~$4-5K. ROV operation costs would also significantly increase for 24 hr/day operations. We will remain on station at night, but sampling activities will be curtailed with only a skeleton crew manning the vessel for safety.

Reference: Payne, J.R., T.J. Reilly, and D.P. French, "Fabrication of a Portable Large-volume Water Sampling System to Support Oil Spill NRDA Efforts," in *Proceedings of the 1999 Oil Spill Conference*, American Petroleum Institute, Washington, D.C., pp. 1179-1184, 1999.

Approval of this work plan is for the purposes of obtaining data for the Natural Resource Damage Assessment. Parties each reserve its right to produce its own independent interpretation and analysis of any data collected pursuant to this work plan.

Approved by:

Lisa DiPinto, Ph.D. (NOAA)

5/8/10

Date

Ralph Markarian, Ph.D. (ENTRIX)

5/8/10

Date

Attachments:

1. Portable Large-Volume Seawater Sampling System (PLVWSS): PLVWSS Specifications, Sampling Protocols, and Power Requirements 05/05/10

2. Water Sampling Protocols in Support of the NRDA Cruise, 05/05/10

3. Data Quality Assurance (QA) Plan for NRDA Water Column Chemistry Cruise, 05/05/10

Table 1. Sample numbers and totals by station.

		Station 1		Station 2		Station 3		Station 4	
		VOA	THC/PAH	VOA	THC/PAH	VOA	THC/PAH	VOA	THC/PAH
Surface	NRDA	2	1	2	1	2	1	2	1
	Entrix Rep			2	1			2	1
	DI Blank	2	1			2	1	2	1
	Seawater Background			2	1	2	1	2	1
Mixed Layer	NRDA	2	1	2	1	2	1	2	1
	Entrix Dupe/Split	2	1			2	1		
	DI Blank								
	Seawater Background								
Mid Depth	NRDA	2	1	2	1	2	1	2	1
	Entrix Dupe/Split							2	1
	DI Blank								
	Seawater Background					2	1		
Deep	NRDA	2	1	2	1	2	1	2	1
	Entrix Dupe/Split	2	1			2	1	2	1
	DI Blank					2	1	2	1
	Seawater Background							2	1

					Total
NRDA Samples	4	4	4	4	16
BP/Entrix Samples	2	1	2	3	8
DI Water Blank Samples	1	0	2	2	5
Seawater Background Samples	0	1	2	2	5

M/V Jack Fitz

Official Number 1074297

MAIN PARTICULARS

Length Overall:	165’
Beam:	36’
Depth:	12
Light Draft:	5”10”
Freeboard:	2’ 3”
Clear Deck Space:	3090 sq ft 103’ x 30’

CAPCATIES

Deck Cargo:	500 Lt
Cargo Water:	81,500 US Gallons
Fuel:	52,800/124,200 US Gallons
Potable Water:	10,000 US Gallons
Lube Oil:	1,300 US Gallons
Dirty Oil:	3,600 US Gallons
Sewage:	3,000 US Gallons
Liquid Mud:	71,400 US Gallons/1,700 bls
Walk In Cooler:	YES

Machinery

Main Engines (2):	Caterpillar 3508 MTU
Horsepower:	1610 hp
Reduction Gears:	Twin Disk MG626
Bow Thruster:	Schottel
Propellers:	4 Bid Brz
Generators (2):	Delco 99 kw 480 Volts
Driven By:	Caterpillar 3304
Fire Monitor:	4’ Ekhart
Fuel Consumption:	
GPH @ 12 knots:	67 US Gallons
GPH @ 10 knots:	52 US Gallons
Fuel Pump:	Barnes 10cce

Maximum Discharge 150 gpm @ 80’ Head

ACCOMMODATIONS

Staterooms: 6
Berths: 20
Galley Seating: 10

ELECTRONICS

DP System: MT DP-1 W/Joystick
Gyro: (2) SG Brown
2 RM Young Wind Tracker & Sensor
Radars (2): Furuno 1932 Mark 2
AIS: Furuno FA100
Radios
VHF (3): Standard Horizon GX1500S
GPS (2): Furuno GP 32
(1): C-Nav 2050
DGPS (1): C-Nav 1000 GNSS Receiver
Navtex: Furuno NX-300
GMDSS: Felcom 15 Inmarsat C
2 FM8800 w/DSC
Fathometer: Datamarine International Offshore
Auto Pilot: Comm Nav 1001
Iridium Sat Phone:

International Sat Services, Mitsubishi Sat Phone:
Advanced Logistics SAMM System

REGISTRATION

Flag:	US
Home Port:	Golden Meadow, La
Call Sign:	WCZ2375
Builder:	Master Boat Builders
Year Built:	1999

PORTABLE LARGE-VOLUME SEAWATER SAMPLING SYSTEM (PLVWSS)

05/05/10

PLVWSS Specifications, Sampling Protocols, and Power Requirements

Container	Contents	Dimensions (inches)	Weight (lbs)	Power Requirements
Cruise Box No.1	Vacuum pump, in-line charcoal filter and water trap, vacuum gauge, support rack for 1 gallon amber-glass bottles, Teflon® stopper and suction tubing	24¼ W x 21¾ D x 19½ H	60	110 volts AC (from ship's AC outlet or portable generator)
Cruise Box No. 2	14.2 cm stainless steel Millipore® filter holder, Tygon® tubing, Teflon® solvent squirt bottles for equipment rinsing, Pall-Gelman Sciences 14.2 cm glass fiber filters, electrical extension cord, stainless steel forceps and spatula for filter manipulation	23¾ W x 23 ¾ D x 21¼ H	50	None

INSTRUCTIONS FOR SAMPLE COLLECTION AND FILTRATION

1) Place the Tygon® sampling tubing attached to the upper side of the filtration unit into the water (for near-surface samples if direct suction sampling is desired) or attach to the sampling port of the Go Flow Bottle used to collect samples at depth.

2) Plug in the vacuum pump (there is no on/off switch), and hold the Teflon® stopper firmly in the neck of the sample bottle. DO NOT FORCE THE STOPPER COMPLETELY INTO THE BOTTLE. The Viton® O-ring on the stopper is intended to make the seal with the upper lip of the sample bottle. Forcing the stopper into the neck of the bottle may cause the bottle to break, and it will certainly make it difficult to remove the stopper at the termination of sampling operations.

3) Press the Viton® O-ring on the stopper onto the top lip of the amber-glass bottle until a vacuum reading of 20 to 24 inches of Hg is obtained on the vacuum gauge attached to the pump. If the stopper starts to get sucked into the sample bottle, gently pull it out part way while still maintaining 20 to 24 inches of vacuum. Hold the stopper in place until water can be observed bubbling about 3 to 4 inches from the top of the amber glass bottle. This entire process may take from 5 to 7 minutes.

4) At this point, carefully watch the upper water level to ensure that the bottle does not become completely filled. Also, watch the vacuum tubing running from the Teflon® stopper to the in-line charcoal filter and water trap to see signs of water droplets starting to be drawn across into the trap. Stop collecting the sample when the water level is about 2 to 3 inches from the top of the 1-gallon bottle or when frequent water droplets are observed going over into the in-line trap.

5) To stop sampling, simply pull up on the Teflon® stopper to break the vacuum seal with the sample bottle. DO NOT TURN OFF THE VACUUM PUMP FIRST. This can damage the vacuum pump, and cause back diffusion of materials trapped in the in-line water trap back into the sample.

6) After the seal with the sample bottle is broken and the vacuum pressure has dropped back to ambient, unplug the vacuum pump.

7) Disconnect the Teflon® stopper from the transfer tubing coming from the bottom of the Millipore® filtration unit and wrap both ends of the tubes from the two-holed Teflon® stopper with aluminum foil. Place the original cap from the amber-glass bottle back on the bottle to seal it. Leave the sample in the pump box for safe storage until all other sampling operations are secure.

8) Drain any excess water from the tube running from the bottom of the filtration unit before opening the Millipore® filter housing. This will prevent any of the filtered material (SPM, sand, and free oil droplets) from being washed off the filter when the unit is opened. After all the water has drained from the bottom of the filtration unit, cap the tubing with aluminum foil and wrap the tubing around the legs for temporary storage.

9) Open the Millipore® filtration unit and carefully remove the outer ¼-inch circle of the glass-fiber filter from the perforated blue support base. Discard the outer edge of the filter. Using the stainless steel forceps and spatula provided with the PLVWSS, carefully fold the filter (while still on the blue support base) in half (and then in half again) to make a quarter-pie shape and then one more time making an eighth of a pie wedge. This entire operation should be done with the filter still resting on the perforated blue support base.

10) Place the folded filter wedge into a 125 mL Certified-Clean I-Chem bottle, seal and label it. The filters may be stored on ice or frozen in the field, if dry ice is available. Store frozen.

11) If another water sample is to be collected right away, place another glass-fiber filter into the Millipore® filtration unit, return the filtration unit to the cruise box/container, and proceed to the next station.

Finally, put the filtered water sample in the 1-gallor amber glass jug in a refrigerator (4^{o}C) or cooler with frozen Blue Ice packs for storage before transfer to the analytical laboratory. Alternatively, the dissolved-phase water sample may be preserved by acidification (pH < 2 with HCl) or poisoned with 50 to 100 mL of methylene chloride. Because of air-freight shipping considerations, preservation with refrigeration and shipment with Blue Ice is preferred, particularly if next-day air delivery to the laboratory is available.

Water Sampling Protocols in Support of the NRDA Cruise WATER SAMPLES

Sampling Objectives

- To determine the concentration of oil compounds in the water column.
- To determine the source via fingerprinting, the degree of weathering, and background levels.
- To document exposure of water-column organisms and validate toxicity models.
- To maintain the integrity the sample(s) during sampling, transport, and storage.

Sample Volume

Analysis	*Sample Volume*	*Reporting Limit*
Volatile Aromatic Hydrocarbons (VAH)* by SIM GC/MS (collect in duplicate)	40 mL vials	0.1-1 µg/L (ppb)
Total Hydrocarbon (THC) by GC/FID	1-Liter	15 µg/L (ppb)
PAH (including alkylated PAHs) by SIM GC/MS	1-Liter	0.001 to 0.01 µg/L
	3.5 Liter	0.0005 to 0.003 µg/L

*sometimes referred to as VOA or BTEX analysis

Sampling Equipment/Containers

See separate NRDA Cruise Plan and PLVWSS procedures for use of the Portable Large Volume Water Sampling System (PLVWSS) for separating dissolved- and particulate/oil fractions by vacuum filtration immediately after collection.

- Collect VAH samples (wearing clean Nitrile gloves) by pouring directly from the collection device (4 or 5 L Go-Flow bottle or other sampler) into HCl-persevered 40 mL septum-capped vials. Ensure that there is no headspace (i.e., bubble) in the vial.
- Collect water samples for THC and PAH in glass containers, certified-clean to be organic-free (solvent rinsed). Amber glass is preferred. Leave headspace of about 1 inch for 1 L jars. If the Portable Large Volume Water Sampling System (PLVWSS) is used, the sample will first be processed by vacuum filtration through a 0.7 µm glass fiber filter as it is vacuum transferred from the Go Flow Bottle into the amber glass jug (see separate PLVWSS Protocol).
- If slicks are present, decon samplers before each use (see separate QA Plan for the NRDA Cruise). Wash with laboratory-grade detergent and clean water, with a triple clean-water rinse (distilled water from a local store is OK but laboratory grade, certified-clean DI water is better. If that cannon be obtained, clean "background" water from an up-current non-contaminated area may be used. If sampler is contaminate by an oil slick, an Alkanox wash followed by solvent rinse with isopropanol (or acetone) and methylene chloride is appropriate. (See separate QA Plan for sampler decon and blank protocol/frequency.) Collect waste solvent rinsate for proper disposal.

Sample Collection Methods

- Collect subsurface samples below the water surface so as not to include any surface oil.
- Take "near surface" samples from approximately 1 m below the surface; take "near bottom" samples within 5 m of the bottom.

- Sampling equipment MUST be deployed and retrieved in the closed position. Also applies to sample jars lowered by hand.
- On each cruise, try to sample the control/least oiled areas first, then more contaminated zones.
- Clear surface slicks with a boat hook or pole prior to deploying the equipment, but carefully so that the surface oil is not physically dispersed into the water column. Sweeping the area with sorbents may also be effective.

Preservation/Holding Times

- VAH (VOA vial): With no preservative the samples may be held for 7 days at 4°C in the dark. Addition of HCl can extend the holding time to 14 days at 4°C in the dark without loss of sample integrity.
- THC and PAH: No preservative added. Can be held at 4°C in the dark for up to 7 days.
- Immediately place all water samples in cooler and keep at 4^{o} C (do not freeze).
- Use packing material around containers to prevent breakage.
- Ship to the laboratory ASAP with complete COCs. They need at least one day to process prior to holding time expiration.
- **Volatile hydrocarbons** (benzene, toluene, ethylbenzene, and xylene, or BTEX). For oil spill applications, the standard EPA Method 8240 (purge & trap) should be modified by running the GC/MS in selected ion monitoring mode and expanding the scan list (retention times and ions) to include the higher alkylated (C3 and C4) benzenes. Detection limits should be 1 ppb for individual analytes; 0.1 ppb is possible.
- **Total hydrocarbons** (THC). Often referred to as total petroleum hydrocarbons, but most methods do not differentiate among petroleum, petrogenic, and biogenic hydrocarbons. THC by GC-FID (total area of FID gas chromatogram of combined f_1 and f_2 fractions after column chromatography) is often the preferred method because of the low detection limit (compared to other THC methods) and the direct measurement of individual hydrocarbons. This method does not detect low boiling compounds (below n-C_8). For NRDA, THC analyses generally will not provide the data needed to support calculation of toxic effects from PAH exposure, and will have to be corrected to equivalent PAHs. The THC results, however, can be used to tract oil weathering and map extent of exposure of water column resources, if meaningful detection limits can be reached. So, get a copy of the GC "trace." Detection limits are usually higher than those needed for aquatic injury assessment.
- **Polycyclic aromatic hydrocarbons** (PAH). Since most of the toxicity in oil is due to the PAHs, it is often the preferred analysis for NRDA. However, PAHs are expensive and require special laboratory skills. If PAHs are to be measured, it is important that the analytes include the alkyl-substituted PAH homologs, in addition to the standard PAH "priority pollutants." This method is referred to as Modified EPA Method 8270, because the list of PAHs is expanded to include the alkylated homologs, using GC/MS in the selected ion monitoring (SIM) mode. Detection levels should be 1 ppb for individual PAHs to support injury assessment using toxicity thresholds. Have the lab also run the source oil.

Other Considerations

- Contamination by surface slicks is of great concern. Document presence of slicks, weather, wave conditions, etc. which might suggest mixing of surface oil during sampling.

- Be aware of sources of contamination on the sampling vessel (exhaust fumes, engine cooling systems, oily surfaces). Work up-wind of any exhausts. Segregate dirty/clean areas. Lay out clean substrates to work on and replace frequently.
- Collect background samples from clean sites representative of pre-oiling conditions, as well as areas not yet oiled but in the potential path of the oil.
- Preservation chemicals should be provided by the lab.
- Use a computer or conceptual model of the extent of water-column contamination to determine the number and location of samples. Minimum guidelines are at least three samples per area of relatively uniform exposure or sub-waterbody. Also, sample along exposure gradients starting in the cleanest zone at regular intervals proportionate to the exposure area.

Contact James R. Payne at PECI for questions or additional information

[redacted]

Data Quality Assurance Plan for NRDA Water Column Chemistry Cruise

Purpose

This document provides general guidance for field sampling data quality assurance for the collection of NRDA field samples for planned sampling cruise on May 6 and May 7, 2010 to assist in the validation of 3-dimensional modeling of subsurface plume structure aboard the M/V Green Provider,

The current sampling plan involves sampling 4 depths at 4 stations for BTEX, THC, PAHs and free oil droplet size. Sampling requirements as outlined for basic sampling to address field program objectives for adequate description of locations are presented in Table 1. This sampling scheme is derived from the Field Plan and Sampling Protocol documents.

Table 1: Required Analytical Samples for 3-dimensional modeling data support

Sample Type	Volume Needed	**Minimum** # of samples per location
BTEX	40 mL	2 per depth
THC and PAH	1 gallon	1
Oil Droplet distribution	10 mL	10 per sample depth

In addition to basic site description, additional sampling requirements for data verification and validation, as well as equipment and procedural validation are required. These samples and the suggested frequency are described below.

Laboratory Notebook

All errata and observations that do not have a logical spot on the Chain of Custody form shall be documented in a bound lab notebook with numbered pages. Additional notation shall be written in black or blue ink. Entry errors shall be crossed out with a single line, initialed, and dated.

Blank Samples

Laboratory Grade de-ionized (DI) water in certified clean glass containers will be provided by Pace Laboratories. 5 DI water samples shall be collected, where practical, using the laboratory provided water, according to the described methodology for BTEX and THC/PAH analyses (including filtration) at each sample location. These samples shall be handled and stored in accordance with the accepted methodology for each sample type. At stations where two DI samples are collected, one shall be collected before Go-Flo bottle sample collection, and one shall be collected after the last seawater sample is collected.

Guided by fluorescence measurements from the upwind site (which is presumed to be representative of seawater not impacted by oil) the depth of minimum fluorescence will be used for the collection of a volume of background seawater. This seawater will be stored in sealed amber glass jars. Background sample blank collection shall be done in the same manner as outlined for DI sample blanks above.

Storage Procedure Monitoring
Aqueous samples shall be refrigerated to 4 °C (+/- 0.5 °C). DO NOT FREEZE. Refrigeration temperature shall be recorded when samples are stored, and periodically monitored and recorded to ensure proper refrigeration. A thermometer will be available to remain with the aqueous samples in storage for monitoring purposes.

Filter samples shall be frozen for storage. Storage temperature shall be kept at 0 °C or below. Refrigeration temperature shall be recorded when samples are stored, and periodically monitored and recorded to ensure proper refrigeration. A thermometer will be available to remain with the filter samples in storage for monitoring purposes.

Methods for sample replicates/splits
To accomplish sample splits, two methods can be employed during the cruise. Method One will be simultaneous deployment of two 5 L Go-Flo bottles which will be closed at the same depth in order to collect sample water as similar as practical. Method Two involves deploying a single 10 L Go-Flo bottle and collecting samples in series from the same bottle upon retrieval. Method One will be the preferred method. Method choice must be documented on the Chain of Custody form as **Replicate** (Method One) or **Split** (Method Two).

Sampling Equipment Monitoring
All tubing and shall be visually inspected before sampling. Sampling tubing shall be changed when contamination is visually obvious. Tubing changes shall be documented in a separate laboratory notebook (date, time, location).

Sample Depth Determination and Verification
Where practical, sample depths shall be chosen to best elucidate modeling data needs. For all samples except ROV collected samples (where depth is distance from the bottom (is fixed by the tethering equipment apparatus), depths must be preset and the depth selections recorded. Verification of triggering sequence of the CTD shall be made and documented in order to verify samples were collected as expected. Go-Flo bottles shall be numbered and numbers documented with sample station and on Chain of Custody forms. Any malfunction of the triggering of the Go-Flo bottle operation shall be documented.

General Sampling Plan for Shipboard Execution

Plan, by station and depth, to ensure the acquisition of sufficient samples, replicates, DI blanks, and seawater blanks.

Station 1 is designated as the collection point for additional background seawater samples. A 10 L Go-Flo bottle shall be used to collect seawater which will be stored in the refrigerator between uses. Additional seawater shall be collected after rosette deployment as needed.

Table 2: Sampling Schedule for NRDA Cruise May 2010

ENTRIX	WATER COLUMN PROFILING SERVICES	

Water Column Profiling Services to Measure Dissolved-Phase Aromatic Hydrocarbons and Free Oil Droplets as a Function of Depth and Location Relative to the Subsurface Oil Release

GOM BLOCK

MISSISSIPPI CANYON 252

PROJECT HSE PLAN

ENTRIX Corporation

CSA International, Inc. (CSA)

REVISION STATUS			APPROVAL		
Rev	**Date**	**Reason for Issue**	**Originator**	**Reviewed**	**Approved**
A	4-May-2010	Issued for Comment	L. Powell		
B	7-May-2010	Changed vessel	F. Ayer		
C	7-May-2010	Changed HSE Manager	F. Ayer		

Dist:	**Subject**	**HSE Management**
As per page 2	**Activity:**	**Project HSE Plan**
	Location:	**GOM Block MC252**

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PARTY APPROVAL FOR USE IN OPERATIONS

Bureau Veritas Stephen C. Donham, CIH HSE Manager	Lynwood Powell HSE Manager

Record of Document Issue

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1.0 INTRODUCTION

ENTRIX has contracted CSA International, Inc. (CSA) to conduct a Water Column Profiling Survey (WCPS) to Measure Dissolved-Phase Aromatic Hydrocarbons and Free Oil Droplets as a Function of Depth and Location Relative to the Subsurface Oil Release in Mississippi Canyon Block 252 (**Figure 1**). The objective of the project is to collect data to calibrate 3-dimensional modeling of subsurface oil plume structure, fate, and transport.

CSA has chartered the M/V Jack Fitz as the support vessel to conduct all survey operations for this project. The survey will consist of performing water column profiles using a General Oceanics model 1018 Rosette Water Sampling system and hydrographic profiles using a Seabird SBE-19 Profiling Conductivity-Temperature-Depth (CTD). Also a Teledyne-RDI Acoustic Doppler Current Profiler (ADCP) will be mounted on an over-the-side pole and used to collect real-time water current data. In addition a Sub-Atlantic Super Mohawk ROV system will be used to collect sediment and water samples and record video at the seabed. The survey vessel will deploy all sampling equipment at predetermined locations using a-frame, davit and winch systems. Within MC Block 252, water depths are expected to be approximately 5,000ft.

This document represents CSA International, Inc. (CSA) health, safety, and environment (HSE) policies and procedures for the ENTRIX WCPS. CSA is responsible for the overall safety management of the survey program.

Marine sampling can be inherently hazardous, and proper precautions need to be taken. Precautions for general vessel safety and chemical hazards to be observed on all CSA surveys are discussed in this document. The physical hazards unique to sampling equipment and operations and sampling precautions are discussed. The Project Scientist and the Site Safety Coordinator are responsible for ensuring that CSA HSE policies and procedures are consistently followed and enforced. Sampling activities will be suspended if the safety of the work crew cannot be ensured. Due to safety considerations all operations will be conducted during daylight hours only.

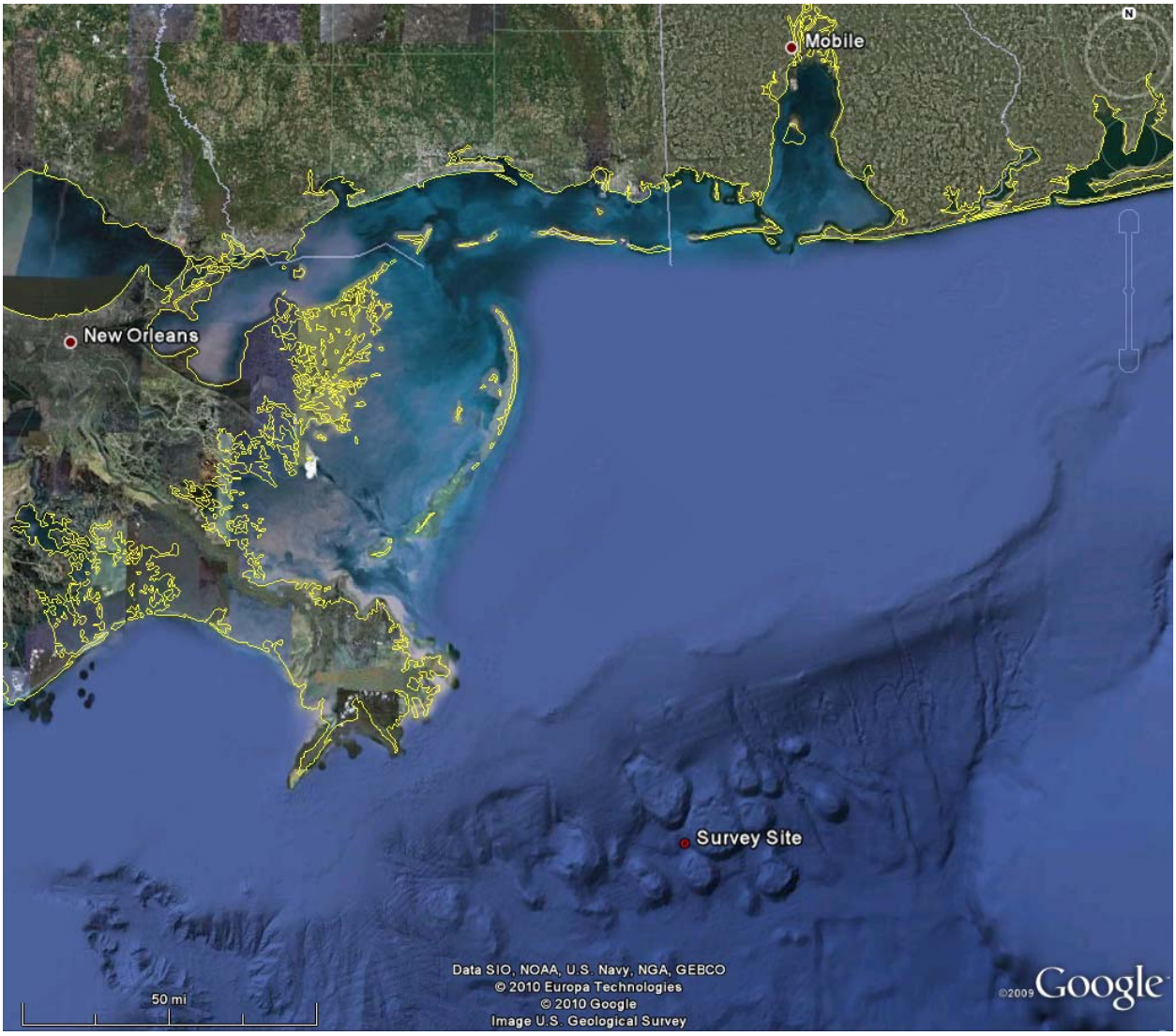


Figure 1. Location of Survey Site in Mississippi Canyon Block 252

1.1 General HSE Policy

This HSE Plan specifies the safety rules and standards for all CSA personnel and subcontractors during field onshore, shipboard, and laboratory activities. The HSE Plan is a tool to help implement and maintain the CSA safety policies and procedures.

1.1.1 CSA HSE Goals

The safety goal for CSA is to prevent all injuries, protect worker health, and cause no damage to the environment. CSA is vitally concerned for the health and safety of all its employees, subcontractors, facilities, and materials used during all phases of operations. We rely on each employee to actively support and implement the HSE policies and procedures. All CSA personnel are responsible for HSE compliance. The HSE policies are intended to create and maintain a safe working environment for all employees and protect the environment.

All employees and subcontractors are to be familiar with the client's HSE policies and work rules. In particular, all employees and subcontractors are to read from the client's corporate safety manuals all sections pertaining to:

- client sites that may be visited by CSA personnel during the conduct of CSA's work; and
- any activities which are procedurally similar to CSA's activities for the project.

PROJECT OPERATIONS WILL BE SHUT DOWN
IF SAFETY OF PERSONNEL CANNOT BE ASSURED

1.1.2 Site Safety Hazard Analysis and Risk Assessment

The Site Safety Coordinator will perform a site safety hazard/risk analysis as necessary for any special operations which might be required for this project. Safety procedures are routinely assessed for effectiveness specific to the project. The Site Safety Coordinator monitors safety procedures and evaluates them on a specific task by task basis. This information is relayed to the CSA Corporate Safety Supervisor and changes, if any, are made to further ensure personnel safety.

A project-specific Hazards Analysis/Risk Assessment is presented in **Appendix A**. **Table 1** provides the risk ranking descriptions. The HSE Risk Assessment was conducted for each potential hazard by ranking the consequence of the hazard and likelihood of the hazard occurring as summarized in **Table 2**.

Table 1. Risk ranking descriptions.

Risk Ranking	Description
A	Broadly acceptable
B	Tolerable
C	Subject to further study; identification of risk reduction measures and Cost Benefit Analysis
D	Subject to further study; identification of risk reduction measures and Cost Benefit Analysis
E	Unacceptable

Table 2. Risk matrix.

Likelihood of Occurrence		Consequence of Hazard				
		1	8	16	50	100
		Minor	Moderate	Major	Critical	Catastrophic
0.5	Insignificant	A (0.5)	A (4)	B (8)	B (25)	C (50)
1	Remote	A (1)	B (8)	B (16)	C (50)	D (100)
2	Infrequent	A (2)	B (16)	C (32)	D (100)	D (200)
5	Occasional	A (5)	C (40)	C (80)	D (250)	E (500)
10	Frequent	B (10)	C (80)	D (160)	E (500)	E (1,000)

1.1.3 Deviation from Safety Standards

Any deviation from the standard safety requirements as outlined in this HSE Plan and the client's particular Corporate Safety Manual shall be registered by the Site Safety Coordinator with the appropriate feedback from personnel. Follow-up by the Site Safety Coordinator requires reporting any deviations to the CSA Corporate Safety Supervisor.

1.1.4 Management of Change

If for any reason there is a request to make changes, the following will apply: The ENTRIX Representative will be notified of any changes to material, equipment, personnel, or procedures that could affect the safety of the operation or materially affect the scope or completion of the work.

Changes to any aspect of the work program will be subject to a risk assessment by CSA and ENTRIX to ensure any potential adverse effects of the change may be identified and either eliminated or controlled to minimize risk as much as reasonably practicable. Proposed changes will require the approval of the CSA Project Manager (or a designated representative) and the ENTRIX Technical Representative prior to implementation. Any such changes or additions to the operation and the subsequent risk assessment will be communicated prior to implementation to all relevant personnel likely to be affected by the change.

Any implemented change will be documented by completing a CSA Management of Change Order (See **Appendix C-Forms**).

2.0 LINE MANAGEMENT

2.1 Site Safety Coordinator

The Site Safety Coordinator for this project will be **Tony Wadley** and his role in the project includes the following:

- HAZWOPER/CPR/First Aid trained;
- Ensures that first aid supplies are in good order and easily accessible;
- Conducts pre-mobilization safety briefing;
- Conducts daily safety/tool box meetings at the beginning of each day and notifies the client representative if any conditions or specific health and safety hazards will be encountered during the work to be done during the day;
- Responsible for ensuring all safety rules are followed and understood;
- Understands that if unsafe conditions exist, personnel are not required to work; and
- Will not rush to complete a job at the expense of safety.

2.2 Project Scientist/QA Coordinator

The Project Scientist/QA Coordinator for this project will be **Bruce Graham** and his role in the project includes the following:

- Responsible for data collection and quality;
- First line of incident reporting;
- Coordinates daily survey progress assessment meetings;
- Responsible for reporting and recording all injuries, accidents, and near misses to the designated client representative on board and to the CSA home offices. The initial report will be oral, which will then be followed by a written record; and
- HAZWOPER/CPR/First Aid trained

2.3 Operations Director

The Operations Manager for this project will be **Frank Johnson** and his role in the project includes the following:

- Coordinates with Project Scientist on overall survey goals;
- Coordinates operations with ship's crew;
- Responsible for equipment installation and operation;
- Responsible for daily operations of sampling equipment; and
- HAZWOPER/CPR/First Aid trained.

2.4 Operations Manager

The Lead Technician for this project will be **Terry Stevens** and his role in the project includes the following:

- Insure all sampling equipment is in proper working order;
- Inspects CSA equipment daily to ensure it is in proper working order;
- Assist in sample/data collection and processing;
- Responsible for implementing safety procedures; and
- HAZWOPER/CPR/First Aid trained.

EACH EMPLOYEE IS RESPONSIBLE FOR HIS OWN AND OTHERS' SAFETY.
HE ALSO HAS AN OBLIGATION TO WORK SAFELY AND REPORT ANY UNSAFE CONDITIONS.

3.0 HAZARD COMMUNICATION

3.1 General

All employees and contract personnel are informed of all potential health and safety hazards related to the project and are instructed on how to avoid the risk of an accident. When operating offshore CSA personnel will conduct daily meetings and communicate progress with onshore support. Personnel to relay program status and any logistical concerns and requirements via SAT Phone email.

3.2 Reporting

All survey personnel will be provided with sampling guides that summarize sample collection and processing activities and identify potential hazards.

In the event of an injury accident the Site Safety Coordinator initially will notify the Project Manager and/or Project Director and the client or its agent verbally. An Incident/Accident Notification form will be completed within 24 hours of an accident/injury/near miss and a copy will be sent to the CSA HSE Manager. "Incident/Accident Notification" forms (**Appendix C**) will be kept on site.

A daily progress report will be prepared for the HSE manager and will detail the technical aspects of the sampling acquisition as well as details and will include the following:

- Close calls/near misses;
- Any unsafe condition;
- Any CSA employee having a problem working safely;
- Any accident/incident;
- Any failure of safety equipment;
- Hazard reports & safety observations;
- Inspections & audits completed;
- Emergency drills completed;
- Personnel on Board;
- HSE issues or concerns; and
- Interaction with other vessels and fishermen

3.3 Project Site

Mobilization/Demobilization: Golden Meadow, Louisiana
Survey Site: GOM Block MC252
Schedule and Duration: Mobilization – May 7-8 2010; 2 day survey
Weather: Monitored and assessed daily

3.3.1 General Vessel Safety

To ensure adequate preparation for emergencies that may possibly arise, prior to selecting and/or chartering a vessel for survey operations, the Site Safety Coordinator will ensure that the proper safety equipment are or will be available when the vessel is mobilized for a survey. If any equipment are not available (e.g., in foreign countries where vessels of opportunity are used) arrangements should be made to have the safety equipment made available either from in-country sources or by shipping them to the mobilization port.

3.3.2 Pre-Mobilization Safety Briefing (PMSB)

A Pre-mobilization Safety Briefing will be conducted by the CSA Site Safety Coordinator and the ENTRIX HSE Manager.

The following list is a summary of items to be discussed:
1. Description of project and goals
2. Communications – key to acquiring goals
3. Team members, assignments, and shifts
4. Coordination with ship's crew
5. Designation of person in charge on deck
6. Complexity of the operations – moving platform, machinery, openings
7. Pre-operation checks – vessel preparation
8. Safety equipment – vessel and sampling
9. Hazards - vessel and equipment – Hazid Actions/JSA/Toolbox
10. Limitations of personnel and equipment (Lifting, rigging, and safe working loads)
11. Environmental conditions (wind, weather, sea state, etc.)

An HSE induction for all personnel involved with the offshore field survey will be conducted by CSA prior to or during vessel mobilization.

All vessel crew members will be briefed on the operation of all primary sampling equipment, cranes, winches, blocks, cables, and A-frame prior to mobilization.

It is the responsibility of the Site Safety Coordinator and survey team members to ensure that proper rigging and lifting procedures are used.

The vessel's captain will be responsible for conducting the following drills: M.O.B., Fire, Abandon Ship, and Medical Emergency. These drills will be conducted once before the survey begins and weekly thereafter.

3.3.3 Chemical Hazards

Isopropyl Alcohol, Hexane, and Liquinox will be used during the field surveys. Material Safety Data Sheets (MSDS) for each chemical product will be aboard the vessel located near the chemicals and on the bridge. All personnel will be aware of the chemical products being used and safety considerations needed to prevent injuries.

The Site Safety Coordinator will ensure that field personnel review all relevant Material Safety Data Sheets (MSDS) before mobilizing for a field survey.

It is the responsibility of all personnel on board to take advantage of the information available, to wear the protective equipment provided, and to follow recommendations for handling any hazardous material.

Protective safety equipment will be worn when handling hazardous chemicals and include: chemical-resistant gloves, laboratory aprons, safety glasses or goggles, masks, and/or respirators.

In some areas, contact with marine sediment may present a potential health hazard from chemical and/or biological constituents of the sediment. Possible routes of exposure to chemical/biological hazards include inhalation, skin and/or mucous membrane absorption, ingestion, and injection. Potentially hazardous chemical/biological sediment constituents may include hydrogen sulfide, mercury and other heavy metals, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, solvents, and various types

of bacteria and viruses. Other potentially hazardous substances may include chemicals used as sample preservative agents or sampler decontamination agents.

Crew members should exercise caution to avoid coming into contact with potentially contaminated sediment during sampling operations. Crew members should exercise good personal hygiene after sampling and prior to eating or drinking.

Exposure to airborne contaminants can be greatly reduced if the vessel steams to windward in a way that minimizes risk to the sampling crew from exposure to volatiles. Having respirators on hand will reduce exposure to volatile fumes that may be present when mixing large quantities of chemicals or using a solvent rinse during equipment decontamination.

During sampling, caution, common sense, and good judgment should dictate appropriate safety gear to be worn in any given situation on deck. Hardhats, gloves, and steel-toed shoes must be worn in working conditions where there is a possibility of injury to the head, hands, or feet. Work vests must be worn while working on the fantail, or while working near an open gunwale. If in doubt, survey team members should ask the designated Site Safety Coordinator.

Collecting samples in extremely hot and humid weather carries the risk of dehydration and heat stroke. Survey team members should carry an adequate supply of potable water or other liquids for protection against dehydration in hot weather. The Site Safety Coordinator will ensure that survey team members continually drink to replace lost fluids in periods of work in hot weather.

3.4 Areas of Safety Concern

3.4.1 Mobilization

There is a large variety of marine sampling equipment in use today, and each has the potential for causing serious injury. Many types are heavy, ranging from under 50 lbs for a small sediment grab or plankton net to up to 2,000 lbs for a large Ewing piston corer. Unless the equipment is secure on deck or fully deployed and submerged, care must be taken to avoid crushing or other impact-related injuries from the handling of this gear.

This project will use a large ROV to collect all chemical and infaunal samples. The ROV is very heavy and all personnel must be aware of the corer weight and potential for uncontrolled motions during deployment and recovery. Proper tag line procedures will be stressed during the pre-mobilization briefing. Work gloves will be worn at all times when using tag lines.

Also, an appreciable amount of vertical clearance is usually required to clear the gunwale during deployment and retrieval, which in turn can increase the risk of uncontrolled lateral motion unless suitable tag lines are used.

A typical box corer is fairly heavy (from 200 to 900 lbs) and is also both tall and wide at the base. At least 100 square feet of deck area is required to safely manage this equipment. Good foot protection is mandatory when handling this equipment.

Essentially all types of sediment grabs utilize their own weight, some type of tensioning device, or other form of mechanical advantage to actuate the sampler upon contact with the bottom. Care must therefore be taken to minimize the risk of accidental or premature closure while handling. The box corer for this project has a release which triggers upon contact with the bottom. The sample is collected during retrieval.

In general, all sampling equipment uses the same type of marine hardware to attach to the appropriate lifting device. Periodically, all connections (e.g., cabling, shackles, pins, swivels, etc.) should be inspected to ensure the integrity of all points along the sampling assembly. The placement of the survey equipment on the deck will be discussed with the captain to assure safety and structural concerns are addressed. Welders attaching equipment to the vessel need to be certified in the operation of the welding and cutting equipment as well as using the appropriate materials to secure the equipment to the vessel. Tag lines will be attached to all equipment when it is being placed on or removed from the vessel.

Concern: Lifting equipment onto vessel.
Precaution(s): Lift with legs, back straight, good footing, and avoid twisting. Get help if load is too heavy. Avoid pushing, pulling, or prying while working aloft. Approved hard hats and safety boots/shoes with toe protection should be worn while working on the fantail.

Concern: Slippery deck.
Precaution(s): Guard rails; shoes, boots with sufficient anti-skid soles to minimize potential for slippage; employees to wear personal floatation device (PFD) while on the work deck at sea and if transfers are required.

Concern: Installation of equipment.
Precaution(s): Secure all equipment in case of rough seas. In the case of installation of navigational antenna and cables, two people will be on hand at all times for this part of the mobilization and will inform vessel captain of antenna installation and positioning and have the radar unit switched off (antennae should not be moving).

Concern: Loose containers.
Precaution(s): Secure all shipping containers to ensure they cannot break loose and cause physical harm during rough sea condition.

Concern: Confined space.
Precaution(s): Keep clean and ventilated. Check for proper lighting. Conform to vessel permit to work and confined space entry requirements

Concern: Lock out/tag out procedures (faulty equipment).
Precaution(s): Unplug equipment before doing repair and tag it as such. Reactivate the system only through an established and published procedure that ensures each person has removed his own lock and tag first.

Concern: Installation of first aid kit.
Precaution(s): Ensure all personnel are aware of the location of the first aid kit on the vessel.

Concern: Location of fire extinguishers.
Precaution(s): Ensure all personnel are aware of the location of the fire extinguishers on the vessel.

3.4.2 Offshore

A sampling device is least secure while suspended in the air during the transitional period between the deck of a vessel and the surface of the water; a pitching and/or rolling deck during rough weather will aggravate this situation. Care must be taken to ensure that sufficient restraining, or tag lines or other devices are in place to meet these conditions. Because of the increased potential for damage or injury, all personnel on deck and in the wheelhouse must be notified before a sampling device leaves the deck during deployment or breaks the surface upon retrieval. If the winch operator is remotely located from the

scene of operations, a clear system of signals must be established between the lead deck person and the winch operator, usually via hand signals or electronic communication.

OSHA requires that hard hats be worn when working beneath suspended equipment, or when the potential of injury to the head exists due to lateral impact. All crew members should have a suitable level of seamanship skills, based upon their level of responsibility. Listed below are some of the items related to seamanship and gear-handling that, when overlooked, have been known to cause serious accidents on board ship.

- A capstan is potentially more dangerous than a winch drum, as the wraps are not enclosed and could instantly slip off the end if not handled properly.
- If a hydraulic hose fails, winches can free-wheel, and load-bearing rams can collapse under a load unless backed up with balance-check valves.
- Different kinds of line and wire rope have different characteristics, which may not be suitable for all applications (e.g., nylon is 25 percent stronger than polypropylene, but it is much more elastic and can be lethal if parted under a strain; polypropylene will float, making it less susceptible to propeller entanglement).
- An eye splice over a thimble will only cause a 5 percent reduction in line strength, but a knot (depending on type) can reduce the strength in a line by as much as 55 percent due to unequal strain on the fibers (a line will usually break under a strain at that point where it is forced to bend).
- Theoretically, the longer a line under a strain, the weaker it is when compared against its rated breaking strength (the chances are statistically greater of encountering a section weaker than the last as line length increases).
- The recommended working load-to-breaking strain for wire rope and line is typically 1 to 5. If the load ever exceeds 75 percent of the breaking strength, permanent damage could result, which can lead to unexpected breakage.
- Topside operations may be more dangerous on larger ships than smaller vessels because it is harder to keep track of safety concerns when activities are spread over a larger area of deck.
- Crew members should always stand clear of slack or looped line lying on deck to avoid entanglement. A sudden strain on slack line can entrap arms and legs; personnel may be severely injured or carried overboard.

In the event the sediment grab or winch wire becomes entangled in an object on the bottom, in the ship's propellers, or as a result of a malfunction in the winch or a-frame, the personnel on the bridge will be notified immediately.

The Operations Manager conducting sampling operations will confer with the ship's master and will direct the survey team members and vessel personnel in order that the situation is safely resolved.

Inclement weather may introduce additional hazards. Heavy equipment can be much more difficult to manage, and footing may become unsure due to slippery decks and/or increased vessel motion, and the risk of falling overboard may increase. Some state agencies requires that all railings be a minimum of 36 inches in height, and OSHA requires that an approved life vest be donned when working over the water or if there is an increased risk of falling overboard. A safety line will be secured across the opening from which the survey equipment will be deployed and retrieved. Vessel accommodations should be able to provide relief to crew members in case of cold or heat stress.

The vessel's Captain is responsible for determining the relative safety due to inclement weather on all operations. If necessary, survey operations will be suspended. The Captain will decide whether to stay on station or transit to port until weather conditions improve. If operations are suspended the Operations Manager will direct the movement and securing of equipment and materials until sampling resumes.

Concern: Chemicals.
Precaution(s): Familiarization with use and handling of chemicals to be used on project. Splash-proof goggles, organic vapor masks, and protective gloves will be used when handling chemicals. Chemicals will only be used in well-ventilated areas.

Concern: Acids, bases, and other hazardous chemicals.
Precaution(s): Briefing and MSDS sheets regarding all hazardous chemicals. Use of rubber gloves when handling dangerous chemicals such as water quality fixatives. Availability of first aid kits, eye wash kits, and spill kits. Prior to applicable activities, the Site Safety Coordinator will remind survey team members of the location of first aid kits, eye wash kits, and spill kits.

Precautions should be taken when handling hazardous materials during sampling and sample processing. Gloves and safety glasses should be worn as needed.

Concern: Man overboard.
Precaution(s): Single (one) employee is not allowed on rear deck of the vessel alone – two men or more are required on deck during at-sea operations. All employees are to wear PFDs while on deck of the vessel.

3.4.3 Winch and Davit Operations and Safety Procedures

CSA will be utilizing the services of Jambon Boat Rentals, LLC (JBR) who will provide the vessel M/V Jack Fitz to facilitate the sampling effort. An a-frame/davit was constructed to serve as the deployment/retrieval system for the rosette water sampler. The a-frame/davit is welded to the gunwale and deck and exceeds any loads anticipated for the field survey tasks. The winch will be the CSA deepwater electro-hydraulic unit manufactured by Sea-Mac.

CSA and JBR are responsible for training field personnel in the safe working procedures of the equipment being utilized for this project. Under the terms of the contract, CSA and JBR will provide competent personnel to carry out the work. As such CSA and JBR will address the a-frame, davit, and winch systems which include electro-hydraulic winches and hydraulic power units (HPU). The purpose of this document is to outline a systematic approach to mobilization, training, and standards which will optimize safety and program efficiency.

Systems safety and operational planning and implementation are a two-tier function:

1. Pre-cruise planning will address the specific operational requirements associated with the equipment. It is the responsibility of the Operations Manager to ensure that all requirements relative to mobilization, operation, and maintenance are implemented through in-house planning and discussion.

2. On-board, prior to the actual operation, it is the Operations Managers responsibility to coordinate mobilization, training, and operational procedures with the ship's Captain and crew, CSA Technicians, Project Scientist, and Operations group. This is to ensure that all individuals involved clearly understand what is required of them and that all equipment is appropriate and have been inspected.

The following points will be addressed during the Pre-mobilization Safety Briefing and Operations Training:

- Read all warning tag information and become familiar with all controls before operating winch.
- Never attempt to clean, oil, or perform any maintenance on a machine with the engine or prime mover running, unless instructed to do so.

- Never operate winch controls unless you are properly positioned at the operator's station and you are sure personnel are clear of the work area.
- Assure that personnel who are responsible for hand signals are clearly visible and that the signals to be used are thoroughly understood by everyone.
- Ground personnel should stay in view of the operator and clear of winch drum. Do not allow ground personnel near winch line under tension. A safe distance of at least 1-1/2 times the length of the unspooled cable should be maintained.
- Inspect rigging and winch at the beginning of each work shift. Defects should be corrected immediately.
- Keep equipment in good operating condition.
- Do not exceed the maximum pressure, PSI (kPa), or flow, GPM (LPM), stated in the winch specifications for hydraulically driven winches.
- Match winch line speeds to job conditions.
- Leather gloves should be used when handling winch cable.
- Never attempt to handle winch cable when the hook end is not free. Keep all parts of body and clothing clear of cable rollers, cable entry area of fairleads and the winch drum.
- When winding winch cable on the winch drum, never attempt to maintain tension by allowing winch cable to slip through hands. Always use "hand-over-hand" techniques, being careful to keep hands and clothing away from winch drum and fairlead rollers.
- Never use winch cable with broken strands. Replace winch cable.
- Do not weld on any part of the winch.
- Use recommended hydraulic oil and gear lubricant.
- Install guarding to prevent personnel from getting any part of body or clothing caught at a point where the cable is wrapped onto the drum or drawn through guide rollers.
- Install switches or valves which will shut off power to the winch in locations where they can be reached by anyone entangled in the cable before being drawn into the winch or any "pinch-point."
- "Deadman" controls, which automatically shut off power to the winch whenever the operator leaves his station, should be installed whenever practical.
- Never allow anyone to stand under a suspended load.
- Avoid sudden "shock" loads or attempting to "jerk" load free. This type of operation may cause heavy loads in excess of rated capacity, which may result in failure of cable and winch.
- It is imperative that the person operating the unit follow directions while maintaining situational awareness for the task at hand.

Never put your hands into, around, or near the spool or rollers when operating.
Serious injury can occur!

3.4.4 Demobilization

At the completion of all planned survey tasks there can exist the opportunity for injury due to survey team members and ships crew rushing demobilization efforts. When these demobilization procedures are performed too quickly the risk of an accident is increased.

3.4.4.1 Offshore

Concern: Personnel anxious to disembark vessel.
Precaution(s): Must use cautious, methodical procedures.

Concern: Loose trash/debris.
Precaution(s): All trash/debris will be stored and removed.

Concern: Transferring equipment/personnel from vessel to dock. Dropped objects
Precaution(s): PFDs required (see also slippery deck hazard).

3.4.4.2 Onshore

Concern: Personnel anxious to disembark.
Precaution(s): Must use cautious, methodical procedures.

Concern: Loose trash/debris.
Precaution(s): All trash/debris will be stored and removed.

Concern: Safe disposal of trash, hazardous chemicals, fixatives, etc.
Precaution(s): Careful identification, marking, disposal, packing, and transport (if required) of hazardous materials. Proper neutralization of chemicals will be completed if required.

Concern: Leakage of sample preservatives (mostly formaldehyde).
Precautions: Briefing on safe handling of formaldehyde and other possible fixatives. Double bagging of fixed samples, eyewash capabilities, flushing of neutralization of skin contact.

3.5 Emergency Program

The vessel master has a direct responsibility for the health, safety and welfare of all persons on board and for dealing with the immediate response to emergencies. In the event of an emergency CSA will provide emergency response management in cooperation with the vessel's captain to insure the health, safety, and welfare of all persons on board. The Site Safety Coordinator will work along side the captain in the event of a medical emergency.

In the event of injury or illness to personnel, CSA have responsibility for the evacuation of any person on board from the vessel to the nearest port or heliport, depending upon the nature and severity of injuries. From there CSA have responsibility to transfer their own and subcontractor personnel to hospital for treatment. ENTRIX has responsibility for the transfer, hospitalization and ongoing welfare of their own personnel. CSA and their subcontractors have full responsibility for the response to and management of all emergencies arising onboard or involving the vessel.

CSA will mobilize an AED and First Aid Kit for the survey. All CSA personnel are trained in the proper use of an AED and First Aid administration.

3.5.1 Personnel on Board (POB)/Next of Kin (NOK)

A POB/NOK list for the vessel shall be issued prior to departure from the harbor and will be updated should personnel change out, which is not currently planned. Copies of the vessel POB/NOK lists will be transmitted to CSA and ENTRIX offices. All parties will undertake to keep the NOK information confidential.

In the event of an emergency, CSA where necessary shall liaise with the relevant authorities and provide a verified POB list. The onshore response personnel of CSA (and 3rd party contractors if necessary), will be responsible for providing support to relatives of CSA personnel and subcontractors on board during an emergency. The ENTRIX response team would take this responsibility for ENTRIX vessel personnel.

Prior to vessel mobilization medical evacuation support services were researched in south Louisiana. A hospital and helicopter service, identified prior to mobilization, will be contacted in the event of an emergency.

3.5.2 Overall Strategy

An emergency is defined as an unplanned event, or situation, which poses an actual or potential threat to the safety or integrity of:

- Life and limb or health of personnel on board the vessel
- The environment or,
- The reputation of CSA or ENTRIX

An emergency can be further defined as any event, incident or situation, which poses a continuing threat and requires the mobilization of assistance or support from sources external to the affected party.

Both offshore and onshore emergency response actions will be clear, co-coordinated and will be based on the agreed arrangements listed in this document.

CSA emergency response team will take the lead role in responding to all emergencies.

Local services will respond in an emergency to provide support to CSA. Depending upon the nature and scale of the emergency, the CSA shore support may also respond.

In event of an emergency, a number of CSA personnel will remain on call for the duration of the ENTRIX contract. CSA will have a team on standby in Florida to provide support, consisting of the CSA HSE Manager, an Operations Manager, and other support personnel as required.

Vessel

The vessel captain and the CSA Site Safety Coordinator in cooperation with the ENTRIX HSE field representative will insure Muster, Fire, MOB, loss of power, and Communication drills will be run before beginning field tasks. The Fire drill will include pressure to and discharge of the fire hoses.

3.5.3 Post Event Incident Reporting

Formal written reports will be prepared by CSA after an emergency has been resolved. A report need not be final, but may be an interim or preliminary document. A report should not only identify the sequence of events and causes of the incident, but also the adequacy of the response and corrective actions.

3.5.4 Emergency Response

Responsibilities during an emergency include the following:

Offshore Response

Vessel Master-M/V Jack Fitz	
Responsibility:	Safety of all persons on board the vessel Overall control of the vessel Emergency Response Team On-scene commander Liaison with other vessels if in the survey area Obtaining medical advice as required
Actions:	Controlling emergency and safeguarding personnel Notify the relevant authorities, if necessary Notify CSA On-Duty Operations Notify the ENTRIX representative on the vessel Calling onshore medical authorities
ENTRIX HSE Representative	
Responsibility:	Providing assistance to the Vessel Master as requested Initial notification of ENTRIX HSE Manager
Actions:	Call duty person as above and inform them of nature of emergency and onshore assistance if required.

Local Onshore Response

CSA Project Manager	
Responsibility:	Primacy for supporting the vessel and coordinating the onshore emergency response in accordance with CSA Emergency Response procedures.
Actions:	Coordination of emergency response via the existing CSA emergency response organisation and arrangements, including provision of logistical support Notification of and Liaison with external agencies including Medical Support Notification and regular updating of ENTRIX representative. Informing CSA personnel and subcontractor NOK of injuries etc. Arranging medivacs to shore in response to injuries, illness or other incidents on board for all POB. Arranging reception and transfer to hospital for any injured CSA or subcontractor personnel
ENTRIX HSE Manager	
Responsibility:	The health, safety and welfare of ENTRIX personnel involved in any emergency, once they have returned to shore. The reputation and standing of ENTRIX
Actions:	Mobilize to ENTRIX offices in response to call out from ENTRIX Survey Rep. Keep updated of events via CSA emergency personnel Make arrangements to meet and greet any injured or affected ENTRIX personnel in port or heliport as required Arrange transfer and hospitalization of injured ENTRIX personnel as required Arrange for medivacs as required for ENTRIX personnel Ensure notification of NOK for any affected ENTRIX personnel. Seek support on preparation and issue of media statements as required, in conjunction with CSA.

3.5.5 Emergency Response Organization

The response organization for the baseline environmental survey is shown in **Figure 2** below. Call out and communication routes are also shown in this figure.

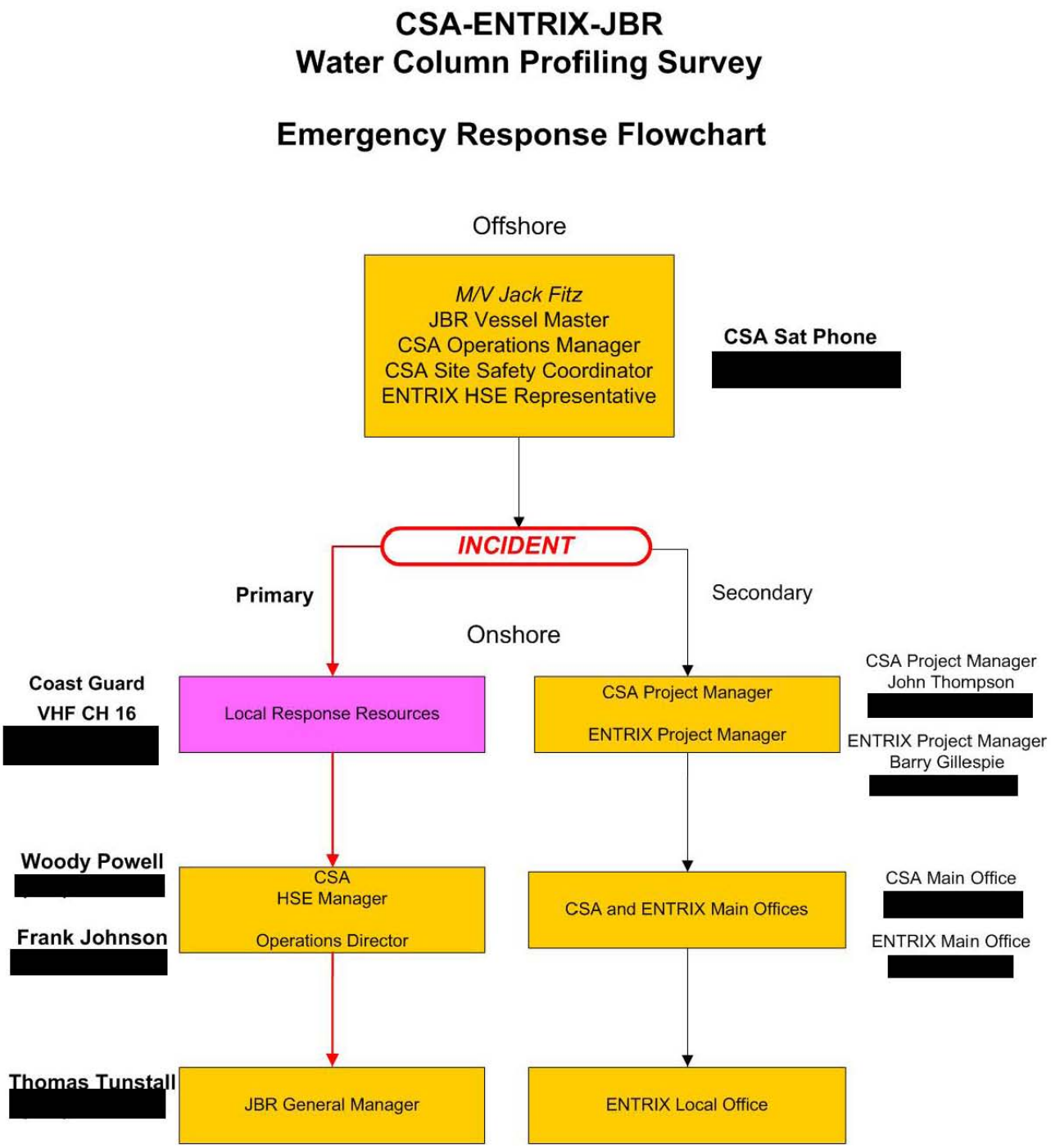


Figure 2. Emergency Response Organization Flowchart

3.5.6 Medivac Plan

Should a medical emergency require the immediate evacuation of a person or persons from the survey vessel, the vessel should immediately head toward the nearest shore facility. The Coast Guard should be contacted immediately on VHF channel 16. The Coast Guard air station is located approximately 13 miles south of New Orleans in Belle Chasse, La

Any applicable client transport coordinators or helicopter dispatchers should be contacted by either satellite phone or cellular telephone for assistance with the emergency. They will arrange helicopter evacuation of the injured person(s) from the platform or shore facility to the nearest emergency medical facility. If medical treatment is needed for a non-life threatening situation, the vessel should head to the nearest shore facility from which the injured person(s) can then travel to the nearest medical facility to obtain necessary medical treatment.

The arrangements listed in this document shall apply to the Emergency Response Procedures for the period that the vessel is contracted for the purpose of completing the survey.

Emergency contact numbers for communications during emergency situations are provided below.

Vessel Emergency Contact Numbers

Vessel-M/V Jack Fitz	
Master	
Satellite Phone	
Vessel Call Sign	
Thomas Tunstall, JBR	[redacted]

CSA Emergency Contact Numbers

CSA	
Satellite Phone-OnBoard Vessel	+[redacted]
Fred Ayer, CSA Project Manager	[redacted]
Gordon Stevens, CSA Operations	[redacted]
Lynwood Powell, HSE Manager	[redacted]

ENTRIX Emergency Contact Numbers

ENTRIX	
Ryan Holem, HSE Manager	[redacted]

4.0 MEDICAL/FIRST AID PROGRAM

CSA personnel are all properly trained in cardio-pulmonary resuscitation (CPR) and first aid. Training allows CSA personnel to give immediate and temporary care to a victim of an accident or sudden illness until a physician can be obtained. This effective first aid consists of common sense, training, and knowledge of the following:

- Procedures for treating bleeding;
- Procedures for heart attack victims;
- Procedures for choking victims;
- Procedures for treating victims of burns;
- Procedures for treating electric shock victims;
- Procedures for treating victims of exposure to chemicals;
- Procedures for treating victims of inhalation of toxic gas or smoke;
- Procedures for treating shock victims;
- Procedures for treating victims of heat exhaustion;
- Procedures for treating victims of heat stroke;
- Procedures for treating victims of frostbite;
- Procedures for treating victims of hyperthermia; and
- Procedures for treating victims of skin poisoning or swallowed poisons.

5.0 SUBSTANCE ABUSE PROGRAM

CSA is committed to maintaining a drug-free workplace. In recognition of the dangers to our employees and the company of drug abuse in the workplace, and pursuant to the provisions of the U.S. Drug-Free Workplace Act of 1988 and Federal Acquisition Regulation 23.504, all employees are subject to the following:

- Unlawfully manufacturing, distributing, dispensing, possessing, or using a controlled substance is prohibited in the workplace.
- Any employee who unlawfully manufactures, distributes, dispenses, possesses or uses a controlled substance in the workplace will be subject to discipline up to and including dismissal.
- All employees, as a condition of continued employment, must abide by the statement and are required to notify the company of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction.
- This Drug-Free Workplace Statement does not amend, limit, restrict, modify or otherwise alter any other company rules, regulations, procedures or policies.

CSA employees tested for substance abuse must meet the U.S. Department of Transportation (DOT) standards for drug and alcohol testing to be able to work as CSA's representatives on designated projects. The medical forms may be made available for the client's inspection with prior approval from the employee.

DOT regulations require screening for the following drugs (known as the NIDA 5 Panel):

- Marijuana;
- Barbiturates;
- Opiates;
- Amphetamines;
- PCP; and
- Cocaine.

6.0 PERSONAL PROTECTIVE EQUIPMENT SAFETY PROGRAM

The following outlines CSA policy pertaining to the issuance and use of certain personal protective equipment (PPE) that will be issued by CSA. Each employee will be responsible for ensuring his PPE is kept clean and in good working condition.

Protective gear for sampling personnel should include the following:

- a hard hat;
- steel-toe shoe/boots;
- equipment handling and chemical-resistant gloves (e.g., leather or Nitrile);
- safety glasses/goggles;
- respiratory protection;
- rain gear (if necessary);
- coldwater survival gear (if necessary); and
- hearing protection (if safe noise levels are exceeded).

In addition to the above PPE personnel deploying and retrieving equipment over the side of the vessel will be required to wear a safety harness and utilize a retractable lifeline securely connected to a point on the vessel.

It is important to note that the ship's captain has the ultimate responsibility and authority to immediately override the authority of all other on board personnel, especially where the general welfare of crew and vessel are concerned.

During the dockside mobilization, the Site Safety Coordinator will conduct an inventory of the safety-related equipment and materials and provide a report to the Project Scientist and Operation Manager of their status, location, and availability.

Hard Hats. Each employee will be expected to wear a hard hat at all times when working out on deck. These safety hats will meet the specifications contained in American National Standards Institute, Z89.1-1969, Safety Requirements for Industrial Head Protection.

Steel-toed Shoes/Boots. Steel-toed shoes or boots will be required while outside of office area or on any work site, e.g., work deck.

Gloves – Work and Chemical. Work gloves will be provided for handling of equipment and supplies to reduce the potential of hand injuries. Nitrile, rubber, gloves will be provided for the handling of all chemicals and solvents.

Safety Glasses/Goggles. All employees will be issued and must wear approved safety glasses with side shields at all times while in the work area. Those employees who wear prescription glasses will wear safety glasses over their glasses. This also applies to those employees who wear contact lenses.

All employees will be issued and expected to wear 1) approved impact-type goggles with side shields when engaging in any activity that involves hazards to the unprotected eye from chipped or flying particles; and 2) approved splash proof goggles when they are handling hazardous chemical liquids, powders, or vapors as well as when they are in the vicinity of these chemicals.

Employees who wear prescription glasses will wear goggles over their glasses. This also applies to employees who wear contact lenses; these employees must make it apparent that they do wear contact lenses.

Respiratory masks
Protective respiratory mask will be provided to all employees. Any employee handling chemicals or solvents is required to wear a respiratory mask in addition to gloves and goggles.

Protective Outerwear
An outerwear capable of protecting the employee from oily products will be worn during all sampling operations. A Tyvek or suitable alternative is required.

Rain gear
Rain gear is not provided for most offshore surveys. It is the responsibility of the employee to provide adequate protection when working outside of the confines of the vessel.

Cold water survival gear
Cold water survival gear will not be necessary for this survey due to the time of year and the location of the survey area.

Hearing protection
Hearing protection is mandatory in all designated high noise areas. Ear plugs and ear muffs will be provided.

During operations which require special equipment and outerwear, the previously mentioned mandatory equipment and requirements pertaining to the equipment may be voided or amended.

7.0 HEARING CONSERVATION PROGRAM

All employees will wear the appropriate hearing protection provided by CSA while in a high noise area (85 decibels [dBA] or above for an 8-hour time period). A sign will be posted in high noise areas.

The Site Safety Coordinator will ensure any employees working in a high noise area are wearing hearing protection.

CSA also urges its employees to use common sense in a "noisy environment." If it is necessary to shout to communicate, an area is considered a high noise area whether or not signs are posted.

8.0 LIFE SAVING EQUIPMENT

All personnel working or riding on the deck of a boat or barge, or when transferring between vessels or onto a platform, must wear a U.S. Coast Guard (USCG)-approved PFD with reflector tape strips. There will be one PFD for each employee. On-board personnel should familiarize themselves with the ship's man overboard procedures and the vessel's life saving equipment location.

9.0 MOB AND FIRE EMERGENCY PROCEDURES

9.1 MAN OVERBOARD

- Throw a ring buoy overboard as close to the person as possible.
- Notify the personnel on the bridge immediately; bridge records vessel position.
- Post a lookout to keep the person overboard in sight.
- Maneuver the vessel to pick up the person in the water.
- Crew member wearing a PFD attaches a safety line and stands by to jump into the water to assist the person overboard if necessary.
- If person is not immediately located, notify Coast Guard and other vessels in the area by radio telephone.
- Continue search until released by the Coast Guard.

9.2 RULES FOR ABANDONMENT

- Review rules posted on vessel prior to vessel leaving dock.
- Take instructions from vessel's captain and proceed to pre-assigned station on the vessel.

9.3 FIRE ON BOARD

- Review rules posted on vessel prior to vessel leaving dock.
- When alarm sounds proceed to pre-assigned station on the vessel.
- Vessel’s captain will instruct survey team members.

10.0 WATER SURVIVAL PLAN

All employees must become familiar with the use and operation of survival gear and emergency instructions posted on the vessel.

In case of vessel evacuation:

1. Put on a PFD and remove your safety hat.
2. Do not dive into the water but jump in feet first.
3. If swimming in rough water, turn your back to the wind or waves. Keep your head out of water and use a breast stroke.
4. If there is an oil or fuel fire on the water, swim UNDER the water. Before surfacing, use your hands to splash a breathing hole above your head. Close your eyes before surfacing, take a breath, and then resubmerge (feet first).
5. If there is oil and/or debris on the water surface, keep your head up and out of the water. Push the oil/debris away from you as you swim. Protect eyes, nose, and mouth.
6. If swimming in cold water, conserve body heat, and help to prevent hypothermia by minimizing movement.
7. Do not swim to rescuers – let them come to you.

CONSERVE YOUR ENERGY! YOUR SURVIVAL MAY DEPEND ON IT!

11.0 EQUIPMENT INSPECTION PROGRAM

CSA will insure the following equipment is aboard the vessel:

- Fire extinguishers;
- PFDs;
- Safety Harnesses;
- Retractable lifelines;
- Ear protectors;
- Hard hats;
- Safety glasses;
- Safety shoes;
- Organic vapor masks; and
- Protective gloves.

The above equipment shall be inspected daily prior to use for wear and tear and so noted by the designated CSA safety person in his Project Log. During daily inspections, emphasis will be put on equipment security (i.e., safely secured for rough seas), and equipment maintenance.

The safety person will be knowledgeable with U.S. 29 CFR 1926 (Subparts E, F, I, J, K, L, N, and O): Personal Protective and Life Saving Equipment; Fire Protection and Prevention; Tools (Hand/Power); Welding and Cutting; Electrical; Ladders and Scaffolding; Cranes, Derricks, Hoists, Elevators, and Conveyors; Motor Vehicles, Mechanized Equipment, and Marine Operations.

12.0 ELECTRICAL SAFETY PROGRAM

12.1 INSTALLATION AND MAINTENANCE OF ELECTRICAL EQUIPMENT

All installation and maintenance of electrical equipment must comply with the pertinent provisions of the national electrical code. All electrical work will be performed by competent personnel who are familiar with code requirements and qualified for the class of work to be performed. All applicable electrical wire, apparatus, and equipment will be of a type approved by Underwriters Laboratories, Inc., Factory Mutual Engineering Corp., or any other nationally recognized testing laboratory.

12.2 ELECTRICAL ACCIDENT PREVENTION PROCEDURES

The best qualified available employee will be appointed to be the electrical job supervisor. That person will have total responsibility for the electrical work.

Each job should be thoroughly planned, making sure that adequate and proper equipment and sufficient personnel are available to perform the job safely. No job is to be rushed to completion at the expense of safety.

A special safety meeting will be conducted before starting a job to brief all workers involved to make sure all questions are answered and that no confusion exists among the workers.

All possible circuits in the vicinity of the work area should be de-energized and secured in this condition by grounding, locking, and tagging. If it is not possible to de-energize all circuits, use barriers, rubber goods, or any other protective equipment necessary to make the work area safe. Danger signs will be displayed in appropriate locations and on associated equipment as required to afford maximum personnel protection.

Complete attention should be devoted to the job at hand. Preoccupation or day-dreaming cannot be tolerated while working with electrical equipment.

Even low voltage (e.g., 32 volts AC) as well as many battery-powered systems are hazardous and require proper precautions.

All unsafe electrical equipment should be de-energized immediately and tagged "unsafe for use." This action and also notification of inoperable or damaged electrical tools, appliances, etc., should be reported to the immediate supervisor at once. Unqualified persons should not attempt to repair such equipment.

Under no circumstances should the hand or finger be used to test for voltage in a circuit. Only proper and safe test instruments should be used.

In case of an accident or an electrical fire, all power should be cut off immediately. Emergency switches are generally installed at convenient locations to stop electrical machinery. Know where these switches are. Use only fire extinguishers which have been approved for use on an electrical fire. Foamite or other conductive fluids, including water, must not be used on an electrical fire under any circumstances.

Electrical work of any kind will not be performed if an electrical storm is in progress in the immediate vicinity.

Adverse conditions such as darkness, poor weather, isolation, or any abnormal situations may make working alone unduly hazardous. These occasions should be identified by established management guidelines from which the employee can carefully assess the task to be performed and determine whatever assistance might be necessary to perform the job safely. All electrical conductors and equipment will be approved and meet the standards in 29 CFR Subpart K covering the electrical equipment and work practices for this project (copy follows).

13.0 SPILL PREVENTIVE/CLEANUP PLAN

All personnel involved on a project should be aware of all possible polluting situations and take steps to prevent such occurrences.

CSA Operations Managers will insure the MARPOL rules and regulations are posted on the vessel and are followed by all members of the survey team.

Should a spill occur, the following will be available:

- Absorbent pads for use on local spills on vessel and, if necessary, small discharges into the water;
- Absorbent booms for installation around drums and apparatus that could cause a spill on vessel;
- Should portable generators/winches be used that involve fueling, a catchment tray will be provided to prevent gasoline/oil or other fluids from being spilled;
- Shore personnel to locate suitable disposal container close to dock for trash removal from vessel; and
- Trash bags and ties for general trash storage will be provided on vessel.

In case of large spills, the vessel is to cease operations, stay in the area and call in to the local client base, local Coast Guard, or other appropriate regulatory agency.

PICK UP ANY TRASH YOU SEE -- NOT JUST YOUR OWN.
AND REMEMBER NO TRASH/DEBRIS/WASTE/POLLUTANT IS TO BE DEPOSITED ANYWHERE BUT IN THE CORRECT RECEPTACLE.

14.0 SHORT-TERM EMPLOYEE PROGRAM

Any CSA employees that have been with the company less than six months will be identified as "Short-Term Employees" to all personnel including the client or its agent prior to start-up and mobilization of project.

Short-term employees will be given a job-specific orientation prior to the general job safety meeting dealing with the client's site safety expectations and procedures and hands-on training by CSA for upcoming job assignments.

Short-term employees will expect to be given special supervision during their 90-day probationary period with the orientation reinforced at the end of their first week's employment with CSA and at the end of their first month's employment. The employee will then be evaluated by their supervisor monthly for the next three months. It is implied here and to be understood by the short-term employee that he will be teamed with an experienced employee whenever possible. Under no circumstances will two short-term employees be teamed on a job without approval.

APPENDIX

APPENDIX A

Hazards Analysis/Risk Assessment

HAZARDS ANALYSIS/RISK ASSESSMENT

Hazard	Consequences/Risk	Severity	Safeguard(s)/Control Measure(s)	Risk Matrix		Recommendations	Responsibility	Status
				Likelihood	Risk Rank			
Lifting accidents, dropped equipment	Injuries, damage to or loss of equipment/material	Major	Lifting procedures, lift plan, worker awareness, qualified/experienced personnel	Remote	B	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open
Boarding/loading boats	Trips, falls, injuries, damage to or loss of equipment	Minor	Designated boarding/ loading areas and procedures, first aid, clear work procedures	Infrequent	A	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open
Navigation and positioning control	Wrong locations, work delays, impact to work productivity	Moderate	Obtain latest nautical charts, set up and check CSA vessel GPS navigation during mobilization, prepare pre-plots, provide accurate locations, provide coordinates in a digital exchange file	Remote	B	Confirm accuracy of coordinates through backup GPS	Project Scientist	Open
Deployment/handling of sample collection equipment	Pinching injury, impact/crushing injury, entanglement, MOB	Moderate	Worker training, established procedures, work gloves, HSE briefing	Infrequent	B	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open
Man overboard (MOB)	Loss of personnel	Major	PFDs, work deck rules, safety chain, MOB procedures	Infrequent	C	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open
General health and safety (offshore/on water)	Heat exhaustion and overheating, exposure, dehydration, minor injuries	Moderate	Adequate drinking water available, sunscreen, light clothing, clear decks, designated work areas and clear work procedures, first aid	Infrequent	B	Review during HSE induction	Operations Supervisor	Open
Spillage of fuels, oils, and lubricants	Environmental degradation, regulatory fines, damage to reputation	Major	Refueling on land or in port only, adequate capacity for full-day operations	Infrequent	C	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open
General health and safety (onshore)	Exposure, dehydration, minor injury	Moderate	Adequate shade, adequate drinking water available, sunscreen, light clothing, clear/designated work areas, clear work procedures, work breaks	Infrequent	B	Review during HSE induction	Operations Supervisor	Open
Road/driving accidents	Collisions, damage to vehicles or equipment, injury	Major	Use of licensed and experienced drivers, safe driving at posted speeds, seatbelts	Remote	B	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open

Hazard	Consequences/Risk	Severity	Safeguard(s)/Control Measure(s)	Risk Matrix		Recommendations	Responsibility	Status
				Likelihood	Risk Rank			
Food-/water-/blood-borne pathogens	Debilitating illness, impacts to productivity	Moderate	Worker training, HSE briefing, emergency response plan	Infrequent	B	Review during HSE induction	Operations Supervisor	Open
Unsafe weather/sea state conditions	Damage to vessels	Major	Weather forecast reviews, continuous monitoring of local weather, ongoing communications, delay/cancel/abort weather thresholds	Remote	B	Conduct continuous monitoring of weather while on site, morning forecast reviews and postpone mobilization if predicted to exceed limitations	Operations Supervisor	Open
Rough sea conditions	Injuries, MOB, damage to or loss of equipment/materials	Moderate	Check for secure deck and equipment/materials before getting underway, use of PFDs	Infrequent	B	Cross check for clear deck prior to getting underway	Operations Supervisor	Open
Vessel mechanical failure or damage	Loss of vessel, vessel adrift, stranded divers	Major	Rigorous vessel maintenance and inspection, standby vessel, float plan, established communications	Remote	B	Ensure valid vessel inspections, pre-day vessel checklists	Vessel Master	Open
Unsafe deck conditions (e.g., wet, cluttered)	Slips, trips, falls, MOB, damage to equipment	Major	Clear decks, designated work areas, clear work procedures, emergency response plan	Frequent	D	Review procedures and PPE requirements in toolbox meeting prior to activity; install safety line across stern	Vessel Master	Open
Underwater obstructions, contact with bottom, grounding	Damage to seabed features/organisms, damage to boats/ equipment, injuries	Major	Review of nautical charts, mapping of navigation hazards, experienced boat operators	Remote	B	Review transit route for obstructions, shallow water	Vessel Master	Open
Other vessel/traffic shipping	Collisions	Major	Deck watch	Remote	B	Review of shipping patterns, contact any vessels in vicinity	Vessel Master	Open
Medical emergencies (injured/unconscious worker), limited timely medical access/support	Lack of/late medical attention leading to medical complications, possibly disablement/ fatality	Major	Emergency procedures for worker extraction, established communications to shore, standby vessel, local emergency support, emergency response plan, emergency oxygen on-board, comprehensive first aid equipment	Remote	B	Prior arrangements with Port/ambulance, advice to Navy and/or Coast Guard; post-emergency contact infomation readily available on all vessels/boats	Operations Supervisor	Open
Emergency preparedness	Inadequate response to emergencies	Minor	Conduct weekly drills, HSE inspection to review emergency systems	Infrequent	A	Review procedures in toolbox meeting prior to activity	Operations Supervisor	Open

Hazard	Consequences/Risk	Severity	Safeguard(s)/Control Measure(s)	Risk Matrix		Recommendations	Responsibility	Status
				Likelihood	Risk Rank			
Confined Space Entry	Loss of consciousness, fatality, impact to work productivity	Major	Real-time air monitoring, forced air ventilation, full body harness, rescue tri-pod	Remote	B	Review procedures in toolbox meeting prior to activity	Site Safety Officer	Open

APPENDIX B

MSDS for Project chemicals

Project Chemicals:

Liquinox

Isopropyl Alcohol

Hexane

LIQUINOX MSDS

Section 1 : PRODUCT AND COMPANY IDENTIFICATION

Chemical family: Detergent.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Supplier: Same as manufacturer.

Product name: Liquinox

Section 2 : INGREDIENT INFORMATION

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE

Section 3 : HAZARD IDENTIFICATION

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Eye contact: May cause irritation.

Skin contact: Prolonged and repeated contact may cause irritation.

Inhalation: May cause headache and nausea.

Ingestion: May cause vomiting and diarrhea.
May cause gastric distress.

Effects of chronic exposure: See effects of acute exposure.

Section 4 : FIRST AID MEASURES

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
If irritation persists, seek medical attention.

Ingestion: Do not induce vomiting, seek medical attention.
Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.

Section 5 : FIRE FIGHTING MEASURES

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.
Use water spray to cool fire exposed containers.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Sensitivity to static discharge: Not available.

Sensitivity to mechanical impact: Not available.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: Containers may rupture if exposed to heat or fire.

Section 6 : ACCIDENTAL RELEASE MEASURES

Leak/Spill: Contain the spill.
Prevent entry into drains, sewers, and other waterways.
Wear appropriate protective equipment.
Small amounts may be flushed to sewer with water.
Soak up with an absorbent material.
Place in appropriate container for disposal.
Notify the appropriate authorities as required.

Section 7 : HANDLING AND STORAGE

Handling procedures and equipment: Protect against physical damage.
Avoid breathing vapors/mists.
Wear personal protective equipment appropriate to task.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Avoid extreme temperatures.
Launder contaminated clothing prior to reuse.

Storage requirements: Store away from incompatible materials.
Keep containers closed when not in use.

Section 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

Gloves / Type:

Wear appropriate gloves.

Respiratory / Type: None required under normal use.

Eye / Type:

Safety glasses recommended.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

Exposure limit of material: Not available.

Section 9 : PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid.

Appearance & odor: Odourless.
Pale yellow.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): @ 20°C (68°F).
17

Vapour density (air=1): >1

By volume: Not available.

Evaporation rate (butyl acetate = 1): < 1.

Boiling point (°C): 100 (212F)

Freezing point (°C): Not available.

pH: 8.5

Specific gravity @ 20 °C: (water = 1).
1.083

Solubility in water (%): Complete.

Coefficient of water\oil dist.: Not available.

VOC: None

Chemical family: Detergent.

Section 10 : STABILITY AND REACTIVITY

Chemical stability: Product is stable under normal handling and storage conditions.

Conditions of instability: Extreme temperatures.

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids.
Strong oxidizing agents.

Hazardous decomposition products: See hazardous combustion products.

Section 11 : TOXICOLOGICAL INFORMATION

LD50 of product, species & route: > 5000 mg/kg rat oral.

LC50 of product, species & route: Not available.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Section 12 : ECOLOGICAL INFORMATION

Environmental toxicity: No data at this time.

Environmental fate: No data at this time.

Section 13 : DISPOSAL CONSIDERATIONS

Waste disposal: In accordance with local and federal regulations.

Section 14 : TRANSPORT INFORMATION

D.O.T. CLASSIFICATION: Not regulated.

Special shipping information: Not regulated.

Section 15 : REGULATORY INFORMATION

WHMIS classification: Not controlled.

DSL status: Not available.

SARA hazard catagories sections 311/312: Immediate (Acute) Health Hazard: No.
Delayed (Chronic) Health Hazard: No.
Fire Hazard: No.
Sudden Release of Pressure: No.
Reactive: No.

SARA Section 313: None

TSCA inventory: All components of this product are listed on the TSCA inventory.

Health Hazard: 1
Flammability: 0
Reactivity: 0

Health Hazard: 1
Flammability: 0
Physical hazard: 0
PPE: A

Section 16 : OTHER INFORMATION

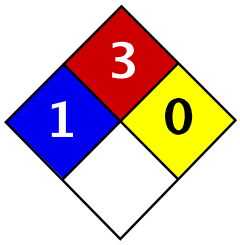
Supplier MSDS date: 2006/07/14

Data prepared by: Global Safety Management
3340 Peachtree Road, #1800
Atlanta, GA 30326

Phone: 877-683-7460
Fax: (877) 683-7462

Web: www.globalsafetynet.com
Email: info@globalsafetynet.com.

General note: This material safety data sheet was prepared from information obtained from various sources, including product suppliers and the Canadian Center for Occupational Health and Safety.



Health	2
i	3
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Isopropyl Alcohol, 70% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Isopropyl Alcohol, 70%

Catalog Codes: SLI1669

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Isopropyl alcohol; Water

CI#: Not available.

Synonym: 2-Propanol, 70%; Isoprpanol, 70%; Isopropyl Rubbing Alcohol

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Isopropyl alcohol	67-63-0	70
Water	7732-18-5	30

Toxicological Data on Ingredients: Isopropyl alcohol: ORAL (LD50): Acute: 5045 mg/kg [Rat]. 3600 mg/kg [Mouse]. 6410 mg/kg [Rabbit]. DERMAL (LD50): Acute: 12800 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, . Slightly hazardous in case of skin contact (sensitizer, permeator). Non-corrosive for skin. Non-corrosive to the eyes. Non-corrosive for lungs.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Isopropyl alcohol].
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Isopropyl alcohol].

The substance may be toxic to kidneys, liver, skin, central nervous system (CNS).
Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: The lowest known value is 399°C (750.2°F) (Isopropyl alcohol).

Flash Points: CLOSED CUP: 18.3°C (64.9°F) - 24 deg. C (75 deg. F)

Flammable Limits: The greatest known range is LOWER: 2% UPPER: 12.7% (Isopropyl alcohol)

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat.
Flammable in presence of oxidizing materials.
Non-flammable in presence of shocks

Explosion Hazards in Presence of Various Substances:
Slightly explosive in presence of open flames and sparks, of heat.
Non-explosive in presence of shocks.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water.
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME.
Hydrogen peroxide sharply reduces the autoignition temperature of Isopropyl alcohol.
After a delay, Isopropyl alcohol ignites on contact with dioxgenyl tetrafluorborate, chromium trioxide, and potassium tert-butoxide. When heated to decomposition it emits acrid smoke and fumes. (Isopropyl alcohol)

Special Remarks on Explosion Hazards:
Secondary alcohols are readily autooxidized in contact with oxygen or air, forming ketones and hydrogen peroxide. It can become potentially explosive.
It reacts with oxygen to form dangerously unstable peroxides which can concentrate and explode during distillation or evaporation. The presence of 2-butanone increases the reaction rate for peroxide formation.
Explosive in the form of vapor when exposed to heat or flame. May form explosive mixtures with air.
Isopropyl alcohol + phosgene forms isopropyl chloroformate and hydrogen chloride.
In the presence of iron salts, thermal decompositon can occur, whicn in some cases can become explosive.
A homogeneous mixture of concentrated peroxides + isopropyl alcohol are capable of detonation by shock or heat.
Barium perchlorate + isopropyl alcohol gives the highly explosive alkyl perchlorates.
It forms explosive mixtures with trinitormethane and hydrogen peroxide.
It produces a violent explosive reaction when heated with aluminum isopropoxide + crotonaldehyde.
Mixtures of isopropyl alcohol + nitroform are explosive.
(Isopropyl alcohol)

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid.
Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious).

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
Isopropyl alcohol
TWA: 983 STEL: 1230 (mg/m3) [Australia]
TWA: 200 STEL: 400 (ppm) from ACGIH (TLV) [United States] [1999]
TWA: 980 STEL: 1225 (mg/m3) from NIOSH
TWA: 400 STEL: 500 (ppm) from NIOSH
TWA: 400 STEL: 500 (ppm) [United Kingdom (UK)]
TWA: 999 STEL: 1259 (mg/m3) [United Kingdom (UK)]
TWA: 400 STEL: 500 (ppm) from OSHA (PEL) [United States]
TWA: 980 STEL: 1225 (mg/m3) from OSHA (PEL) [United States]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Alcohol like.

Taste: Not available.

Molecular Weight: Not applicable.

Color: Clear Colorless.

pH (1% soln/water): Neutral.

Boiling Point: The lowest known value is 82.5°C (180.5°F) (Isopropyl alcohol). Weighted average: 87.75°C (189.9°F)

Melting Point: May start to solidify at -88.5°C (-127.3°F) based on data for: Isopropyl alcohol.

Critical Temperature: The lowest known value is 235°C (455°F) (Isopropyl alcohol).

Specific Gravity: Weighted average: 0.84 (Water = 1)

Vapor Pressure: The highest known value is 4.4 kPa (@ 20°C) (Isopropyl alcohol). Weighted average: 3.77 kPa (@ 20°C)

Vapor Density: The highest known value is 2.07 (Air = 1) (Isopropyl alcohol). Weighted average: 1.63 (Air = 1)

Volatility: Not available.

Odor Threshold: The highest known value is 22 ppm (Isopropyl alcohol)

Water/Oil Dist. Coeff.: The product is equally soluble in oil and water.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, n-octanol, acetone.

Solubility: Easily soluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, flame, ignition sources, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Reacts violently with hydrogen + palladium combination, nitroform, oleum, $COCl_2$, aluminum triisopropoxide, oxidants
Incompatible with acetaldehyde, chlorine, ethylene oxide, isocyanates, acids, alkaline earth, alkali metals, caustics, amines, crotonaldehyde, phosgene, ammonia.
Isopropyl alcohol reacts with metallic aluminum at high temperatures.
Isopropyl alcohol attacks some plastics, rubber, and coatings.
Vigorous reaction with sodium dichromate + sulfuric acid. (Isopropyl alcohol)

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation.

Toxicity to Animals:
Acute oral toxicity (LD50): 5143 mg/kg (Mouse) (Calculated value for the mixture).
Acute dermal toxicity (LD50): 18286 mg/kg (Rabbit) (Calculated value for the mixture).

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Isopropyl alcohol].
DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Isopropyl alcohol].
Contains material which may cause damage to the following organs: kidneys, liver, skin, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation.
Slightly hazardous in case of skin contact (sensitizer, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive/teratogenic effects (fertility, fetoxicity, developmental
abnormalities(developmental toxin)) based on animal studies.
Detected in maternal milk in human. (Isopropyl alcohol)

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects:
Skin: May cause mild skin irritation, and sensitization.
Eyes: Can cause eye irritation.
Inhalation: Breathing in small amounts of this material during normal handling is not likely to cause harmful effects. However, breathing large amounts may be harmful and may affect the respiratory system and mucous membranes (irritation), behavior and brain (Central nervous system depression - headache, dizziness, drowsiness, stupor, incoordination, unconciousness, coma and possible death), peripheral nerve and senstation, blood, urinary system, and liver.
Ingestion: Swallowing small amouts during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful. Swallowing large amounts may cause gastrointestinal tract irritation with nausea, vomiting and diarrhea, abdominal pain. It also may affect the urinary system, cardiovascular system, sense

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Isopropanol, solution (Isopropyl alcohol) UNNA: 1219 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Isopropyl alcohol
Illinois toxic substances disclosure to employee act: Isopropyl alcohol
Rhode Island RTK hazardous substances: Isopropyl alcohol
Pennsylvania RTK: Isopropyl alcohol
Florida: Isopropyl alcohol
Minnesota: Isopropyl alcohol
Massachusetts RTK: Isopropyl alcohol
New Jersey: Isopropyl alcohol
New Jersey spill list: Isopropyl alcohol
TSCA 8(b) inventory: Isopropyl alcohol; Water
TSCA 4(a) final testing order: Isopropyl alcohol
TSCA 8(a) IUR: Isopropyl alcohol
TSCA 8(d) H and S data reporting: Isopropyl alcohol: Effective date: 12/15/86 Sunset Date: 12/15/96
TSCA 12(b) one time export: Isopropyl alcohol
SARA 313 toxic chemical notification and release reporting: Isopropyl alcohol 70%

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable.
R36- Irritating to eyes.

S2- Keep out of the reach of children.
S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves (impervious).
Lab coat.
Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 05:53 PM

Last Updated: 11/06/2008 12:00 PM

Material Safety Data Sheet
Instant FAME/Instant Anaerobe Methods
Hexane

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: Hexane
MSDS Preparation Date: 06/19/2009
Synonyms or Generic ID: n-Hexane, Hexyl-hydride, Dipropyl, normal-Hexane, Hex.
PIN (UN#/ NA#): UN1208
Company Identification:
Microbial ID
125 Sandy Drive
Newark Delaware 19711
For Information, call: (800)276-8068, (302)737-4297
For Domestic CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

SECTION 2 – COMPOSITION, INFORMATION ON INGREDIENTS

CAS #	Chemical Name	Percent	EINECS/ELINCS	ACGIH TLV	Hazards
110-54-3	Hexane (contains a mixture of isomers)	100	203-777-6	50 ppm	Flammable, mild irritant

State: Liquid	Appearance: colorless	Odor: Gasoline Like
Boiling Point (C): 62-69°C 760mm HG	pH: not available	Specific Gravity: 0.678
Vapor Pressure (mm Hg): 151mm Hg @ 25°C	Vapor Density (AIR=1): 2.97	
Solubility in Water: insoluble		

SECTION 3 – HAZARDS IDENTIFICATION

Appearance: clear, colorless.

DANGER! Extremely flammable liquid and vapor. Vapor may cause flash fire. Breathing vapors may cause drowsiness and dizziness. Causes eye, skin, and respiratory tract irritation. May be harmful if absorbed through the skin. Aspiration hazard if swallowed. Can enter lungs and cause damage. Possible risk of impaired fertility. Long-term exposure may cause damage to the nervous system of the extremities (the hands, arms, legs and feet). Dangerous for the environment.
Target Organs: Central nervous system, respiratory system, eyes, skin, peripheral nervous system, testes.

Potential Health Effects
Eye: Causes mild eye irritation.
Skin: Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. Causes irritation with burning pain, itching, and redness. Absorbed through the skin. There have been no reports of skin sensitization in people occupationally exposed to n-hexane. Skin sensitization was not observed in a maximization test using 25 volunteers.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. May cause central nervous system depression.
Inhalation: Causes respiratory tract irritation. Exposure produces central nervous system depression. Vapors may cause dizziness or suffocation. n-Hexane vapor concentrations can become so high that oxygen is displaced, especially in confined spaces.

Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. Prolonged or repeated exposure may cause adverse reproductive effects. Chronic exposure may cause visual disturbances. Laboratory experiments have resulted in mutagenic effects. Peripheral neuropathy symptoms include: muscular weakness, paresthesia, numbing of the hands, feet, legs and arms, unsteadiness, and difficulty in walking and standing. Repeated exposure may cause nervous system abnormalities with muscle weakness and damage, motor incoordination, and sensation disturbances. Chronic exposure produces peripheral neuropathy.

SECTION 4 – FIRST AID MEASURES

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: Potential for aspiration if swallowed. Get medical aid immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively. For ingestion, the stomach should be intubated, aspirated, and lavaged with a slurry of activated charcoal--protect the airway from aspiration of gastric contents. Monitor arterial blood gases in cases of severe aspiration.

SECTION 5 – FIRE FIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. May accumulate static electrical charges, and may cause ignition of its own vapors. Extremely flammable liquid and vapor. Vapor may cause flash fire. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. This liquid floats on water and may travel to a source of ignition and spread fire.
Extinguishing Media: Use dry chemical, carbon dioxide, or appropriate foam. Solid streams of water may be ineffective and spread material. Water may be ineffective because it will not cool material below its flash point.
Flash Point: -7.6 to -15°C
Autoignition Temperature: 225 deg C (437.00°F)
Explosion Limits, Lower:1.2 vol %
Upper: 7.7 vol %
NFPA Rating: (estimated) Health: 1; Flammability: 3; Instability: 0

SECTION 6 – ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Large spills may be neutralized with dilute alkaline solutions of soda ash, or lime. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation. Do not get water inside containers. A vapor suppressing foam may be used to reduce vapors. Absorb spill using an absorbent, non-combustible material such as earth, sand or vermiculite.

SECTION 7-HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Take precautionary measures against static discharges. Keep away from heat, sparks and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Avoid breathing vapor or mist.
Storage: Keep away from heat and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well ventilated area away from incompatible substances.

SECTION 8 – EXPOSURE CONTROL/ PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure limits:

Chemical Name	ACGH	NIOSH	OSHA
Hexane (contains a mixture of isomers)	50 ppm TWA; Skin-potential significant contribution to overall exposure by the cutaneous route	50 ppm TWA; 180 mg/m3 TWA 1100 ppm IDLH	500 ppm TWA; 1800 mg/m3 TWA

OSHA Vacated PELs: Hexane (contains a mixture of isomers): 50 ppm TWA; 180 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respiratory use.

Other Protective Equipment: Make eye bath and emergency shower available.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Appearance: Clear colorless
Odor: Gasoline-like
pH: Not available.
Vapor Pressure: 151 mm Hg @ 25°C
Vapor Density: 2.97(Air = 1)
Evaporation Rate: Not available.
Viscosity: 0.31 mPas 20°C
Boiling Point: 62 - 69°C @ 760 mmHg
Freezing/Melting Point:-95 °C
Decomposition Temperature: Not available.
Solubility: Insoluble.
Specific Gravity/Density:0.678
Molecular Formula:C6H14
Molecular Weight:86.18

SECTON 10 – STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Ignition sources, excess heat, electrical sparks, confined spaces.
Incompatibilities with Other Materials: Strong oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.
Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGICAL INFORMATION

CAS# 110-54-3: MN9275000
LD50/LC50:
CAS# 110-54-3:
Draize test, rabbit, eye: 10 mg Mild;
Inhalation, mouse: LC50 = 150000 mg/m3/2H;
Inhalation, rat: LC50 = 48000 ppm/4H;
Inhalation, rat: LC50 = 627000 mg/m3/3M;
Oral, rat: LD50 = 25 gm/kg;
Carcinogenicity:
CAS# 110-54-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: Occupational polyneuropathy has resulted from hexane exposures as low as 500 ppm, but the minimum levels of n-hexane that are neurotoxic in humans haven't been established. Nearly continuous exposure of animals at 250 ppm has caused neurotoxic effects.
Teratogenicity: No evidence of teratogenicity or embryotoxicity in anmial studies with hexane. Fetotoxicity has been observed in the presence of maternal toxicity.
Reproductive Effects: Severe testicular damage has been observed in rats exposed to hexane at concentrations which have produced other significant toxicity. Although subneurotoxic doses of its principle toxic metabolite, 2,5-hexanedione, can induce progressive testiculartoxicity in rats, there have been no reports of human sterility or other reproductive toxicity associated with n-hexane exposures.
Mutagenicity: Positive results (chromosomal damage in the bone marrow cells) obtained for rats exposed by inhalation to n-hexane.
Neurotoxicity: n-Hexane is a mild irritant and CNS depressant in acute exposure, but its principal effects are damage to the sensory and motor peripheral nerves, particularly in chronic exposure.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: No data available. Estimated BCF values = 2.24 and 2.89. These values suggest that hexane will show low bioconcentration in aquatic organisms. Estimated Koc value = 4.11. This product will show slight soil mobility and is expected to rapidly volatilize from moist surface soils.
Environmental: Terrestrial: Volatilization and adsorption are expected to be the most important fate processes. Aquatic: Photolysis or hydrolysis are not expected to be important. Atmospheric: Expected to exist entirely in the vapor phase in ambient air, expected half life 2.8 days. Expected to biodegrade but not bioconcentrate.
Physical: No information available.
Other: No information available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

SECTION 14 – TRANSPORT INFORMATION

Proper Shipping Name: Hexanes
Hazard Class: 3
UN Number: UN1208
Packing Group: II
Flash Point: -22

SECTION 15 – REGULATORY INFORMATION

US FEDERAL
TSCA
CAS# 110-54-3 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 110-54-3: 5000 lb final RQ; 2270 kg final RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 110-54-3: immediate, delayed, fire.
Section 313
This material contains Hexane (contains a mixture of (CAS# 110-54-3, 100%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Parts 261.3
Clean Air Act:
CAS# 110-54-3 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 110-54-3 can be found on the following state right to know lists: New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN F N
Risk Phrases:
R 11 Highly flammable.
R 38 Irritating to skin.
R 48/20 Harmful : danger of serious damage to health by prolonged exposure through inhalation.
R 62 Possible risk of impaired fertility.
R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 65 Harmful: may cause lung damage if swallowed.
R 67 Vapours may cause drowsiness and dizziness.

Safety Phrases:
S 16 Keep away from sources of ignition - No smoking.
S 29 Do not empty into drains.
S 33 Take precautionary measures against static discharges.
S 36/37 Wear suitable protective clothing and gloves.
S 9 Keep container in a well-ventilated place.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.
S 62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

WGK (Water Danger/Protection)
CAS# 110-54-3: 1
Canada - DSL/NDSL
CAS# 110-54-3 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of B2, D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List
CAS# 110-54-3 is listed on the Canadian Ingredient Disclosure List.

SECTION 16 – Other Information

This Material Safety Data Sheet has been prepared in accordance with 29 CFR 1910.1200 and contains information believed to be accurate and complete at the date of preparation. The statements contained herein are offered for informational purposes only. MIDI Inc. believes them to be accurate but does not purport to be all-inclusive. The above-stated product is intended for use only by persons having the necessary technical skills and facilities for handling the product at their discretion and risk. Since conditions and manner of use are outside our control, we (MIDI Inc.) make no warranty of merchantability or any such warranty, express or implied with respect to information and we assume no liability resulting from the above product or its use. Users should make their own investigations to determine suitability of information and product for their particular purposes.

APPENDIX C

FORMS

Pre-Mobilization Safety Briefing

HSE Indoctrination Record

Job Safety Hazard Analysis

Hazard Analysis/Risk Assessment Acknowledgement

Daily Safety Meeting

Incident/Accident Notification

Next of Kin Information

Daily Survey Report

Management of Change Order

CSA INTERNATIONAL, INC.
PRE-MOBILIZATION SAFETY BRIEFING (PMSB)

A PMSB will be conducted by the CSA Site Safety Coordinator

The following is a summary of items to be discussed:

1) Description of project and goals
   - Sediment & Water collection, hydrographic profiler casts, ADCP, ROV Ops
2) Communications – key to acquiring goals
   - Accident prevention - safe and healthy environment
3) Team members, assignments, and shifts
   - CSA, ENTRIX, and M/V Jack Fitz crew
4) Coordination with boat driver/vessel's crew
   - Efficient procedures
   - Emergencies - medical, fire, man overboard (MOB), abandon ship
5) Designation of person in charge on deck
   - Shift leader
6) Complexity of the operations
   - Mobilization, Field, Demobilization
   - Collection Processes
7) Pre-operation checks
   - Vessel preparation
   - Location of vessel safety equipment
8) Safety equipment
   - Vessel
   - Sampling
   - First-aid
9) Hazards
   - Vessel operations
   - Sampling operations
   - Vessel and equipment: slips, trips, falls, bumps, pinching;
10) Limitations of personnel and equipment
   - Lifting, rigging, and safe working loads
   - Personal protective equipment
11) Environmental conditions
   - Wind, sea state, etc.

The PMSB/HSE induction for all personnel involved with the field activities will be conducted prior to vessel mobilization. Daily briefings will be conducted for survey personnel. All vessel crew members will be briefed on the operation of all primary and support equipment and primary sampling equipment (especially the winch, blocks, cable, and A-frame) prior to mobilization. It is the responsibility of the survey team members to ensure that proper rigging and lifting procedures are used. The vessels' Masters will be responsible for conducting the following drills: MOB, fire, abandon ship, and medical emergency. These drills will be conducted once before the survey begins and weekly thereafter.

CSA INTERNATIONAL, INC.

HEALTH, SAFETY, AND ENVIRONMENTAL INDOCTRINATION RECORD

Name:

Date:

Employer:

I have received indoctrination and training for following:

1. Company safety policies of CSA, ENTRIX, and JBR safety requirements, and the names of persons assigned to safety supervision duties.

2. Requirements and my individual responsibilities for accident prevention, maintaining a safe and healthy work environment, preventing damage to property, and protecting safety of others.

3. Provisions for medical facilities and procedures for reporting or correcting unsafe conditions and practices, and reporting accidents.

4. Job hazards and means used to control or eliminate those hazards, including applicable "Job Safety Analyses (JSA)" (major activity, locations, hazards, controls).

5. Accident Reporting - Both my individual and my Supervisor's responsibilities for reporting all accidents, even minor.

6. Sanitation - Water, toilet facilities.

7. Medical Facilities - Location of nearest medical emergency facilities, emergency phone numbers, first-aid kits and material data safety sheets.

8. Emergency Plans – man overboard, fire, medical, severe weather, spill response, and other emergency procedures.

9. Personal protective equipment.

10. Daily housekeeping requirements.

11. Fire prevention.

12. Policy on use of ropes, slings, and chains.

13. Hazards of floor and wall openings.
14. Hearing protection.
15. Requirements when working around hot substances.
16. Precautions with welding, cutting, and grounding of machinery.
17. Temporary electrical requirements.
18. Proper use of hand tools and power tools.
19. Proper precautions with compressed gas cylinders.
20. Requirements for ramps, runways, platforms, and scaffolds.
21. Clear access and ladder safety.
22. Material handling, storage, and disposal.
23. Hazardous materials.
24. If I am injured I (do) (do not) want the following person notified:

Name:

Phone:

Signature: _____ Date _____

Safety Officer Signature: _____ Date _____

CSA INTERNATIONAL, INC.

JOB SAFETY HAZARD ANALYSIS FORM

JOB TITLE:	**JSHA No.**____	**Page**___**of**___	**DATE**: **New**___ **Revised**___
Employer: **Facility**: **Location**:	**Classification(s) Doing Job**: **Supervisor**:	**Required /Recommended Personal Protective Equipment**:	**Analysis by**: **Reviewed by**: **Approved by**:

Sequence of Basic Job Steps	Potential Hazards	Recommended Action or Procedure

CSA INTERNATIONAL, INC.

HAZARDS ANALYSIS/RISK ASSESSMENT ACKNOWLEDGEMENT

My supervisor has reviewed this hazard analysis with me, and I understand the hazards and required precautionary actions. I will follow the requirements of this hazard analysis or notify my supervisor if I am unable to do so. I understand that there are Environmental, Safety, and Health professionals on staff if I need further assistance or clarification.

Name (please print)	Signature	Date

CSA INTERNATIONAL, INC.

DAILY SAFETY MEETING FORM

DATE:_____

PROJECT TITLE:_____

CONDUCTED BY:_____

IN ATTENDANCE: **Print Name** **Sign Name**

SUBJECT(S) DISCUSSED: **Potential Safety Hazards and Resolutions**

INCIDENT/ACCIDENT NOTIFICATION FORM Directions for filling out form

Email within 24 hrs to – Lynwood Powell, CSA Stuart Office –

Originators Reference No: ***Number assigned by project/asset as in its incident summary***		
Date of Incident:	**Time:**	**Exact Location**: **Location of the incident/Project Group**
Name of Person(s) involved: ***Injured party, any other people involved***		
Employing Company: ***Injured party and all people involved***		
Type of Incident: ***LTI, Near Miss, RWC, Medical Treatment, etc.***		
Initial Potential Consequence: ***Assign initial potential consequence as per The Risk Assessment Matrix***		
Description of Incident:	Where, when, what, how, who, operation in progress at the time (only factual)	

Provide details of the incident including:

- ***timing,***
- ***order of events,***
- ***Personnel involved their position, company, etc.***
- ***their role in the incident,***
- ***any relevant information available at the time of reporting***
- ***medical/emergency response details***
- ***any other important information***

Immediate Action:	Immediate remedial action and actions to prevent reoccurrence or escalation

In this section provide only immediate remedial actions (corrective) and actions TO PREVENT REOCCURRENCE. Do not include medical response into this section

Remedial Actions:

Provide long term remedial actions (if identified at the stage of reporting). For the incidents requiring further investigation do not include remedial actions. Those will have to be reported as a part of a final investigation report

Name: **Title:** **Date:**

Signature:

CSA International, Inc.

INCIDENT NOTIFICATION FORM

E-mail/Fax within 24 hrs to – Lynwood Powell, CSA Stuart Office –

Originators Reference No:		**Project/Asset Group:**
Date of Incident:	**Time:**	**Exact Location**:
Client/Employing Company:		
Type of Incident:		
Initial Potential Consequence:		
Description of Incident: Where, when, what, how, who, and the operation in progress at the time (only factual).		
Immediate Action: Immediate remedial action and actions to prevent reoccurrence or escalation.		
Remedial Actions:		

Name: **Title:** **Date:**

Signature:

CSA International, Inc.

NEXT-OF-KIN INFORMATION

Person	Name	Relationship	Phone
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

CSA INTERNATIONAL, INC.
DAILY SURVEY REPORT

Client: ENTRIX
Project: Water Column Profiling Survey
Location: GOM; MC Block 252
Job Number: CSA-2290
Date:

Vessel: M/V Jack Fitz
Client Rep:
Current location:
Satellite Phone #:
Onboard Email:

Weather Report
Wind speed/dir:
Wave height:
General:

PERSONNEL ON BOARD

CSA	*Client*	*Vessel*

CSA INTERNATIONAL, INC.
Daily Survey Report (*Cont'd*)

SAMPLE SUMMARY

Total Stations:		Total Stations:	
# Complete:	0	# Complete:	0
% Complete:	0.00%	% Complete:	0.00%

DAILY ACTIVITIES LOG

Time	*Description*

SUMMARY OF PROJECT TIME

Operation	*today*	*previous total*	*Total*
Mob/Demob			0
Operations			0
Standby Weather			0
Standby Other			0
Standby in Port			0
Standby Client			0
Technical Downtime			0
Vessel Downtime			0
Maintenance Time			0
TOTAL	0	0	**0**

CSA INTERNATIONAL, INC.
Daily Survey Report (*Cont'd*)

PLANNED ACTIVITY FOR NEXT 24 HOURS

ACCIDENTS/INCIDENTS

HAZARDS REPORTS

AUDITS COMPLETED

SIGHTINGS OF/INTERACTIONS WITH FISHERMEN

EMERGENCY DRILLS COMPLETED

HSE ISSUES/CONCERNS

MARINE MAMMAL/SEA TURTLE SIGHTINGS

CURRENT ESTIMATE OF COMPLETION DATE

CSA INTERNATIONAL, INC.
Daily Survey Report (*Cont'd*)

MONTHLY EVENTS

Event	*Quantity*
Number of Fatalities	
Number of Lost Time Injuries	
Number of Restricted Work Injuries	
Number of Medial Treatment Injuries	
Number of First Aid Injuries	
Number of Fires and Explosions	
Number Incidents involving Equipment Damage	
Number of Near Misses	
Number of Spills (to sea or land)	
Number of Security Incidents	
Number of hazard reports /STOP cards or safety observations	
Number of incidents involving stakeholder complaints	
Amount of waste generated, categorized by type. (monthly only)	
Amount of fuel oil / diesel used	

At the completion of the survey a report on injury absences and details of ongoing HSE Programs/Initiatives will be completed.

CSA INTERNATIONAL, INC.

Management of Change Order

Date:

To:

Subject:

Comments:

Project Change	Reason for Change

Approved by:

CSA Project Manager

_____

Client Representative

_____

An Industrial Hygiene (IH) Technician equipped with air monitoring equipment including, but not limited to, an Ultrarae to sample for benzene and a Multirae to continuous sample continuously for VOCs, LEL, H2S and CO, will be aboard the vessel to monitor air quality during the effort. The IH technician will inform the boat crew and the vessel will re-position, if the air quality meets or exceeds the following:

Compound	**Threshold**
Benzene	0.5 ppm
VOCs	50 ppm
H2S	5 ppm
LEL	10%
CO	15 ppm

MC 252 Standing Order

TO: All Personnel assigned to MC252 Response		
FROM: Tad Lynch	POSITION: Houston IC Safety Officer	
SUBJECT: Incident Reporting	DATE: 02 May 2010	Time: 1630 hrs

1.0 PURPOSE AND SCOPE

The purpose of this Standing Order is to establish a consistent HSSE incident reporting process for MC252 response personnel. Response personnel include all Federal employees, BP employees, Contractors, Visitors, and other third parties. These minimum reporting requirements are for response operations and are not intended to replace site or project-specific incident and emergency response procedures and policies. The ultimate purpose is to enable and foster a culture of sharing and continuous improvement through identifying trends, special focus needs, case management, HSSE performance and sharing lessons learned.

2.0 RESPONSIBILITIES

All personnel involved in the MC 252 response who are personally involved in, or witness an incident or near miss; are required to immediately notify the person in charge or BP Supervisor who is responsible for the work being conducted. The person in charge or BP Supervisor is responsible for making timely notifications to the appropriate Incident Command or Unified Area Command - Safety Officer (currently Houma, Houston, Mobile, and Robert).

[redacted] [redacted]

3.0 NOTIFICATION REQUIREMENTS

Incident Classification	**Notification Time**
Major Incident (MIA), High Potential Incident (HiPo), or Loss of Primary Containment (Spills)	Immediately
Recordable Injuries (DAFWC / Restricted Duty /Medical Treatment), First Aids, or Near Miss	Within 2 hours

4.0 REPORTING STRUCTURE

Safety Officers and/or Health & Safety Unit Leaders are required to report all incidents and near misses to the Safety Officer in Robert, La. - [redacted] After verbal notification has been made, send written incident reports and associated documentation to

Input into Traction will be completed by an HSSE Technician in Houston. The Tech will access information via the above e-mail location.

NOTE: If you are a Safety Officer and are not on the list, contact the number above and they will submit your information to IT&S to get you set up.

5.0 REQUIRED INFORMATION

Instructions: The Initial Incident Report should be completed using the attached GoM Preliminary HSSE Incident Report "Short Form", or an equivalent contractor supplied form. At a minimum, information should include the following and sent to

Minimum information to include:

Report Date:
Date / Time Occurred:
Date / Time Reported:
Type of Incident: First Aid, Recordable, Near Miss, Spill, HIPO, MIA
Location (Circle One): Offshore or Onshore
Site / Vessel:
Company/Agency/Volunteer Group involved:
Event Description:
Completed by:
Contact Phone #:

6.0 INCIDENT INVESTIGATION

The level of investigation performed will depend on the actual and potential severity outcomes. The level of investigation and responsible organization are listed below.

Incident Classification	**Investigation Requirements**
Major Incident (MIA), High Potential Incident (HiPo), or Loss of Primary Containment (Spills)	Houston Safety Officer and Tim Church will determine level of investigation and team make-up.
Recordable Injuries (DAFWC / Restricted Duty /Medical Treatment),	Local investigation. One-page Lessons Learned document will be developed by Tim Church from local investigation report.
First Aids, or Near Miss	Local investigation. Incident report containing information outlined in Section 5.

7.0 HSSE PERFROMANCE SCORECARD

The Safety Officer in Robert will report incidents to the Unified Area Command BP Liaison and BP Aide de Camp. They will also update and distribute the HSSE Performance summary and scorecard daily by 1100 hrs. It is responsibility of each IC Safety Officer to distribute the information to appropriate command and planning staff.

Safety Officer Name:	Date:
Signature:	Approval Signature:

ABS *Survey Manager*

SURVEY STATUS REPORT
(FOR OWNER)

JACK FITZ

REGISTERED OWNER : M/V JACK FITZ, LLC

Class Number	:	**9937906**
IMO Number	:	**8964836**
Print Date	:	**Wed Mar 31 12:12:56 CDT 2010**

Name : **JACK FITZ**
Status : **In Operation, Active, Loadline only**
Class Number : **9937906**
IMO Number : **8964836**

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Name	:	**JACK FITZ**	Class Number	:	**9937906**
Status	:	**In Operation, Active, Loadline only**	IMO Number	:	**8964836**

Owner/Manager Address

Managing Company

JAMBON BOAT RENTALS, LLC.

Registered Owning Company

M/V JACK FITZ, LLC

Billing Customer

JAMBON BOAT RENTALS, LLC.

General Characteristics

Designation

Official Registry Number	1074297
Flag Name	United States of America
Port of Registration	New Orleans, LA
Delivery Date	18 Mar 1999

Categories

Description	Tug and Supply Vessel
SOLAS CATEGORY	Cargo Ship
MARPOL CATEGORY	Not an Oil Tanker
IBC IGC CATEGORY	Not Applicable
ISM CATEGORY	Other Cargo Ship

ABS Class Notations

ABS Safety, Quality and/or Environmental Standards:

International code for the security of the ships and of port facilities (ISPS Code), ABS Security Notation:

Anchor Equipment

Other Info

Rapid Response Program	No
Subject to IACS S19 S22 S23 SOLAS XII/Reg 14	No

Principal Characteristics

Design Tonnage	486 tonnes
Length between perpendicular	43.8912 m
Molded Breadth(M)	10.9728
Molded Depth(M)	3.6576

Tonnage

Regulation	Gross Tonnage	Net Tonnage
ITC	486 (Registered)	145 (Registered)
NATIONAL	86	59

Builder

Builder	Customer	Builder	Builder Role	Project	Contractual	Contract Date

Name : **JACK FITZ**
Status : **In Operation, Active, Loadline only**
Class Number : **9937906**
IMO Number : **8964836**

	Number	Building ID		Description	Responsibility	
MASTER BOAT BUILDERS,INC.	373308	257	Prime Build			16 Mar 2010

IACS Unified Requirements Information
No IACS Unified Requirements found for this vessel.

IMO Requirements Information
No IMO Requirements found for this vessel.

Freeboard Assignments

Freeboard	Displacement	Deadweight (tonnes)	Calculated Freeboard(mm)	State
Conventional Freeboard from Ring			546.1	Active

Compartment Details

Item	Frame	Function	Means of Heating	Coating Type	Other Means of Protection
Tank					
Afterpeak Ballast	Frames 51/Stern	Ballast	No	Hard Coating	
Forepeak Ballast	Frames 00/05	Ballast	No	Hard Coating	
No. 1 Ballast	Frames 05/11	Ballast	No	Hard Coating	
No. 1 Ballast	Frames 05/13	Ballast	No	Hard Coating	
No. 2 Ballast	Frames 13/18	Ballast	No	Hard Coating	
No. 2 Ballast	Frames 13/18	Ballast	No	Hard Coating	
No. 3 Ballast	Frames 49/56	Ballast	No	Hard Coating	
No. 3 Ballast	Frames 49/56	Ballast	No	Hard Coating	
Fuel Oil Day	Frames 30/34	Diesel Oil	No	No Coating	
No. 1 Fuel Oil	Frames 21/24	Diesel Oil	No	No Coating	
No. 1 Fuel Oil	Frames 21/24	Diesel Oil	No	No Coating	
No. 2 Fuel Oil	Frames 24/30	Diesel Oil	No	No Coating	
No. 2 Fuel Oil	Frames 24/30	Diesel Oil	No	No Coating	
No. 3 Fuel Oil	Frames 45/49	Diesel Oil	No	No Coating	
No. 3 Fuel Oil	Frames 45/49	Diesel Oil	No	No Coating	
Hudraulic Oil	Frames 36/37	Hydraulic Oil	No	No Coating	
Lube Oil	Frames 36/37	Lubricating Oil	No	No Coating	
Lube Oil	Frames 36/37	Lubricating Oil	No	No Coating	
Liquid Mud No. 1	Frames 21/24	Mud	No	Hard Coating	
Liquid Mud No. 1	Frames 21/24	Mud	No	Hard Coating	
Liquid Mud No. 2	Frames 24/30	Mud	No	Hard Coating	
Liquid Mud No. 2	Frames 24/30	Mud	No	Hard Coating	
Potable Water	Frames 37/44	Potable Water	No	Hard Coating	
Potable Water	Frames 37/44	Potable Water	No	Hard Coating	
Dirty Oil / Bilge Oil	Frames 34/36	Sludge	No	No Coating	
Dirty Oil / Bilge Oil - Copy	Frames 34/36	Sludge	No	No Coating	
Sewage	Frames 11/13	Waste Water	No	Hard Coating	
Void					

Name : **JACK FITZ**
Status : **In Operation, Active, Loadline only**

Class Number : **9937906**
IMO Number : **8964836**

Item	Frame	Function	Means of Heating	Coating Type	Other Means of Protection
Aft Void	Frames 44/45	Void		Hard Coating	
Aft Void	Frames 44/45	Void		Hard Coating	
Forward Void	Frames 18/21	Void		Hard Coating	
Forward Void	Frames 18/21	Void		Hard Coating	

Name : **JACK FITZ**
Status : **In Operation, Active, Loadline only**
Class Number : **9937906**
IMO Number : **8964836**

Hull

Material

Type	Primary	Location
Ordinary Strength Steel	Yes	

Stiffener Systems

On Side Shell : Transverse

Bulkhead

Type	Number
Water Tight	5

Tank

Type	Number
Ballast	9
Diesel Oil	8
Mud	4
Potable Water	2
Sludge	2
Lubricating Oil	2
Waste Water	1
Hydraulic Oil	1

Machinery

No records exist for the criteria.

Capacity

No record exist for the criteria.

Lifting Equipment

No record exist for the criteria.

ABS Survey Manager Survey Status

Name : **JACK FITZ**
Status : **In Operation, Active, Loadline only**

Class Number : **9937906**
IMO Number : **8964836**

Certificate Type	Term	Flag	Issue Date	Expiry Date	Extended Date	State Date	Status
Load Line							
International Load Line Certificate (HSSC)	Full Term	United States of America	11 Mar 2010	26 Feb 2014		11 Mar 2010	Issued

ABS Survey Manager Survey Status

Name	:	**JACK FITZ**	Class Number	:	**9937906**
Status	:	**In Operation, Active, Loadline only**	IMO Number	:	**8964836**

Surveys - Scheduled

✔ indicates survey requested or in progress.

Survey Name	Status	Last Visit Date	Due Date	Range Date	Extended Date
Statutory					
Annual Load Line Survey 2			26 Feb 2011	26 Nov 2010 - 26 May 2011	
Renewal Load Line Survey 3			26 Feb 2014	26 Nov 2013 - 26 Feb 2014	

Attendance - In Progress

No records exist for the criteria.

Surveys - History For Last 5 Years

Survey Name	Status	Last Visit Date	Done Date	Location	Report Number
Statutory					
Annual Load Line Survey 1	Completed		11 Mar 2010	Morgan City, LA	MC1803708_A
Renewal Load Line Survey 2	Completed		24 Mar 2009	Morgan City, LA	MC1637871_A
Annual Load Line Survey 4	Completed		29 May 2008	Morgan City, LA	MC1006121_A
Annual Load Line Survey 3	Completed		14 Mar 2007	Morgan City, LA	MC806099_A
Annual Load Line Survey 2	Completed		01 Mar 2006	Morgan City, LA	MC687488_A

Surveys - Future

Survey Name	Interval	Due Date	Left Range Date	Right Range Date	Extended Date
Statutory					
Annual Load Line Survey 2	12	26 Feb 2011	26 Nov 2010	26 May 2011	
Annual Load Line Survey 3	12	26 Feb 2012	26 Nov 2011	26 May 2012	
Annual Load Line Survey 4	12	26 Feb 2013	26 Nov 2012	26 May 2013	
Renewal Load Line Survey 3	60	26 Feb 2014	26 Nov 2013	26 Feb 2014	

Name	:	**JACK FITZ**	Class Number	:	**9937906**
Status	:	**In Operation, Active, Loadline only**	IMO Number	:	**8964836**

Statutory Deficiencies - Open

No open statutory deficiencies have been reported as of the date of this report.

Statutory Deficiencies - In Progress

No in progress statutory deficiencies have been reported as of the date of this report.

Special Findings - Open

No open special findings have been reported as of the date of this report.

Special Findings - In Progress

No in progress special findings have been reported as of the date of this report.

Attendance History - Last 12 months

Port Office	Report Number	Last Visit Date
Morgan City, LA	MC1803708	11 Mar 2010

Report Number	Survey	Status
MC1803708_A	Annual Load Line Survey 1	Completed

Port Office	Report Number	Last Visit Date
Morgan City, LA	MC1738158	21 Dec 2009

Report Number	Survey	Status
MC1738158_A	Damage - Repair Survey (Statutory)	Completed

Name	:	**JACK FITZ**	Class Number	:	**9937906**
Status	:	**In Operation, Active, Loadline only**	IMO Number	:	**8964836**

FAX REQUEST FOR ABS ATTENDANCE

To ABS Office At: _____ ABS Fax No: _____

Attn: Surveyor-in-Charge

Requestor's Name : _____

Requestor's Company : _____

Requestor's Company Address: _____

_____

_____

Requestor's Tel. #: _____

Local Contact Details : _____

_____

Billing Customer Name : _____

Billing Customer Address : _____

_____

Name : **JACK FITZ**

ABSID : **9937906**

Customer W.O/P.O. (if any) : _____

Date and Time of Survey : _____

Place of Survey : _____

We hereby request attendance for the attached surveys/items checked. If any surveys/items are not checked, please explain in the reason for each :

_____

_____

_____

_____

_____

_____

Requestor's Signature

Name	:	**JACK FITZ**	Class Number	:	**9937906**
Status	:	**In Operation, Active, Loadline only**	IMO Number	:	**8964836**

*Note: The survey overdue date includes the window of time allotted for completion of annual and intermediate surveys, as applicable.

ADDITIONAL: List any additional surveys/items that are not checked above that you wish to include at this time.

Name : **JACK FITZ**
Status : **In Operation, Active, Loadline only**
Class Number : **9937906**
IMO Number : **8964836**

REQUEST FOR A SHIP AUDIT(ISM, SQE, AND ISPS)

Please complete and fax this form to the ABS office closest to the requested audit location. To find the nearest ABS office and contact details please refer to the ABS Directory. **If the ship is not ABS Classed, please ensure the applicable class faxes a copy of the current survey status to the auditor.**

From: _____ [Requestor's name]
To: _____ [ABS Office closest to Audit]

Tel: _____
Location of Audit: _____

Fax: _____
Audit Date: _____

E-mail: _____

Agent's Name: _____
Agent's Tel: _____

Agent's Address: _____
Agent's Fax: _____

_____
Agent's E-mail: _____

Is the vessel currently ISM certified by RO (class society) other than ABS: Yes ☐ No ☐
If yes, name of the RO that has issued the existing SMC:
Note to the auditor: If the answer to the above question is "yes", please refer to process instruction, Transfer of Certification of Management Systems, SWZ-018-99-P04.

Audit Type 1:	**Audit Type 2 (If applicable)**
a) ☐ **ISM** ☐ **ISPS**	a) ☐ **S** ☐ **SQ** ☐ **SE** ☐ **SQE** ☐ **SEC Notation**(ABS Guide Requirements)
b) ☐ Initial ☐ Annual ☐ Intermediate ☐ Renewal ☐ Follow-Up ☐ Additional ☐ Interim ☐ Pre-assessment	**b)** ☐ Initial ☐ Annual ☐ Intermediate ☐ Renewal ☐ Follow-Up ☐ Additional ☐ Pre-assessment
[Check appropriate audit type(s)]	

Name of Ship: _____

Name & Address of Company: _____

(as it appears on your DOC) _____

_____

_____

_____

DOC issued by (For ISM/SQE): _____
Ship Security Plan approved by (For ISPS): _____

Flag: _____

Ship's ABS Class number: _____

ABS Survey Manager Survey Status

Name	:	**JACK FITZ**	Class Number	:	**9937906**
Status	:	**In Operation, Active, Loadline only**	IMO Number	:	**8964836**

Following section must be filled out if the vessel is not ABS classed:

Class Society:	_____	**Class Ship Type:**	_____
Distinctive Number or Letters:	_____	**IMO Number:**	_____
IMO Ship Type: [Check applicable ship type]	☐ Passenger Ship	☐ Oil Tanker	☐ Bulk Carrier
	☐ Passenger High Speed Craft	☐ Chemical Tanker	☐ Other Cargo Ship
	☐ Cargo High Speed Craft	☐ Gas Carrier	☐ MODU
Gross Tonnage:	_____	**Year of Build:**	_____
Builder Name:	_____	**Hull Number:**	_____

Instructions for filling out this form

IMO Ship type:
As defined in SOLAS Chapter IX, Regulation 1.

Class Number:
Identification number assigned to the vessel by ABS.

Audit Type 1:
This depends on the contract signed with ABS and will determine the scope of audit to be conducted. This information is used to identify an auditor qualified for the audit.

Should you have signed an ISM only contract then you only need check "ISM".

Should you have signed an ISPS only contract then you only need check "ISPS".

Audit Type 2:
If your contract also includes the ABS SQE Notation, then please additionally check the notation that you are pursuing (i.e., S, SQ, SE or SQE). This information is used to identify an auditor qualified for the audit.

Please note that should your contract cover SQE certification then you may not opt out of this requirement by choosing an ISM only audit.

SEC Notation incorporates all the requirements of the ABS Guide for Ship Security.

Survey Status:
If the ship to be audited is not ABS Classed, then it is a prerequisite of attendance that the auditor receives, prior to commencing the audit, a fax copy of the current survey status directly from the applicable Classification Society.

General Comments:
Wherever possible, please provide at least one week's notice of an intended audit.

Please ensure that the selected auditor is provided prompt notification of any alteration of the ETA and/or ETD.

For ISM/SQE Audits:
1) At the completion of the audit a copy of the audit report, including any Corrective Action Requests (CARs) and Observation, will be left onboard with the Master. A copy of this report together with the corrective action plan to any CARs must be maintained onboard so that they may be closed at the next audit.

2) A corrective action plan must be forwarded to the auditor within one month of the audit. Once accepted by the auditor, this plan must be implemented within three months of the audit completion. Please note many plans are not accepted on first attempt and it is therefore prudent to submit the corrective action plans at the first available opportunity.

United States of America
Department of Homeland Security
United States Coast Guard

Certification Date:	01 Mar 2006
Expiration Date:	01 Mar 2011
IMO Number:	8964836

Certificate of Inspection

For ships on international voyages this certificate fulfills the requirements of SOLAS 74 as amended, regulation V/14, for a SAFE MANNING DOCUMENT.

Vessel Name	Official Number	Call Sign	Service
M V JACK FITZ	1074297	WCZ2375	Offshore Supply Vessel

Hailing Port	Hull Material	Horsepower	Propulsion
NEW ORLEANS LA	Steel	1600	Diesel Reduction

Place Built	Delivery Date	Date Keel Laid	Gross Tons	Net Tons	DWT	Length
CODEN, AL UNITED STATES	23Mar1999	01Jun1998	R-86 I-486	R-59 I-145		R-144 I-144

Owner	Operator
M/V JACK FITZ LLC 20804 HIGHWAY 1 SOUTH GOLDEN MEADOW, LA 70357 UNITED STATES	JAMBON BOAT RENTALS 20804 HIGHWAY 1 GOLDEN MEADOW, LA 70357 UNITED STATES

This vessel must be manned with the following licensed and unlicensed personnel. Included in which there must be 0 certified lifeboatmen, 0 certified tankermen, 0 HSC type rating, and 3 GMDSS Operators.

1 Master	0 Master & 1st Class pilot	0 Radio Officer(s)	1 Chief Engineer	0 QMED/Rating
0 Chief Mate	0 Mate & 1st Class Pilot	2 Able Seamen/ROANW	0 1st Asst. Engr/2nd Engr.	0 Oilers
0 2nd Mate/OICNW	2 Lic. Mate/OICNW	1 Ordinary Seamen	0 2nd Asst. Engr/3rd Engr.	
0 3rd Mate/OICNW	0 1st Class Pilot	0 Deckhands	0 3rd Asst. Engr.	
			0 Lic. Engr.	

In addition, this vessel may carry 0 passengers, 0 other persons in crew, 0 persons in addition to crew, and 13 Offshore Workers. Total persons allowed: 20

Route Permitted and Conditions of Operation:

---Oceans---

WHILE ENGAGED IN THE SUPPORT OF EXPLORATION, EXPLOITATION, OR PRODUCTION OF OFFSHORE MINERAL OR ENERGY RESOURCES.

WHEN VESSEL IS ON A VOYAGE OF LESS THAN SIX HUNDRED (600) MILES, VESSEL MAY OPERATE WITH:
ONE (1) MASTER ONE (1) LICENSED MATE TWO (2) DECKHANDS
INCLUDED IN THE ABOVE LICENSED AND UNLICENSED PERSONNEL, THERE MUST BE TWO (2) CERTIFIED LIFEBOATMEN AND TWO (2) GMDSS OPERATORS. THE AUTHORIZED FIFTEEN (15) OFFSHORE WORKERS MAY BE INCREASED TO SIXTEEN (16).

NO MORE THAN TWELVE (12) OFFSHORE WORKERS MAY BE CARRIED ON AN INTERNATIONAL VOYAGE.

SEE NEXT PAGE FOR ADDITIONAL CERTIFICATE INFORMATION

With this Inspection for Certification having been completed at Morgan City, LA, the Officer in Charge, Marine Inspection, Marine Safety Unit Morgan City certified the vessel, in all respects, is in conformity with the applicable vessel inspection laws and the rules and regulations prescribed thereunder.

Annual/Periodic/Quarterly Reinspections

Date	Zone	A/P/Q	Signature
14Mar2007	MSU Houma	P	Harris, Dave M
29May2008	MSU Houma	P	Mosko, Gregory
24Mar2009	MSU Houma	P	Evans, Morgan
11Mar2010	MSU Houma	P	Harris, Dave M

This Amended certificate issued by:

P. MARK MCMANUS, LCDR, USCG, By Direction
Officer in Charge, Marine Inspection

Morgan City, Louisiana
Inspection Zone

OMB No. 2115-0517

Department of Homeland Security
United States Coast Guard

Certificate of Inspection

M V JACK FITZ

Certification Date:
01Mar2006

WHEN TRANSFERRING FUEL OIL, PETROLEUM BASED LIQUID MUD, OR OTHER COMBUSTIBLE LIQUIDS, A CERTIFICATED TANKERMAN, LICENSED ENGINEER, OR LICENSED DECK OFFICER SHALL SERVE AS THE DESIGNATED PERSON IN CHARGE.

IMMERSION SUITS NOT REQUIRED WHEN OPERATING BETWEEN 32 DEGREES NORTH AND SOUTH LATITUDES

ADDITIONAL FIRE PROTECTION SHALL BE ON BOARD AND PROPERLY MAINTAINED IN ACCORDANCE WITH 49 CFR 176.315 OR 46 CFR 98.30, AS APPLICABLE. FIXED INDEPENDENT, MARINE PORTABLE AND DOT TANKS TYPES IM 101 AND 102 MAY BE DISCHARGED OR FILLED WHILE ON BOARD THE VESSEL PROVIDED THEY MEET THE CARGO HANDLING REQUIREMENTS OF 46 CFR 98.30 AND 46 CFR64. DOT TANKS TYPE 57 MAY BE FILLED OR DISCHARGED WHILE ON BOARD THE VESSEL, PROVIDED THEY MEET THE CARGO HANDLING REQUIREMENTS OF 46 CFR 98.33. CARRAIGE OF FLAMMABLE OR COMBUSTIBLE LIQUIDS IN BULK IN APPROVED MARINE PORTABLE OR DOT TANKS SHALL NOT EXCEED TWENTY (20) PERCENT OF THE VESSEL'S DEADWEIGHT TONNAGE. THE COMBINED TOTAL HEIGHT OF CENTER OF GRAVITY AND WEIGHT OF ALL TANKS SHALL NOT EXCEED THE RESTRICTIONS IN THE CURRENT STABILITY LETTER.

VESSEL IS SUITABLE FOR OFFSHORE STANDBY SERVICE FOR A MAXIMUM OF 75 PERSONS IN ACCORDANCE WITH THE PROVISIONS OF 33 CFR 143, SUBPART E. WHEN ACTING AS A STANDBY VESSEL, ADDITIONAL EQUIPMENT SHALL BE PROVIDED AND MAINTAINED ON BOARD IN ACCORDANCE WITH 33 CFR 143, SUBPART E; AND MANNING SHALL BE:
ONE (1) MASTER TWO (2) LICENSED MATES TWO (2) DECKHANDS

CARRIAGE OF HAZMAT PROHIBITED WHILE IN STANDBY SERVICE.

VESSEL IS PROHIBITED FROM DISCHARGING NOXIOUS LIQUID SUBSTANCES (NLS) RESIDUE TO THE SEA.

VESSEL IS INSPECTED UNDER THE PROVISIONS OF 46 CFR SUBCHAPTER "L".

---Hull Exams---

Exam Type	Next Exam	Last Exam	Prior Exam
Drydock	06Mar2012	16Mar2009	06Mar2007
Internal Structure	06Mar2012	16Mar2009	06Mar2007

---Stability---

Letter Approval Date / 08Feb1999 Office/ MSC

---Liquid/Gas/Solid Cargo Authority/Conditions---

Authorization/ Grade "E" Liquid Mud and Non-Combustible (NLS) Drilling Fluids
46CFR Subchapter D Authority: Highest Grade/E Capacity/1260 Units/Barrels
46CFR Subchapter O Authority: Part 151/No Part 153/No Part 154/No

Loading Constraints - Structural

Tanks	Max Cargo Weight/Tank(Short Tons)	Max Density(LBS/Gal)
2S	13	16.670
1P	9	16.670
1S	9	16.670
2P	13	16.670

---Inspection Status---

Cargo Tanks

Department of Homeland Security
United States Coast Guard

Certificate of Inspection

M V JACK FITZ

Certification Date:
01Mar2006

	Internal Exam			External Exam		
TankID	Previous	Last	Next	Previous	Last	Next
2S	06Mar2007	16Mar2009	06Mar2012	-	-	-
1P	06Mar2007	16Mar2009	06Mar2012	-	-	-
1S	06Mar2007	16Mar2009	06Mar2012	-	-	-
2P	06Mar2007	16Mar2009	06Mar2012	-	-	-

	Saftey	Hydro Test		
TankID	Valves	Previous	Last	Next
2S	-	-	-	-
1P	-	-	-	-
1S	-	-	-	-
2P	-	-	-	-

Pressure Vessels

Type	Location	Previous	Last	Next
Air Receiver	Engine Room	-	16Mar2009	16Mar2014
Air Receiver	Engine Room	-	16Mar2009	16Mar2014

---Lifesaving Equipment---

	Number	Persons		Required
Total Equipment for		22	Life Preservers(Adult)	25
Lifeboats(Total)	0	0	Life Preservers(Child)	0
Lifeboats(Port)*	0	0	Ring Buoys(Total)	8
Lifeboats(Starbd)*	0	0	With Lights*	4
Motor Lifeboats*	0	0	With Line Attached*	2
Lifeboats W/Radio*	0	0	Other*	2
Rescue Boats/Platforms	1	0	Immersion Suits	25
Inflatable Rafts	2	40	Portable Lifeboat Radios	0
Life Floats/Buoyant App	0	0	Equipped with EPIRB?	Yes
Inflatable Bouyant App(IBA)	0	0	(* included in totals)	

---Fire Fighting Equipment---

Number of Fireman Outfits/ 0

Number of Fire Pumps/ 2

Hose information

Qty	Diameter	Length
5	1.5	Other

Fire Extinguishers - Hand portable and semi-portable

Qty	Class Type
2	A-II
5	B-II
2	C-I

---Certificate Amendments---

Current Amendment

Port Amending/ Marine Safety Unit Houma

Date Amended/ 18Mar2010

-Remarks-

ISSUED AMENDED COI FOR ROUTE CHANGE.

Department of Homeland Security
United States Coast Guard

Certificate of Inspection

M V JACK FITZ

Certification Date:
01Mar2006

END

INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified of the Protocol of 1978 related thereto (hereinafter referred to as "the Convention") under the authority of the Government of:

THE UNITED STATES OF AMERICA

By the

United States Coast Guard

Name of ship	Distinctive number or letters	IMO number	Port of registry	Gross tonnage
M V JACK FITZ	1074297	8964836	FALLING WATERS, WEST VIRGINIA, USA	486

Type of ship: ☐ tanker

☑ ship other than a tanker

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with Regulation 5 of Annex VI of the Convention; and

2. That the survey shows that the equipment, systems, fittings, arrangements and materials fully comply with the applicable requirements of Annex VI of the Convention.

This Certificate is valid until MARCH 1, 2011 subject to surveys in accordance with Regulation 5 of Annex VI of the Convention.

Issued at MORGAN CITY, LOUISIANA, USA

3/18/2010
Date of Issue

P. M. MCMANUS, LCDR, USCG, BY DIR
Officer in Charge, Marine Inspection, U. S. Coast Guard

INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that based upon a survey required by regulation 5 of Annex VI of the Convention, the ship was found to comply with the relevant provisions of the Convention:

Annual Survey:

Signed: _____

Place: _____

Date: _____

Annual*/Intermediate Survey:

Signed: _____

Place: _____

Date: _____

Annual*/Intermediate Survey:

Signed: _____

Place: _____

Date: _____

Annual Survey:

Signed: _____

Place: _____

Date: _____

* Delete as Appropriate

SUPPLEMENT TO INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE (IAPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT

In respect of the provisions of Annex VI of the International Convention for the Prevention of Pollution from Ships, 1973, as modified of the Protocol of 1978 relating thereto (hereinafter referred to as "the Convention").

Notes:

1. This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.
2. If the language of the original Record is not English, French or Spanish, the text shall include a translation into one of these languages.
3. Entries in boxes shall be made by inserting either a cross (x) for the answer "yes" and "applicable" or a (-) for the answers "no" and "not applicable" as appropriate.
4. Unless otherwise stated, regulations mentioned in this Record refer to regulations of Annex VI of the Convention and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of Ship

1.1 Name of Ship ..M V JACK FITZ.....

1.2 Distinctive numbers or letters ..1074297.....

1.3 IMO Number .....8964836.....

1.4 Port of Registry ..FALLING WATERS, WEST VIRGINIA, USA.....

1.5 Gross tonnage ....486.....

1.6 Date on which keel was laid or ship was at a similar stage of construction ..JUNE 1, 1998.....

1.7 Date of commencement of major engine conversion (if applicable) (regulation 13) ..NOT APPLICABLE.....

2 Control of emissions from ships

2.1 Ozone-depleting substances (regulation 12)

2.1.1 The following fire-extinguishing systems and equipment containing halons may continue in service ..... -

System equipment	Location on board

2.1.2 The following systems and equipment containing CFCs may continue in service ..... -

System equipment	Location on board

2.1.3 The following systems and equipment containing hydro-chlorofluorocarbons (HCFCs) installed before 1 January 2020 may continue in service ..... -

System equipment	Location on board

2.2 Nitrogen Oxides (NO_x) (regulation 13)

2.2.1 The following diesel engines with power output greater than 130kW, and installed on a ship constructed on or after 1 January 2000, comply with the emission standards of regulation 13(3)(a) in accordance with the NO_x Technical Code ..... -

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.2.2 The following diesel engines with power output greater than 130kW, and which underwent major conversion per regulation 13(2) on or after 1 January 2000, comply with the emission standards of regulation 13(3)(a) in accordance with the NO_x Technical Code ..... -

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.2.3 The following diesel engines with power output greater than 130kW, and installed on a ship constructed on or after 1 January 2000, or with a power output greater than 130 kW and which underwent major conversion per regulation 13(2) on or after 1 January 2000, are fitted with an exhaust gas cleaning system or other equivalent methods in accordance with regulation 13(3), and the NO_x Technical Code ..... -

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)

2.2.4 The following diesel engines from 2.2.1, 2.2.2 and 2.2.3 above are fitted with NO_x emission monitoring and recording devices in accordance with the NO_x Technical Code ..... –

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (rpm)
MARINE SAFETY U				

2.3 Sulfur oxides (SO_x) (regulation 14)

2.3.1 When the ship operates within SO_x emission control area specified in regulation 14(3), the ship uses:

.1 fuel oil with a sulfur content that does not exceed 1.5% m/m as documented by bunker delivery notes; or ..... –

.2 an approved exhaust gas cleaning system to reduce SO_x emissions below 6.0 g SO_x /kW h; or ..... –

.3 other approved technology to reduce SO_x emissions below 6.0 g SO_x /kW h ..... –

2.4 Volatile organic compounds (VOCs) (regulation 15)

2.4.1 The tanker has a vapor collection system installed and approved in accordance with MSC/Circ.585 ..... -

2.5 The ship has an incinerator:

.1 which complies with resolution MEPC.76(40) as amended ..... -

.2 installed before 1 January 2000 which does not comply with resolution MEPC.76(40) as amended ..... -

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at MARINE SAFETY UNIT, MORGAN CITY, LOUISIANA

3/18/2010
Date of issue

P.M. MCMANUS, LCDR, BY DIRECTION
Signed
Officer In Charge, Marine Inspection,
U.S. Coast Guard