
เอกสารแนบที่ 27

ตัวอย่าง Work Permit



Date : 15/11/2023

Revision : 4

Ref : F-09-SHE/11

PERMIT TO WORK (PTW)

VESSEL:

DATE:

PTW No.:

LOCATION AREA: Ship side p/STBD

☒ DECK☐ ENGINE

OPERATION UNIT: Ship's fender.

TASK: Repair Ship fenders p/STBD

INDICATE WORK TO BE COMPLETED (tick (✓) as many as applicable)

WORKING AT HEIGHTS / OUTBOARD	<input type="checkbox"/>	COMPLETE F-09-SH E/05 PTW WORK AT HEIGHTS CERTIFICATE
WORK REQUIRED ELECTRICAL / MACHANICAL	<input type="checkbox"/>	COMPLETE F-09-SHE/06 PTW ISOLATION CERTIFICATE
WELDING / BURNING / CUTTING/HEATING	<input checked="" type="checkbox"/>	COMPLETE F-09-SHE/07 PTW HOT WORK CERTIFICATE
ENTRY INTO CONFINED	<input type="checkbox"/>	COMPLETE F-09-SHE/08 PTW CONFINED SPACE ENTRY CERTIFICATE
DIVING OPERATIONS	<input type="checkbox"/>	COMPLETE F-09-SHE/09 PTW DIVING OPERATIONS CERTIFICATE

SOME TASKS MAY REQUIRE MORE THAN ONE PTW CERTIFICATE; DOUBLE-CHECK WHEN COMPLETING THE CERTIFICATE

3rd PARTIES / AUTHORITIES TO BE NOTIFIED (tick (✓) or indicate N/A, as appropriate)

MASTER / CHIEF ENGINEER	<input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A	Charterer / Client Representative	<input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A
LOCAL PORT AUTHORITIES / COASTGUARD?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> N/A	FLAG / CLASS / INSURANCE REPRESENTATIVES?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A

PERMIT VALID FROM:

DATE; 16/11/2024
TIME; 1810
(In 24hr format - HHMM)

PERMIT VALID UNTIL:

DATE; 16/11/2024
TIME; 2330
(In 24hr format - HHMM)

VALIDITY OF EACH PERMIT MUST NOT EXCEED 12hrs IN TOTAL

Hazards Identified by Permit Holder

<input type="checkbox"/> Liquids / Gas Under Pressure	<input type="checkbox"/> Manual Handling	<input type="checkbox"/> Chemicals	<input type="checkbox"/> Electrical
<input checked="" type="checkbox"/> Explosive	<input checked="" type="checkbox"/> Hot Equip / Surfaces	<input type="checkbox"/> Flying particles	<input checked="" type="checkbox"/> Dropped Objects
<input type="checkbox"/> Moving / Rotating Machinery	<input type="checkbox"/> Heavy Lift Operations	<input type="checkbox"/> Dust / Fumes	<input checked="" type="checkbox"/> Weather / Sea State
<input type="checkbox"/> Work at Height Lifting Equipment	<input type="checkbox"/> Adjacent Operations	<input type="checkbox"/> Safety System Disabled	<input type="checkbox"/> Confined Space
<input checked="" type="checkbox"/> Working Over Water	<input type="checkbox"/> Restricted Access / Egress	<input checked="" type="checkbox"/> Non-Routine Task	<input checked="" type="checkbox"/> Slips, trips & falls
<input type="checkbox"/> Other:			

Precaution to be taken

<input checked="" type="checkbox"/> Toolbox meeting required	<input checked="" type="checkbox"/> Check equipment dead/earthed	<input type="checkbox"/> Air line connection secured	<input checked="" type="checkbox"/> Work vest/life buoy to be worn
<input type="checkbox"/> Considers adjacent work	<input type="checkbox"/> Depressurize	<input type="checkbox"/> SDS	<input checked="" type="checkbox"/> JSA # 22, 97
<input checked="" type="checkbox"/> Safety observer in place	<input checked="" type="checkbox"/> Provide with suitable spaces	<input type="checkbox"/> Erect Signs / barriers	
<input checked="" type="checkbox"/> Communications	<input type="checkbox"/> water Flush/drain	<input checked="" type="checkbox"/> Scaffolding	
<input type="checkbox"/> Thoroughly ventilated	<input type="checkbox"/> Work place adequality lit	<input type="checkbox"/> Lifting Equipment	

Safety Equipment Required and Extra PPE

<input type="checkbox"/> Fall Arrest	<input checked="" type="checkbox"/> SCBA	<input type="checkbox"/> Floatation Device	<input type="checkbox"/> Eye Protection
<input type="checkbox"/> Face Shield	<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Particulate Respirator	<input checked="" type="checkbox"/> Gloves (Type): Welding gloves
<input type="checkbox"/> Full Chemical Suit	<input type="checkbox"/> Gas Detector	<input type="checkbox"/> Radio	<input type="checkbox"/> Others

RESPONSIBLE PERSON

AUTHORISING PERSON

HAVE ALL SAFETY CONTROL MEASURES,
ISOLATIONS & WORKING RESTRICTIONS BEEN REMOVED? ☐HAVE ALL RELEVANT 3rd PARTIES & AUTHORITIES BEEN
NOTIFIED OF COMPLETION? ☐ALL ISSUED PTW CERTIFICATES ARE SIGNED-OFF & CLOSED OUT? ☐HAVE ALL INVOLVED CREW / STAFF BEEN DE- BRIEFED? ☒

RESPONSIBLE PERSON

AUTHORISING PERSON

place and harmful condition to another people or environment.

เอกสารแนบที่ 28

ตัวอย่าง Job Safety Analysis

	Date : 15/03/2024	Revision : 5	Ref : F-09-SHE/04	The Residual Risk Matrix The Matrix will determine if the Risk is LOW , MEDIUM or HIGH
	JOB SAFETY ANALYSIS			

JSA No. Specific_001 **Job :** MOORING / UNMOORING VESSEL AT OFFSHORE, Vessel approaching offshore installation, Passenger transfer by personnel basket, Lifting Activity cargo operation.

Vessel Name : SC Nata **Date :** 02/ 01 / 2025 **Location :** Jasmine oil field

Visibility : Good **Wind (Direction / Speed) :** NE / 10- 15 knots


Sea (Wave) : 0.5 m. **Current (Direction / Speed) :** NE / 0.9-1.4 knots

Severity	Probability				
	A	B	C	D	E
1	1A	1B	1C	1D	1E
2	2A	2B	2C	2D	2E
3	3A	3B	3C	3D	3E
4	4A	4B	4C	4D	4E
5	5A	5B	5C	5D	5E

TASK (1) งาน	HAZARD ID (2) หมวดหมู่ความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
1) Approaching the offshore installation	<ul style="list-style-type: none"> - Machinery - Motion - Gravity 	<ul style="list-style-type: none"> - Machinery failure - Vessel contacts with installation. - Crew on deck slips trips and fall due to vessel motions. 	<ul style="list-style-type: none"> - 500m zone safety checklist / Black out preventive checklist shall be completed prior approaching the installation. - Analysis wind / current direction and speed, approach with safe direction and speed, avoid approaching on a drift on position. - Check weather forecast from Marine control sharing. - Crews wear appropriated PPE with job / Fit for duty. 	3	C	3C	<ul style="list-style-type: none"> - Engineer regularly check all machineries to ensure that they are working in good order. - If vessel unable to avoid approaching on drift on position, vessel Master shall keep a safe distant between vessel and the installation while approaching. - Observe weather condition from radar and by visual. - Ensure the working area on deck must be kept clear from all obstruction. 	3	B	3B
2) Passing heaving / mooring lines	<ul style="list-style-type: none"> - Motion 	<ul style="list-style-type: none"> - Crew losing balance when throwing heaving line or passing mooring line results falling overboard. 	<ul style="list-style-type: none"> - Deck crew wear work vest and other appropriated PPE, life buoy with line readily available. 	3	C	3C	<ul style="list-style-type: none"> - Ensure the working area on deck must be kept clear from all obstruction. - Do not throw heaving line directly to the riggers on the installation. 	3	B	3B

	Date : 15/03/2024	Revision : 5	Ref : F-09-SHE/04	
	JOB SAFETY ANALYSIS			


TASK (1) งาน	HAZARD ID (2) หมวดหมู่ความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
	<ul style="list-style-type: none"> - Gravity 	<ul style="list-style-type: none"> - Rigger on the offshore installation hit by monkey fist when sending heaving line. 	<ul style="list-style-type: none"> - Maintain a proper communication with the installation. 	3	C	3C	<ul style="list-style-type: none"> - Ensure, no solid metal in the monkey fist on the heaving line. 	3	B	3B
3) Free payout of mooring line overboard <i>SHE(MO) LES 2022-10 The mooring rope entangled to the starboard propeller. (While proceeding to tie up the buoy).</i>	<ul style="list-style-type: none"> - Motion - Machinery 	<ul style="list-style-type: none"> - Crews leg caught by rope and dragged into bits or fall overboard - Mooring line caught-in propellers 	<ul style="list-style-type: none"> - Never attempt to use leg to control paying out mooring line. - Follow safe mooring practice. - Payout mooring line gradually and keep clear of water, do not leave surplus length of mooring rope on water surface. 	3	C	3C	<ul style="list-style-type: none"> - Never stand in bight of line - Pay out mooring line one at a time in controlled manner. 	3	B	3B
4) Heaving mooring lines using capstan or mooring winch <i>SHE(MO) LES SUB 2022-01 The crew was injured (The little finger of the right hand was injured).</i>	<ul style="list-style-type: none"> - Motion 	<ul style="list-style-type: none"> - Crews leg or hand caught by rope and trapped between capstan and rotating capstan or mooring winch. 	<ul style="list-style-type: none"> - Follow safe mooring practice. - Never tie back control lever of capstan. - Clear communication. 	3	C	3C	<ul style="list-style-type: none"> - Do not stand in bight of rope. - Capstan and mooring winch control is to be attened during operation, clear command to start and stop. 	3	B	3B

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				S	P	R		S	P	R
	- Machinery	- Mooring line trapped in rotating capstan or mooring winch causes parting and hitting person. - Pinch point.	- Do not stand in line of fire / snap back zone.	3	C	3C	- Stop or slow rotation when running mooring line on to capstan or mooring winch. - Impact grooves is to be used only. - Never use cotton glove in mooring operation.	3	B	3B
5) Secure mooring line on the bitts	- Motion	- Vessel motion causes sudden tightening of line and traps hand between line and bitts.	- Observe weather condition from radar and by visual.	3	C	3C	- Rope stopper to be used to secure mooring line prior transfer from capstan or winch to the bitts. - Do not turn the rope on the bitts if the vessel has excessive way still on. - Vessel shall use engines to maintain position until tie-up is completed.	3	B	3B
	- Pressure (Tension)	- Vessel motion causes line parted and hits person.	- Do not stand in line of fire / snap back zone.	3	C	3C	- Ensure adequate turn of rope made on the bitts, avoid turning more than one rope on one set of the bitts to enable rope to be adjustable and ensure each mooring line has equal tension.	3	B	3B

Original: Vessel, Copy: SHE, Retention: 2 years

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	JOB SAFETY ANALYSIS		

TASK (1) งาน	HAZARD ID (2) หมวดหมู่ความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
6) On the mooring	- Motion	- Vessel motion due to wave, swell and squall causes mooring rope parted - Vessel contacts with the installation caused by wave, swell or squall.	- Ensure all mooring ropes are preferably fastened and regulary check shall be carried out. - Observe weather condition from radar and by visual. - Check weather forecast from Marine control sharing. - SWA is to be applied in an ample time if situation not permit or unsafe for operation.	3	C	3C	- Vessel shall maintain adequate ballast to minimize motions due to sea wave or swell. - Vessel shall have all propulsions ready for use at all times. - The adequated size and quantity of Yokohama fenders shall be provided to prevent direct contact between vessel and installation (Distant between each fender shall be provided properly for effective prevention). - If mooring direct to platform ensure ropes are secured at delicated mooring points that height enough above water line to avoid banacles (Accomodation support vessel)	3	B	3B

Original: Vessel, Copy: SHE, Retention: 2 years

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7) Recover mooring lines after let go them.	- Motion	- Mooring line parted due to vessel motion and hit person. - The line pulled rapidly overboard, leg caught in bight of rope caused injury to person or dragged overboard.	- Never stand in bight of line or snap back zone. - Observe weather condition from radar and by visual. - Turn mooring rope on capstan barrel only two rounds so it can be easily released if necessary.	3	C	3C	- Vessel shall use engines to maintain position until cast off is completed.	3	B	3B
	- Machinery	- Mooring line caught-in propellers, thrusters or rudders.	- Cast off and recover one line at a time to avoid entanglement, pick up line as fast as it safe and do not leave surplus length of rope on water surface.	3	C	3C	- Deck crew to report of any floating object surrounding vessel.	3	B	3B


TASK (1) งาน	HAZARD ID (2) หมายเลขความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
1) Entering 500m Zone <u>SHE(MO) LES 2018 -13 Vessel collided with FSO (HIPO)</u> <u>SHE(MO) LES 2018 -13 Vessel collided with platform (HIPO)</u> <u>SHE(MO) LES 2019 -04 The propellers entangled with fishing net</u> <u>SHE(MO) LES 2019 -07 Propellers and rudders entangled with bamboo sticks and fishing net</u> <u>SHE(MO) LES 2019 -14 The propellers entangled in mooring rope</u> <u>SHE(MO) LES 2022-04 The alternator coil of generator no.1 is damaged.</u>	- Motion	- Collision with offshore installation. - Vessel rolling and pitching.	- Before entering 500m Zone, ensure all machineries and controls and emergency systems are operational and tested. - Conduct Toolbox meeting. - Only enter 500m after receiving permission from installation. - Avoid drift on approach to platform. - Know the state of weather and tide including forecast. - Test communication with platform before entering 500m and get information of any other operations that will affect vessel.	2	A	2A				
	- Mechanical	- Engine failure: blackout or loss propulsion.	- Ensure the bridge and ER adequately manned. - Approach platform at safe reduced speed and set-up a safe distance off platform. - Master & Officers familiar with Emergency steering system. - 500m Zone procedure apply and complete 500M zone checklist completed. - If vessel unable to maintain position due to weather/current exercise SWA do not continue operation.	2	A	2A				

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				S	P	R		S	P	R
2) Approaching offshore installation <u>SHE(MO) LES 2022-02</u> <i>Platform's fender damaged due to contact from vessel stern while transfer passenger by swing rope.</i>	- Motion	<ul style="list-style-type: none"> - Collision with installation. - Miscommunication with platform operator. - Loss heading and position control while approaching the installation. 	<ul style="list-style-type: none"> - Approaching with appropriate direction and speed. - SWA if required. 	3	B	3B	<ul style="list-style-type: none"> - Vessel maneuver with a safe control-able speed. - Avoid drift on situation. - Avoid direct heading of the vessel to the installation. - Keep a safe clearance distance between vessel and installation (not less than 5 meters) 	3	A	3A
	- Gravity	<ul style="list-style-type: none"> - Shifting / falling of Cargo while turning vessel due to ship/s rolling by high swell while turning the vessel. 	<ul style="list-style-type: none"> - Do not release lashing until turning of vessel is completed and permission from bridge. - Ensure no any crew or passenger present on Cargo deck. - Ensure all lashing gears are in good condition. - Ensure all lashing gears are tighten prior turning vessel. - Crew completed full PPE. 	3	C	3C	<ul style="list-style-type: none"> - Stop vessel after turning in order to analyze all related/potential circumstances that affected to vessel motion prior handling vessel by astern to intend location at platform. 	3	B	3B

Original: Vessel, Copy: SHE, Retention: 2 years

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				S	P	R		S	P	R
<u>SHE(MO) LES 2018-18</u> <i>Vessel collided with FSO (HIPO)</i> <u>SHE(MO) LES 2017-18</u> <i>Hi-Po: Vessel contacted platform</i>	- Mechanical	<ul style="list-style-type: none"> - Propeller Entanglement - M/E failure 	<ul style="list-style-type: none"> - Clear any floating materials & notify to platform. - M/E PMS to be maintained in good performance. - Emergency failure procedure to be familiarized. - Engine crew stand by at time inside engine room. - Exercise familiarization to ship's Contingency plan. 	2	C	2C	<ul style="list-style-type: none"> - Additional & Vigilant look out. - Stop engine immediately to avoid entangle up on receive notification from crew on deck if safe to do so. 	2	B	2B

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				S	P	R		S	P	R
1) Preparation for Approaching to Plat Form.	- Motion / Gravity	- Crew on main deck slip, trip and fall due to vessel rolling, pitching from bad weather and very high swell.	- Check weather forecast from Marine control sharing. - Properly PPE in that job. - Completed Pre-lift and hand safety checklist. - Crew fit for duty.	3	C	3C	- Observed weather from radar and by visual. - Observe current and wind before approaching - Main deck must be cleared from any obstruction.	3	B	3B
	- Temperature	- Heat from sunshine /heat stroke.	- Crew fit for duty.	3	C	3C	- Prepare drinking water.	3	B	3B
2) During approaching / holding position to platform	- Motion	- Ship contact with platform boat landing due to un-control from bad weather, strong wind and high swell.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approach plat form. - Check weather forecast from Marine control sharing. - If condition unsafe or bad weather use SWA.	3	C	3C	- Observed weather from radar and by visual. - Observe current and wind before approaching (wind speed not over 25 knots and swell not over 2.0 m).	3	B	3B

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				S	P	R		S	P	R
	- Machinery	- M/E Failure from fishing net, fishing trap and any obstruction entangle to propeller.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approach plat form.	3	B	3B	- All crew observe carefully in way of approaching area during handling astern in any obstructions (fishing net, fishing trap and any obstruction)	3	A	3A
	- Motion/ Gravity.	- Crew on deck & Passenger Slips, Trips and falls due to ship very rolling from high swell and bad weather.	- Ensure on deck must be cleared from any obstruct. - Crew and passenger fit for duty.	3	C	3C	- Check weather forecast, observed weather from radar and observe current / wind before approaching.	3	B	3B
	- Temperature/ Radiation	- Heat from sunshine/ heat stroke. - Radiation from sunshine.	- Properly PPE in that job (coverall, safety shoes, safety helmet with chinstrap, impact glove, Sunglasses, work vest). - Crew fit for duty. - SWA to exercise if danger or risk.	3	C	3C	- Prepare drinking water.	3	B	3B
3) During transfer passenger by personnel basket (lowering & hoisting)	- Motion	- Ship contact with platform boat landing due to un-control from bad weather, strong wind and high swell.	- Comply with 500 M zone checklist/ Back out preventive checklist completed before approaching plat form. - Check weather forecast from Marine control sharing. - If condition unsafe or bad weather use SWA.	3	C	3C	- Observed weather from radar and by visual. - Observe current and wind before approach, (wind speed not over 25 knots and swell not over 2.0 m)	3	B	3B

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				S	P	R		S	P	R
	- Machinery	- M/E Failure from fishing net, Fishing trap and any obstruct entangle to propeller.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approach plat form. - If condition unsafe or bad weather use SWA.	3	C	3C	- All crew observe carefully in way of approaching area during handling astern in any obstructions (fishing net, fishing trap and any obstruction).	3	B	3B
	- Gravity	- Crew & Passenger slips, Trips and falls on deck. - Personnel basket drop, hit, contact with crew on deck during lowering. - Passenger fall into personnel basket during hoisting. - Passenger contact with guard rail/ hand rail at aft during lifting up. - Tag-line entangle with crew body during lifting personnel basket. - Drop object from any back pack /any hand carry of passenger fall to crew on deck during lifting up.	- Ensure all crew and passenger properly PPE in that job. - Crew on deck do not stand under the personnel basket (line of fire). - Passenger stand by at passenger zone (Don't stay over passenger limit). - Crew and passenger fit for duty. - All passenger must be familiar to personnel basket transfer. - Crew on deck familiar to use two tag-line for control personnel basket. - Crew on deck ensure tag-line clear from body. - Crew on deck don't stand under of personnel basket (line of fire). - Proper communication among parties crane operator / bridge/ banks man - SWA to exercise in danger or risk.	3	C	3C	- Ensure on main deck must be clear from any obstruction. - Crew on deck familiar to use two tag-line for control personnel basket.	3	B	3B

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				S	P	R		S	P	R
4) Completion of passenger transfer / Moving off vessel from the platform.	- Machinery	- M/E Failure from fishing net and fishing trap and any obstruction entangle to propeller.	- Contract to another vessel in vicinity about destination from another vessel.	3	C	3C	- Observe carefully in forward way area from any obstructions during handling for move out from platform (fishing net, fishing trap and any obstruction)	3	B	3B
	- Motion	- Vessel collision with another vessel in vicinity due to M/E failure from bad weather, high swell and strong wind.	- Check weather forecast from Marine control sharing. - Observed weather from radar and by look-out.	3	C	3C	- Observe current and wind speed/ direction.	3	B	3B
	- Gravity/ Motion.	- Crew and passenger slips, trips and falls on deck due to ship very rolling.	- Properly PPE in that job. - Crew and passenger fit for duty.	3	C	3C	- Ensure on deck and passage way must be clear from any obstruction.	3	B	3B

Original: Vessel, Copy: SHE, Retention: 2 years

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TASK (1) งาน	HAZARD ID (2) หมายเลขความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
1) Preparation for Approaching to Plat Form.	- Motion / Gravity	- Crew on main deck slip, trip and fall due to vessel rolling, pitching from bad weather and very high swell.	- Check weather forecast from Marine control sharing. - Observed weather from radar and by visual. - Observe current and wind before approaching - Properly PPE in that job. - Completed Pre-lift and hand safety checklist.	3	C	3C	- Main deck must be cleared from any obstruct.	3	B	3B
	- Temperature.	- Heat stroke.	- Fitness for duty (checklist)	3	B	3B	- Prepare drinking water.	3	A	3A
2) During Approach to position of platform.	- Motion	- Ship contact with platform boat landing due to un-control from bad weather, strong wind and high swell.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approach plat form. - Check weather forecast from Marine control sharing. - Observed weather from radar and by visual. - If condition unsafe or bad weather use SWA.	3	C	3C	- Observe current and wind before approach, (wind speed not over 25 Knots and swell not over 2.0 M.	3	B	3B

	Date : 15/03/2024	Revision : 5	Ref : F-09-SHE/04
	JOB SAFETY ANALYSIS		

TASK (1) งาน	HAZARD ID (2) หมายเลขความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
	- Machinery	- M/E Failure from fishing net, Fishing trap and any obstruct entangle to propeller.	- All crew observe carefully in way of approaching area during handling astern in any obstructions. (Fishing net, fishing trap and any obstruct.)	3	B	3B				
	- Motion / Gravity	- Crew on deck Slips, Trips and falls due to ship very rolling.	- Properly PPE in that job (Coverall, safety shore, safety helmet with chinstrap, impact glove, safety glass, work vest).	3	C	3C	- Ensure on deck must be cleared from any obstruct.	3	B	3B
	- Temperature/ Radiation	- Heat from sunshine/ heat stroke. - Radiation from sunshine.	- Properly PPE in that job (Coverall, safety shore, safety helmet with chinstrap, impact glove, safety glass, work vest). - SWA to exercise in danger or risk.	3	B	3B	- Prepare drinking water.	3	A	3A

TASK (1) งาน	HAZARD ID (2) หมายเลขความอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
3) During transfer/ loading cargo	- Gravity	- Crew slips, trips and falls on deck. - Drop object from cargo/crane/platform.	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest). - Don't stand under the cargo (Line of fire).	3	C	3C	- Ensure on main deck must be clear from any obstructions.	3	B	3B
	- Machinery	- M/E Failure from fishing net and fishing trap and any obstruct entangle to propeller.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approach platform.	3	C	3C	- Observe carefully in area during handling astern from any obstructions. (Fishing net, Fishing trap and any obstruct.)	3	B	3B
	- Motion	- Cargo contact with deck crew and guard rail/ hand rail aft. - Pinch Point from cargo.	- Cargo clear from the hand rail aft or Guard rail on deck. - Banks man must ensure to correct hand signals with Crane Driver. - Use two tagline for control the cargo and don't direct touch to cargo. - Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest).	3	C	3C	- Ensure VHF communication working properly. - Battery/tested between Bridge, Banks man and Crane Driver.	3	B	3B

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TASK (1) งาน	HAZARD ID (2) หมายเลขความอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
	- Chemical/ Radiation/ Biological.	- Chemical from dangerous cargo (Oil tank/ Rig wash). - Radiation from dangerous cargo (Radioactive Box). - Biological from food waste.	- Contact to LQ Radio room for detail of any cargo before load the cargos. - Load dangerous cargos on IMDG area. - SWA to exercise in danger or risk.	3	C	3C	- Crew must be familiar with SDS / Labels and DG Manifest checked from dangerous cargos.	3	A	3A
4) During securing of cargo.	- Mechanical.	- Pinch point from Ratchet with cargo.	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest).	3	C	3C	- Keep clear hand and body before secure cargo.	3	B	3B
	- Gravity.	- Crew Slips, Trips and falls on deck.	- Prepare drinking water.	3	C	3C	- Ensure on deck must be clear from any obstruct.	3	B	3B
	- Motion.	- Cargo shifting and impact to crew on deck / Body injury.	- Don't stand in Line of fire.	3	C	3C	- Ensure secured all cargo.	3	B	3B
	- Temperature.	- Heat from sunshine/ heat stroke. - Radiation from sunshine.	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest). - Prepare drinking water.	3	C	3C	- Prepare drinking water.	3	B	3B

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TASK (1) งาน	HAZARD ID (2) หมวดหมู่ความเป็นอันตราย	HAZARD (3) อันตราย	EXISTING CONTROL (4) มาตรการควบคุมที่มีอยู่	RANKING (5) ความเสี่ยง			ADDITIONAL CONTROL MEASURES (6) มาตรการควบคุมเพิ่มเติม	RE-RANKING (7)		
				S	P	R		S	P	R
	- Chemical/ Radiation/ Biological.	- Chemical from dangerous cargo (Oil tank/ Rig wash). - Radiation from dangerous cargo (Radioactive Box). - Biological from food waste.	- Comply with instruction of SDS. - SWA to exercise in danger or risk.	3	B	3B	- Deck crew must be familiar with SDS / Labels and DG procedure /Manifest checked from dangerous cargos.	3	A	3A
5.) Completion of Cargo transfer / moving out from the Platform.	- Machinery	- Vessel collision with another vessel in vicinity due to M/E Failure from fishing net and Fishing trap and any obstruct entangle to propeller.	- Contact to another vessel in vicinity about destination from another vessel	3	C	3C	- Observe carefully in forward way area from any obstructions during handling for move out from platform. (.fishing net, fishing trap and any obstruction).	3	B	3B
	- Motion	- Vessel collision with another vessel in vicinity due to M/E failure from bad weather, high swell and strong wind.	- Check weather forecast from Marine control sharing. - Observed weather from radar and by visual. - If condition unsafe or bad weather use SWA.	3	C	3C	- Observe current direction and wind before approaching, (wind speed not over 25 Knots and swell not over 2.0 M.)	3	B	3B
	- Gravity	- Crew Slips, Trips and falls on deck due to ship very rolling.	- Properly PPE in that job.	3	C	3C	- Ensure on deck and passage way must be clear from any obstruct.	3	B	3B

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Emergency Preparedness	
Emergency/Contingency that might be occurred :	Type of Shipboard Contingency Plan requires :
1) Person Injury	1) Medevac
2) Man Overboard	2) Life saving equipment set up ready
3) Black Out	3) Emergency Generator / Black out Recover
4) Steering Gear Failure	4) Emergency Steering Gear
5) _____	5) _____

JSA Review (Closed Task)			
TASK	HAZARD ID	HAZARD	EXISTING CONTROL

Prepared By:	Mr. Arayawat M	Signature :		Date :	02 Jan 2025
Approved By:	Capt.Narin P.	Signature :		Date :	02 Jan 2025

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Meeting members			
Name	Signature	Name	Signature
			



Date : 01/08/2019

Revision : 2

Ref : F-09-SHE/03

TOOLBOX MEETING

Vessel Name: SC GANYA		Date: 05 Jan 2025	
Location: Jasmine oil field		Time: 0600 Lt.	
Description of work to be performed (รายละเอียดของงานที่จะดำเนินการ):			
<ul style="list-style-type: none">- LIFTING ACTIVITY CARGO OPERATION- MOORING UNMOORING VESSEL AT OFFSHORE- PASSENGER TRANSFER BY PERSONNEL BASKET- VESSEL APPROACHING OFFSHORE INSTALLATION			
JSA reviewed (ตรวจสอบ JSA):		<input type="checkbox"/> Yes (มี) <input type="checkbox"/> No (ไม่มี)	
JSA's Topic (หัวข้อ JSA):		<input type="checkbox"/> Yes (มี) <input type="checkbox"/> No (ไม่มี)	
<ul style="list-style-type: none">- JSA 46 LIFTING ACTIVITY CARGO OPERATION- JSA 50 MOORING UNMOORING VESSEL AT OFFSHORE- JSA 65 PASSENGER TRANSFER BY PERSONNEL BASKET- JSA 94 VESSEL APPROACHING OFFSHORE INSTALLATION			
Procedure Review (ทบทวนขั้นตอนการปฏิบัติงาน):		<input type="checkbox"/> Yes (มี) <input type="checkbox"/> No (ไม่มี)	
Refer to (อ้างอิง):			
<ul style="list-style-type: none">- SWA- Marine operation guide lines- SMS manual: No hand on load- Lesson learnt- Safety Flash- Incident Sharing: Cargo damage while off-loading due to snagging hazard			
Permit to work (ใบขออนุญาตทำงาน):		<input type="checkbox"/> Yes (มี) <input type="checkbox"/> No (ไม่มี)	
Type (ประเภท):			
Duty of each one (หน้าที่ของแต่ละคน)			
Name	Duty	Name	Duty
	C/O, OOW		
	2/O, OOW		
	Bosun		
	AB, Deck crew		
	AB, Deck crew		
	AB, Deck crew		



Date : 01/09/2019

Revision : 2

Ref : F-09-SHE/03

TOOLBOX MEETING

Risks/ Hazards Identified (อันตราย/ ภัยจาก):	
<ul style="list-style-type: none">- Personnel injury- Sea wash on deck- Engine or Machinery failure- Miscommunication- Person fall on to deck or into water- The basket or cargo unit swing & hit person- Unable to maintain vessel position- Dropped objects- Mooring rope parted and hit person- Mooring rope entangled in thruster or propeller	
Comments of meeting (ข้อเสนอแนะจากทีมประชุม):	
<ul style="list-style-type: none">- All personnel involve in operation shall wear all appropriated PPE as per PPE matrix.- All personnel involve in operation shall aware of pinch point – Highlight on No hand on load.- Ensure effective communication between deck /bridge/crane operator is available.- Bridge, Engine room and deck shall be always appropriated manned.- Do not standing in line of fire.- Exercise SWA at any time if unsafe act or condition occur.- Monitor weather condition/squall by all available means.- Complete potential drops checklist prior commence operation.- Identify snagging point and prohibit cherry picking method in cargo operation to avoid cargo damage.- Bank man shall always stand in position where able to be seen by the crane operation at all time.- Re-inspect lifting gear prior off-loading to ensure they are in serviceable condition and all element are intact.- Platform crane breakdown during cargo operation, deck crew shall stand clear from line and vessel shall move away from danger.	
Person in charge (PIC):	
ผู้รับผิดชอบ	
Name	
Title	
Nathakorn K.	
Name	
Title	
Capt. Chaiyapan C.	
Authorising person (Permits task to go ahead):	
ผู้อนุมัติ	



Date 15/03/2024

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The Residual Risk Matrix

The Matrix will determine if the Risk is

HIGH, MEDIUM or LOW

JOB SAFETY ANALYSIS

JSA No. JSA J605012025

Vessel Name: SC GANYA

Visibility: Good

Sea (Wave): 1.1 - 2.0 m.

Job: LIFTING ACTIVITY / CARGO OPERATION

Location: Jasmine Offfield

Date: 05 January 2025

Wind (Direction / Speed): NE 5-22 Knot

Current (Direction / Speed): NE 0.7-1.5 Knot

Severity	A	B	C	D	E
1	1	2	3	4	5
2	2	3	4	5	6
3	3	4	5	6	7
4	4	5	6	7	8
5	5	6	7	8	9

TASK (1) etc	HAZARD ID (2) Hazardous event	HAZARD (3) Hazard	EXISTING CONTROL (4) Existing control	RANKING (5) Ranking			RE-RANKING (7) Re-ranking		
				S	P	R	S	P	R
1) Preparation for Approaching to Platform.	- Motion: Gravity	- Crew on main deck slip, trip and fall due to wet and falling pitching from bad weather and very high swell.	- Check weather forecast from Marine control shelter. - Observed weather from radar and by visual. - Observe current and wind before approaching. - Properly PPE in that job. - Completed Pre-lift and hand safety checklist. - Fitness for duty (checklist).	3	C	3C	3	B	3B
2) During Approach to platform.	- Motion: Temperature	- Heat stroke	- Ship contact with platform load landing due to uncontrol from bad weather, strong wind and high swell.	3	B	3B	3	A	3A
	- Motion	- Ship contact with platform load landing due to uncontrol from bad weather, strong wind and high swell.	- Comply with 500 M zone checking back our preventive checklist completed before approach platform. - Check weather forecast from Marine control shelter. - Observed weather from radar and by visual. - If condition unsafe or bad weather use SWA.	3	C	3C	3	B	3B

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JOB SAFETY ANALYSIS

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TASK (1) etc	HAZARD ID (2) Hazardous event	HAZARD (3) Hazard	EXISTING CONTROL (4) Existing control	RANKING (5) Ranking			RE-RANKING (7) Re-ranking		
				S	P	R	S	P	R
3) During Landing loading cargo	- Gravity	- Crew slips, trips and falls on deck. - Drop object from cargo/crate platform.	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest). - Don't stand under the cargo (Line of fire).	3	C	3C	3	B	3B
	- Machinery	- M/E Failure from fishing net and fishing trap and any obstruct entangle to propeller.	- Comply with 500 M zone checking back our preventive checklist completed before approach platform.	3	C	3C	3	B	3B
	- Motion	- Cargo contact with deck crew and guard rail hand rail all. - Push front from cargo.	- Cargo clear from the hand rail all or deck crew and guard rail hand rail all. - Banks man must ensure to correct hand signals with Crane Driver. - Use two tagline for control the cargo and don't direct touch to cargo.	3	C	3C	3	B	3B

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JOB SAFETY ANALYSIS

TASK (1) etc	HAZARD ID (2) Hazardous event	HAZARD (3) Hazard	EXISTING CONTROL (4) Existing control	RANKING (5) Ranking			RE-RANKING (7) Re-ranking		
				S	P	R	S	P	R
	- Machinery	- M/E Failure from fishing net. Fishing trap and any obstruct entangle to propeller.	- All crew observe carefully in very of approaching area during handling net, fishing trap and any obstruct (Fishing net, falling trap and any obstruct).	3	H	3B	3	A	3A
	- Motion: Gravity	- Crew on deck Slips, trips and falls due to ship very rolling.	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, work vest).	3	C	3C	3	B	3B
	- Temperature: Radiation	- Heat from sunline's heat stroke. - Radiation from sunline	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, work vest). - SWA to exercise in danger or risk.	3	B	3B	3	A	3A

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JOB SAFETY ANALYSIS

TASK (1) etc	HAZARD ID (2) Hazardous event	HAZARD (3) Hazard	EXISTING CONTROL (4) Existing control	RANKING (5) Ranking			RE-RANKING (7) Re-ranking		
				S	P	R	S	P	R
4) During securing of cargo.	- Chemical: Radiation: Biological	- Chemical from dangerous cargo (Oil tank, Rig wash). - Radiation from dangerous cargo (Radioactive Box). - Biological from food waste.	- Contact to LO Radio room for detail of any cargo before load the cargo. - Load dangerous cargo on IMIX area. - SWA to exercise in danger or risk.	3	C	3C	3	A	3A
	- Mechanical	- Punch event from Ratchet with cargo.	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest).	3	C	3C	3	B	3B
	- Gravity	- Crew Slips, Trips and falls on deck.	- Prepare drinking water.	3	C	3C	3	B	3B
	- Motion	- Cargo shifting and impact to crew on deck. - Body injury.	- Don't stand in Line of fire.	3	C	3C	3	B	3B
	- Temperature	- Heat from sunline heat stroke. - Radiation from sunline	- Properly PPE in that job (Coverall, safety shoes, safety helmet with chinstrap, impact glove, safety glasses, and work vest). - Prepare drinking water.	3	C	3C	3	B	3B

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JOB SAFETY ANALYSIS

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JOB SAFETY ANALYSIS

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TASK (H) งาน/กิจกรรม	HAZARD (H) อันตราย	EXISTING CONTROL (E) มาตรการที่มีอยู่	RANKING (R) อันดับ			ADDITIONAL CONTROL MEASURES (A) มาตรการเพิ่มเติม			RE-RANKING (R) อันดับ		
			S	P	R	S	P	R	S	P	R
	- Chemical/Radiation/Biological. - Chemical from dangerous cargo (N1 tank/Rig wash). - Radiation from dangerous cargo (Radioactive box). - Biological from food waste.	- Comply with instructions of SDS. - SWA, box of PPE, etc. as required.	3	B	3B				3	A	3A
5.) Completion of Cargo transfer from the Platform.	- Machinery. - Collision with another vessel in vicinity due to M/E failure from fishing net and fishing trap and any obstruct entangle to propeller. - Motion. - Vessel collision with another vessel in vicinity due to M/E failure from bad weather, high swell and strong wind.	- Contact to another vessel in vicinity about destination from another vessel. - Check weather forecast from Marine control sharing. - Observed weather from radar and by visual. - If condition unsafe or bad weather use SWA. - Properly PPE in that job.	3	C	3C				3	B	3B
	- Gravity.	- Crew Slips, Trips and falls on deck due in ship very rolling.	3	C	3C				3	B	3B

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Revision: 5

Ref: F-09-SHE/04

JOB SAFETY ANALYSIS

Emergency Preparedness Emergency/Contingency that might be occurred :	Type of Shipboard Contingency Plan requires :
1) _____	1) _____
2) _____	2) _____
3) _____	3) _____
4) _____	4) _____
5) _____	5) _____

SEA Return (Closed Task)	
Task	SEA/400
Task	SEA/400

Prepared By: Mr. Nathakorn Kungnamsanee	Signature: _____	Date: 05 January 2025
Approved By: Capt. Chaiyaporn Charnoi	Signature: _____	Date: 05 January 2025

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The Residual Risk Matrix

The Matrix will determine if the Risk is HIGH, MEDIUM or LOW

Severity	A	B	C	D	E
1	1	2	3	4	5
2	2	3	4	5	6
3	3	4	5	6	7
4	4	5	6	7	8
5	5	6	7	8	9

Job : MOORING / UNMOORING VESSEL AT OFFSHORE

Date : 05 January 2025 Location : Jasmine Offfield

Wind (Direction / Speed) : NE 5-22 Knot

Current (Direction / Speed) : NE 0.7-1.5 Knot

JSA No. : JSA 50/501/2025

Vessel Name : SC GANYA

Visibility : Good

Sea (Wave) : 1.1 - 2.6 m.

TASK (1) to	HAZARD ID (1) to	HAZARD (1) to	EXISTING CONTROL (1) to	RANKING (1) to	ADDITIONAL CONTROL MEASURES (1) to	RE-RANKING (1) to
				S	P	R
1) Approaching the offshore installation	- Machinery	- Machinery failure	- 500m zone safety checklist. Black out preventive checklist shall be completed prior approaching the installation.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Analyse wind / current direction and speed, avoid approaching on a drift on position.	3	C	3C
	- Gravity	- Crew or deck slips trips and fall due to vessel motions.	- Check weather forecast from Marine control sharing.	3	C	3C
	- Motion	- Crew leaving balance when throwing leaving line or passing mooring line results falling overboard	- Crews wear appropriate PPE with job / Fit for duty.	3	C	3C
2) Passing leaving / mooring lines	- Motion	- Crew leaving balance when throwing leaving line or passing mooring line results falling overboard	- Ensure the working area on deck must be kept clear from all obstruction.	3	C	3C
	- Motion	- Crew leaving balance when throwing leaving line or passing mooring line results falling overboard	- Do not leave leaving line directly to the riggers on the installation.	3	C	3C

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Date : 15/03/2024

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The Residual Risk Matrix

The Matrix will determine if the Risk is HIGH, MEDIUM or LOW

Severity	A	B	C	D	E
1	1	2	3	4	5
2	2	3	4	5	6
3	3	4	5	6	7
4	4	5	6	7	8
5	5	6	7	8	9

Job : MOORING / UNMOORING VESSEL AT OFFSHORE

Date : 05 January 2025 Location : Jasmine Offfield

Wind (Direction / Speed) : NE 5-22 Knot

Current (Direction / Speed) : NE 0.7-1.5 Knot

JSA No. : JSA 50/501/2025

Vessel Name : SC GANYA

Visibility : Good

Sea (Wave) : 1.1 - 2.6 m.

TASK (1) to	HAZARD ID (1) to	HAZARD (1) to	EXISTING CONTROL (1) to	RANKING (1) to	ADDITIONAL CONTROL MEASURES (1) to	RE-RANKING (1) to
				S	P	R
1) Approaching the offshore installation	- Machinery	- Mooring line tripped in rotating capstan or mooring winch causing jamming and hitting.	- Do not stand in line of fire / snap back zone.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
2) Passing leaving / mooring lines	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C

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The Residual Risk Matrix

The Matrix will determine if the Risk is HIGH, MEDIUM or LOW

Severity	A	B	C	D	E
1	1	2	3	4	5
2	2	3	4	5	6
3	3	4	5	6	7
4	4	5	6	7	8
5	5	6	7	8	9

Job : MOORING / UNMOORING VESSEL AT OFFSHORE

Date : 05 January 2025 Location : Jasmine Offfield

Wind (Direction / Speed) : NE 5-22 Knot

Current (Direction / Speed) : NE 0.7-1.5 Knot

JSA No. : JSA 50/501/2025

Vessel Name : SC GANYA

Visibility : Good

Sea (Wave) : 1.1 - 2.6 m.

TASK (1) to	HAZARD ID (1) to	HAZARD (1) to	EXISTING CONTROL (1) to	RANKING (1) to	ADDITIONAL CONTROL MEASURES (1) to	RE-RANKING (1) to
				S	P	R
1) Approaching the offshore installation	- Gravity	- Rigger on the offshore installation hit by monkey fist when sending leaving line.	- Maintain a proper communication with the installation.	3	C	3C
	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Never attempt to use leg to control paying out mooring line.	3	C	3C
	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Follow safe mooring practice.	3	C	3C
2) Passing leaving / mooring lines	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Pay out mooring line gradually and keep clear of water, do not have surplus length of mooring rope on water surface.	3	C	3C
	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Pay out mooring line one at a time in controlled manner.	3	C	3C
3) Leaving mooring lines using capstan or mooring winch	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Follow safe mooring practice.	3	C	3C
	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Never the back control lever if mooring winch.	3	C	3C
	- Motion	- Crews leg caught by rope and dragged into bits or fall overboard	- Clear communication	3	C	3C

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Date : 15/03/2024

Revision : 5

Ref : F-09-SHE/04

The Residual Risk Matrix

The Matrix will determine if the Risk is HIGH, MEDIUM or LOW

Severity	A	B	C	D	E
1	1	2	3	4	5
2	2	3	4	5	6
3	3	4	5	6	7
4	4	5	6	7	8
5	5	6	7	8	9

Job : MOORING / UNMOORING VESSEL AT OFFSHORE

Date : 05 January 2025 Location : Jasmine Offfield

Wind (Direction / Speed) : NE 5-22 Knot

Current (Direction / Speed) : NE 0.7-1.5 Knot

JSA No. : JSA 50/501/2025

Vessel Name : SC GANYA

Visibility : Good

Sea (Wave) : 1.1 - 2.6 m.

TASK (1) to	HAZARD ID (1) to	HAZARD (1) to	EXISTING CONTROL (1) to	RANKING (1) to	ADDITIONAL CONTROL MEASURES (1) to	RE-RANKING (1) to
				S	P	R
1) Approaching the offshore installation	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
2) Passing leaving / mooring lines	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C
	- Motion	- Vessel contacts with installation.	- Observe weather condition from radar and by visual.	3	C	3C

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7) Recover mooring lines after let go them.	- Motion	<ul style="list-style-type: none">- Mooring line parted due to vessel motion and hit person.- The line pulled rapidly overboard, leg caught in height of rope caused injury to person or dragged overboard.	<ul style="list-style-type: none">- Never stand in height of line or snap back zone.- Observe weather condition from radar and by visual.- Turn mooring rope on capstan barrel only two rounds so it can be easily released if necessary.	3	C	3C	<ul style="list-style-type: none">- Vessel shall use engines to maintain position until cast off is completed.	3	B	3B
	- Machinery	<ul style="list-style-type: none">- Mooring line caught in propellers, thrusters or rudders.	<ul style="list-style-type: none">- Cast off and recover one line at a time to avoid entanglement, pick up line as fast as it safe and do not leave surplus length of rope on water surface.	3	C	3C	<ul style="list-style-type: none">- Deck crew to report if any floating object surrounding vessel.	3	B	3B

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Date 15/03/2024

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JOB SAFETY ANALYSIS

Emergency Preparedness	Type of Shipboard Contingency Plan requires:
Emergency/Contingency that might be occurred:	1) _____
1) _____	2) _____
2) _____	3) _____
3) _____	4) _____
4) _____	5) _____
5) _____	

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JSA Review (Closed Task)	Task	30/2400 JP	Task	STARTING CONTROLLER

Prepared By: Mr. Nethakorn Kanjanominee	Signature:	Date: 05 January 2025
Approved By: Capt. Chaisapan Channo	Signature:	Date: 05 January 2025

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The Residual Risk Matrix

The Matrix will determine if the Risk is

High, Medium or Low

Sensitivity	A	B	C	D	E
1	25	15	10	5	2
2	50	30	20	10	5
3	75	45	30	15	7
4	100	60	40	20	10
5	125	75	50	25	12

JSA No. JSA 65/09/2023
Vessel Name: SC GANYA
Viability: Good
Sea (Wave): 1.1 - 2.6 m.
Job: PASSING/FR TRANSFER BY PERSONNEL BASKET
Date: 05 January 2025
Location: Jansine Offfield
Wind (Direction / Speed): NE 5-23 Knot
Current (Direction / Speed): NE 0.7-1.5 Knot

TASK (1) ID	HAZARD ID (1) ID	HAZARD ID (2) ID	EXISTING CONTROL (1) ID	RANKING (1) ID	ADDITIONAL CONTROL MEASURES (1) ID	RE-RANKING (1) ID
				S	P	R
1) Preparing for approaching to platform.	- Motion/ Gravity	- Crew on main deck 4ft, trip and fall due to vessel rolling, pitching from bad weather and very high swell.	- Check weather forecast from Marine control station. - Properly PPE in that job. - Completed Pre-lift and hand safety checklist. - Crew fit for duty.	3	3C	3B
2) During approaching / holding position to platform	- Temperature	- Heat from sunshine heat stroke.	- Crew fit for duty.	3	3C	3B
	- Motion	- Ship contact with platform boat handling due to un-control from bad weather, strong wind and high swell.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approaching from platform. - Check weather forecast from Marine control station. - If condition unsafe or bad weather use SWA.	3	3C	3B

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JOB SAFETY ANALYSIS

TASK (1) ID	HAZARD ID (1) ID	HAZARD ID (2) ID	EXISTING CONTROL (1) ID	RANKING (1) ID	ADDITIONAL CONTROL MEASURES (1) ID	RE-RANKING (1) ID
				S	P	R
1) Preparing for approaching to platform.	- Motion/ Gravity	- Crew on main deck 4ft, trip and fall due to vessel rolling, pitching from bad weather and very high swell.	- Check weather forecast from Marine control station. - Properly PPE in that job. - Completed Pre-lift and hand safety checklist. - Crew fit for duty.	3	3C	3B
2) During approaching / holding position to platform	- Temperature/ Radiation	- Heat from sunshine heat stroke. - Radiation from sunshine.	- Crew fit for duty.	3	3C	3B
3) During transfer by personnel basket (lowering & hoisting)	- Motion	- Ship contact with platform boat handling due to un-control from bad weather, strong wind and high swell.	- Comply with 500 M zone checklist/Back out preventive checklist completed before approaching from platform. - Check weather forecast from Marine control station. - If condition unsafe or bad weather use SWA.	3	3C	3B

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JOB SAFETY ANALYSIS

TASK (1) ID	HAZARD ID (2) ID	HAZARD ID (3) ID	TYPICAL (4) ID	EXISTING CONTROL (4) ID	RANKING (5) ID			ADDITIONAL CONTROL MEASURES (6) ID	RE-RANKING (7) ID
					S	P	R		
					3	C	3C		3B
					3	C	3C		3B

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JOB SAFETY ANALYSIS

TASK (1) SID	HAZARD IN CH DESCRIPTION SID(12)	HAZARD (1) SID(13)	EXISTING CONTROL (1) DESCRIPTION SID(14)	RANKING (1) SID(15)		ADDITIONAL CONTROL MEASURES (1) DESCRIPTION SID(16)	RE-RANKING (1) SID(17)	
				S	R		S	R
4) Completion of passenger transfer / Moving off vessel from the platform.	- Machinery	- M/F failure from fishing net and fishing trap and any obstruction entangle to propeller.	- Contact to another vessel in vicinity about destination from another vessel.	3	3C	- Observe carefully in forward way area from any obstructions during hauling for move out from platform (during net fishing trip and any obstruction)	3	3B
	- Motion	- Vessel collision with another vessel in vicinity due to M/F failure from bad weather, high swell and strong wind.	- Check weather forecast from Marine control station. - Observed weather from radar and by look-out.	3	3C	- Observe current and wind speed/direction.	3	3B
	- Gravity/ Motion.	- Crew and passenger slips, trips and falls on deck due to ship very rolling	- Properly PPE in that job - Crew and passenger fit for duty.	3	3C	- Ensure on deck and passage way must be clear from any obstruction.	3	3B

Original Vessel Copy SHE, Retention: 2 years

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JOB SAFETY ANALYSIS

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เอกสารแนบที่ 29

2024 HSSE Performance report



Table of Content

- Table of Content:
 - HSSECQ Policy / Stop Work Authority (SWA)
 - 2024 HSSE KPI & Performance Dashboard
 - Incident / Accident Triangle Statistics Summary
 - 2024 HOC Summary & Analysis Summary
 - 2024 B5/27 HSSE Champion of the Month Summary
 - 2024 PTW Register and Summary
 - 2024 Emergency Drill Exercise Summary
 - 2024 Clinic Visit Summary
 - 2024 HSSE & Operation Highlight
 - 2024 Safety Campaign Summary:
 - 2024 Safety Campaign Summary:
 - 2024 Environment Campaign Summary:
 - 2024 Health Campaign Summary:
 - Lookahead Challenge in Year 2025



HSSE Policy / Stop Work Authority (SWA)



HEALTH, SAFETY AND SUSTAINABILITY POLICY

Valeura Energy is committed to conduct its activities in a manner that will protect the health and safety of its employees, contractors, and the environment. This policy sets out the framework for managing risks and ensuring compliance with applicable laws and international standards.

- Comply with all national and local regulations and meet accepted international standards and good practices.
- Identify HSSECQ risks arising from our business these assets, manage and reduce these risks.
- Engage with local communities and stakeholders to ensure a positive impact.
- Set targets and measure our Health, Safety, and Sustainability performance to drive continuous improvement.
- Ensure appropriate resources are available to implement the HSSECQ Management System.
- All of our employees and contractors must work diligently and with regard for the safety of our assets, the health, safety, and security of our employees, community and other stakeholders, the impact to the environment, and reduce our carbon footprint to quality.



HSSE KPIs

Fatality (target = 0)
0

LTIFR (target ≤ 0.07)
0.00

TRIFR (target ≤ 0.20)
0.20

Last Lost Time Injury date: 26-Aug-23
Last Recordable Injury date: 19-Oct-24

HSSE Performance

Process safety Incident (target = 0)
0

Oil spill > 1 barrel (target = 0)
0

Business loss from security aspect (target = 0)
0

Repeated HIPO (target = 0)
0

Sr. Management visit (target = 7)
7

No. of emergency exercises
441

Regulatory non-compliance (target = 0)
0

Action closed within due date (High & Medium priority) (target = 85%)
86%

No. of HSSE training
189

Green House Gas (GHG) Emissions

740,926
YTD Emission Load (ton CO₂e)

82.02
YTD Intensity (ton CO₂e/mboe)
(2023 baseline = 82.5, 189)



Man-hours/Performance (Year To Date)

LTIFR / TRIFR (Year To Date)
Total man hours: 293,528

12 Months Rolling
293,528

Year To Date
293,528

Incident Summary

Field	Incident Date	Category	Details	Case No
B5/27	03-Nov-25	Undersized	Property Damage: D-230 conductor water leaking from perforator, MFD on 03 Jan 2025	20023
G1/48	19-Dec-24	Restricted Work Case	HOC: If rig was caught between pipe and wellbore, it could cause a well control incident	20222
G1/48	15-Dec-24	Property Damage	Property Damage: All supply line of H-Lo pilot pressure valve with valve	20202
G1/48	13-Dec-24	Property Damage	Property Damage: N/A, the LGR surface valve label fell from its support	20024
G1/48	11-Dec-24	Property Damage	Property Damage: Sensor was broken from 6 inches bypass cooling line on pipe spool	20025
G1/48	04-Dec-24	Loss of Containment (LOC)	LOC: Chemical leakage from Hot tank	20026
G1/48	01-Dec-24	Property Damage	Property Damage: Computer Screen	20021





January			El&O	Vinarco
February	Operator		Operator	Vinarco
March	Operator		Operator	Vinarco
April	El&O		El&O	Vinarco
May	Mechanic		Mechanic	Vinarco
June	Operator		Operator	Vinarco

Quarterly PTW Compliance report 2024



- Quarterly sampling of closed work permits for surveillance audit to ensure the document were used, filled out and approved correctly in 2024. No major non-compliance was detected from the samples. However, permits applicants and permit approvers are thoroughly checking and making sure correct use and, where applicable, gas test results are filled out properly to avoid repeats of audit findings by internal auditors or external auditors, i.e., SGS, DMF, during HSSE audits.
- Sample size was 15 permits to expand random sampling of mixed permit types to identify, if any, non-compliant use or completion.
- Contractors and subcontractors are provided induction on use of PTW form and required supporting documents and JSA acknowledged sign sheets.
- Any gaps or deficiencies, if any are detected or worked, document will not proceed. Work permit applicants will be briefed, advised with immediate corrections.

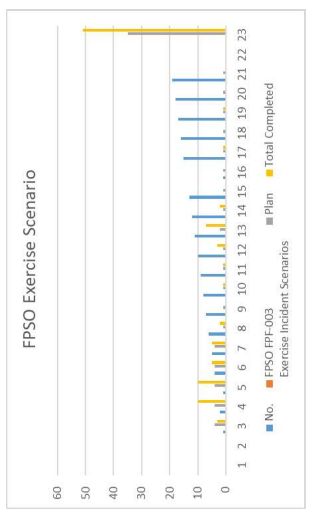
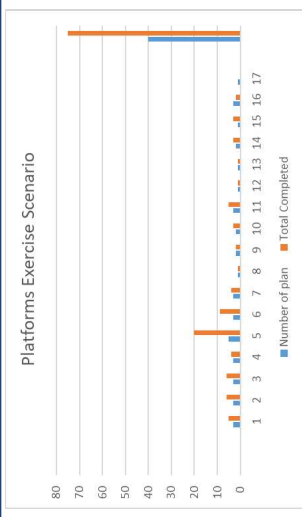


July			Operator	Vinarco
August			Mechanic	Vinarco
September			Operator	Vinarco
October			Operator	Vinarco
November			Mechanic	Vinarco
December			Operator	Vinarco

Emergency Drill Exercise Summary 2024

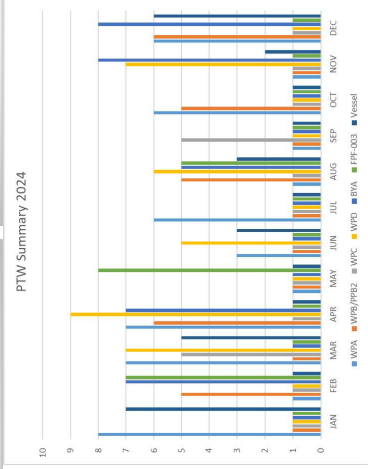


No.	Exercise Incident Scenarios	Number of plan	Total Completed
1	Search and Rescue/Man Overboard	3	5
2	Platform abandonment / evacuation	3	6
3	Fire / Explosion	3	6
4	Gas leak	3	4
5	General Master	5	20
6	Medevac injured or ill person	3	9
7	Oil spill response (see #5 in FSO/Infield IM)	3	4
8	Flares / Refrig. Refridgers / Trespassers.	1	2
9	Platform fire	2	2
10	Subsea pipeline leak	2	3
11	Electrical shock	3	5
12	Floating hose rupture	1	1
13	Typhoon Evacuation	1	1
14	Well Complication Blowout (rig at location)	2	3
15	Structural failure	1	3
16	Cane Failure	3	2
17	Business continuity plan (BCP) scenario-based tabletop exercise	1	0
Total		40	75
FPSO PFF-003		Plan	Total Completed
1	Boat drill /Evacuation	4	3
2	Fire drill /Boiler & Tank explosion	4	10
3	Oil spill containment /Chemical spill	4	10
4	Evacuation drill /Master station drill	4	5
5	Flare test	4	5
6	Suspended helicopter launching/MOB	1	2
7	Gas leak alarm	1	0
8	Lifboat launching	1	1
9	Communication drill	1	1
10	Man overboard	1	3
11	Medevac by boat / helicopter	2	7
12	Security drill-Terrorism/Piracy/Bomb	1	2
13	Emergency steering gear	1	0
14	ERT flooding/pipe or valve rupture	1	0
15	ERT fire - generator - power	1	0
16	Collision drill	1	0
17	Moorling failure	1	1
18	Hull failure	1	0
19	Business continuity plan (BCP) scenario-based tabletop exercise	1	0
Total		35	51





PTW Register and Summary 2024



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HSSE & Operation Highlight 2024

- FPSO FPF-003 UWILD, tanks cleaning and inspection for ABS class certification renewal over 10 months were completed without recordable LTI.
- 2024 Jasmine shutdown for maintenance campaign was accomplished as planned and injury-incident-free.
- 2024 ISO 9001, 14001, 45001 Audit Jasmine and Ban Yen, without major non-conformity.
- 2024 VE management visited at Jasmine field in October.
- 2024 DMF HSE& Waste management audit Jasmine field.
- 2024 VE KISS : We Keep It Safe and Sustainable campaign.
- 2024 Safety Campaign PTW&ICC Quality plus.
- 2024 safety Standup You see it you own it.
- 2024 Health campaigns Fit and Green season#6 "Right BMI / Right Living".
- 2024 AIM campaign promoted awareness and actions by field operators and maintenance team.



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Clinic Visit Summary 2024

Category of illnesses and injuries	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gastrointestinal	0	2	0	0	1	4	2	1	3	3	2	3	21
Eye	1	0	0	0	2	1	0	6	0	0	0	0	12
Ear	0	0	0	0	0	0	4	0	0	0	0	0	4
Respiratory	3	3	5	5	16	1	41	6	8	9	1	1	99
Cardiovascular	0	0	0	0	0	0	0	0	0	0	0	0	0
Musculoskeletal	0	1	0	2	0	0	0	0	5	0	0	2	10
Neurological	0	0	0	0	0	5	1	0	0	1	0	0	7
Skin	0	1	1	1	0	0	0	1	5	0	1	0	10
Urological	0	0	0	0	0	0	0	0	0	0	0	0	0
Dental	1	0	0	0	0	0	0	0	0	0	0	0	1
Genital & Gynecology	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	1	1	0	0	0	2	0	0	4
Total Visits	5	7	6	8	20	12	49	13	21	17	4	6	168
Total New case	5	7	6	8	9	8	12	4	11	13	4	6	93
Total follow up case	0	0	0	0	11	4	37	9	10	4	0	0	75
Total visit after work hour	2	1	0	0	4	4	1	1	10	1	1	0	25

Type of illnesses and injuries	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Illness - Non work related	5	7	6	8	20	12	49	13	18	17	4	6	165
Illness - Work related	0	0	0	0	0	0	0	0	0	0	0	0	0
Illness - Fatality	0	0	0	0	0	0	0	0	0	0	0	0	0
Injury - Non work related	0	0	0	0	0	0	0	0	3	0	0	0	3
Injury - Work related	0	0	0	0	0	0	0	0	0	0	0	0	0
Injury - Fatality	0	0	0	0	0	0	0	0	0	0	0	0	0

Classification of case	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FAC (First aid case)	4	6	5	6	12	9	39	1	15	10	4	6	117
MTC (Medical treatment case)	1	1	1	2	8	3	10	12	6	7	0	0	51
RWR (Return to work with restrictions)	0	0	0	0	0	0	0	0	0	0	0	0	0
LTA (Lost time accident)	0	0	0	0	0	0	0	0	0	0	0	0	0



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HSSE & Operation Highlight 2024



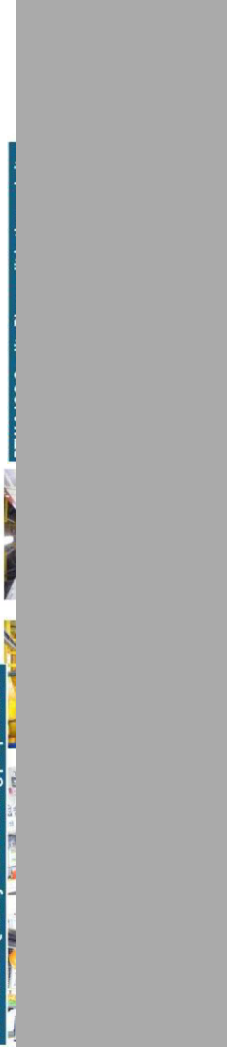
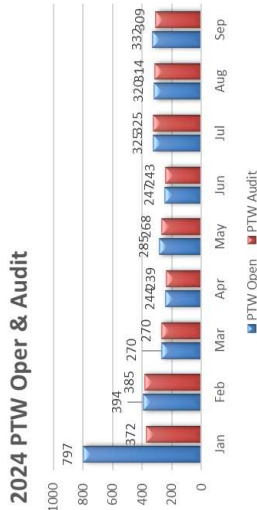
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VE KISS in Action Award

Congratulations to the Winners!

Work Location	First Winner	Second Winner	Third Winner
BKK Office	Patchareeporn M.	Thirada K.	Anasorn P.
Jasmine	Surasit K.	Wilson M.	
Minora	Menora Team		
Nong Yao	Poranule N. Rawi R. Khaliya J.	Wirotp.	
Wassana	Chalemporn L.	Sa-nguan S. Suriya D. Suriya C. Wattana K.	Terdhanat W.
Drilling	Suypochai K.	Yusop P.	Apichart B.
STH WH	Direk T.	Jirapa T.	Sujira T. and Kullitsak C.
SKL WH	Prasit B.	Kridada K. and Jetty & Passenger Team	

[Click here to watch all the winner's video here!](#)

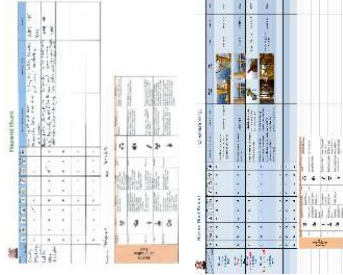


Effective Outcome

- Jasmine team with FVS, and all contactor's participated campaign such as Hazard Hunt before start and during working.

- The top 3 of hazard energy are below

1. Motion Hazard
2. Gravity Hazard
3. Chemical Hazard

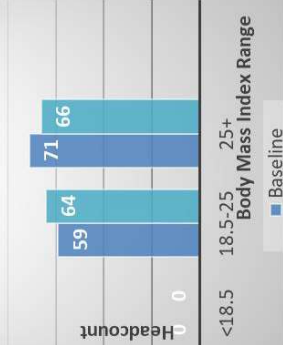


Group	BMI	Participants baseline	Participant final	% BMI Diff
1. BMI 18.5 - 25	18.5 - 25	59 persons (45.23%)	64 persons (49.23%)	+ 3.85 %
2. BMI > 25	>25	71 persons (54.61%)	66 persons (50.76%)	- 3.85 %
3. BMI < 18.5	<18.5	0	0	0



Jasmine B5
Key achievement
➢ Total 130 participants
➢ BMI percentage of improvement from the baseline by at least 0.90 BMI, or maintain BMI within the normal range.
➢ Crews monitor own's body mass index and ensure sustainable the right BMI for living healthy lifestyle at workplace and at home.

Jasmine B5 : Final 2024



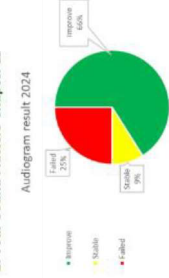
HSSE Committee meeting and Safety moment sharing plan in 2024				
ลำดับ	ผู้ดำเนิน	Month	Date	Venue
1	Jasmine Operator	January	25-Jan-2024	Bangkok office
2	Jasmine Operator	February	28-Feb-2024	Via MS-Teams
		March	28-Mar-2024	Via MS-Teams
		April	25-Apr-2024	Bangkok office
		May	23-May-2024	Manorot Field
		June	20-Jun-2024	Via MS-Teams
3	Jasmine Operator	July	25-Jul-2024	Watanaa Field
		August	29-Aug-2024	Bangkok office
4	Jasmine Operator	September	30-Sep-2024	Via MS-Teams
		October	22-Oct-2024	Manorot Field
		November	21-Nov-2024	Nong Yoo Field
		December	19-Dec-2024	Watanaa Field
5	Jasmine Operator			Jasmine Field
6	Jasmine Operator			
7	Jasmine Mechanic			
8	Jasmine Mechanic			

HSSE Committee meeting and Safety moment sharing plan in 2024

Month	Date	Venue	Safety protocol	Field sharing
January	25 Jan 2024	Bangkok office		Minor Field
February	28 Feb 2024	Via MS-Teams		Nong 'No Field
March	28 Mar 2024	Via MS-Teams		Wassana Field
April	23 Apr 2024	Bangkok office		James Field
May	20 May 2024	Via MS-Teams		Minor Field
June	20 Jun 2024	Via MS-Teams		Nong 'No Field
July	23 Jul 2024	Bangkok office		Wassana Field
August	29 Aug 2024	Via MS-Teams		James Field
September	20 Sep 2024	Via MS-Teams		Minor Field
October	22 Oct 2024	Nong 'No Field		Nong 'No Field
November	21 Nov 2024	Via MS-Teams		Wassana Field
December	19 Dec 2024	Bangkok office		James Field



1. Your Sound Matters Chapter II

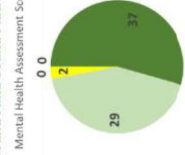


Note: Based on audiogram results, it can be seen that most of the results were trending positive.



2nd winner: Sport cap 10 rewards.

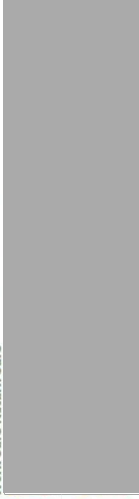
2. Sound Mind Sound Platform



Note: Based on mental health assessment result, the majority have good mental health, ranging from good to very good levels, with only a small portion at a moderate level.



3. Work Safe Return Safe

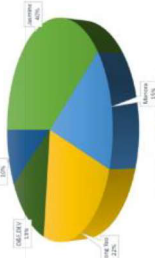


Some picture snap by our crew. WORK SALE and return home sale



ed for lucky participants

024

☐ Offshore 115 crews, no need 1 crew
☐ Onshore 13 person, no need 1 person

THANK YOU

เอกสารแนบที่ 30

สรุปสถิติอุบัติเหตุและตัวอย่างรายงานการสอบสวนเหตุการณ์

Final Investigation Report For Incidents with Potential Severity Medium & Serious

PECHS-FRM-X-664 Rev.6

Petrofac

PROJECT INFORMATION

PROJECT NAME	FPF-003 Burekham Jasmine Field	PROJECT NUMBER	2024-02
CONTRACTOR/COMPANY NAME	Petrofac South East Asia Pte. Ltd.	REPORT DATE	28-Aug-2024
ASSIGNED LOCATION	FPF-003	SPECIFIC LOCATION (Area / Module)	FPF-003 / No.2 Turbine Generator
SYNERGIC CASE NUMBER	33434		

COMPANY / ORGANIZATION

NAME:	DESIGNATION / POSITION
Manop Subkong	Team Lead / OIM
Wichai Supol	Facilitator / Safety Technician
Arun Phopli	Team Member / Maintenance Supervisor
Chumpon Ngarn-Rang	Team Member / Sr. Marine Engineer
Thunchaya Thonglam	Team Member / Cargo Officer
Somchai Khruaeburana	Team Member / Sr. E&I Tech
Phisan Chanthakiet	Nominated workforce / Bosun
Teerasong Damrongleangpao	Incident Owner / HSEQ Advisor

INCIDENT INFORMATION

DATE OF INCIDENT (dd/mm/yyyy)	23 August 2024	TIME OF INCIDENT (24 hr)	17:14 hrs.
TYPE OF INCIDENT	<div><div><div><input type="checkbox"/> LTI</div><div><input type="checkbox"/> RWC</div><div><input type="checkbox"/> MTC</div><div><input type="checkbox"/> FIRST AID</div><div><input type="checkbox"/> NEAR MISS</div><div><input type="checkbox"/> FIRE</div><div><input type="checkbox"/> SECURITY</div></div><div><input type="checkbox"/> PROPERTY DAMAGE</div><div><input type="checkbox"/> ENVIRONMENTAL</div><div><input type="checkbox"/> VEHICLE INCIDENT</div><div><input checked="" type="checkbox"/> OTHER</div></div> <div>Please specify: PSE</div>		

| INCIDENT SEVERITY ACTUAL | Personal injury/illness ☐ MEDIUM ☐ MINOR Environmental Incident ☐ MEDIUM ☐ MINOR Property Damage ☐ DAMAGE > \$10k ☐ MINOR | | |

| INCIDENT SEVERITY POTENTIAL (Refer to Appendix 1 below) | Personal injury/illness ☐ MEDIUM ☐ SERIOUS Environmental Incident ☐ MEDIUM ☐ SERIOUS Property Damage ☐ DAMAGE > \$10k | | |

| LIFE SAVING RULES (LSR) VIOLATED | ☐ Work Authorisation ☐ Driving ☐ Confined Space ☒ None ☐ Energy Isolation ☐ Working at Height ☐ Line of Fire ☐ Hot Work ☐ Safe Mechanical Lifting ☐ Bypassing Safety Controls | | |

Provide a brief reasoning for the LSR selected above: None

Controlling Document: PEC-HS-PRO-X-0875

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Final Investigation Report For Incidents with Potential Severity Medium & Serious

PECHS-FRM-X-664 Rev.6

Petrofac

DISCHARGE TO THE ENVIRONMENT

Material Released:	Release to:	Total Volume Released: 0 L
Release type:	<input type="checkbox"/> Air	
<input type="checkbox"/> Atmospheric	<input type="checkbox"/> Water	Total Volume Recovered: 0 L
<input type="checkbox"/> Spill	<input type="checkbox"/> Ground	
<input type="checkbox"/> Waste Disposal	<input type="checkbox"/> Containment Area	

NAME OF INJURED PERSONNEL

NAME OF INJURED PERSONNEL	
JOB TITLE	
EXPERIENCE IN POSITION	
EXPERIENCE IN LOCATION	
AGE AND GENDERS	
BODY PART(S) INJURED	
TYPE OF INJURY	
MEDICAL TREATMENT PROVIDED (Provide details and effect of medical report when relevant)	
DATE AND TIME OF WORK (DATE)	Actual -
NAME OF ATTENDING MEDIC / DOCTOR	

DESCRIPTION OF WORK / WORK ACTIVITY

DESCRIPTION OF WORK / WORK ACTIVITY
Normal Operation

BRIEF DESCRIPTION OF INCIDENT AND EMERGENCY RESPONSE (Use only known facts. Include relevant events that happened prior to the incident during the actual incident and immediate actions that followed the incident in chronological order. Avoid opinions / arguings)

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On 23rd August 2024 at 17:14 hrs., an abnormal alarm initiated for No.2 T/G Governor Valve Full Open and followed by a high bus frequency. Resulting in the tripping on T/G No.2 at 17:15 hrs. This event affect power management, causing a brief black out for a few seconds due to load shedding to Main D/G. However, there was no impact on production.

After investigation, it was found that the emergency stop valve was partially open, at 20-25%, after completion of preventive maintenance on the turbine generator, which resumed at 10:00 hrs. The duty engineer who started up the turbine generator stated that he assumed the valve was fully open because he had opened the emergency stop valve until it became difficult to turn. However, he did not check at the valve indicator for confirmation.

An inspection revealed there is a damage on valve stem: thread and nut of emergency stop valve.

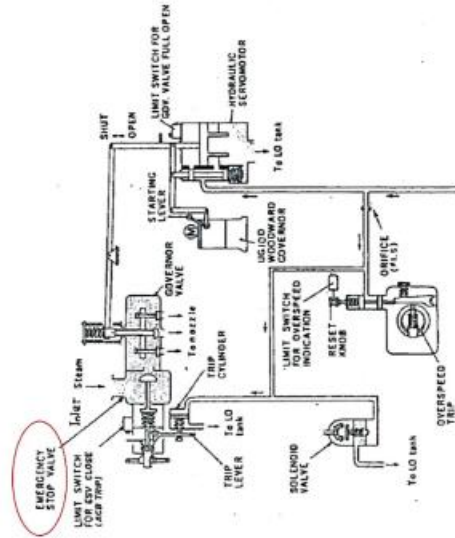
Summary by investigation team is at normal operation, emergency stop valve must be adjusted to fully open, when T/G is operating at the low or normal load condition, the governor can handle the steam flow through a partially open emergency stop valve. However, when the T/G is operating at peak load in the evening that have crane operation, the governor will try to adjust the valve beyond the full open support.

Once the abnormal No.2 T/G Governor Valve Full Open alarm was initiated, the preference trip removed unnecessary loads immediately. The combination of all these factors resulted in a high bus frequency followed by the tripping of No.2 T/G.

Controlling Document: PEC-HS-PRO-X-0875

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Governor Diagram and Emergency Stop valve



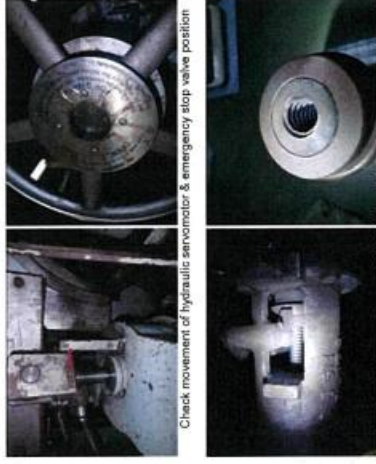
Timeline of event

Date	Time	Event	Alarm	Remark
30-07-24		Run TIG No.2		
23-08-24	7:26:15 AM	Noticed an issue on TIG No.1		Out of services
	10:00:39 AM	PW Cleaning Lubric Oil Cooler - TIG No.2		
		TIG No.2 back to service		
		Fact statement: The Duty Engineer informed that he had opened the emergency stop valve until it became difficult to turn. He did not check the valve indicator to confirm.		Interview
	5:14:01 PM	#2 TIG GOVERNOR FULL OPEN	ABNOR	Alarm Event
	5:14:07 PM	MAIN SWITCHBOARD	ABNOR	Alarm Event
	5:14:07 PM	PREFERENCE TRIP	TRIP	Alarm Event
	5:14:07 PM	STBY/DIG AUTO START	ABNOR	Alarm Event
	5:14:18 PM	STBY/DIG AUTO START	NOR	Alarm Event
	5:14:56 PM	MAIN SWITCHBOARD	NOR	Alarm Event
	5:14:56 PM	PREFERENCE TRIP	NOR	Alarm Event
	5:14:56 PM	#2 TIG GOVERNOR FULL OPEN	NOR	Alarm Event
	5:15:09 PM	MAIN SWITCHBOARD	ABNOR	Alarm Event
	5:15:09 PM	BUS FREQUENCY	HIGH	Alarm Event
	5:15:09 PM	#2 TIG TRIP	TRIP	Alarm Event
		Run on DIG	No Production	Shutdown
		Inspection governor and hydraulic servomotor movement - all Satisfied		
24-08-24		Inspection emergency stop valve - found it was opened only 20-25%		Normal at 100% open position
		An inspection revealed a damaged valve stem thread and nut. This led the Duty Engineer to believe that the valve was fully open, and not aware to checking the valve indicator.		
		Fixed the condition of emergency stop valve		
25-08-24		Test run TIG No.2		
		Resumed TIG No.2 in services and back to normal operate.		

Action 24-8-2024

Inspect governor, hydraulic servomotor movement & emergency stop valve position.

1. Checked position of governor speed control knob position, found remain one round of moving before reach the maximum setting.
2. Checked hydraulic servomotor movement for any stuck, found free & smooth movement.
3. Checked emergency stop valve opening position, found only 20-25% opened. (Normal operation is 100% Open after start by manual). On duty Engineer informed that the valve was fully open, and not aware to checking the valve indicator.
4. Inspected emergency stop valve, found thread of valve stem and nut damaged. Valve handle was not moving easily while tested to open.
5. Inspect & rectify emergency stop valve thread damage & high friction and jammed during start.



Threat of valve stem & nut damaged, cause of high friction during open emergency stop valve to start up TIG



Emergency stop valve (TIG 1 & 2) had been repaired & lubricated to make valve open smoothly.

Action 25-8-2024

Run No.2 turbo generator on full load & find out cause of emergency trip

1. Started up No.2 TIG and tested emergency stop, found normal activate.
2. Running No.2 TIG idle, checked governor response by manual adjust Hz from 57 Hz-63Hz, found working smooth.
3. Put No.2 TIG on load parallel with diesel generator for half an hour, then put No.2 TIG full load by run DIG idle. Keep No.2 TIG running full load for 3 hrs., no sign of any abnormal.
4. Simulated No.2 TIG abnormal situation by increase load up to 950-980 kW and closing emergency stop valve from 100% to 30% open and observing governor reaction, found governor valve opened nearly touch limit switch for full open signal. Then, opened emergency stop valve back to increase steam inlet, governor valve moved to closing up for rpm control but not fast enough. Bus bar high frequency was occurred, and tripped No.2 TIG breaker followed with DIG lock out in few secs.
5. Resumed all steam and power plant back to normal operate.



Check No.2 turbo generator Hz compare with RPM.

At load 960 kW, emergency stop valve full open, governor opened at 35%



At load 960 kW, emergency stop valve 20% open, governor valve opened 50% nearly touch the full open signal limit switch.



Opened back emergency stop, governor tried to reduce steam inlet but not fast enough.
Bus high frequency activated follow with No.2 T/G tripped.

Action 26-27/8/2024

Test run No.2 turbo generator

Run No.2 Turbo generator on single load as normal operate to confirm ready-to work condition.

CAUSAL ANALYSIS AND FINDINGS			
A. DIRECT CAUSE OF INJURY / ILLNESS [Check relevant Box(es)]			
<input type="checkbox"/> Struck by (or by moving object)	<input type="checkbox"/> Heat Stress		
<input type="checkbox"/> Fall from height	<input type="checkbox"/> Electricity		
<input type="checkbox"/> Biological agents	<input type="checkbox"/> Pressure (high/low)		
<input type="checkbox"/> Manual handling	<input type="checkbox"/> Helicopter related		
<input type="checkbox"/> Movement/posture	<input type="checkbox"/> Diving related		
<input type="checkbox"/> Caught	<input type="checkbox"/> Physical Assault		
<input type="checkbox"/> Caught Under	<input type="checkbox"/> Sexual Assault		
<input type="checkbox"/> Crushed	<input type="checkbox"/> Psychological		
<input type="checkbox"/> Eye Flash	<input type="checkbox"/> Chemical liquid/dust		
<input type="checkbox"/> Fire/explosion	<input type="checkbox"/> Contact with substance		
<input type="checkbox"/> Slip/trip/fall at the same level	<input type="checkbox"/> Cold substance / surface		
<input type="checkbox"/> Trapped	<input type="checkbox"/> Noise		
<input type="checkbox"/> Smoke inhalation	<input type="checkbox"/> Animal/object blasting		
<input type="checkbox"/> Fumes/gas/vapour	<input type="checkbox"/> Foreign body		
	<input type="checkbox"/> Radiation (ionising/ non ionising)		
	<input type="checkbox"/> Hot substance / surface		
B. INCIDENT'S ROOTCAUSES AND CONTRIBUTORY FACTORS [Check relevant Box(es), Refer to Appendix 2 below]			
1.0 Not Following Procedure	2.0 Use of Tools, Equipment, Materials and Products	3.0 Use of Protective Methods	4.0 Inattention / Lack of Awareness / Behaviours
<input type="checkbox"/> 1.1	<input type="checkbox"/> 1.4	<input type="checkbox"/> 3.1	<input type="checkbox"/> 4.1
<input type="checkbox"/> 1.2	<input type="checkbox"/> 1.5	<input type="checkbox"/> 3.2	<input type="checkbox"/> 4.2
<input type="checkbox"/> 1.3	<input type="checkbox"/> other	<input type="checkbox"/> 3.3	<input type="checkbox"/> 4.3
			<input type="checkbox"/> 4.4
5.0 Protective Systems:	6.0 Integrity Tools, Plant / Equipment, Materials, Products	7.0 Work Place Hazards	8.0 Organisational
<input type="checkbox"/> 5.1	<input type="checkbox"/> 5.4	<input type="checkbox"/> 7.1	<input type="checkbox"/> 8.1
<input type="checkbox"/> 5.2	<input type="checkbox"/> other	<input type="checkbox"/> 7.2	<input type="checkbox"/> 8.2
<input type="checkbox"/> 5.3	<input type="checkbox"/> 6.2	<input type="checkbox"/> 7.3	<input type="checkbox"/> 8.3
	<input type="checkbox"/> 6.3	<input type="checkbox"/> other	<input type="checkbox"/> 8.4
			<input type="checkbox"/> 8.5
9.0 External Influence beyond Petrofac's Control:	Findings: (detail findings related to each cause; amend content and delete rows as required)		
<input type="checkbox"/> 9.1	<input type="checkbox"/> 9.4	Root cause / Contributory	
<input type="checkbox"/> 9.2	<input type="checkbox"/> 9.5	Findings	
<input type="checkbox"/> 9.3	<input type="checkbox"/> other	An inspection revealed the damaged valve stem thread and nut of the emergency stop valve had been removed from the valve stem. The valve is an existing component. The valve has been in service for many years, that make everyone familiar, and no one raised the concern to rectify it.	
		The emergency stop valve was supposed to be fully opened, but it was partially open at the scene because of Duty Maintenance Engineer complacency in checking the actual status of the valve at the level indicator.	
		Choose an item	
		Choose an item	

VIII. ACTIONS TO PREVENT RECURRENT			
Root and Contributory Causes	ACTION(S)	RESPONSIBLE	TARGET DATE FOR COMPLETION
6.3 inadequate maintenance / inspection / testing	Inspection and Overhauled emergency stop valve	Maintenance Supervisor	31-Aug-24
6.3 inadequate maintenance / inspection / testing	Add emergency stop valve mechanism inspection in PM: 4000 hr. Turbo worklist for Gen. service & inspection	Maintenance Supervisor	31-Aug-24
8.2 inadequate / missing work standards / procedures / control of work.	Provide Start & Stop checklist of Turbine Generator	Maintenance Supervisor	05-Sep-24
8.2 inadequate / missing work standards / procedures / control of work.	Provide power management operation refresher training to Maintenance Team	Maintenance Supervisor	30-Sep-24
Choose an Item.			Click or tap to enter a date.
Choose an Item.			Click or tap to enter a date.
Choose an Item.			Click or tap to enter a date.
Choose an Item.			Click or tap to enter a date.
Does the related risk assessment require to be reviewed?			
Yes No			
If yes, please specify:			
Has the emergency response been adequate?			
Yes No			
If no, please specify:			
Are the related Security Standard Operating Procedures adequate?			
Yes No			
If no, please specify: not concern			
IX. LESSONS LEARNED			
It's important to note that while familiarity with a hazard can sometimes lead to positive outcomes, such as increased efficiency or skill, on the other hand, it can also increase the risk of accidents or injuries. To mitigate the hazards, it's crucial to emphasize safety awareness, hazard assessments, and risk management strategies.			
X. ATTACHED INFORMATION			
EMPLOYEE INTERVIEW		PRE-TASK PLANNING RECORDS (START CARDS, JHA, ETC.) Method Statement, Risk Assessment, Traffic Management Plan, Induction Record, Permit to Work.	
WITNESS INTERVIEW		PHOTOS	
TRAINING RECORDS		OTHER: OEM inspection Report	
XI. SIGNATURE			
Investigation Team Lead / Lead Facilitator	Project Director / Site Manager	Senior Site HSSE Representative / Site HSSE Manager	
			09/09/2024

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SEVERITY LEVEL	INCIDENT POTENTIAL SEVERITY MATRIX							Incident Owner
	CONSEQUENCES							
	People	Environment	Asset	Reputation	Hydrocarbon Release			
Onshore					Offshore	MAH* Related		
Major	Chronic severe facilities	Major pollution events leading to long term environmental damage or Resource Interest. Significant clean up costs may be incurred. Clean water or air may be affected or lost or lost or	Significant or important loss/damage or destruction of assets e.g. \$100M+	Regulator prosecution and finding civil damages for pollution. Significant environmental damage. International media attention	LOPC leading to release of Oil or Renewable liquids: > 700 tons Natural gas/Renewable gases or vapour: > 10,000m³ at STP Hazardous liquids: > 10,000kg	Spills related to marine activities Crude Oil/Oil/Gas Hazardous chemicals, Oil Base Muls. Oil: 100 tons Fuel Oil: > 10,000kg	Gas/Vapour/Mist release: 100kg - 100kg or in kg - 1kg for more than 5 mins Liquid release: 100kg - 100kg or in kg - 1kg for more than 10 mins	Independent O&G Assessment
Significant	Life changing events. Fatigue and. Inevitable life changing media effects	Substantial pollution event leading to long term significant damage or Statutory liability. Clean up costs may be incurred. Significant clean up costs may be incurred.	Property or equipment loss/damage or destruction of assets e.g. \$100M - \$10M	Regulator enforcement action. Negative national media attention. No significant litigation	LOPC leading to release of Oil or Renewable liquids: 100 tons - 700 tons Natural gas/Renewable gases or vapour: 1,000m³ - 10,000m³ at STP Hazardous liquids: 1,000kg - 10,000kg	Spills related to marine activities Crude Oil/Oil/Gas Hazardous chemicals, Oil Base Muls. Oil: 10 tons - 10 tons Fuel Oil: 1,000kg - 10,000kg	Gas/Vapour/Mist release: 100kg - 100kg or in kg - 1kg for between 2 - 5 mins Liquid release: 100kg - 100kg or in kg - 1kg for between 2 - 5 mins	Independent O&G Managing Director Approval
Medium	Personal injuries resulting in 1-10 medical treatments or restricted work days	Moderate pollution event leading to local damage. Statutory fines, clean up and corrective action	Property or equipment loss/damage or destruction of assets e.g. \$10M - \$100K	Regulator investigation/ action. Negative local media attention	LOPC leading to release of Oil or Renewable liquids: 1 ton - 100 tons Natural gas/Renewable gases or vapour: 10m³ - 1,000m³ at STP Hazardous liquids: 100kg - 1,000kg	Spills related to marine activities Crude Oil/Oil/Gas Hazardous chemicals, Oil Base Muls. 1 ton - 10 tons Fuel Oil: 100kg - 1,000kg	Gas/Vapour/Mist release: 1kg - 100kg or in kg - 1kg or less than 2 - 5 mins Liquid release: 10kg - 100kg or in kg - 1kg for between 2 - 5 mins	Ops/Asset/Project Manager
Minor	Non-serious/limited first aid cases, 1-10 hours recovery. Non-serious/limited first aid cases, 1-10 hours recovery. Non-serious/limited first aid cases, 1-10 hours recovery.	A low or contained pollution event with no effect, no offshore impact, minor clean up costs may be incurred. Minor clean up costs may be incurred.	Minor property or equipment loss/damage or minor attention to operations e.g. \$10K	No or complaints from local stakeholders unlikely to affect media attention. No regulatory attention	LOPC leading to release of Oil or Renewable liquids: < 1 ton Natural gas/Renewable gases or vapour: < 100m³ at STP Hazardous liquids: < 100kg	Spills related to marine activities Crude Oil/Oil/Gas Hazardous chemicals, Oil Base Muls. < 1 ton Fuel Oil: < 100kg	Gas/Vapour/Mist release: 1 kg or in kg - 1kg for less than 2 mins Liquid release: 10 kg or in kg for less than 2 mins	Local Manager Supervisor

This matrix is a guide to the judgement of ranking of Incident Potential Severity. It is neither a comprehensive listing nor strictly definitive. Individual incidents will present particular circumstances that need to be considered by responsible management in allocating the potential severity and consequent investigation activities. In such instances deviation from the guidance given in this matrix may be justified.

* LOPC: Loss of Primary Containment. STP: Standard Temperature and Pressure. 1 bbl = 159 litres. MAH: Major Accident Hazard

Final Investigation Report For Incidents with Potential Severity Medium & Serious

PEC-HS-RMA-0464 Rev 6

Petrofac

APPENDIX 2

Incident's Root and Contributory Causes

1.0 Not Following Procedures:

1.1 Violation intentional (by individual or group)

1.2 Improper position (in the line of fire)

1.3 Overexertion or improper position / posture for task

1.4 Work or motion at improper speed

1.5 Improper lifting or loading

2.0 Use of Tools, Equipment, Materials and Products:

2.1 Improper use / position of tools / equipment / materials / products

2.2 Servicing of energized equipment / inadequate energy isolation

3.0 Use of protective Methods:

3.1 Inadequate use of safety systems

3.2 Personal Protective Equipment not used or used improperly

3.3 Equipment or materials not secured

3.4 Violation intentional - disabled or removed guards, warning systems or safety devices

4.0 Inattention / Lack of Awareness / Behaviors:

4.1 Lack of attention / distracted by other concerns / stress

4.2 Improper decision making or lack of judgement (taking a short cut)

4.3 Effects of drugs or alcohol

4.4 Fatigue

4.5 Horseplay or bravado

4.6 Acts of violence

4.7 Medical impairment

5.0 Protective Systems:

5.1 Inadequate / defective guards or protective barriers

5.2 Inadequate / defective Personal Protective Equipment

5.3 Inadequate / defective warning systems / safety devices

5.4 Inadequate security provisions or systems

6.0 Integrity of Tools, Plant / Equipment, Materials, products:

6.1 Inadequate design / specification / management of change

6.2 Inadequate / defective tools / equipment or materials / products (incl. packaging or disposal)

6.3 Inadequate maintenance / inspection / testing

7.0 Workplace Hazards:

7.1 Congestion, clutter or restricted motion

7.2 Inadequate surfaces, floors, walkways or roads or poor illumination

7.3 Hazardous atmosphere (explosive / toxic / asphyxiant)

7.4 Adverse weather and acts of nature

7.5 Chemical or physical effects (noise, vibration, radiation)

8.0 Organizational:

8.1 Inadequate / missing training / competence

8.2 Inadequate / missing work standards / procedures / control of work

8.3 Inadequate / missing risk assessment

8.4 Inadequate / missing communication

8.5 Inadequate / no supervision

8.6 Poor leadership / organizational culture

8.7 Failure to report / learn from events

8.8 Lack of personnel

8.9 Contractor competency or communications

9.0 External Influences beyond Petrofac's Control:

9.1 Security breach

9.2 Terrorism

9.3 Theft

9.4 Client intervention or action

9.5 Not work related

Date : 01/02/2021

Revision : 4

Ref : F-08-SHE/01

INITIAL INCIDENT REPORT

Vessel Name :

Report No : Date :

Subject :

SECTION 1 – INITIAL INCIDENT CLASSIFICATION

☐ Injury

☐ FAC

☐ MTC

☐ RWC

☐ LTI

☐ Fatality

Name:

Nature of Injury:

Nature of Damage:

☐ Illness

☐ Property Damage

☐ Near miss

Type:

Nature of loss

SECTION 2 – GENERAL INFORMATION

1. Date of Incident: (dd/mm/yyyy)

2. Place of Incident: (address)

3. Time of Incident: (hour/minute)

4. Activity Incident: (what/where/when)

SECTION 3 – INCIDENT INFORMATION

5. Description of Incident (Refer to attachment if insufficient space) :

6. Pictures / Drawings of Incident

NO INCIDENT IN THIS PERIOD

Report by : Name Company Rank

Witness (verbal 1) Name Company Rank

Witness (verbal 2) Name Company Rank

เอกสารแนบที่ 31

ตัวอย่างเอกสารความปลอดภัยเคมีภัณฑ์ (SDS)

Safety Data Sheet EB-8884

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product Identifier

Product name EB-8884
Product code 142484
Country Limitations This SDS is not for use in the European Union (EU).

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Demulsifier

Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier
M-I Drilling Fluids UK Limited
Westhill Business Park
Westhill AB92 6JL, Aberdeenshire
Scotland United Kingdom

+47 51577424

SDS@slb.com

1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Health hazards

Aspiration toxicity	Category 1
Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity - Repeated exposure	Category 2

Environmental hazards

Chronic aquatic toxicity	Category 3
--------------------------	------------

Contains
Xylene

Ethylbenzene

Solvent naphtha, petroleum, heavy aromatic

Naphthalene

2.3 Other hazards

Not classified as PBT/vPvB by current EU criteria

3. Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical Name	EC No	CAS No	Weight %	Regulation (EC) No. 1272/2008	REACH registration number
Xylene	215-535-7	1330-20-7	30-60	Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Flam. Liq. 3 (H228)	01-2119488216-3 2-xxxx
Ethylbenzene	202-849-4	100-41-4	10-30	Acute Tox. 4 (H332) Asp. Tox. 1 (H304) Aquatic Chronic 3 (H412) STOT RE 2 (H373) Flam. Liq. 2 (H225)	No data available
Formaldehyde, polymer with methylloxirane, 4-methylphenol and oxirane		63428-92-2	5-10	Eye Irrit. 2 (H319)	No data available
Solvent naphtha, petroleum, heavy aromatic	265-198-5	64742-94-5	1-5	STOT SE 3 (H336) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411) (EUH066)	01-2119510128-5 0-xxxx
2-Propenoic acid, polymer with 4-(1,1-dimethylethyl)phenol, formaldehyde, 2,5-furandione, methylloxirane, 4-methylphenol and oxirane		129828-31-5	1-3	Eye Irrit. 2 (H319)	No data available
4-butylphenol, polymer with formaldehyde, ethoxystated, propoxystated	polymer	30794-64-4	1-3	Eye Irrit. 2 (H319)	No data available
Naphthalene	202-049-5	91-20-3	1-3	Acute Tox. 4 (H302) Carc. 2 (H351) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	No data available

Physical Hazards	
Flammable Liquids	Category 3

2.2 Label elements



Signal word

DANGER

Hazard statements

H304 - May be fatal if swallowed and enters airways
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H332 - Harmful if inhaled
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects
H228 - Flammable liquid and vapour

Precautionary Statements - EU (628, 1272/2008)

P201 - Obtain special instructions before use
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P370 + P378 - In case of fire: Use dry sodium carbonate to extinguish
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Supplementary precautionary statements

P202 - Do not handle until all safety precautions have been read and understood
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ ventilating/ lighting/ equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P260 - Do not breathe dust/fume/gas/mist/vapours/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P273 - Avoid release to the environment
P280 - Wear protective gloves/protective clothing and eye/face protection
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
P331 - Do NOT induce vomiting
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P391 - Collect spillage
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P403 + P235 - Store in a well-ventilated place. Keep cool

Comments

The product contains other ingredients which do not contribute to the overall classification.

4. First aid measures

4.1 First aid measures

Inhalation	If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion	Rinse mouth. Do not induce vomiting without medical advice. Risk of product entering the lungs on vomiting after ingestion. If vomiting occurs spontaneously, minimize the risk of aspiration by properly positioning the affected person. Never give anything by mouth to an unconscious person. Seek medical attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation persists.
Eye Contact	Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses, if worn. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

General advice The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Symptoms

Inhalation	Please see Section 11. Toxicological Information for further information.
Ingestion	Please see Section 11. Toxicological Information for further information.
Skin contact	Please see Section 11. Toxicological Information for further information.
Eye contact	Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
P370 + P378 - In case of fire: Use dry sodium carbonate to extinguish.

Extinguishing media which must not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards

FLAMMABLE. Vapours are heavier than air and may spread along floors. Vapors may travel considerable distance to source of ignition and flash back.

Hazardous combustion products

Fire or high temperatures create: Carbon oxides (CO₂).

5.3 Advice for firefighters**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures

Containers close to fire should be removed immediately or cooled with water.

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

Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

Environmental exposure controls

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dyke far ahead of liquid spill for later disposal.

Methods for cleaning up

Take precautionary measures against static discharges. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use clean non-sparking tools to collect absorbed material. Ground and bond containers when transferring material. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage**7.1 Precautions for safe handling****Handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

Hygiene Measures

Xylene	50 ppm TWA 217 mg/m ³ TWA	Not determined	210 mg/m ³ TWA	25 ppm TWA 108 mg/m ³ TWA 37.5 ppm STEL 135 mg/m ³ STEL Skin
Ethylbenzene	125 ppm STEL 543 mg/m ³ STEL 100 ppm TWA 434 mg/m ³ TWA	Not determined	430 mg/m ³ STEL 215 mg/m ³	5 ppm TWA 20 mg/m ³ TWA 10 ppm STEL 30 mg/m ³ STEL Carcinogen Skin
Solvent naphtha, petroleum, heavy aromatic	Not determined	Not determined	Not determined	Not determined
Naphthalene	15 ppm STEL 79 mg/m ³ STEL 10 ppm TWA 52 mg/m ³ TWA	Not determined	80 mg/m ³ STEL 50 mg/m ³	10 ppm TWA 50 mg/m ³ TWA 15 ppm STEL 75 mg/m ³ STEL Skin
Chemical Name	Poland	Portugal	Romania	Russia
Xylene	100 mg/m ³ TWA NDS	100 ppm STEL VLE-CD 442 mg/m ³ STEL VLE-CD 50 ppm TWA indicative limit value 221 mg/m ³ TWA indicative limit value	100 ppm STEL 442 mg/m ³ STEL 50 ppm TWA 221 mg/m ³ TWA	150 mg/m ³ STEL 0717 vapor 50 mg/m ³ TWA 0717
Ethylbenzene	400 mg/m ³ STEL NDSCH 200 mg/m ³ TWA NDS	200 ppm STEL VLE-CD 884 mg/m ³ STEL VLE-CD 100 ppm TWA indicative limit value 442 mg/m ³ TWA indicative limit value	200 ppm STEL 884 mg/m ³ STEL 100 ppm TWA 442 mg/m ³ TWA	150 mg/m ³ STEL 2338 vapor 50 mg/m ³ TWA 2338
Solvent naphtha, petroleum, heavy aromatic	Not determined	Not determined	Not determined	Not determined
Naphthalene	50 mg/m ³ STEL NDSCH 20 mg/m ³ TWA NDS	15 ppm STEL VLE-CD 10 ppm TWA indicative limit value 50 mg/m ³ TWA indicative limit value	10 ppm TWA 50 mg/m ³ TWA	20 mg/m ³ MAC
Chemical Name	Spain	Switzerland	Turkey	UK
Xylene	100 ppm STEL 442 mg/m ³ STEL Skin 50 ppm TWA VLA-ED 221 mg/m ³ TWA VLA-ED	200 ppm STEL 870 mg/m ³ STEL Skin 100 ppm TWA MAK 435 mg/m ³ TWA MAK	100 ppm STEL 442 mg/m ³ STEL Skin 50 ppm TWA 221 mg/m ³ TWA	100 ppm STEL 441 mg/m ³ STEL Skin 50 ppm TWA 220 mg/m ³ TWA
Ethylbenzene	200 ppm STEL 884 mg/m ³ STEL Skin 100 ppm TWA VLA-ED 441 mg/m ³ TWA VLA-ED	50 ppm STEL 220 mg/m ³ STEL Skin 50 ppm TWA MAK 220 mg/m ³ TWA MAK	200 ppm STEL 884 mg/m ³ STEL Skin 100 ppm TWA 442 mg/m ³ TWA	125 ppm STEL 552 mg/m ³ STEL Skin 100 ppm TWA 441 mg/m ³ TWA
Solvent naphtha, petroleum, heavy aromatic	Not determined	Not determined	Not determined	Not determined
Naphthalene	15 ppm STEL 80 mg/m ³ STEL Skin 10 ppm TWA VLA-ED 53 mg/m ³ TWA VLA-ED	15 ppm STEL 10 ppm TWA MAK 50 mg/m ³ TWA MAK	10 ppm TWA 50 mg/m ³ TWA	Not determined

Derived No Effect Level (DNEL)

Short term exposure local effects
Xylene

Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

7.2 Conditions for safe storage, including any incompatibilities**Technical measures/precautions**

Ensure adequate ventilation. Keep airborne concentrations below exposure limits. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Ensure all equipment is electrically grounded before beginning transfer operations.

Storage precautions

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Avoid contact with: Oxidizing agents. Strong bases. Strong acids.

Storage class

Flammable liquid storage.

Packaging materials

Use specially constructed containers only.

7.3 Specific and uses

See Section 1.2.

8. Exposure controls/personal protection**8.1 Control parameters****Component Information**

Chemical Name	EU OEL - Third List	Austria	Australia	Denmark
Xylene	100 ppm STEL pure 442 mg/m ³ STEL pure 50 ppm TWA 221 mg/m ³ TWA Possibility of significant uptake through the skin	100 ppm STEL 442 mg/m ³ STEL 50 ppm TWA 221 mg/m ³ TWA	150 ppm STEL 655 mg/m ³ STEL 80 ppm TWA 350 mg/m ³ TWA	25 ppm TWA 108 mg/m ³ TWA Potential for cutaneous absorption (listed under Xylene, all isomers)
Ethylbenzene	200 ppm STEL 884 mg/m ³ STEL 100 ppm TWA 442 mg/m ³ TWA Possibility of significant uptake through the skin	200 ppm STEL 880 mg/m ³ STEL 100 ppm TWA 440 mg/m ³ TWA	125 ppm STEL 543 mg/m ³ STEL 100 ppm TWA 434 mg/m ³ TWA	50 ppm TWA 217 mg/m ³ TWA Potential for cutaneous absorption
Solvent naphtha, petroleum, heavy aromatic	Not determined	Not determined	Not determined	Not determined
Naphthalene	Not determined	10 ppm TWA 50 mg/m ³ TWA	15 ppm STEL 79 mg/m ³ STEL 10 ppm TWA 52 mg/m ³ TWA	10 ppm TWA 50 mg/m ³ TWA
Chemical Name	Malaysia	France	Germany	Hungary
Xylene	100 ppm TWA 434 mg/m ³ TWA 50 ppm TWA 221 mg/m ³ TWA	100 ppm STEL 442 mg/m ³ STEL 50 ppm TWA 221 mg/m ³ TWA	100 ppm TWA 440 mg/m ³ TWA	221 mg/m ³ STEL
Ethylbenzene	100 ppm TWA 434 mg/m ³ TWA	100 ppm STEL 442 mg/m ³ STEL 20 ppm TWA 88.4 mg/m ³ TWA	20 ppm TWA 88 mg/m ³ TWA	442 mg/m ³ TWA 884 mg/m ³ STEL
Solvent naphtha, petroleum, heavy aromatic	Not determined	Not determined	Not determined	Not determined
Naphthalene	10 ppm TWA 52 mg/m ³ TWA	10 ppm TWA 50 mg/m ³ TWA	Not determined	50 mg/m ³ TWA
Chemical Name	New Zealand	Italy	Netherlands	Norway

Inhalation 280 mg/m³

Short term exposure systemic effects

Xylene Inhalation 280 mg/m³

Long term exposure systemic effects

Xylene 180 mg/kg bw/day

Dermal 77 mg/m²

Predicted No Effect Concentration (PNEC)

Xylene

Sea Water 0.327 mg/L

Freshwater sediment 12.46 mg/kg

Sea sediment 12.46 mg/kg

Soil 2.31 mg/kg

Impact on sewage treatment 6.58 mg/L

Intermittent release 0.327 mg/L

9.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering Controls

Ensure adequate ventilation. Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into work environment.

Personal protective equipment**Eye protection**

Eye protection must conform to standard EN 166. Tightly fitting safety goggles. Safety glasses with side-shields.

Hand protection

Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training.

Use protective gloves made of: Viton

Break through time >480 minutes

Glove thickness 0.4 mm

Respiratory protection

Be aware that liquid may penetrate the gloves. Frequent change is advisable. No personal respiratory protective equipment normally required, in case of insufficient ventilation wear suitable respiratory equipment. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Respirator with combination filter for vapour/particulate (EN 141), Type AP/3. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

Skin and body protection

Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.

Hygiene Measures

Wash hands before eating, drinking or smoking. Remove and wash contaminated clothing before re-use.

**9.2.3 Environmental exposure controls**

Environmental exposure Use appropriate containment to avoid environmental contamination See section 6 for more information

9. Physical and chemical properties**9.1 Information on basic physical and chemical properties**

Physical state	Liquid
Appearance	Clear
Odour	No information available
Colour	Amber
Colour threshold	Not applicable

Property	Values	Remarks
pH	No information available	
pH @ dilution	6.83 ± 1.00	@ 1% vv 50:50 IPA:H2O
Melting / freezing point	No information available	
Boiling point/range	No information available	
Flash point	28 °C / 82.4 °F	ASTM D 93-11
Evaporation rate	No information available	
Flammability (solid, gas)	Not applicable	
Flammability Limit in Air		
Upper flammability limit	Not applicable	
Lower flammability limit	Not applicable	
Vapour pressure	No information available	
Vapour density	No information available	
Specific gravity	No information available	
Bulk density	No information available	
Relative density	No information available	
Water solubility	Insoluble in water	
Solubility in other solvents	Oil soluble.	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	7.8 cPs	@ 40 °C
log Pow	Not determined	
Explosive properties	Not applicable	
Oxidizing properties	None known	

9.2 Other information

Pour point	< -21°C / -5.8°F
Molecular weight	No information available
VOC content(%)	None
Density	0.83 ± 0.03 g/ml @ 20°C

Comments
The data listed above are typical physical and chemical properties and should not be construed as product specification.

10. Stability and reactivity**10.1 Reactivity**

FLAMMABLE LIQUID AND VAPOUR.

10.2 Chemical stability

Sensitisation	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	This product does not contain any known or suspected mutagens.
Carcinogenicity	Contains a known or suspected carcinogen.
Reproductive toxicity	This product does not contain any known or suspected reproductive hazards.
Routes of exposure	Ingestion. Skin contact. Inhalation.
Routes of entry	Inhalation. Skin absorption. Ingestion.
Specific target organ toxicity - Single exposure	Not classified
Specific target organ toxicity - Repeated exposure	Category 2.
Target organ effects	Central nervous system. Liver. Kidney.
Aspiration hazard	May be fatal if swallowed and enters airways.

12. Ecological information**12.1 Toxicity**

Harmful to aquatic life with long lasting effects

Toxicity to algae
See component information below.

Toxicity to fish
See component information below.

Toxicity to daphnia and other aquatic invertebrates
See component information below.

Toxicology data for the components

Chemical Name	Toxicity to fish	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates
Xylene	2.681 - 4.063 mg/L LC50 Oncorhynchus mykiss 96 h = 13.4 mg/L LC50 Pimephales promelas 96 h 13.5 - 17.3 mg/L LC50 Oncorhynchus mykiss 96 h 13.1 - 16.5 mg/L LC50 Lepomis macrochirus 96 h = 19 mg/L LC50 Lepomis macrochirus 96 h 30.26 - 40.75 mg/L LC50 Poecilia reticulata 96 h > 780 mg/L LC50 Cyprinus carpio 96 h = 780 mg/L LC50 Cyprinus carpio 96 h 23.53 - 28.97 mg/L LC50 Pimephales promelas 96 h 7.711 - 9.591 mg/L LC50 Lepomis macrochirus 96 h	= 11 mg/L EC50 Pseudokirchneriella subcapitata 72 h	= 0.6 mg/L LC50 Gammarus lacustris 48 h = 3.82 mg/L EC50 water flea 48 h

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerisation
Hazardous polymerisation does not occur.

10.4 Conditions to avoid

Avoid heat, flames and other sources of ignition. Take precautionary measures against static charges.

10.5 Incompatible materials

Oxidizing agents. Strong acids. Strong bases.

10.6 Hazardous decomposition products

See Section 5.2.

11. Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

Inhalation	Harmful by inhalation. May cause irritation of respiratory tract. Vapors inhaled in high concentration have a narcotic effect on the central nervous system. Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing.
Eye contact	Contact with eyes may cause irritation.
Skin contact	Harmful in contact with skin. Causes skin irritation. May be absorbed through the skin in harmful amounts. Prolonged skin contact may defat the skin and produce dermatitis.
Ingestion	May be fatal if swallowed and enters airways. Potential for aspiration if swallowed. Aspiration may cause pulmonary edema and pneumonitis. May cause damage to organs through prolonged or repeated exposure.
Unknown acute toxicity	Not applicable.

Toxicology data for the components

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Xylene	= 3500 mg/kg (Rat)	> 1700 mg/kg (Rabbit) > 4350 mg/kg (Rabbit)	= 29.08 mg/L (Rat) 4 h = 5.04 mg/L (Rat) 4 h
Ethylbenzene	= 3500 mg/kg (Rat)	= 15400 mg/kg (Rabbit)	= 17.4 mg/L (Rat) 4 h > 5.04 mg/L (Rat) 4 h
Solvent naphtha, petroleum, heavy aromatic	> 5000 mg/kg (Rat)	> 2 mL/kg (Rabbit)	> 590 mg/m³ (Rat) 4 h
Naphthalene	= 1110 mg/kg (Rat) = 490 mg/kg (Rat)	> 20 g/kg (Rabbit) = 1120 mg/kg (Rabbit)	> 340 mg/m³ (Rat) 1 h

Ethylbenzene	9.1 - 15.6 mg/L LC50 Pimephales promelas 96 h = 9.6 mg/L LC50 Poecilia reticulata 96 h = 32 mg/L LC50 Lepomis macrochirus 96 h 11.0 - 18.0 mg/L LC50 Oncorhynchus mykiss 96 h = 4.2 mg/L LC50 Oncorhynchus mykiss 96 h 7.55 - 11 mg/L LC50 Pimephales promelas 96 h	= 11 mg/L EC50 Pseudokirchneriella subcapitata 72 h = 4.6 mg/L EC50 Pseudokirchneriella subcapitata 72 h > 438 mg/L EC50 Pseudokirchneriella subcapitata 96 h 2.6 - 11.3 mg/L EC50 Pseudokirchneriella subcapitata 72 h 1.7 - 7.6 mg/L EC50 Pseudokirchneriella subcapitata 96 h	1.8 - 2.4 mg/L EC50 Daphnia magna 48 h
Solvent naphtha, petroleum, heavy aromatic	= 45 mg/L LC50 Pimephales promelas 96 h = 1740 mg/L LC50 Lepomis macrochirus 96 h = 41 mg/L LC50 Pimephales promelas 96 h = 2.34 mg/L LC50 Oncorhynchus mykiss 96 h = 19 mg/L LC50 Pimephales promelas 96 h	= 2.5 mg/L EC50 Skeletonema costatum 72 h	= 0.05 mg/L EC50 Daphnia magna 48 h
Naphthalene	= 31.0265 mg/L LC50 Lepomis macrochirus 96 h 0.91 - 2.82 mg/L LC50 Oncorhynchus mykiss 96 h = 1.6 mg/L LC50 Oncorhynchus mykiss 96 h 5.74 - 6.44 mg/L LC50 Pimephales promelas 96 h = 1.99 mg/L LC50 Pimephales promelas 96 h	= 0.4 mg/L EC50 Skeletonema costatum 72 h	= 2.16 mg/L LC50 Daphnia magna 48 h = 1.96 mg/L EC50 Daphnia magna 48 h 1.09 - 3.4 mg/L EC50 Daphnia magna 48 h

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

Mobility
Insoluble in water.

Mobility in soil
See component information below.

Chemical Name	Mobility in soil
Xylene 1330-20-7	No information available
Ethylbenzene 100-41-4	No information available
Solvent naphtha, petroleum, heavy aromatic	No information available

64742-94-5 Naphthalene 91-20-3	No information available
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12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

12.6 Other adverse effects

None known.

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

Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Empty containers should be transported/delivered using a registered waste carrier for local recycling or waste disposal.
EWG Waste Disposal No	According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: EWG waste disposal No: Waste Code: 07 01 04

14. Transport information**14.1 UN number**

UN/ID No. (ADR/RID/ADN/ADG)	UN1993
UN No. (IMDG)	UN1993
UN No. (ICAO/ANAC)	UN1993

14.2 UN proper shipping name

FLAMMABLE LIQUID, N.O.S. (Xylene, Ethylbenzene, Solvent naphtha, petroleum, heavy aromatic)

14.3 Hazard class(es)

ADR/RID/ADN/ADG Hazard class	3
IMDG Hazard class	3
ICAO Hazard class/division	3

14.4 Packing group

ADR/RID/ADN/ADG Packing Group	III
IMDG Packing group	III
ICAO Packing group	III

Philippines (PICCS)	Does not comply
Inventory - Japan - Existing and New Chemicals list	Does not comply
China (IECSC)	Does not comply
Australia (AICS)	Does not comply
Korea (KECL)	Does not comply
Inventory - New Zealand - Inventory of Chemicals (NZIC)	Does not comply

Europe - REACH

All products supplied from the European Economic Area (EEA) are compliant with the REACH Regulation EC 1907/2006. For products supplied from the EEA, Schlumberger and/or its suppliers have pre-registered and is registering all of the substances that it and/or its suppliers manufactures in or imports into the EEA that are subject to Title II of the REACH Regulation. All products supplied from outside the EEA are subject to REACH only if imported into the EEA. The importer of the products must comply with REACH for each imported substance. Contact REACH@slb.com for REACH information.

This SDS is not for use in the European Union (EU).

15.2 Chemical Safety Report

No information available

16. Other information

Prepared by	Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam
Revision date	20/Nov/2017
Version	1
This SDS has been revised in the following section(s)	New issue.

Full text of H-Statements referred to under sections 2 and 3

H304 - May be fatal if swallowed and enters airways
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H332 - Harmful if inhaled
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects
H226 - Flammable liquid and vapour
H225 - Highly flammable liquid and vapour
H319 - Causes serious eye irritation
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H411 - Toxic to aquatic life with long lasting effects
H336 - May cause drowsiness or dizziness
EUH066 - Repeated exposure may cause skin dryness or cracking

**14.5 Environmental hazard**

No

14.6 Special precautions

Hazard ID	30
EmS (IMDG)	F-E, S-E
Emergency Action Code (EAC)	-3Y
Tunnel restriction code	(D/E)

14.7 Transport in bulk according to Annex III of MARPOL 73/78 and the IBC Code
Please contact SDS@slb.com for info regarding transport in Bulk.

15. Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

Australian Standard for the Uniform Scheduling of Drugs and Poisons

Xylene

Schedule 7
Schedule 6
Ethylbenzene
Schedule 7
Solvent naphtha, petroleum, heavy aromatic
Schedule 7
Naphthalene
Schedule 6

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1483/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 83/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

This safety data sheet complies with the requirements of Regulation (EC) No. 1272/2008.

International inventories

USA, Toxic Substances Control Act inventory (TSCA)	Complies
European Union - EINECS and ELINCS	Does not comply
Canada (DSL)	Does not comply

Disclaimer

The information contained herein is considered in good faith as reliable of the data issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

Safety Data Sheet
WT-510

1. Identification of the substance/preparation and of the Company/undertaking

1.1 Product Identifier

Product name WT-510
Product code MI11452

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended use Water treatment chemical
Uses advised against Consumer use

1.3 Details of the supplier of the safety data sheet

Supplier Identification
M-I Drilling Fluids UK Limited
C/O Schlumberger
Enterprise Drive
Westhill Industrial Estate
Westhill, AB32 8TQ
Scotland UK
+47 51577424
MISDS@slb.com

1.4 Emergency Telephone Number

Emergency telephone - (24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, New Zealand +64 9929 1483, USA 001 281 561 1600

2. Hazards Identification

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008

Health hazards Not classified
Environmental hazards Not classified
Physical Hazards Not classified

2.2 Label Elements

Signal word
None

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Safety data sheet number MI11452
Revision date 21/Jul/2015

General advice
The severity of the symptoms described will vary dependant of the concentration and the length of exposure. If adverse symptoms develop, the casualty should be transferred to hospital as soon as possible.

Main symptoms

Inhalation Please see Section 11. Toxicological Information for further information.
Ingestion Please see Section 11. Toxicological Information for further information.
Skin contact Please see Section 11. Toxicological Information for further information.
Eye contact Please see Section 11. Toxicological Information for further information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding material.

Extinguishing media which shall not be used for safety reasons
None known.

5.2 Special hazards arising from the substance or mixture

Unusual fire and explosion hazards
None known.
Hazardous combustion products
Thermal decomposition can lead to release of irritating gases and vapours.

5.3 Advice for firefighters

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus and full protective gear.

Special Fire-Fighting Procedures
Containers close to fire should be removed immediately or cooled with water.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. See also section 8.

6.2 Environmental precautions

The product should not be allowed to enter drains, water courses or the soil.

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Revision date 21/Jul/2015

Hazard statements

This product is not classified as hazardous therefore no (H) hazard statements assigned.

Precautionary Statements - EU (528, 1272/2008)

This product is not classified as hazardous therefore has no (P) precautionary statements assigned.

Contains

2.3 Other data

Not classified as PBT/vPvB by current EU criteria

3. Composition/information on ingredients

3.1 Substances

Not Applicable

3.2 Mixtures

No classified ingredients, or those having occupational exposure limits, present above the level of disclosure.

4. First aid measures

4.1 First Aid

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.
Skin contact Wash skin thoroughly with soap and water. Get medical attention if irritation persists.
Eye contact Promptly wash eyes with lots of water while lifting eye lids. Remove contact lenses. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

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Safety data sheet number MI11452
Revision date 21/Jul/2015

Environmental exposure controls
Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up

Methods for Containment
Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. After cleaning, flush away traces with water.

6.4 Reference to other sections

See section 13 for more information.

7. Handling and storage

7.1 Precautions for safe handling

Handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Avoid spills and splashing during use.

Hygiene measures
Use good work and personal hygiene practices to avoid exposure. When using do not smoke, eat or drink. Wash hands and face before breaks and immediately after handling the product. Remove contaminated clothing.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures/precautions Ensure adequate ventilation.
Storage precautions Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from freezing. Keep at 1-49°C.
Storage class Chemical storage.
Packaging material Use specially constructed containers only.

7.3 Specific end uses

See also Section 1.2.

8. Exposure controls/personal protection

8.1 Control parameters

Exposure limits
The product does not contain any hazardous materials with occupational exposure limits established.

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8.2 Exposure controls

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

Engineering measures to reduce exposure
Ensure adequate ventilation.

Personal protective equipment

Eye protection	It is good practice to wear Safety Glasses with Side-shields when handling any chemical.
Hand protection	Use protective gloves made of, Neoprene. Be aware that liquid may penetrate the gloves. Frequent change is advisable.
Respiratory protection	No personal respiratory protective equipment normally required. In case of insufficient ventilation wear suitable respiratory equipment. Use respirator with organic vapor protection (A, brown). At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.
Skin and body protection	Wear suitable protective clothing. Eye wash and emergency shower must be available at the work place.

Hygiene measures
Wash hands before eating, drinking or smoking. Remove and wash contaminated clothing before re-use.



9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Liquid	
Appearance	milky	
Odour	Mild	
Colour	Milky white.	
Odor threshold	Not applicable	
Property	Values	Remarks
pH	3.5	
pH @ dilution		
Melting/freezing point	No information available	
Boiling point/range	No information available	
Flash Point	No information available	
Evaporation rate	No information available	
Flammability (solid, gas)	Not Applicable	
Flammability Limits in Air		
Upper flammability Limit	Not applicable	
Lower flammability limit	Not applicable	
Vapor pressure	No information available	
Vapor density	No information available	
Specific gravity	No information available	
Bulk density	No information available	
Relative density	No information available	
Water solubility	Soluble in water	
Solubility in other solvents	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	< 10 cPs	@ 20 °C
Viscosity, dynamic	No information available	
Log Pow	Not determined	
Explosive properties	Not Applicable	
Oxidizing properties	None known.	
9.2 Other information		
Pour point	< 0°C / 32°F	
Molecular weight	No information available	
VOC content(%)	None	
Density VALUE	1.024 ± 0.03 g/ml @ 20°C	

10. Stability and reactivity

10.1 Reactivity

No specific reactivity hazards associated with this product.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Possibility of Hazardous Reactions

Hazardous polymerization
Hazardous polymerisation does not occur.

10.4 Conditions to avoid

Protect from freezing.

10.5 Incompatible materials

No materials to be especially mentioned.

10.6 Hazardous decomposition products

See also section 5.2.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Inhalation	Inhalation of vapours in high concentration may cause irritation of respiratory system.
Eye contact	May cause slight irritation.
Skin contact	Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause stomach discomfort.
Unknown acute toxicity	Not Applicable.

Sensitisation	This product does not contain any components suspected to be sensitizing.
Mutagenic effects	This product does not contain any known or suspected mutagens.
Carcinogenicity	This product does not contain any known or suspected carcinogens.

Reproductive toxicity	This product does not contain any known or suspected reproductive hazards.
Routes of exposure	None known.
Routes of entry	No route of entry noted.

Specific target organ toxicity (single exposure)	Not classified
Specific target organ toxicity (repeated exposure)	Not classified.

Aspiration hazard

No hazard from product as supplied.

12. Ecological information

12.1 Toxicity

The product component(s) are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

Toxicity to algae
This product is not considered toxic to algae.

Toxicity to fish
This product is not considered toxic to fish.

Toxicity to daphnia and other aquatic invertebrates
This product is not considered toxic to invertebrates.

12.2 Persistence and degradability

No product level data available.

12.3 Bioaccumulative potential

No product level data available.

12.4 Mobility in soil

Mobility
Soluble in water.

12.5 Results of PBT and vPvB assessment

Not classified as PBT/vPvB by current EU criteria.

12.6 Other adverse effects

None known.

13. Disposal considerations

13.1 Waste treatment methods

Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Empty containers should be transported/delivered using a registered waste carrier for local recycling or waste disposal.
EWC waste disposal No.	According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used. The following Waste Codes are only suggestions: EWC waste disposal No: 07 01 99.

14. Transport information

14.1 UN number

Not regulated

14.2 Proper shipping name

The product is not covered by international regulation on the transport of dangerous goods

14.3 Hazard class(es)

ADR/RID/ADN/ADG Hazard class	Not regulated
IMDG Hazard class	Not regulated
ICAO Hazard class/division	Not regulated

14.4 Packing group

ADR/RID/ADN/ADG Packing Group	Not regulated
IMDG Packing group	Not regulated
ICAO Packing group	Not regulated

14.5 Environmental hazard

No

14.6 Special precautions

Not Applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Please contact MISDS@slb.com for info regarding transport in Bulk.

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Disclaimer

The information contained herein is considered in good faith as reliable of the data issued and is based upon on measurements, tests or data derived from supplier's own study or furnished by others. In providing this SDS information, Supplier makes no express or implied warranties as to the information or product; merchantability or fitness of purpose; any express or implied warranty; or non-infringement of intellectual property rights; and supplier assumes no responsibility for any direct, special or consequential damages, results obtained, or the activities of others. To the maximum extent permitted by law, supplier's warranty obligations and buyer's sole remedies are as stated in separate agreement between the parties.

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

This safety data sheet complies with the requirements of Regulation (EC) No. 1272/2008.

International Inventories

USA, Toxic Substances Control Act inventory (TSCA)	Complies
European Union - EINECS and ELINCS	Complies
Canada, Domestic Substance List (DSL)	Does not Comply
Philippines (PICCS)	Does not Comply
Inventory - Japan - Existing and New Chemicals list	Does not Comply
China (IECC)	Does not Comply
Australia (AICS)	Complies
Korea (KECL)	Does not Comply
Inventory - New Zealand - Inventory of Chemicals (NZIoC)	Does not Comply

Contact REACH@miswaco.slb.com for REACH information.

15.2 Chemical Safety Report

No information available

16. Other information

Prepared by	Global Regulatory Compliance - Chemicals (GRC - Chemicals) , Sandra McWilliam
Supersedes date	04/Apr/2011
Revision date	21/Jul/2015
Version	5

The following sections have been revised: Updated according to GHS/CLP. This SDS have been made in a new database and therefore a new layout. No changes with regard to classification have been made.

Full text of H-Statements referred to under sections 2 and 3

This product is not classified as hazardous therefore no (H) hazard statements assigned.



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SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifier
- Trade name: **Alfa Caus**
- 1.2 Relevant identified uses of the substance or mixture and uses advised against
 - No further relevant information available.
- Application of the substance / the mixture Industrial cleaner
- 1.3 Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
 - Alfa Laval Tumba AB
 - Hans Stahles väg 7
 - S-147 80 Tumba
 - Sweden
 - +46 8 530 650 00
 - info.se@alfalaval.com
- Further information obtainable from:
 - For further questions regarding the safety data sheet, please contact your local Alfa Laval Sales Company which you find at www.alfalaval.com or in section 16 "Other Information" in the end of the safety data sheet.
- 1.4 Emergency telephone number:
 - In the UK: For immediate, life-threatening emergencies, call 999
 - For health advice and information (24h) dial 111 (NHS direct).
 - In Europe: Call 112 and ask for poison information.

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008
 - Met. Corr.1 H290 May be corrosive to metals.
 - Skin Corr. 1A H314 Causes severe skin burns and eye damage.
- 2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008
 - The product is classified and labelled according to the CLP regulation.
- Hazard pictograms



GHS05

- Signal word Danger
- Hazard-determining components of labelling:
 - sodium hydroxide
- Hazard statements
 - H290 May be corrosive to metals.
 - H314 Causes severe skin burns and eye damage.

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- 4.3 Indication of any immediate medical attention and special treatment needed
 - No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
- Suitable extinguishing agents:
 - Water
 - Foam
 - Fire-extinguishing powder
 - Carbon dioxide
 - Use fire extinguishing methods suitable to surrounding conditions.
- For safety reasons unsuitable extinguishing agents: Not applicable.
- 5.2 Special hazards arising from the substance or mixture
 - During heating or in case of fire poisonous gases are produced.
 - Carbon monoxide and carbon dioxide
 - Nitrogen oxides (NOx)
 - Sulphur dioxide (SO2)
- 5.3 Advice for firefighters
- Protective equipment:
 - Wear fully protective suit.
 - Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
 - See Section 8 for information on personal protection equipment.
 - Wear protective equipment. Keep unprotected persons away.
 - Do not breathe vapour.
 - Do not get in eyes, on skin, or on clothing.
- 6.2 Environmental precautions:
 - Dilute with plenty of water.
 - Do not allow to enter sewers/ surface or ground water.
 - Send for recovery or disposal in suitable receptacles.
- 6.3 Methods and material for containment and cleaning up:
 - Dilute with plenty of water.
 - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 - Use neutralising agent.
 - Dispose contaminated material as waste according to item 13.
 - Ensure adequate ventilation.
- 6.4 Reference to other sections
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

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- Precautionary statements (Contd. of page 1)
 - P260 Do not breathe mist/vapours/spray.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P310 Immediately call a POISON CENTER or doctor/physician.
 - P363 Wash contaminated clothing before reuse.
- 2.3 Other hazards
- Results of PBT and vPvB assessment
 - PBT: Not applicable.
 - vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

- 3.2 Mixtures
- Description: Mixture: consisting of the following components.
- Dangerous components:

CAS: 1310-73-2	sodium hydroxide	Skin Corr. 1A, H314	5-15%
EINECS: 215-185-5			
CAS: 657-84-1	sodium toluene-4-sulphonate	Eye Dam. 1, H318	5-10%
EINECS: 211-522-5			

SECTION 4: First aid measures

- 4.1 Description of first aid measures
- General information:
 - Wash contaminated clothing before reuse.
 - Immediately remove any clothing soiled by the product.
- After inhalation: Supply fresh air; consult doctor if symptoms persists.
- After skin contact:
 - Immediately wash with water and soap and rinse thoroughly.
 - If skin irritation continues, consult a doctor.
- After eye contact:
 - Flush eyes with lukewarm water for 10-15 minutes. Transport the exposed person to hospital or an eye specialist. Continue rinsing eyes during transport.
- After swallowing:
 - Rinse out mouth and then drink plenty of water.
 - If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.
- 4.2 Most important symptoms and effects, both acute and delayed
 - No further relevant information available.

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SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
 - When diluting always pour product into water and not vice versa.
 - Ensure good ventilation/exhaustion at the workplace.
 - Prevent formation of aerosols.
 - When using do not eat, drink or smoke.
 - See Section 8 for information on personal protection equipment.
 - Avoid contact with skin and eyes.
 - Ensure that washing facilities are available at the work place.
- Information about fire - and explosion protection: No special measures required.
- 7.2 Conditions for safe storage, including any incompatibilities
- Storage:
 - Requirements to be met by storerooms and receptacles:
 - Keep container tightly closed.
 - Keep only in original container.
 - Store in a dry place.
 - Information about storage in one common storage facility: Do not store together with acids.
- Further information about storage conditions:
 - Keep container tightly sealed.
 - Protect from frost.
- 7.3 Specific end use(s)
 - Industrial cleaner
 - Only for trade users / technical specialists

SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.
- 8.1 Control parameters
- Ingredients with limit values that require monitoring at the workplace:

1310-73-2 sodium hydroxide
WEL [Short-term value: 2 mg/m³]
- DNELs
 - 1310-73-2 Sodium hydroxide: Hazard via inhalation route: Long time exposure: 1 mg/m³, Overall assessment factor: 1, Dose descriptor starting point: NOAEC.
- Additional information: The lists valid during the making were used as basis.
- 8.2 Exposure controls
- Personal protective equipment:
 - General protective and hygienic measures:
 - No further data; see item 7.
 - Keep away from foodstuffs, beverages and feed.
 - Immediately remove all soiled and contaminated clothing
 - Wash hands before breaks and at the end of work.
 - Avoid contact with the eyes and skin.
 - Use only in well-ventilated areas.

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In case of insufficient ventilation, wear suitable respiratory equipment.

Respiratory protection:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Filter P2

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

Chloroprene rubber, CR

Natural rubber, NR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Face protection



Tightly sealed goggles

Body protection: Use protective suit.**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance:**

Form: Fluid

Colour: Yellowish

Odour: Undistinguishable.**Odour threshold:** Not determined.**pH-value at 20 °C:** 13-14

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Nitrogen oxides (NOx)
Sulphur dioxide

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SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity:****1310-73-2 sodium hydroxide**

Oral LD50 2000 mg/kg (rat)

LDLo 500 mg/kg (rabbit) (LDLo)

Primary irritant effect:**on the skin:** Strong caustic effect on skin and mucous membranes.**on the eye:**

Strong caustic effect.

Irritating effect.

Sensitisation: No sensitising effects known.**Additional toxicological information:**

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:

Causes severe burns.

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

Repeated dose toxicity**1310-73-2 sodium hydroxide**Inhalative Repeated Dose Toxicity (No information available)
10 weeks; 20 minutes, 2 times/week.**SECTION 12: Ecological information****12.1 Toxicity****1310-73-2 sodium hydroxide**

EC50

Germ Cell Mutagenicity (Bacterial mutation assay)
LC50>100 mg/L (daphnia) (OECD Guideline 202
(Daphnia sp. Acute Immobilisation)
(Bacteria) (Bacterial Forward Mutation Assay)
189 mg/L (Fish) (OECD Guideline 203 (Fish, Acute
Toxicity Test))
48 h, Leuciscus idus melanotus**Aquatic toxicity:** No further relevant information available.**12.2 Persistence and degradability**

The surfactants contained in the product correspond to the legislation on the environmental compatibility of detergents and are biodegradable.

12.3 Bioaccumulative potential No further relevant information available.**12.4 Mobility in soil** No further relevant information available.

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Change in condition**Melting point/Melting range:** Undetermined.**Boiling point/Boiling range:** > 100 °C**Flash point:** > 100 °C**Flammability (solid, gaseous):** Not applicable.**Ignition temperature:****Decomposition temperature:** Not determined.**Self-igniting:** Product is not selfigniting.**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:****Lower:** Not determined.**Upper:** Not determined.**Vapour pressure:** Not determined.**Density at 20 °C:** 1,17 g/cm³**Relative density** Not determined.**Vapour density** Not determined.**Evaporation rate** Not determined.**Solubility in / Miscibility with water:** Fully miscible.**Partition coefficient (n-octanol/water):** Not determined.**Viscosity:****Dynamic:** Not determined.**Kinematic:** Not determined.**Solvent content:****Organic solvents:** 0.0 %**9.2 Other information** No further relevant information available.

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SECTION 10: Stability and reactivity**10.3 Possibility of hazardous reactions**

Contact with acids releases flammable gases.

Reacts with base metals forming hydrogen.

10.4 Conditions to avoid Do not store together with acids.**10.5 Incompatible materials:**

Keep away from acids.

Store away from metals.

10.6 Hazardous decomposition products:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

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• 14.2 UN proper shipping name	
• ADR	1824 SODIUM HYDROXIDE SOLUTION
• IMDG, IATA	SODIUM HYDROXIDE SOLUTION
• 14.3 Transport hazard class(es)	
• ADR, IMDG, IATA	
	
• Class	8 Corrosive substances.
• Label	8
• 14.4 Packing group	
• ADR, IMDG, IATA	II
• 14.5 Environmental hazards:	
• Marine pollutant:	
No	
• 14.6 Special precautions for user	
• Danger code (Kemler):	Warning: Corrosive substances.
• EMS Number:	80
• Segregation groups	F-A, S-B
• 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	
Not applicable.	
• Transport/Additional information:	
• ADR	
• Limited quantities (LQ)	1L
• Excepted quantities (EQ)	Code: E2
Maximum net quantity per inner packaging: 30 ml	
Maximum net quantity per outer packaging: 500 ml	
• Transport category	2
• Tunnel restriction code	E
• IMDG	
• Limited quantities (LQ)	1L
• Excepted quantities (EQ)	Code: E2
Maximum net quantity per inner packaging: 30 ml	
Maximum net quantity per outer packaging: 500 ml	
• UN "Model Regulation":	
UN1824, SODIUM HYDROXIDE SOLUTION, 8, II	

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SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
 - EU regulation (EC) no 1272/2008 (CLP)
 - EC DIRECTIVE 2008/98/EC (waste)
 - EU Regulation (EC) no.1907/2006 (REACH)
- 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

www.alfalaval.com

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

LIMITATION OF LIABILITY

This document is only intended to be used as guidance as regards the risks of which we are aware that are associated with the product. Every individual who works with the product or in close proximity of it must receive suitable training. Individuals who come into contact with the product must be capable of using their own judgement as regards conditions or methods for handling, storing and using the product. Alfa Laval is not liable for demands, losses or damage of any kind that arise from flaws or deficiencies in this document or from using, handling, storing or disposing of the product unless it can be proven that Alfa Laval has acted in a grossly negligent manner. Beyond what has been agreed upon and specified in writing with Alfa Laval in the individual case, Alfa Laval makes no promises or assumes any liability, including but not limited to implicit guarantees regarding marketability or appropriateness in terms of both the information provided in this document and the product to which the information refers. Please contact your local Alfa Laval Sales Company for further questions:

Relevant phrases

H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

• Department issuing MSDS: Alfa Laval Materials and Chemistry Centre (MACC)

Contact:

Argentina: alfa.consulta@alfalaval.com
Australia: australia.info@alfalaval.com
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Vietnam: vietnam.info@alfalaval.com

• Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
Met. Corr. 1: Corrosive to metals, Hazard Category 1
Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1

• Data compared to the previous version altered.

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according to 1907/2006/EC, Article 31

Printing date 29.03.2016

Version number 11

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SECTION 1: Identification of the substance/mixture and of the company undertaking**1.1 Product identifier**

• Trade name: Alfa Phos

• 1.2 Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

• Application of the substance / the mixture Industrial cleaner

1.3 Details of the supplier of the safety data sheet**Supplier:**

Alfa Laval Lund AB
Box 74
SE-221 00 Lund
Sweden
+46 46 36 65 00
info.se@alfalaval.com

Further information obtainable from:

For further questions regarding the safety data sheet, please contact your local Alfa Laval Sales Company which you find at www.alfalaval.com or in section 16 "Other Information" in the end of the safety data sheet.

1.4 Emergency telephone number:

For immediate, life-threatening emergencies, call 999
For health advice and information (24h) dial 111 (NHS direct).

In Europe: Call 112 and ask for poison information.

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

• Classification according to Regulation (EC) No 1272/2008

Met. Corr.1 H290 May be corrosive to metals.

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

2.2 Label elements

• Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms

• Signal word Danger

• Hazard-determining components of labelling:

phosphoric acid

Hazard statements

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

Precautionary statements

P260 Do not breathe mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor/.

• **2.3 Other hazards**

• **Results of PBT and vPvB assessment**

• PBT: Not applicable.

• vPvB: Not applicable.

SECTION 3: Composition/information on ingredients• **3.2 Mixtures**• **Description:**

Phosphates	25-50%
Anionic surfactants	2,5-<10%

• **Dangerous components:**

CAS: 7664-38-2	phosphoric acid	50-100%
EINECS: 231-633-2	Met. Corr.1, H290; Skin Corr. 1B, H314	
Reg.nr.: 01-2119485924-24		

• **Additional information:** For the wording of the listed hazard phrases refer to section 16.**SECTION 4: First aid measures**• **4.1 Description of first aid measures**• **General information:** Immediately remove any clothing soiled by the product.• **After inhalation:** Supply fresh air; consult doctor if symptoms persists.• **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

• **After eye contact:**

IF IN EYES: Rinse cautiously with water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

• **After swallowing:**

Rinse out mouth and then drink plenty of water.

If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

• **4.2 Most important symptoms and effects, both acute and delayed**

Corrosive effects. Can cause permanent eye damage.

• **4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

SECTION 5: Firefighting measures• **5.1 Extinguishing media**• **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.• **For safety reasons unsuitable extinguishing agents:** Not applicable.

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• **8.1 Control parameters**• **Ingredients with limit values that require monitoring at the workplace:**

CAS: 7664-38-2 phosphoric acid

WEL	Short-term value: 2 mg/m ³
	Long-term value: 1 mg/m ³

• **DNELs**7664-38-2 Orthophosphoric acid: Local effects: Long term exposure: 1 mg/m³ (repeated dose toxicity); Acute/short term exposure: 2 mg/m³.• **Additional information:** The lists valid during the making were used as basis.• **8.2 Exposure controls**• **Personal protective equipment:**• **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

Use only in well-ventilated areas.

In case of insufficient ventilation, wear suitable respiratory equipment.

• **Respiratory protection:**

Filter P2



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

• **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

• **Material of gloves**

Natural rubber, NR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

• **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

• **Eye protection:**

Tightly sealed goggles

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- **5.2 Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
 - **5.3 Advice for firefighters**
 - **Protective equipment:** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures• **6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Do not breathe vapour.

Do not get in eyes, on skin, or on clothing.

• **6.2 Environmental precautions:**

Do not allow to enter sewers/ surface or ground water.

Send for recovery or disposal in suitable receptacles.

• **6.3 Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralising agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

• **6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7: Handling and storage• **7.1 Precautions for safe handling**

When diluting always pour product into water and not vice versa.

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

When using do not eat, drink or smoke.

See Section 8 for information on personal protection equipment.

Avoid contact with skin and eyes.

Ensure that washing facilities are available at the work place.

• **Information about fire - and explosion protection:** No special measures required.• **7.2 Conditions for safe storage, including any incompatibilities**• **Storage:**• **Requirements to be met by storerooms and receptacles:**

Protect from frost.

Keep only in original container.

• **Information about storage in one common storage facility:** Not required.• **Further information about storage conditions:** Keep container tightly sealed.• **7.3 Specific end use(s)** Industrial cleaner**SECTION 8: Exposure controls/personal protection**• **Additional information about design of technical facilities:** No further data; see item 7.

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• **Body protection:** Full protective clothing

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SECTION 9: Physical and chemical properties• **9.1 Information on basic physical and chemical properties**• **General Information**• **Appearance:**

Form: Liquid

Colour: Yellow-brown

• **Odour:** Undistinguishable.• **Odour threshold:** Not determined.• **pH-value at 20 °C:** 1,6• **Change in condition**• **Melting point/Melting range:** Undetermined.• **Boiling point/Boiling range:** > 100 °C• **Flash point:** > 100 °C• **Flammability (solid, gaseous):** Not applicable.• **Ignition temperature:**• **Decomposition temperature:** Not determined.• **Self-igniting:** Product is not selfigniting.• **Danger of explosion:** Product does not present an explosion hazard.• **Explosion limits:**• **Lower:** Not determined.• **Upper:** Not determined.• **Vapour pressure:** Not determined.• **Density at 20 °C:** 1,57 g/cm³• **Relative density:** Not determined.• **Vapour density:** Not determined.• **Evaporation rate:** Not determined.• **Solubility in / Miscibility with water:** Not miscible or difficult to mix.• **Partition coefficient (n-octanol/water):** Not determined.• **Viscosity:**• **Dynamic:** Not determined.• **Kinematic:** Not determined.• **Solvent content:**• **Organic solvents:** 0,0 %• **VOC (EC):** 0,00 %• **9.2 Other information** No further relevant information available.

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SECTION 10: Stability and reactivity

- **10.1 Reactivity** Reacts with alkali (lyes).
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid**
Protect from frost.
Do not store together with alkalis (caustic solutions).
- **10.5 Incompatible materials:** Refer to section 10.3 above.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

SECTION 11: Toxicological information

CAS: 7664-38-2 phosphoric acid

Irritation of skin	Skin corrosion/irritation	(rabbit) (24 h)
Sensitisation	Respiratory or skin sensitization	(No information available) Not sensitizing.

• **11.1 Information on toxicological effects**• **Acute toxicity**

CAS: 7664-38-2 phosphoric acid

Oral LD50 3500 mg/kg (rat)

Based on available data, the classification criteria are not met.

- **Primary irritant effect:**
- **Skin corrosion/irritation**
Causes severe skin burns and eye damage.
- **Serious eye damage/irritation**
May cause irreversible eye damage
Causes severe skin burns and eye damage.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information• **12.1 Toxicity**

CAS: 7664-38-2 phosphoric acid

LC50 <100 mg/L (Fish) (OECD Guideline 203)
OECD Guideline 203 (Fish Acute Toxicity test), ISO 6341 15 Water quality.

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• IMDG	PHOSPHORIC ACID, SOLUTION
• IATA	Phosphoric acid solution
• 14.3 Transport hazard class(es)	
• ADR, IMDG, IATA	
	
• Class	8 Corrosive substances.
• Label	8
• 14.4 Packing group	
• ADR, IMDG, IATA	III
• 14.5 Environmental hazards:	Product contains environmentally hazardous substances: phosphoric acid
• Marine pollutant:	No
• 14.6 Special precautions for user	Warning: Corrosive substances.
• Danger code (Kemler):	80
• EMS Number:	F-A, S-B
• Segregation groups	Acids
• Stowage Category	A
• 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
• Transport/Additional information:	
• ADR	
• Limited quantities (LQ)	5L
• Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
• Transport category	3
• Tunnel restriction code	E
• IMDG	
• Limited quantities (LQ)	5L
• Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
• UN "Model Regulation":	UN 1805 PHOSPHORIC ACID, SOLUTION, 8, III

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
EU regulation (EC) no 1272/2008 (CLP)
EC DIRECTIVE 2008/98/EC (waste)

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48-h EC50 (static)	1689 mg/L (rabbit) Inhalation; 1 h. >100 mg/L (daphnia) (OECD Guideline 202, EU Method C.2) Aqua (freshwater); 56 mg/L (NOEC); EC50: >100 mg/L (48 h), Daphnia magna (invertebrate); GLP compliance; OECD Guideline 202 (Daphnia sp, Acute Immobilisation Test); EU Method C.2 (Acute Toxicity for Daphnia), Fresh Water.
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- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations• **13.1 Waste treatment methods**• **Recommendation**

Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

• **European waste catalogue**

06 00 00	WASTES FROM INORGANIC CHEMICAL PROCESSES
06 01 00	wastes from the manufacture, formulation, supply and use (MFSU) of acids
06 01 04*	phosphoric and phosphorous acid

• **Uncleaned packaging:**• **Recommendation:** Disposal must be made according to official regulations.**SECTION 14: Transport information**

• 14.1 UN-Number	UN1805
• ADR, IMDG, IATA	
• 14.2 UN proper shipping name	1805 PHOSPHORIC ACID, SOLUTION
• ADR	

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- EU Regulation (EC) no.1907/2006 (REACH)
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

LIMITATION OF LIABILITY

This document is only intended to be used as guidance as regards the risks of which we are aware that are associated with the product. Every individual who works with the product or in close proximity of it must receive suitable training. Individuals who come into contact with the product must be capable of using their own judgement as regards conditions or methods for handling, storing and using the product. Alfa Laval is not liable for demands, losses or damage of any kind that arise from flaws or deficiencies in this document or from using, handling, storing or disposing of the product unless it can be proven that Alfa Laval has acted in a grossly negligent manner. Beyond what has been agreed upon and specified in writing with Alfa Laval in the individual case, Alfa Laval makes no promises or assumes any liability, including but not limited to implicit guarantees regarding marketability or appropriateness in terms of both the information provided in this document and the product to which the information refers.

www.alfalaval.com

Please contact your local Alfa Laval Sales Company for further questions:

• **Relevant phrases**

- H290 May be corrosive to metals.
- H314 Causes severe skin burns and eye damage.

• **Department issuing MSDS:** MACC -Materials & Chemistry Centre• **Contact:**

Argentina: alfa.consulta@alfalaval.com
Australia: australia.info@alfalaval.com
Austria: info.mideurope@alfalaval.com
Belgium: benelux.info@alfalaval.com
Bolivia: alfa.consulta@alfalaval.com
Brazil: alfa.laval.br@alfalaval.com
Bulgaria: bulgaria.info@alfalaval.com
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Croatia: hrvatska.info@alfalaval.com
Czech Republic: czechrepublic.info@alfalaval.com
Denmark: info.nordic.dk@alfalaval.com
Egypt: alme.marketing@alfalaval.com
Estonia: estonia.info@alfalaval.com
Finland: info.fi@alfalaval.com
France: environnement@alfalaval.com
Germany: info.mideurope@alfalaval.com
Greece: greece.info@alfalaval.com
Hungary: info.hu@alfalaval.com
India: india.info@alfalaval.com
Indonesia: alfa.indo@alfalaval.com
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Malaysia: malaysia.info@alfalaval.com
Mexico: mexico.info@alfalaval.com
The Netherlands: benelux.info@alfalaval.com
New Zealand: newzealand.info@alfalaval.com
Norway: info.no@alfalaval.com
Peru: ventas.peru@alfalaval.com
Philippines: philippines.info@alfalaval.com
Poland: poland.info@alfalaval.com
Portugal: portugal.info@alfalaval.com
Qatar: alme.marketing@alfalaval.com
Romania: romania.info@alfalaval.com
Russia: moscow.response@alfalaval.com
Singapore: al.singapore@alfalaval.com
Slovak Republic: slovakia.info@alfalaval.com
Slovenia: slovenija.info@alfalaval.com
South Africa: info.sa@alfalaval.com
Spain: info.spain@alfalaval.com
Sweden: info.se@alfalaval.com
Switzerland: info.mideurope@alfalaval.com
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United Kingdom: general.uk@alfalaval.com
United States: customerservice.usa@alfalaval.com
Venezuela: venezuela.info@alfalaval.com
Vietnam: vietnam.info@alfalaval.com

* Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
DIEL: Derived No-Effect Level (R5d/4h)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Met, Corr. 1: Corrosive to metals, Hazard Category 1
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B

* * Data compared to the previous version altered.

08

BAUER COMPRESSOR OIL N28355



Safety data sheet according to Regulation (EC) No 1272/2008, Annex II

1. Identification

Material Name	Bauer-Kompressorenöl
Product Code	N28355
Product Use	Compressor oil
Uses Advised Against	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice off the supplier.
Manufacturer/Supplier	BAUER KOMPRESSOREN GmbH, Stäblistraße 8, D-81477 München Telefon +49(0)89-78049-0, Telefax +49(0)89-78049-167
Emergency Telephone Number	Telefon +49(0)89-78049-0

2. Hazards Identification

Classification of the substance or mixture	67/548/EEC or 1999/45/EC Hazard Characteristics: Not classified as dangerous under EC criteria
EC Symbols	No Hazard Symbol required
EC Classification	Not classified as dangerous under EC criteria
EC Risk Phrases	Not classified
EC Safety Phrases	Not classified
Health Hazards	Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Used oil contain harmful impurities.
Safety Hazards	Used oil may contain harmful impurities.
Environmental Hazards	Not classified as dangerous for the environment

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BAUER COMPRESSOR OIL N28355



3. Composition/information on ingredients

Material Name	Not applicable
Mixture Description	Blend of synthetic esters and additives

Classification of components according to Regulation (EC) No 1272/2008

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Alkarylamine	68411-46-1	270-128-1	01-2119491299-23	1,00 – 3,00%

Chemical Name	Hazard Class & Category	Hazard Statement
Alkarylamine	Aquatic Chronic, 3	H412

Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EC Number	REACH Registration No.	R-phrases(s)	Conc.
Alkarylamin	68411-46-1	270-128-1	01-2119491299-23	R52/53	1,00 – 3,00%

Additional Information	Refer to Ch 16 for full text of R- and H- phrases. This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB
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4. First aid measures

General Information	Not expected to be a health hazard when used under normal conditions.
Inhalation	No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
Skin contact	Remove polluted, soaked clothing immediately, wash thoroughly with plenty of water and soap, in case of irritation of the skin (flare), consult a doctor.
Eye contact	Remove contact lenses. Was thoroughly for several minutes using copious water. Seek medical help if necessary.
Most important symptoms and effects, both acute and delayed	Oil acne/folliculitis and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhea.

BAUER COMPRESSOR OIL N28355



Indication of any immediate medical attention and special treatment needed	Notes to doctor/physician: Treat symptomatically.
---	---

5. Firefighting measures

Suitable extinguishing media	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only
Unsuitable extinguishing media	High volume water jet
Special hazards arising from the substance or mixture	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.
Advice for firefighters	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469)

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	For non emergency personnel: Avoid contact with skin and eyes. For emergency responders: Avoid contact with skin and eyes.
Environmental precautions	Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or river by using sand, earth, or other appropriate barriers.
Methods and material for containment and cleaning up	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional advice	Local authorities should be advised if significant spillages cannot be contained.
Reference to other sections	For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

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7. Handling and storage

General precautions	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Precautions for safe handling	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closeable containers.
Conditions for safe storage, including any incompatibilities	Store at ambient temperature.
Recommended materials	For containers or container linings, use mild steel or high density polyethylene.
Unsuitable materials	PVC
Specific end use(s)	Not applicable
Additional information	Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion. Storage class according to TRGS 510:10 Fire hazard classification: B

8. Exposure controls/personal protection

Biological Exposure Index (BEI)	No biological limit allocated.
Monitoring methods	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

Exposure Controls General Information

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical methods <http://www.cds.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methodes for the Determination of Hazardous Substances <http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.
<http://www.dguv.de/inhalt/index.jsp>

L'Institut Nationalde Recherche et de Sécurité, (INRS), France
<http://www.inrs.fr/accueil>

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Personal protective equipment

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye/face protection

Tight fitting protective goggles (EN 166) with side protection, with danger of projections.

Skin protection/Hand protection

Chemical resistant protective gloves (EN 374)
If applicable: Protective nitrile gloves (EN 374), Protective PVC

	gloves (EN374), Protective hand cream recommended. The breakthrough times determined in accordance with EN 374 Part 3 were not obtained under practical conditions. The recommended maximum wearing time is 50% of breakthrough time.
Skin protection – other	Protective working garments (e. g. safety shoes EN ISO 20345, long-sleeved protective working garments).
Respiratory protection	Normally not necessary.
Thermal hazards	If applicable, these are included in the individual protective measures (eye/face protection, skin protection, respiratory protection).

Additional information on hand protection – No tests have been performed	In the case of mixtures, the selection has been made according to the knowledge available and the information about the contents. Selection of materials derived from glove manufacturer's indications. Final selection of glove material must be made taking the breakthrough times, permeation rates and degradation into account. Selection of a suitable glove depends not only on the material but also on other quality characteristics and varies from manufacturer to manufacturer. In the case of mixtures, the resistance of glove materials can not be predicted and must therefore be tested before use. The exact breakthrough time of the glove material can be requested from the protective glove manufacturer and must be observed.
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Environmental exposure controls	Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water. Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.
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9. Physical and chemical properties

Physical state	Liquid at room temperature
Colour	Clear colourless
Odour	Slight hydrocarbon

pH-value	Not applicable
Initial boiling point and boiling range	>280°C/536°F estimated value(s)
Pour point	Typical -39°C/-38°F
Flash point	Typical 260°C/500°F (COC)
Upper/lower Flammability	Typical 1-10 % (V)
Auto-ignition temperature	>320°C/608°F
Vapour pressure	<0.5 Pa at 20°C/68°F (estimated value(s))
Relative Density	Typical 0.988 at 15°C/59°F
Density	Typical 0.988 kg/m ³ at 15°C/59°F
Water solubility	Negligible
Partition coefficient (n-octanol/water)	>6 (based on information on similar products)
Kinematic viscosity	Typical 100 mm ² /s at 40°C/104°F
Vapour density (air=1)	>1 (estimated value(s))
Electrical conductivity	This material is not expected to be a static accumulator
Evaporation rate (nBuAc=1)	Data not available

10. Stability and reactivity

Reactivity	The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
Chemical stability	No hazardous reaction is expected when handled and stored according to provisions
Possibility of hazardous reactions	Reacts with strong oxidizing agents
Conditions to avoid	Extremes of temperature and direct sunlight
Incompatible materials	Strong oxidizing agents
Hazardous Decomposition Products	Hazardous decomposition products are not expected to form during normal storage.

11. Toxicological information

Basis for Assessment	Information given is based on data on the components and the toxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Acute toxicity, by oral route	Expected to be of low toxicity: LD50 > 5000mg/kg, Rat
Acute toxicity, by dermal route	Expected to be of low toxicity: LD50 > 5000mg/kg, Rabbit
Acute toxicity, by inhalation	Not considered to be an inhalation hazard under normal conditions of use.



Skin corrosion/irritation	Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Serious eye damage/irritation	Expected to be slightly irritating
Respiratory irritation	Inhalation of vapours or mists may cause irritation
Sensitisation	Not expected to be a skin sensitizer
Repeated Dose Toxicity	Not expected to be a hazard
Mutagenicity	Not considered a mutagenic hazard
Carcinogenicity	Not expected to be carcinogenic. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).
Reproductive toxicity	Not expected to be a hazard.
Additional Information	Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. Classifications by other authorities under varying regulatory frameworks may exist.

12. Ecological information

Generell informations	Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Acute Toxicity	Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/L50 > 100 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.
Mobility	Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats on water.

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Persistence and degradability	Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
Bioaccumulative potential	Contains components with the potential to bioaccumulate.
Other Adverse Effects	Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. Disposal considerations

Material Disposal	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
Container Disposal	Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.
Local Legislation	Disposal should be in accordance with applicable regional, national, and local laws and regulations. EU Waste Disposal Code (EWC): 13 02 06 synthetic engine, gear and lubricating oils. Classification of waste is always the responsibility of the end user.

14. Transport information

ADR	This product is not classified as dangerous for this mode of transport.
RID	This product is not classified as dangerous for this mode of transport.
Inland waterways transport (AND)	This product is not classified as dangerous for this mode of transport.
IMDG	This product is not classified as dangerous under IMDG regulations.
IATA	This product is not classified as dangerous for this mode of transport.

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Additional Information	MARPOL Annex 1 rules apply for bulk shipments by sea.
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15. Regulatory information

Generell informations	The regulatory information is not intended to be comprehensive. Other regulations may apply to this material
Other regulatory information authorisations and/or restrictions On use	Product is not subject to Authorisation under REACH
Recommended Restrictions on use	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier
Notification Status	EINECS – All components listed or polymer exempt. TSCA – All components listed.
Water pollution class	WGK 2 – hazard to water (appendix 2, VwVwS, preparations)
Chemical safety assessment	No chemical safety assessment has been carried out for this substance/mixture by the supplier.

16. Other information

R-phrases(s)	Not classified
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
CLP hazard statements	Harmful to aquatic life with long lasting effects.
Additional information	No exposure scenario annex is attached to this safety data sheet. It is a non-classified mixture containing hazardous substances as detailed in Section 3, relevant information from exposure scenarios for the hazardous substances contained have been integrated into the core sections 1-16 of this SDS.

17. Legend

AC	Article Categories
Acc., acc to	According, according to
ACGIH	American Conference of Governmental Industrial Hygienists
ADR	Accord européen relative au transport international des marchandises Dangereuses par Route (=European Agreement

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AOEL	concerning the International Carriage of Dangerous Goods by Road)
AOX	Acceptable Operator Exposure Level
Approx.	Adsorbable organic halogen compounds
Art., Art. No	Approximately
ATE	Article number
BAM	Acute Toxicity Estimate according to Regulation (EC) 1272/2008 (CLP)
BAuA	Bundesanstalt für Materialforschung und –prüfung (Federal Institute for Materials Research and Testing, Germany)
BCF	Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (=Federal Institute for Occupational Health and Safety, Germany)
BGV	Bioconcentration factor
BHT	Berufsgenossenschaftliche Vorschrift (=Accident Prevention Regulation)
BMGV	Butylhydroxytoluol (=2,6-Di-t-butyl-4-methyl-phenol)
BOD	Biological monitoring guidance value (EH40, UK)
BSEF	Biochemical oxygen demand
bw	Bromine Science and Environmental Forum
CAS	Body weight
CEC	Chemical Abstracts Service
CESIO	Coordinating European Council for the Development of Performance Tests for Fuels, Lubricants and Other Fluids
CIPAC	Comité Européen des Agents de Surface et de leurs Intermédiaire Organiques
CLP	Collaborative International Pesticides Analytical Council Classification, Labelling and Packaging (Regulation (EC) No 1272/2008 on classification, labeling and packaging of substances and mixtures)
CMR	Carcinogenic, mutagenic, reproductive toxic
COD	Chemical oxygen demand
CTFA	Cosmetic, Toiletory, and Fragrance Association
DMEL	Derived Minimum Effect Level
DNEL	Derived No Effect Level
DOC	Dissolved organic carbon
DTSO	Dwell Time – 50% reduction of start concentration
DVS	Deutscher Verband für Schweißen und verwandte Verfahren e.V. (=German Association for Welding and Allied Processes)
dw	Dry weight
e.g.	For example, for instance
EC	European Community
ECHA	European Chemicals Agency
EEA	European Economic Area
EEC	European Economic Community
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EN	European Norms
EPA	United States Environmental Protection Agency (USA)
ERC	Environmental Release Categories

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ES	Exposure scenario
Etc.	Et cetera
EU	European Union
EWG	European Waste Catalogue
Fax.	Fax number
Gen.	General
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GWP	Global warming potential
HET-CAM	Hen's Egg Test – Chorionallantoic Membrane
HGWP	Halocarbon Global Warming Potential
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
IBC (Code)	Intermediate Bulk Container (Code)
IC	Inhibitory concentration
IMDG-code	International Maritime Code for Dangerous Goods
Incl.	Including, inclusive
IUCLID	International Uniform Chemical Information Database
LC	Lethal concentration
LC50	Lethal concentration 50 percent kill
LCLo	Lowest published lethal concentration
LD	Lethal Dose of a chemical
LD50	Lethal Dose, 50% kill
LDLo	Lethal Dose Low
LOAEL	Lowest Observed Adverse Effect Level
LOEC	Lowest Observed Effect Concentration
LOEL	Lowest Observed Effect Level
LQ	Limited Quantities
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
n.a.	Not applicable
n.av.	Not available
n.c.	Not checked
n.d.a.	No data available
NIOSH	National Institute of Occupational Safety and Health (USA)
NOAEC	No Observed Adverse Effective Concentration
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
NOEL	No Observed Effect Level
ODP	Ozone Depletion Potential
OECD	Organisation for Economic Co-operation and Development
Org.	Organic
PAH	Polycyclic aromatic hydrocarbon
PBT	Persistent, bioaccumulative and toxic
PC	Chemical product category
PE	Polyethylene
PNEC	Predicted No Effect Concentration
POCP	Photochemical ozone creation potential

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Ppm	Parts per million
PROC	Process category
PTFE	Polytetrafluorethylene
REACH	Registration, Evaluation, Authorisation and Restriction of Chemical (Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
REACH-IT Lis-No.	9xx-xxx-x No. is automatically assigned, e.g. to pre-registrations without a CAS No. or other numerical identifier. List Numbers do not have any legal significance, rather they are purely technical identifiers for processing a submission via REACH-IT.
RID	Règlement concernant le transport International ferroviaire de marchandises Dangereuses (=Regulation concerning the International Carriage of Dangerous Goods by Rail)
SADT	Self-Accelerating Decomposition Temperature
SAR	Structure Activity Relationship
SU	Sector of use
SVHC	Substance of Very High Concern
Tel.	Telephone
ThOD	Theoretical oxygen demand
TOC	Total organic carbon
TRGS	Technische Regeln für Gefahrstoffe (=Technical Regulations for Hazardous Substances)
UN RTDG	United Nations Recommendations on the Transport of Dangerous Goods
VbF	Verordnung über brennbare Flüssigkeiten (=Regulation for flammable liquids (Austria))
VOC	Volatile organic compounds
vPvB	Very persistent and very bioaccumulative
WEL-TWA, WEL-STEL,	WEL-TWA = Workplace Exposure Limit –Long-term exposure limit (8-hour TWA=(time weighted average) WEL-STEL = Workplace Exposure Limit – Short-term exposure limit (15-minute reference period)(EH40, UK)
WHO	World Health Organization
Wwt	Wet weight

The statements made here should describe the product with regard to the necessary safety precautions – they are not meant to guarantee definite characteristics - but they are based on our present up-to-date knowledge. No responsibility.

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Safety Data Sheet



SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
STARPLEX EP 2

Product Number(s): 035975

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified Uses: Grease

1.3 Details of the supplier of the safety data sheet
Chevron Belgium NV
Technologiepark-Zwijnaarde 2
B-9052 Gent
Belgium
email : eumsds@chevron.com

1.4 Emergency telephone number
Transportation Emergency Response
Europe: 0044(0)18 65 407333
Health Emergency
Europe: 0044(0)18 65 407333
Poison Control Center: Belgium: 0032(0)70 245 245
Product Information
FAX number: 0032(0)9 293 72 22

Poison Control Center: 0032(0)70 245 245

SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
DSD/DPD CLASSIFICATION: Not classified as dangerous according to EU regulatory guidelines.

2.2 Label elements
Under the criteria of Directive 1999/45/EC (dangerous preparations):
Not classified

2.3 Other hazards Not applicable,

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Mixtures
This material is a mixture.

COMPONENTS	EC NUMBER	SYMBOL / RISK PHRASES	AMOUNT
Highly refined mineral oil (C15 - C50)	*	None	60 - 100 %weight

*Contains one or more of the following EINECS numbers: 265-090-8, 265-091-3, 265-096-0, 265-097-6, 265-098-1, 265-101-6, 265-155-0, 265-156-6, 265-157-1, 265-158-7, 265-159-2, 265-160-8, 265-161-3, 265-166-0, 265-169-7, 265-170-5, 276-735-8, 276-736-3, 276-737-9, 276-738-4, 278-012-2.

COMPONENTS	CAS NUMBER	EC NUMBER	REGISTRATION NUMBER	CLP CLASSIFICATION	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	*	**	None	60 - 100 %weight

*Contains one or more of the following EINECS numbers: 265-090-8, 265-091-3, 265-096-0, 265-097-6, 265-098-1, 265-101-6, 265-155-0, 265-156-6, 265-157-1, 265-158-7, 265-159-2, 265-160-8, 265-161-3, 265-166-0, 265-169-7, 265-170-5, 276-735-8, 276-736-3, 276-737-9, 276-738-4, 278-012-2.
**Not available or substance is not currently required for registration under REACH.

SECTION 4 FIRST AID MEASURES

4.1 Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.
Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.
Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.
Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

4.2 Most important symptoms and effects, both acute and delayed IMMEDIATE SYMPTOMS AND HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.
Skin: Contact with the skin is not expected to be harmful. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

DELAYED OR OTHER SYMPTOMS AND HEALTH EFFECTS: Not classified.

4.3 Indication of any immediate medical attention and special treatment needed
Not applicable.

SECTION 5 FIRE FIGHTING MEASURES

5.1 Extinguishing media
Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

5.2 Special hazards arising from the substance or mixture

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Sulfur, Zinc, Phosphorus .

5.3 Advice for firefighters

This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Eliminate all sources of ignition in vicinity of spilled material. Refer to Sections 5 and 8 for more information.

6.2 Environmental precautions

Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater.

6.3 Methods and material for containment and cleaning up

Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil and dispose of in a manner consistent with applicable requirements. Place other contaminated materials in disposable containers and dispose of in a manner consistent with applicable requirements. Report spills to local authorities as appropriate or required.

6.4 Reference to other sections

See sections 8 and 13.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not taste or swallow.

7.2 Conditions for safe storage, including any incompatibilities

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

7.3 Specific end use(s):Grease

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

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Auto-ignition temperature: No data available
Decomposition temperature: No Data Available
Viscosity: 180mm2/s @ 40°C (104°F) Minimum
Explosive Properties: No Data Available
Oxidising properties: No Data Available
9.2 Other Information: No Data Available

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity: This material is not expected to react.
10.2 Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
10.3 Possibility of hazardous reactions: Hazardous polymerization will not occur.
10.4 Conditions to Avoid: Not applicable
10.5 Incompatible materials to avoid: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
10.6 Hazardous decomposition products: Hydrogen Sulfide (Elevated temperatures)

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.
Carcinogenicity: The hazard evaluation is based on data for components or a similar material.
Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

In accordance with the Directive 94/69/EC (21st ATP to DSD), Nota L, reference IP 346/92: "DMSO Extraction Method", we have determined that the base oils used in this preparation are not carcinogenic.

SECTION 12 ECOLOGICAL INFORMATION

12.1 Toxicity

This material is not expected to be harmful to aquatic organisms. The product has not been tested, The statement has been derived from the properties of the individual components.

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GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

8.1 Control parameters

No applicable occupational exposure limits exist for this material or its components. Consult local authorities for appropriate values.

8.2 Exposure controls

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: Neoprene, Nitrile Rubber,

Respiratory Protection: No respiratory protection is normally required. No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

ENVIRONMENTAL EXPOSURE CONTROLS:

See relevant Community environmental protection legislation or the Annex, as applicable.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

9.1 Information on basic physical and chemical properties

Appearance

Color: Green

Physical State: Semi-solid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Freezing Point: No data available

Initial Boiling Point: >315°C (599°F)

Flashpoint: > 150 °C (> 302 °F)

Flammability (solid, gas): No Data Available

Flammability (Explosive) Limits (% by volume in air):

Lower: Not Applicable Upper: Not Applicable

Vapor Pressure: <0.01 mmHg (Typical) @ 37.8 °C (100 °F)

Vapor Density (Air = 1): >1

Density: 0.93 kg/m3 @ 15°C (59°F) (Typical)

Solubility: Insoluble in water.

Partition coefficient: n-octanol/water: No data available

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12.2 Persistence and degradability

This material is not expected to be readily biodegradable. The product has not been tested, The statement has been derived from the properties of the individual components.

12.3 Bioaccumulative potential

Bioconcentration Factor: No Data Available

Octanol/Water Partition Coefficient: No data available

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This product is not, or does not contain, a substance that is a potential PBT or a vPvB.

12.6 Other adverse effects

No other adverse effects identified.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

In accordance with European Waste Catalogue (E.W.C.) the codification is the following: 13 08 99

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult appropriate Dangerous Goods Regulations for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

ADR/RID

NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT

14.1 UN number: Not applicable

14.2 UN proper shipping name: Not applicable

14.3 Transport hazard class(es): Not applicable

14.4 Packing group: Not applicable

14.5 Environmental hazards: Not applicable

14.6 Special precautions for user: Not applicable

ICAO

NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT

14.1 UN number: Not applicable

14.2 UN proper shipping name: Not applicable

14.3 Transport hazard class(es): Not applicable

14.4 Packing group: Not applicable

14.5 Environmental hazards: Not applicable

14.6 Special precautions for user: Not applicable

IMO

NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT

14.1 UN number: Not applicable

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14.2 UN proper shipping name: Not applicable
14.3 Transport hazard class(es): Not applicable
14.4 Packing group: Not applicable
14.5 Environmental hazards: Not applicable
14.6 Special precautions for user: Not applicable
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: Not applicable

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture REGULATORY LISTS SEARCHED:

01=EU Directive 76/769/EEC: Restrictions on the marketing and use of certain dangerous substances.
02=EU Directive 90/394/EEC: Carcinogens at work.
03=EU Directive 92/85/EEC: Pregnant or breastfeeding workers.
04=EU Directive 96/62/EC (Seveso II): Article 9.
05=EU Directive 96/62/EC (Seveso II): Articles 6 and 7.
06=EU Directive 98/24/EC: Chemical agents at work.
07=EU Directive 2004/37/EC: On the protection of workers.
08=EU Regulation EC No. 689/2008: Annex 1, Part 1.
09=EU Regulation EC No. 689/2008: Annex 1, Part 2.
10=EU Regulation EC No. 689/2008: Annex 1, Part 3.
11=EU Regulation EC No. 850/2004: Prohibiting and restricting persistent organic pollutants (POPs).
12=EU REACH, Annex XVII: Restrictions on manufacture, placing on the market and use of certain dangerous substances, mixture & article.
13=EU REACH, Annex XIV: Candidate List of Substances of Very High Concern for Authorization (SVHC).

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: ENCS (Japan).

15.2 Chemical safety assessment

No chemical safety assessment.

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 9, 16.

Revision Date: MAY 07, 2012

Full text of R-phrases:

None

Full text of CLP H-statements:

None

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-Term Exposure Limit	PEL - Permissible Exposure Limit
CVX - Chevron	CAS - Chemical Abstract Service Number

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NQ - Not Quantifiable

Prepared according to the criteria of EU Regulation 1907/2006 by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

No Annex

Revision Number: 3
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SAFETY DATA SHEET



MSR- 698
Received
16-Jun-07
Shut.

1. Identification of the substance/preparation and company/undertaking

Product name	Castrol Transqua HT
SDS no.	853721
Historic SDS no.	80-114002
Product use	Hydraulic fluid For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Supplier	Castrol Marine Ltd Walsfield House Pigons Way Swindon Wiltshire SN4 1RE +44 (0) 1793 572712

2. Composition/information on ingredients

Ethylene glycol Corrosion inhibitor.				
Chemical name	CAS no.	%	EINECS / ELINCS	Classification
Ethylene glycol	107-21-1	20 - 50	203-473-3	Xn; R22

See section 16 for the full text of the R-phrases declared above.
Occupational exposure limits, if available, are listed in section 8.

3. Hazards identification

This preparation is classified as dangerous according to Directive 1999/45/EC as amended and adapted.

Physical/chemical hazards	Not classified as dangerous.
Human health hazards	Harmful if swallowed.
Environmental hazards	Unlikely to be harmful to aquatic organisms.
Effects and symptoms	
Eyes	No significant health hazards identified.
Skin	No significant health hazards identified.
Inhalation	Note: High Pressure Applications Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. See "Medical Advice" under First-Aid Measures, Section 4 of this Safety Data Sheet.
Ingestion	No significant health hazards identified. Harmful if swallowed.

4. First-aid measures

Eye contact	In case of contact, immediately flush eyes with a copious amount of water for at least 15 minutes. Get medical attention if irritation occurs.
Skin contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation develops.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms appear.

Ingestion

Get medical attention urgently informing the doctor that a product containing ethylene glycol has been ingested and specific treatment may be required (see Advice to physicians).

If hospital facilities or medical assistance are NOT immediately available:
If contamination of the mouth occurs, wash out thoroughly with water. If larger amounts are swallowed and hospital facilities or medical assistance are not immediately available, induce vomiting if the casualty is fully conscious. Never attempt to induce vomiting in an unconscious or semi-conscious patient. Transport casualty together with the product container, its label or the safety data sheet urgently to hospital. Inform the doctor that a product containing ethylene glycol has been ingested.

Notes to physician

Gastroic lavage is indicated if significant quantities have been ingested in the previous 4 hours. The metabolism of the glycol to oxalic acid may be delayed by the intravenous administration of ethanol (give as a 5% solution in physiological saline to maintain a blood level of 1.2g/ml). This has been shown to be an effective antidote provided treatment is started within about 6 hours of exposure. The glycol may be removed by dialysis but oxalates are not easily removed.

Note: High Pressure Applications
Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discoloured and extremely painful with extensive subcutaneous necrosis. Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimise tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.

5. Fire-fighting measures

Extinguishing media	
Suitable	In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.
Not suitable	Do not use water jet.
Hazardous decomposition products	These products are carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂ etc.).
Unusual fire/explosion hazards	None.
Protection of fire-fighters	Fire-fighters should wear self-contained positive pressure breathing apparatus (SCBA) and full turnout gear.

6. Accidental release measures

Personal precautions	Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (See Section "Exposure controls/personal protection"). Follow all fire-fighting procedures (See Section "Fire-fighting measures").
Environmental precautions and clean-up methods	If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container for disposal. For large spills use spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal. Avoid contact of spill material with soil and prevent runoff entering surface waterways. See Section 13 for Waste Disposal information.
Personal protection in case of a large spill	Splash goggles. Full suit. Boots. Gloves.

7. Handling and storage

Handling	Wash thoroughly after handling. Avoid contact with eyes, skin and clothing.
Storage	Store in original container; DO NOT DECANT. Do not remove warning labels from containers. Store in a cool, well-ventilated area away from incompatible materials and ignition sources.

8. Exposure controls/personal protection

Ingredient name	Occupational exposure limits
Ethylene glycol	EU OEL (Europe, 4/2004). Skin STEL: 534 mg/m ³ 15 minute(s) STEL: 40 ppm 15 minute(s) TWA: 52 mg/m ³ 8 hour(s) TWA: 20 ppm 8 hour(s) ACGIH TLV (United States, 12/2000). TWA: 5 mg/m ³ 8 hour(s)
Triethanolamine	

Where there are no regulatory exposure limits, for information and guidance, the ACGIH values are included.
For further information on these please consult your supplier.

Product name Castrol Transqua HT	Product code 463721-GB10	Page: 1/8
Version 3	Date of issue 12 January 2005	Format United Kingdom (UK)
	Build 7.2.4 (United Kingdom)	Language ENGLISH (ENGLISH)

Product name Castrol Transqua HT	Product code 463721-GB10	Page: 2/8
Version 3	Date of issue 12 January 2005	Format United Kingdom (UK)
	Build 7.2.4 (United Kingdom)	Language ENGLISH (ENGLISH)

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សំណត្រាយដ៏ងាយ : រំលឹកប្រាប់

สารเคมี/บริษัท/ผลิตภัณฑ์	สารผสม	หมายเลข CAS	ความเข้มข้น: (%)
ชื่อทางเคมี			
แอฟฟานอร์โซลิมิดกับโซลันท์		64742-94-5	60 - 100
Triethanolamine talc		67784-78-5	5 - 10
แอฟฟานอร์		91-20-3	5 - 10
1,2,4-ไตรเอทิลเอมีน		95-63-6	5 - 10
กรดไขมัน, น้ำมันหล่อลื่น, ผลิตภัณฑ์ที่เป็นผลจากปิโตรเลียม		68953-36-6	1 - 5
โซลันท์		1330-20-7	0.1 - 1

ใบกระทู้ที่เข้าศาล	• สำคัญอย่างยิ่งกับสมาคมฯ หากยังมีมาตรการใช้เงินไปจนหมดแน่
ใบกระทู้ที่ผิดกับผิวพวง	• สำคัญมากคล้ายกับมีฐานะยากจนที่หนี้เงินต้อง 15 ปีๆ ไปอยู่ไม่นานถ้ามี ชักเสียดำเนินไปต่อเนื่องจนเข้าขบวนรถไฟพวง สำคัญต่อเท่าไรต่อศาลต่อหน้าสำนักงานไปไหน ไปไปไหนหมด
หากบทสนทนา	• สำคัญมาก หากยังมีมาตรการใช้เงินไปจนหมดแน่
หากหายใจเข้าไป	• หากยังมีมาตรการใช้เงินไปจนหมดแน่
การมีลูกกับสามีอยู่ปทุมธานี	• ใบกระทู้ที่เกิดเหตุฉุกเฉินไปประณามชีวิตครอบครัวจนดำเนินการ ไปศาลดำเนินการโดยที่เสียงต่อมารายงานจับ หากยังมีข้อสงสัยให้ติดต่อหน่วยงานที่รับผิดชอบกรณีเกิดเหตุฉุกเฉินไปอยู่ไปจนหมดเป็นภาระส่วนคนดูแลคนที่กำหนด
หากหยุดถึงแพทย์	• ปรึกษาหาแนวทาง
อาการ และผลกระทบที่สำคัญที่สุดที่แบบแผนพวง และเกิดในภายหลัง	• อันตรายล่อล่อทั้งตัวและเกี่ยวกับผลกระทบต่อสุขภาพและอาการในในส่วนที่ 11

สารส้มเหลืองที่นำมาผสม	<ul style="list-style-type: none"> โพลีคาร์บอนไดออกไซด์ผงแห้ง
สารส้มเหลืองอื่น ๆ ที่เกี่ยวข้องกับโพลีเอทเธน B	<ul style="list-style-type: none"> โบรอนดีฟลูออไรด์ผงละเอียด
สารส้มเหลืองที่ไม่เหมาะสม	<ul style="list-style-type: none"> ไม่มีข้อมูล
ความเป็นอันตรายเฉพาะที่	<ul style="list-style-type: none"> อันตรายจากไฟไหม้

ความหนาแน่นปอลิ	: ไม่มีข้อมูล
ความหนาแน่นสัมพัทธ์	: 0.896,
ความหนาแน่น	: ไม่มีข้อมูล
ความสามารถในการละลายในน้ำ	: เข้ากันได้, ละลายกันได้
ความสามารถในการละลายในตัว ทำละลายอื่น	: ไม่มีข้อมูล
ค่าดัชนีการหักเหของ สารในชั้นของ n - octanol สล น้ำ	: ไม่มีข้อมูล
อุณหภูมิที่จุดหลอมเหลว	: ไม่มีข้อมูล
สารที่สลายการสลายตัว ความชื้น	: ไม่มีข้อมูล
ความหนืดไดนามิก	: 3.30 mPa.s (25 °C)
ความหนืดไดนามิก	: ไม่มีข้อมูล
น้ำหนักโมเลกุล	: ไม่มีข้อมูล
VOC	: ไม่มีข้อมูล

ความแตกต่างทางเพศ	:	เพศชายอาจได้ทราบปกติ
ความเป็นไปได้นานเทปปฏิชีวนาขึ้นตรา	:	ไม่พบปฏิชีวนาขึ้นตราใดๆเกิดขึ้นในสภาวะใช้ตามฉลากปกติ
ผลการตรวจหลังเลี้ยง	:	ความล้มเหลว และ ประสิทธิภาพ
วัสดุที่ใช้ทำภาชนะ	:	สารออกซิไดซ์ที่แรง
ผลิตภัณฑ์ของการผสมยาล้างที่เพิ่มออกซิเจน	:	ผลิตภัณฑ์ที่เกิดจากการผสมยาล้างอาจรวมถึงสารตั้งต้นปฏิกิริยาออกซิเดชัน

ข้อมูลของช่องทางที่น่าจะเป็น : การสุดม, การมีเสียงทางดวงตา, การสัมผัสกับผิวหนัง
ช่องทางสัมผัส :
ผลต่อสุขภาพที่เกิดเกิดขึ้น :
ดวงตา : ทำให้เกิดการระคายเคืองตา
ทางผิวหนัง : ทำให้เกิดการระคายเคืองผิวหนังเล็กน้อย อาจก่อให้เกิดการแพ้ผิวหนัง
การกลืนกิน : หากสูดดม ไม่ก่อการบาดเจ็บ เสียสุขภาพ หรือไม่คาดว่าจะเป็นเมื่อใช้งานตามปกติ
การสุดม : หากสูดดม ไม่ก่อการบาดเจ็บ เสียสุขภาพ หรือไม่คาดว่าจะเป็นเมื่อใช้งานตามปกติ
การสัมผัสแบบเฉื่อย : มีข้อสงสัยว่า อาจก่อให้เกิดเฉื่อย
ประสบการณ์จากการสัมผัสในชุมชน

ส่วนประกอบ	หมายเลข CAS	รูปแบบของการสัมผัส	ความเข้มข้นที่ได้รับอนุญาต	มาตรฐาน
เนฟทาเลบรมิกลีซินดิลนิก	64742-94-5	TWA	500 ppm 2,000 mg/m ³	OSHA P1
		TWA	200 mg/m ³ (ไม่ได้อ้างอิงบน ร้อยละ)	ACGIH
เนฟทาเลน	91-20-3	TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m ³	NIOSH REL
		STEL	15 ppm 75 mg/m ³	NIOSH REL
		TWA	10 ppm 50 mg/m ³	OSHA P1

ความเป็นพันธมิตรแบบนิเวศน์
ผลกระทบต่องีฬาคีฬา : เป็นพันธมิตรซึ่งมีวิวัฒนาการเป็นผลกระทบระยะยาว
ผลลัพธ์อื่นๆ

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ความเป็นพิษต่อปลา : ไม่มีข้อมูล

ความเป็นพิษต่อไรน้ำและสัตว์น้ำที่ไม่มีการระบุชนิดอื่น ๆ : ไม่มีข้อมูล

ความเป็นพิษต่อสาหร่าย : ไม่มีข้อมูล

ส่วนประกอบ

ความเป็นพิษต่อปลา : เมทิลอาร์เซนิกไดไฮไดรด์ (ปลาเทราต์) 3.5 mg/l
ระยะเวลาในการสัมผัส: 96 hTriethanolamine tailate
LC50 : > 100 mg/l
ระยะเวลาในการสัมผัส: 96 hกรดไขมัน, น้ำอินทรีย์, ผลิตภัณฑ์ที่เป็นผลจากปฏิกิริยาที่มีผลต่อ
เลทตินเทรอน
LC50 : 0.43 mg/l
ระยะเวลาในการสัมผัส: 96 h

ส่วนประกอบ

ความเป็นพิษต่อไรน้ำและสัตว์น้ำที่ไม่มีการระบุชนิดอื่น ๆ : Triethanolamine tailate
EC50 : > 320 mg/l
ระยะเวลาในการสัมผัส: 48 h

ส่วนประกอบ

ความเป็นพิษต่อสาหร่าย : Triethanolamine tailate
EC50 : > 100 mg/l
ระยะเวลาในการสัมผัส: 72 h
EC50 : > 100 mg/l
ระยะเวลาในการสัมผัส: 72 h

ส่วนประกอบ

ความเป็นพิษต่อแบคทีเรีย : Triethanolamine tailate
1,000 mg/l

ส่วนประกอบ

ความเป็นพิษต่อไรน้ำและสัตว์น้ำที่ไม่มีการระบุชนิดอื่น ๆ : Triethanolamine tailate
NOEC 320 mg/l
(ความเป็นพิษเรื้อรัง) ระยะเวลาในการสัมผัส: 21 d

การตกค้างยาวนานและความสามารถในการย่อยสลาย

ไม่มีข้อมูล

การเคลื่อนย้ายในดิน

ไม่มีข้อมูล

ศักยภาพในการสะสมทางชีวภาพ

ไม่มีข้อมูล

CORR11020A

ข้อมูลอื่นๆ

ไม่มีข้อมูล

ลักษณะอันตรายต่อสิ่งแวดล้อมและลักษณะการกีดกัน : ภาชนะที่บรรจุเคมีภัณฑ์ที่ก่อให้เกิดอันตรายต่อสิ่งแวดล้อมอยู่ในระดับ ปานกลาง

หมวดที่: 13. ข้อห้ามในการกำจัด

วิธีการกำจัด : ห้ามไม่ให้ปล่อยเคมีภัณฑ์ลงสู่สิ่งแวดล้อม, แหล่งน้ำหรือดิน
ถ้าเป็นไปได้ให้นำเคมีภัณฑ์ไปทิ้งในถังขยะอันตรายที่ไม่ได้ใช้เพื่อการจัดเก็บตามกฎระเบียบ
ของท้องถิ่น
ให้กำจัดของเสียที่บรรจุในภาชนะที่ผ่านการรับรองแล้วเท่านั้นมาตรการการกำจัด : กำจัดโดยวิธีเดียวกับเคมีภัณฑ์ที่ไม่ได้ใช้งาน ควรส่งภาชนะเปล่า
ไปยังสถานที่จัดการของเสียที่ได้รับอนุญาตแล้วเพื่อหลีกเลี่ยงการนำใช้
ใหม่หรือกำจัดทิ้ง ห้ามนำภาชนะเปล่ากลับมายังใช้

หมวดที่: 14. ข้อมูลการขนส่ง

กลุ่มเสี่ยงคำ / ผู้ส่งของ / ผู้รับ จะได้รับอันตรายต่อสุขภาพจากสารเคมี และเครื่องหมายเป็นไปตามข้อกำหนด
ไม่ได้รับอันตราย

การขนส่งทางบก

หมายเลข UN/ID : UN 3082
ชื่อที่ถูกต้องในการขนส่ง : สารที่เป็นอันตรายต่อสิ่งแวดล้อม, ของเหลว, N.O.S. (Not
Otherwise Specified-ไม่ถูกระบุไว้เป็นอย่างอื่น)ประเภทของอันตรายในการขนส่ง : 9
กลุ่มการบรรจุ : III

การขนส่งทางอากาศ (IATA)

หมายเลข UN/ID : UN 3082
ชื่อที่ถูกต้องในการขนส่ง : สารที่เป็นอันตรายต่อสิ่งแวดล้อม, ของเหลว, N.O.S. (Not
Otherwise Specified-ไม่ถูกระบุไว้เป็นอย่างอื่น)ชื่อทางเทคนิค :
ประเภทของอันตรายในการขนส่ง : 9
กลุ่มการบรรจุ : III

การขนส่งทางทะเล (IMDG/IMO)

หมายเลข UN/ID : UN 3082
ชื่อที่ถูกต้องในการขนส่ง : สารที่เป็นอันตรายต่อสิ่งแวดล้อม, ของเหลว, N.O.S. (Not
Otherwise Specified-ไม่ถูกระบุไว้เป็นอย่างอื่น)ชื่อทางเทคนิค :
ประเภทของอันตรายในการขนส่ง : 9
กลุ่มการบรรจุ : III
หมายเหตุ: ไม่เป็นพิษต่อสัตว์น้ำ

หมวดที่: 15. ข้อมูลด้านข้อมูลอื่น

กฎหมายที่บังคับใช้, ประเทศไทย

CORR11020A

พระราชบัญญัติวัตถุอันตราย พ.ศ. 2535

การจำแนกและการสื่อสารความเป็นอันตรายของวัตถุอันตราย พ.ศ. 2555

กฎหมายควบคุมวัตถุอันตราย พ.ศ. 2562 :

ประเทศออสเตรเลีย หน่วยงานเกี่ยวกับสารเคมีในอุตสาหกรรม (การแจ้งและประเมิน) :
สารพิษอันตรายในผลิตภัณฑ์เป็นไปตาม National Industrial Chemicals Notification & Assessment Scheme
(NICNAS)ประเทศจีน บัญชีรายการสารเคมีที่มีอยู่ในประเทศจีน
สารพิษอันตรายในผลิตภัณฑ์เป็นไปตามกฎหมายควบคุมสารเคมีและสารพิษอันตราย Existing Chemical Substances
China (IECSC)บัญชีรายการสารเคมีของประเทศฟิลิปปินส์
สารพิษอันตรายในผลิตภัณฑ์เป็นไปตามกฎหมายฉบับที่ 6969 (Republic Act 6969 (RA 6969)) และอยู่ในบัญชีรายชื่อสารเคมี
และสารพิษอันตรายในผลิตภัณฑ์ (PICCS)ประเทศเกาหลี บัญชีรายการสารเคมีที่มีอยู่ในประเทศเกาหลี
สารพิษอันตรายในผลิตภัณฑ์เป็นไปตามกฎหมายควบคุมสารเคมีเป็นพิษ (TCCL) และอยู่ในบัญชีรายชื่อสารเคมี
และสารพิษอันตราย (ECL)

หมวดที่: 16. ข้อมูลอื่นๆ

วันที่แก้ไข : 13.03.2017

วันที่จำหน่ายครั้งแรก : 12.03.2017

หมายเลขสารเคมีเอกสาร : 1.0

จัดทำเอกสารโดย : Regulatory Affairs

ข้อมูลปรับปรุงใหม่: การเปลี่ยนแปลงข้อมูลเกี่ยวกับระบบข้อมูลความปลอดภัยทางกายภาพที่สำคัญสำหรับผลิตภัณฑ์แสดงให้ทราบใน
เอกสารข้อมูลทางเคมีของ MSDSข้อมูลปรากฏอยู่ในเอกสารข้อมูลความปลอดภัยที่มีความถูกต้องและมีความน่าเชื่อถือที่สุด ข้อมูลและข้อมูลอื่น ๆ ที่
จัดทำเอกสารนี้จะเป็นข้อมูลเบื้องต้นเพื่อใช้ในการจัดการ ใช้งาน จำหน่ายและการเก็บรักษา ขนถ่าย
กำจัด และปลอดภัยต่อสุขภาพของบุคคล โดยข้อมูลเหล่านี้ไม่ได้เป็นการรับประกันหรือการรับประกันว่าข้อมูลจะตรงกับ
คุณภาพ ข้อมูลจะเกี่ยวข้องกับสารเคมีเฉพาะที่ระบุไว้ในเอกสารและไม่ได้ครอบคลุมถึงสารเคมีอื่น ๆ ที่เกี่ยวข้องกับสารเคมี
หรือกระบวนการอื่น เช่นเดียวกับการระบุไว้ในเอกสาร

NALCO SAFETY DATA SHEET

An Ecolab Company

CORR11020A

Section: 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : CORR11020A

Other means of identification : Not applicable.

Recommended use : CORROSION INHIBITOR

Restrictions on use : Refer to available product literature or ask your local Sales Representative for
restrictions on use and dose limits.Company : NALCO INDUSTRIAL SERVICES (THAILAND) CO LTD
Rayong Plant, 103/19 Moo 4, Eastern Seaboard Industrial Estate, Soi ESIE 6, T.
Pakdeong, A. Phakdeong
Rayong
THAILAND 21140
TEL: 66-38-955-160
FAX: 66-38-955-166Emergency telephone
number : 02-104-0545, +65 6542 9695 (International)

Issuing date : 13.03.2017

Section: 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids : Category 4

Skin corrosion/irritation : Category 3

Serious eye damage/eye
irritation : Category 2B

Skin sensitization : Category 1

Carcinogenicity : Category 2

Acute aquatic toxicity : Category 2

Chronic aquatic toxicity : Category 2

GHS Label element

Hazard pictograms



Signal Word : Warning

Hazard Statements

Combustible liquid
Causes mild skin irritation.
May cause an allergic skin reaction.
Causes eye irritation.
Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid
breathing dust/fume/gas/mist/vapours/spray. Avoid release to the
environment. Wear protective gloves/eye protection/face protection. Use
personal protective equipment as required.
Response:
IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously

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with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. If skin irritation or rash occurs: Get medical advice/attention. Collect spillage.

Other hazards : None known.

Section: 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Chemical Name	CAS-No.	Concentration (%)
Heavy Aromatic Naphtha	64742-94-5	60 - 100
Triethanolamine sulfate	67784-78-5	5 - 10
Naphthalene	91-20-3	5 - 10
1,2,4-Trimethylbenzene	95-63-6	5 - 10
Fatty Acids, Tall-Oil, Reaction Products with Tetraethylenepentamine	68953-36-6	1 - 5
Xylene	1330-20-7	0.1 - 1

Section: 4. FIRST AID MEASURES

In case of eye contact : Rinse with plenty of water. Get medical attention if symptoms occur.

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

If swallowed : Rinse mouth. Get medical attention if symptoms occur.

If inhaled : Get medical attention if symptoms occur.

Protection of first-aiders : In event of emergency assess the danger before taking action. Do not put yourself at risk of injury. If in doubt, contact emergency responders. Use personal protective equipment as required.

Notes to physician : Treat symptomatically.

Most important symptoms and effects, both acute and delayed : See Section 11 for more detailed information on health effects and symptoms.

Section: 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Foam
Carbon dioxide
Dry powder
Other extinguishing agent suitable for Class B fires
For large fires, use water spray or fog, thoroughly drenching the burning material.

Unsuitable extinguishing media : None known.

Specific hazards during firefighting : Fire Hazard
Keep away from heat and sources of ignition.
Flash back possible over considerable distance.

Hazardous combustion products : Decomposition products may include the following materials: Carbon oxides

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Special protective equipment : Use personal protective equipment for firefighters

Specific extinguishing methods : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Section: 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Ensure adequate ventilation. Remove all sources of ignition. Ensure clean-up is conducted by trained personnel only. Refer to protective measures listed in sections 7 and 8.

Environmental precautions : Do not allow contact with soil, surface or ground water.

Methods and materials for containment and cleaning up : Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Flush away hoses with water. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway.

Section: 7. HANDLING AND STORAGE

Advice on safe handling : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Keep away from fire, sparks and heated surfaces. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling.

Conditions for safe storage : Keep away from heat and sources of ignition. Keep away from oxidizing agents. Keep out of reach of children. Keep container tightly closed. Store in suitable labelled containers.

Suitable material : Keep in properly labelled containers.

Unsuitable material : not determined

Section: 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Form of exposure	Permissible concentration	Basis
Heavy Aromatic Naphtha	64742-94-5	TWA	500 ppm	OSHA Z1
		TWA	2,000 mg/m ³	ACGIH
			200 mg/m ³	(as total hydrocarbon vapor)
Naphthalene	91-20-3	TWA	10 ppm	ACGIH
		TWA	10 ppm	NIOSH REL
		STEL	15 ppm	NIOSH REL
			75 mg/m ³	
		TWA	10 ppm	OSHA Z1
			50 mg/m ³	
1,2,4-Trimethylbenzene	95-63-6	TWA	25 ppm	NIOSH REL
			125 mg/m ³	

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		TWA	25 ppm	ACGIH
Xylene	1330-20-7	TWA	100 ppm	TH OEL
			435 mg/m ³	
Xylene	1330-20-7	TWA	100 ppm	OSHA Z1
			435 mg/m ³	
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH

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

Personal protective equipment

Eye protection : Safety goggles
Face shield

Hand protection : Wear protective gloves.
Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin protection : Wear suitable protective clothing.

Respiratory protection : No personal respiratory protective equipment normally required.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling.

Human Exposure Characterization :
Based on our recommended product application and personal protective equipment, the potential human exposure is: Low

Section: 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : clear, Brown

Odour : aromatic

Flash point : 61 °C

pH : Not applicable

Odour Threshold : no data available

Melting point/freezing point : FREEZING POINT: -20 °C

Initial boiling point and boiling range : 178 °C

Evaporation rate : no data available

Flammability (solid, gas) : no data available

Upper explosion limit : no data available

Lower explosion limit : no data available

Vapour pressure : 1 hPa, (25 °C)

Relative vapour density : no data available

Relative density : 0.896

Density : no data available

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Water solubility : Miscible

Solubility in other solvents : no data available

Partition coefficient: n-octanol/water : no data available

Auto-ignition temperature : no data available

Thermal decomposition temperature : no data available

Viscosity, dynamic : 3.30 mPa.s (25 °C)

Viscosity, kinematic : no data available

Molecular weight : no data available

VOC : no data available

Section: 10. STABILITY AND REACTIVITY

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

Conditions to avoid : Heat, flames and sparks.

Incompatible materials : Strong oxidizing agents

Hazardous decomposition products : Decomposition products may include the following materials: Carbon oxides

Section: 11. TOXICOLOGICAL INFORMATION

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

Potential Health Effects

Eyes : Causes eye irritation.

Skin : Causes mild skin irritation. May cause allergic skin reaction.

Ingestion : Health injuries are not known or expected under normal use.

Inhalation : Health injuries are not known or expected under normal use.

Chronic Exposure : Suspected of causing cancer.

Experience with human exposure

Eye contact : Redness, Irritation

Skin contact : Redness, Irritation, slight irritation, Allergic reactions

Ingestion : No symptoms known or expected.

Inhalation : No symptoms known or expected.

Toxicity

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Product

Acute oral toxicity	: Acute toxicity estimate: > 5,000 mg/kg
Acute inhalation toxicity	: Acute toxicity estimate: > 40 mg/l Exposure time: 4 h
Acute dermal toxicity	: Acute toxicity estimate: > 5,000 mg/kg
Skin corrosion/irritation	: no data available
Serious eye damage/eye irritation	: Result: Mild eye irritation
Respiratory or skin sensitization	: no data available
Carcinogenicity	: This product contains naphthalene. The International Agency for Research on Cancer (IARC) has evaluated naphthalene and determined it to be possibly carcinogenic to humans (Group 2B, based on sufficient evidence in experimental animals and inadequate evidence in humans).
Reproductive effects	: No toxicity to reproduction
Germ cell mutagenicity	: Contains no ingredient listed as a mutagen
Teratogenicity	: no data available
STOT - single exposure	: no data available
STOT - repeated exposure	: no data available
Aspiration toxicity	: No aspiration toxicity classification

Human Hazard Characterization

Based on our hazard characterization, the potential human hazard is: Moderate

Section: 12. ECOLOGICAL INFORMATION

Ecotoxicity

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

Product

Toxicity to fish : no data available

Toxicity to daphnia and other aquatic invertebrates : no data available

Toxicity to algae : no data available

Components

Toxicity to fish	: Heavy Aromatic Naphtha LC50 Oncorhynchus mykiss (rainbow trout): 3.5 mg/l Exposure time: 96 h
	Triethanolamine tallowate LC50 : > 100 mg/l Exposure time: 96 h
	Fatty Acids, Tall-Oil, Reaction Products with Tetraethylenepentamine LC50 : 0.43 mg/l Exposure time: 96 h

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Components

Toxicity to daphnia and other aquatic invertebrates : Triethanolamine tallowate
EC50 : > 320 mg/l
Exposure time: 48 h

Components

Toxicity to algae : Triethanolamine tallowate
EC50 : > 100 mg/l
Exposure time: 72 h
EC50 : > 100 mg/l
Exposure time: 72 h

Components

Toxicity to bacteria : Triethanolamine tallowate
1,000 mg/l

Components

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Triethanolamine tallowate
NOEC: 320 mg/l
Exposure time: 21 d

Persistence and degradability

no data available

Mobility

no data available

Bioaccumulative potential

no data available

Other information

no data available

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION
Based on our hazard characterization, the potential environmental hazard is: Moderate

Section: 13. DISPOSAL CONSIDERATIONS

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

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

Section: 14. TRANSPORT INFORMATION

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

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Land transport

UN/ID No.	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport hazard class(es)	: 9
Packing group	: III

Air transport (IATA)

UN/ID No.	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	: 9
Transport hazard class(es)	: 9
Packing group	: III

Sea transport (IMDG/IMO)

UN/ID No.	: UN 3082
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name(s)	: 9
Transport hazard class(es)	: 9
Packing group	: III
Marine pollutant	: Heavy Aromatic Naphtha

Section: 15. REGULATORY INFORMATION

APPLICABLE REGULATIONS, THAILAND

Hazardous Substances Act B.E. 2535

Hazard Classification and Communication System for Hazardous Substances B.E. 2555 ("GHS")

INTERNATIONAL CHEMICAL CONTROL LAWS :

Australia, Industrial Chemical (Notification and Assessment) Act
All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).China Inventory of Existing Chemical Substances
All substances in this product comply with the Provisions on the Environmental Administration of New Chemical Substances and are listed on or exempt from the Inventory of Existing Chemical Substances China (IECSC).Philippines Inventory of Chemicals and Chemical Substances (PICCS)
All substances in this product comply with the Republic Act 6869 (RA 6869) and are listed on the Philippines Inventory of Chemicals & Chemical Substances (PICCS).Korea, Korean Existing Chemicals Inventory (KECI)
All substances in this product comply with the Chemical Control Act (CCA) and are listed on the Existing Chemicals List (ECL).

Section: 16. OTHER INFORMATION

Revision Date	: 13.03.2017
Date of first issue	: 12.03.2017
Version Number	: 1.0

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SAFETY DATA SHEET

CORR11020A

Prepared By : Regulatory Affairs

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

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

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Product Name: MOBIL DELVAC 1240
Revision Date: 08Jun2007
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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL DELVAC 1240
Product Description: Base Oil and Additives
Product Code: 201520602540, 440685-00, 971431
Intended Use: Engine oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA
24 Hour Health Emergency 609-737-4411
Transportation Emergency Phone 800-424-8300
ExxonMobil Transportation No. 281-634-3296
MSDS Requests 713-613-3661
Product Technical Information 800-662-4525, 800-947-9147
MSDS Internet Address <http://www.exxon.com>, <http://www.mobil.com>

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
ZINC DITHIOPHOSPHATE	68649-42-3	< 2.5%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID: Health: 0 Flammability: 1 Reactivity: 0
HMS Hazard ID: Health: 0 Flammability: 1 Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES



Product Name: MOBIL DELVAC 1240
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INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur oxides, Oxides of carbon, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200C (392F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which



Product Name: MOBIL DELVAC 1240
Revision Date: 08Jun2007
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exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid contact with used product. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:
No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications,



Product Name: MOBIL DELVAC 1240
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handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly affect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Form: Clear
Color: Brown
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.893
Flash Point [Method]: >200C (392F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)



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Vapor Density (Air = 1): N/D
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 160 cSt (160 mm2/sec) at 40 C | 15.5 cSt (15.5 mm2/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -15°C (5°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS
For the product itself:



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Diesel engine oils: Not carcinogenic in animals tests. Used and unused diesel engine oils did not produce any carcinogenic effects in chronic mouse skin painting studies.
Oils that are used in gasoline engines may become hazardous and display the following properties:
Carcinogenic in animal tests. Caused mutations in vitro. Possible allergen and photoallergen. Contains polycyclic aromatic compounds (PAC) from combustion products of gasoline and/or thermal degradation products.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--
1 = NTP CARC 3 = IARC 1 5 = IARC 2B
2 = NTP SUS 4 = IARC 2A 6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.



Product Name: MOBIL DELVAC 1240
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DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: TSCA

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ZINC DITHIOPHOSPHATE	68649-42-3	< 2.5%

The Following Ingredients are Cited on the Lists Below:



Product Name: MOBIL DELVAC 1240
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Chemical Name	CAS Number	List Citations
ZINC DITHIOPHOSPHATE	68649-42-3	13, 15, 17

--REGULATORY LISTS SEARCHED--
1 = ACGIH ALL 6 = TSCA 5a2 11 = CA P65 REPRO 16 = MN RTK
2 = ACGIH A1 7 = TSCA 5e 12 = CA RTK 17 = NJ RTK
3 = ACGIH A2 8 = TSCA 6 13 = IL RTK 18 = PA RTK
4 = OSHA Z 9 = TSCA 12b 14 = LA RTK 19 = RI RTK
5 = TSCA 4 10 = CA P65 CARC 15 = MI 293

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:
Section 01: Product Code was modified.
Section 13: Empty Container Warning was modified.
Section 08: Hand Protection was modified.
Section 15: List Citations Table was modified.
Section 06: Notification Procedures was modified.

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MHC: 0, 0, 0, 0, 0, 0 PPEC: A
DGN: 2003301XUS (543376)

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603100-85 MOBIL DTE 11M
MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: DTE 11M
MANUFACTURER CODE: 603100
CMCS CODE: 970530
SUPPLIER: MOBIL OIL AUSTRALIA PTY LTD A.B.N. 88 004 052 984
417 ST. KILDA RD.
MELBOURNE 3004
Telephone: (03) 9252 3111
Fax: (03) 9866 9079

After hours: National Emergency Communication System 1-800-023-005
Product Information contact: Mobil Lubeline on 1-800-033-863

Contact Point: Mobil Lubeline 1-800-033-863

Worksafe Classification: Not classified as hazardous according to criteria of Worksafe Australia.

2. COMPOSITION/INFORMATION ON INGREDIENTS

GENERIC COMPOSITION: SEVERE TREAT MIN. OILS & ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS:

None.

OTHER INGREDIENTS:

Substance Name	Approx. Wt%	EU Classification
SOLVENT DEXANED LIGHT PARAFFINIC DISTILLATE (PETROLEUM) (64742-56-9)	55-65 NA	

3. HAZARDS IDENTIFICATION

This product is not considered hazardous according to regulatory guidelines (See Section 1).

ORAL TOXICITY: Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

DERMAL TOXICITY: Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

INHALATION TOXICITY: Practically non-toxic ---Based on testing of similar products and/or the components.

EYE IRRITATION: Practically non-irritating. (Draize score: greater than 6, but 15 or less). ---Based on testing of similar products and/or the components.

SKIN IRRITATION: Practically non-irritating. (Primary Irritation Index: greater than 0.5, but less than 3). ---Based on testing of similar products and/or the components.

OTHER ACUTE TOXICITY DATA: Although an acute inhalation study was not performed with this product, a variety of mineral and synthetic oils, such as those in this product, have been tested. These samples had virtually no effect other than a nonspecific inflammatory response in the lung to the aerosolized mineral oil. The presence of additives in other tested formulations (in approximately the same amounts as in the present formulation) did not alter the observed effects.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

No significant adverse effects were found in studies using repeated dermal applications of similar formulations to the skin of laboratory animals for 13 weeks at doses significantly higher than those expected during normal industrial exposure. The animals were evaluated extensively for effects of exposure (hematology, serum chemistry, urinalysis, organ weights, microscopic examination of tissues etc.).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

No teratogenic effects would be expected from dermal exposure, based on laboratory developmental toxicity studies of major components in this formulation and/or materials of similar composition.

---CHRONIC TOXICOLOGY (SUMMARY)---

Repeated and/or prolonged exposure may cause irritation to the skin, eyes or respiratory tract. Overexposure to oil mist may result in oil droplet deposition and/or granuloma formation. For mineral base oils: Base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as Modified Ames Test, IP-346, and/or other analytical methods. For synthetic base oils: The base oils in this product have been tested in the Ames assay and other tests of mutagenicity with negative results. These base oils are not expected to be carcinogenic with chronic dermal exposures.

---SENSITIZATION (SUMMARY)---

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

authorities. In case of accident or road spill, contact the Police and Fire Brigade and, if appropriate, the Area Water Authority.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:

LAND SPILL: Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping or contain spilled material with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.

WATER SPILL: Confine the spill immediately with booms. Warn other ships in the vicinity. Notify port and other relevant authorities. Remove from the surface by skimming or with suitable absorbents. If permitted by regulatory authorities the use of suitable dispersants should be considered where recommended in local oil spill procedures.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.

PERSONAL PRECAUTIONS: See Section 8

7. HANDLING AND STORAGE

HANDLING: High pressure injection of oil under the skin may occur due to the rupture of pressurized lines. Always seek medical attention. Avoid prolonged, repeated skin contact. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Keep containers closed when not in use. Do not store in open or unlabelled containers. Store away from strong oxidizing agents and combustible materials. Do not store near heat, sparks, flame or strong oxidants. See Section 15 for Regulatory information when storing this product.

SPECIAL PRECAUTIONS: Prevent small spills and leakages to avoid slip hazard.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

When mists/aerosols can occur, the following is recommended: 5 mg/m3 as oil mist (NOHSC).

VENTILATION: If mists are generated, use adequate ventilation, local

European Union Dangerous Substances/Preparations Directives.

Symbol: Not applicable.

Risk Phrase(s): Not applicable.

Safety Phrase(s): S24-62.

Avoid contact with skin. If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

Contains: Low Viscosity Oil.

Governmental Inventory Status: All components comply with European EINECS/ELINCS, US TSCA, Australian AICS and Japanese MSJL.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
*** NO REPORTABLE INGREDIENTS ***		
--- REGULATORY LISTS SEARCHED ---		
1-IARC 1	2-IARC 2A	3-IARC 2B
6-ACGIH	7-ACGIH CARC	8-ACGIH SUS
CARC-CARCINOGEN; SUS-SUSPECTED CARCINOGEN; TERAT-TERATOGENIC		

16. OTHER INFORMATION

USE: HYDRAULIC OIL

NOTE: EXXONMOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBs.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

This MSDS meets Worksafe Australia accepted format requirements.

For Internal Use Only: MHC: 1* 1* 1* 1* 1*, MPPEC: C, TRN:

603100-85, ELIS: 400260, CMCS97: 970531

Issue Date: 04AUG2003

610915-85 MOBILGEAR 636
MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MOBILGEAR 636
MANUFACTURER CODE: 610915
CMCS CODE: 970393
SUPPLIER: MOBIL OIL AUSTRALIA PTY LTD A.B.N. 88 004 052 984
417 ST. KILDA RD.
MELBOURNE 3004
Telephone: (03) 9252 3111
Fax: (03) 9866 9079

After hours: National Emergency Communication System 1-800-023-005
Product information contact: Mobil Lubeline on 1-800-033-863

Contact Point: Mobil Lubeline 1-800-033-863

Worksafe Classification: Not classified as hazardous according to criteria of Worksafe Australia.

2. COMPOSITION/INFORMATION ON INGREDIENTS

GENERIC COMPOSITION: SEVERE TREAT MIN. OILS & ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS:

None.

OTHER INGREDIENTS:

Substance Name	Approx. Wt%	EU Classification
OLEFIN SULFIDE	1-5	R53

3. HAZARDS IDENTIFICATION

This product is not considered hazardous according to regulatory guidelines (See Section 1).

SKIN IRRITATION: Practically non-irritating. (Primary Irritation Index: greater than 0.5, but less than 3). ---Based on testing of similar products and/or the components.

OTHER ACUTE TOXICITY DATA: Although an acute inhalation study was not performed with this product, a variety of mineral and synthetic oils, such as those in this product, have been tested. These samples had virtually no effect other than a nonspecific inflammatory response in the lung to the aerosolized mineral oil. The presence of additives in other tested formulations (in approximately the same amounts as in the present formulation) did not alter the observed effects.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

No significant adverse effects were found in studies using repeated dermal applications of similar formulations to the skin of laboratory animals for 13 weeks at doses significantly higher than those expected during normal industrial exposure. The animals were evaluated extensively for effects of exposure (hematology, serum chemistry, urinalysis, organ weights, microscopic examination of tissues etc.).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

No teratogenic effects would be expected from dermal exposure, based on laboratory developmental toxicity studies of major components in this formulation and/or materials of similar composition.

---CHRONIC TOXICOLOGY (SUMMARY)---

Repeated and/or prolonged exposure may cause irritation to the skin, eyes or respiratory tract. Overexposure to oil mist may result in oil droplet deposition and/or granuloma formation. For mineral base oils: Base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as Modified Ames Test, IP-346, and/or other analytical methods. For synthetic base oils: The base oils in this product have been tested in the Ames assay and other tests of mutagenicity with negative results. These base oils are not expected to be carcinogenic with chronic dermal exposures.

---SENSITIZATION (SUMMARY)---

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

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS:

In the absence of specific environmental data for this product, this assessment is based on information for representative products.

ECOTOXICITY: Available ecotoxicity data (LL50 >1000 mg/L) indicates that adverse effects to aquatic organisms are not expected from this product.

WATER SPILL: Confine the spill immediately with booms. Warn other ships in the vicinity. Notify port and other relevant authorities. Remove from the surface by skimming or with suitable absorbents. If permitted by regulatory authorities the use of suitable dispersants should be considered where recommended in local oil spill procedures.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.

PERSONAL PRECAUTIONS: See Section 8

7. HANDLING AND STORAGE

HANDLING: No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Keep containers closed when not in use. Do not store in open or unlabelled containers. Store away from strong oxidizing agents and combustible materials. Do not store near heat, sparks, flame or strong oxidants. See Section 15 for Regulatory information when storing this product.

SPECIAL PRECAUTIONS: Prevent small spills and leakages to avoid slip hazard.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

When mists/aerosols can occur, the following is recommended: 5 mg/m3 as oil mist (NIOSH).

VENTILATION: If mists are generated, use adequate ventilation, local exhaust or enclosures to control below exposure limits.

RESPIRATORY PROTECTION: If mists are generated, and/or when ventilation is not adequate, wear approved respirator.

EYE PROTECTION: If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.

SKIN PROTECTION: When splashing or liquid contact can occur frequently, wear oil resistant gloves and/or other protective clothing. Good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

*** NO REPORTABLE INGREDIENTS ***

--- REGULATORY LISTS SEARCHED ---

1=IARC 1 2=IARC 2A 3=IARC 2B 4=NTP CARC 5=NTP SUS
6=ACGIH 7=ACGIH CARC 8=ACGIH SUS

CARC=CARCINOGEN; SUS=SUSPECTED CARCINOGEN; TERAT=TERATOGENIC

16. OTHER INFORMATION

USE: GREASE OIL

NOTE: EXXONMOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBs.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

INDUSTRIAL LABEL

Under normal conditions of use, this product should not pose a risk to health. However, users should avoid overexposure to liquids and mists which may result in eye, skin or respiratory irritation. Always observe good hygiene measures. First Aid: Wash skin with soap and water. Flush eyes with water. If overcomes by fumes or vapor, remove to fresh air. If ingested, do not induce vomiting. If symptoms persist seek medical assistance. Read and understand the MSDS before using this product.

This MSDS meets Worksafe Australia accepted format requirements.

For Internal Use Only: MHC: 1* 1* 1* 1*, MPPEC: A, TRN:
610915-85, ELIS: 400227
Issue Date: 22AUG2001

WORKSAFE FORMAT REPORT

Comment : PRINTED BY RMT

Date Last Edited : 4th September 1998
Date Printed : 17th April 2000

According to the Chem Alert Colour Rating System, this product is categorised as GREEN
which means it presents a LOW risk with normal use.

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO WORKSAFE AUSTRALIA CRITERIA.

COMPANY DETAILS

Product Manufactured by : MOBIL OIL AUSTRALIA LIMITED
: 417 St Kilda Rd
: MELBOURNE VIC 3004
: AUSTRALIA
Telephone : 1900 535 663
Emergency Telephone : 1800 523 005
Facsimile : (03) 9886 9079

Product Name : **MOBILITH SHC 220**

Other Names : 644021 - MANUFACTURER'S CODE, 970409 - CMCS CODE, MOBIL MOBILITH SHC 220, SHC 220 MOBILITH.

U.N. Number : None Allocated

Dangerous Goods Class : None Allocated

Secondary / Tertiary Risk : None Allocated

Hazard Code : None Allocated

Poison Schedule Number : None Allocated

Packaging Group : None Allocated

Use(s) : LUBRICANT, GREASE.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: RED GREASE
Odour: MILD MINERAL OIL ODOUR
Flammability: COMBUSTIBLE
Flash Point: > 204 C
Boiling Point: NOT AVAILABLE
Melting Point: NOT AVAILABLE
Exposure Standard (TWA): NOT AVAILABLE
Evaporation Rate: NOT AVAILABLE
pH: NOT AVAILABLE
% Volatiles: NOT AVAILABLE
Specific Gravity: 0.909
Solubility: NEGLIGIBLE
Vapour Pressure: < 0.1 mm Hg @ 20 C
Upper Explosion Limit: NOT AVAILABLE
Lower Explosion Limit: NOT AVAILABLE

INGREDIENTS

Ingredient	Conc.	CAS No.
SYNTHETIC OIL	>60%	Not Available
ADDITIVES	Not Available	Not Available

Printed by : BHP Petroleum PTY LTD

End of Page 1 of 4

WORKSAFE FORMAT REPORT

FIRST AID

Eye Flush gently with running water. Seek medical attention if irritation develops.

Inhalation If over exposure occurs leave exposure area immediately. If other than minor symptoms are displayed seek immediate medical attention.

Skin Remove contaminated clothing and gently flush affected areas with soap and water. Seek medical attention if irritation develops. Maintain good personal hygiene standards. Launder clothing before reuse.

Ingestion If poisoning occurs, contact a Doctor or Poisons Information Centre on 13 11 26 (Australia Wide). Do not induce vomiting without first seeking medical advice.

SAFE HANDLING

Storage Store in cool, dry, well ventilated area, removed from oxidising agents, acids and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

Disposal Reuse where possible or return to the manufacturer. Alternatively, dissolve in flammable liquid and incinerate at approved facility.

Transport Not regulated for transport purposes.

ADDITIONAL INFORMATION

HAG PHRASES

HAG stands for Hazmet Action Guide. HAG phrases describe in simple terms the hazard associated with chemical products and the appropriate action to take in the event of an emergency involving the product. HAG phrases are commonly used by emergency services.

- (18) Combustible.
(51) Does not mix with water.
(52) Avoid personal/skin contact.
(53) Prevent from entering drains.
(71) Absorb with dry agent.
(83) Fire fighting: Foam.
(85) Fire fighting: Dry agent.

ADDITIONAL INFORMATION FOR : ADDITIVES

Concentration in this product : Not Available

ADDITIONAL INFORMATION FOR : SYNTHETIC OIL

Concentration in this product : >60%

ADDITIONAL SAFE HANDLING INFORMATION

EXPOSURE STANDARDS - TIME WEIGHTED AVERAGES: Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced: strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken.

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End of Page 3 of 4

WORKSAFE FORMAT REPORT

HEALTH HAZARDS

Health Hazard Summary Low toxicity - low irritant. Use safe work practices to avoid eye or skin contact and vapour inhalation. Due to the low vapour pressure of this product an inhalation hazard is not anticipated under normal conditions.

Eye Low irritant. Exposure may result in irritation and lacrimation.

Inhalation Low irritant. Over exposure to mists or vapours (if sprayed) may result in mucous membrane irritation of the nose and throat with coughing. At high levels nausea, dizziness and headache. Low product vapour pressure (low volatility), considerably reduces the potential for an inhalation hazard.

Skin Low irritant. Prolonged and repeated contact may result in irritation, skin rash and dermatitis. The manufacturer reports that the dermal LD50 is > 2000 mg/kg (based on testing of similar products and/or the components).

Ingestion Low toxicity. Ingestion of large doses may result in nausea, vomiting, abdominal pain, diarrhoea, and drowsiness. Aspiration may result in chemical pneumonitis and pulmonary oedema. The manufacturer reports that the oral LD50 is > 2000 mg/kg (based on testing of similar products and/or the components).

PRECAUTIONS

Flammability Combustible. May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition. May also produce metal oxides when heated to decomposition.

Reactivity Incompatible with oxidising agents (eg. hypochlorites, peroxides) and acids (eg. sulfuric acid).

Ventilation Do not inhale vapours. Use in well ventilated areas. In poorly ventilated areas, mechanical extraction ventilation is recommended.

PERSONAL PROTECTIVE EQUIPMENT

PPE Wear splash-proof goggles and PVC or rubber gloves. When using large quantities or where heavy contamination is likely, wear coveralls and viton (R) or nitrile gloves. Where an inhalation risk exists, wear a Type A (Organic vapour) respirator.

EMERGENCY

Spillage If spill (bulk), wear splash-proof goggles, PVC/rubber gloves, coveralls and rubber boots. Absorb spill with sand or similar, collect and place in sealable containers for disposal. Prevent spill entering drains or waterways. Caution: Slippery when spill.

Environment The manufacturer states that this product is considered biodegradable, and is not expected to bioaccumulate.

Fire and Explosion Combustible. Evacuate area and contact emergency services. Toxic gases (hydrocarbons, carbon oxides) may be evolved when heated. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use watertight to cool intact containers and nearby storage areas.

Extinguishing Dry agent, carbon dioxide or foam. Prevent contamination of drains or waterways. Absorb runoff with sand or similar.

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End of Page 2 of 4

WORKSAFE FORMAT REPORT

ADDITIONAL INFORMATION cont.

Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

ABBREVIATIONS: *** mg/m³ - Milligrams per cubic metre *** ppm - Parts Per Million *** TWA/ES - Time Weighted Average or Exposure Standard. *** pH - relates to hydrogen ion concentration - this value will relate to a scale of 0 - 14, where 0 is highly acidic and 14 is highly alkaline. *** CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds. *** M - moles per litre, a unit of concentration. *** IARC - International Agency for Research on Cancer.

CLOUR RATING SYSTEM: Chem Alert reports are assigned a colour rating of Green, Amber or Red for the purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Chem Alert Report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made. Information provided by Risk Management Technologies is summarised for ease of use. Additional technical information is available by calling (08) 9322 1711.

Viton and teflon are registered trademarks of DuPont Dow.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Chem Alert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

STATUS OF CHEM ALERT REPORTS

Chem Alert reports are compiled as an independent source of information by RMT's scientific department, based on the latest chemical and toxicological research and, where appropriate, in compliance with relevant standards, guidance notes and legislation. Unless otherwise stated, RMT takes full responsibility for the information in the Chem Alert reports. Where available the manufacturer's original MSDS is also provided to Chem Alert subscribers as a scanned image for their convenience. In many instances Chem Alert reports are compiled on behalf of manufacturers in which case they serve as the 'Manufacturer's MSDS' and are clearly identified as such on the relevant reports.

Last Edited : 4th September 1998
Date Printed : 17th April 2000

END OF REPORT

**Shell Material Safety Data Sheet**

Infosafe No. CV7U0 Issue Date: February 2001 ISSUED by SHELL

Product Name: **PETROL****Classified as hazardous according to criteria of NOHSC****COMPANY DETAILS****Company Name**

Shell Company of Australia Ltd. (ABN 46 004 610 459)

AddressLevel 2, 8 Redfern Road Hawthorn East
VIC 3123 Australia**Emergency Tel.**

1800 651 818

Tel/Fax

Tel: 03 9666 5444

IDENTIFICATION**Product Name**

PETROL

Proper Shipping Name

PETROL

IBP: Approx 25 °C FBP: Approx 228 °C

Vapour Pressure

35-90(Reid) kPa

Specific Gravity

0.73-0.78 @ 15 °C

Flash Point

< -40 °C

Flamm. Limit LEL

1.00 %v/v

Flamm. Limit UEL

8.00 %v/v

Solubility in Water

Negligible

Other Properties**Volatile Component**

100.00

Autoignition Temp.

>250 °C

Evaporation Rate

Not Available

Vapour Density

>3

Ingredients

Other Names	Name	Mancode
	UNLEADED PETROL	00691
	LEAD REPLACEMENT PETROL	14098
	PREMIUM UNLEADED PETROL	00670
	OPTIMAX UNLEADED PETROL	14128
	UNLEADED RESEARCH PETROL (CAMS3)	07388

UN Number

1203

DG Class

3

Packing Group

II

Hazchem Code

3[Y]E

Poisons Schedule

S5

Product Use

Fuel for spark ignition engines.

Physical Data**Appearance**

Yellow, red or purple liquid with motor spirit odour.

Melting Point

Not Relevant

Boiling Point

Ingredients	Name	CAS	Proportion
	Complex mixture of hydrocarbon consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon numbers C4 to C12 range.	Mixture	60-100 %
	Antioxidants, corrosion inhibitors, metal deactivators, dyes and proprietary performance improving packages	Mixture	0-30 %
	Benzene	71-43-2	0-5 %

HEALTH HAZARD INFORMATION**Health Effects****Acute - Swallowed**

Harmful. May cause lung damage if swallowed.

Acute - Eye

Mildly irritating to the eyes.

Acute - Skin

Irritating to skin. Will cause redness and inflammation.

Acute - Inhaled

Inhalation may cause irritation to the respiratory system. Prolonged exposure to vapours may cause somnolence and narcosis.

Chronic

Prolonged and repeated skin contact may cause dermatitis due to defatting effect. Prolonged or repeated exposure may cause cancer.

First Aid

Swallowed

If swallowed, do NOT induce vomiting, give a glass of water and seek medical advice.

Eye

Flood eyes with plenty of water for 20 minutes. If irritation occurs seek medical advice.

Skin

Soak contaminated clothing with water and then remove. Wash skin with soap and water.

Inhaled

Remove affected person from contaminated area and seek medical advice. If not breathing apply artificial respiration and seek urgent medical advice.

First Aid Facilities

Eye wash and safety showers should be available for emergency use.

Advice to Doctor

Advice to Doctor

Treat symptomatically.

Other Health Hazard Information

PRECAUTIONS FOR USE

Exposure Limits	Name	mg/m3 (STEL)	ppm (STEL)	mg/m3 (TWA)	ppm (TWA)	TWA Footnote
	Complex mixture of hydrocarbon consisting of paraffins,				5	Cyanides, (as CN)

Observe good personal hygiene.

Flammability

Fire Hazards

Product is Highly Flammable.
Isolate from sources of heat, naked flames ,sparks and oxidising materials.Take precautions against discharges of static electricity Earth and bond all process equipment including tanks and drums. Ensure ventilation is adequate to prevent build up of explosive atmosphere. Refer to AS 1940 - Storage and handling of flammable and combustible liquids and AS 2865 - Safe working in a confined space, for more specific information on these subjects.

SAFE HANDLING INFORMATION

Storage and Transport

Storage Precautions

Store in a well ventilated place away from ignition sources, oxidizing agents foodstuffs and clothing. Keep containers closed when not in use. Take precautions against static electricity discharges.

Transport

Classified as a Dangerous Good (Class 3) for transport purposes.

Proper Shipping Name

PETROL

IERG Number

14

Packaging Method

5.9.3RT1

cycloparaffins,
aromatic and
olefinic
hydrocarbons with
carbon numbers C4
to C12 range.

Benzene 16 5

Other Exposure Info.

NOHSC Exposure Standard time weighted average (TWA) 900 mg/m3 (petrol)

Eng. Controls

Provide sufficient ventilation to keep airborne levels below the exposure limit. Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required. Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS 2430 - Explosive gas atmospheres for further information concerning ventilation requirements.

Personal Protection

Protective Equip.

Avoid contact with the skin and eyes, and avoid breathing vapours or mists.
When exposure is likely, personal protective equipment in a combination appropriate to the degree and nature of exposure, should be selected from the following list:-

- (1) Eye protection
- (2) PVC gloves
- (3) PVC apron and sleeves, or full PVC covering
- (4) PVC or rubber boots

Where high concentrations of vapour or mist are likely to occur, an appropriate selection from the following additional equipment is recommended:-

- (1) Short elevated exposures, eg spillage - goggles and correct respiratory protection should be worn.
If airborne concentration levels are very high air supplied apparatus should be used.
- (2) For prolonged elevated exposures - Full face air supplied or self contained breathing apparatus should be worn.

CONTAMINATION

If contamination occurs, change clothing. Clothing wet with product should be soaked with water before removal to prevent the possibility of ignition by static electricity discharges. Launder contaminated clothing before reuse, and discard internally contaminated gloves and footwear.

Spills and Disposal

Spills & Disposal

Wear appropriate personal protective equipment. Extinguish or remove all sources of ignition and stop leak if safe to do so. Contain the spill with sand or earth and take up with a vacuum truck or absorb with absorbent material, sand or earth. Keep away from heat, naked flames and sparks. Place used absorbent in suitable sealed containers for disposal.

Disposal

Follow state or local authority regulations and guidelines for disposal of the waste. Clean area with detergent and water - do not allow product to enter drains, sewers or water courses- inform the local authorities if this occurs.

Fire/Explosion Hazard

Fire/Explos. Hazard

Flammable liquid. Keep storage tanks, pipelines, fire exposed surfaces etc cool with water spray. Shut off any leak if safe to do so and remove sources of re-ignition. Vapour/air mixtures may ignite explosively and flashback along the vapour trail may occur.

Hazardous Combustion Products

Combustion products include oxides of carbon.

Extinguishing Media

Use foam, CO2 or powder to extinguish fire.

Hazardous Reaction

Stable. Avoid strong oxidising agents.

Hazchem Code

3[Y]E

OTHER INFORMATION

Risk Statement

R11 Highly flammable.
 R38 Irritating to skin.
 R45(2) May cause cancer.
 R65 Harmful: may cause lung damage if swallowed.

Safety Statement

S16 Keep away from sources of ignition - No smoking.
 S2 Keep out of reach of children.
 S23 Do not breathe gas/fumes/vapour/spray
 S24 Avoid contact with skin.
 S29 Do not empty into drains.
 S33 Take precautionary measures against static discharges.
 S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 S43 In case of fire, use foam, dry chemical or CO₂.
 S51 Use only in well ventilated areas.
 S53 Avoid exposure - obtain special instructions before use.
 S62 If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

Hazard Category

Toxic, Irritant, Highly Flammable

References

For detailed advice on Personal Protective equipment, refer to the following Australian Standards :-
 HB 9 (Handbook 9) Manual of industrial personal protection.
 AS 1337 Eye protectors for industrial applications.
 AS 1715 Selection, use and maintenance of respiratory protective devices.
 AS 1716 Respiratory protective devices.

CONTACT POINT**Contact**

National 24 hr Emergency Response :- 1800 651 818

...End...

Formula 1115**9. PHYSICAL PROPERTIES**

Appearance	-	Yellowish liquid
Odour	-	Pleasant citrus
pH	-	12.5 ± 0.5
Flash point	-	Not applicable
Flammability	-	Non flammable under CHIP Regulation 1993
Viscosity	-	Same as water
Relative density	-	1.065
Solubility	-	Complete soluble in water.

10. STABILITY AND REACTIVITY

Keep away from strong oxidising agents. Very low order toxicity. For sequestering agent, LD₅₀ for rat > 2000 mg/kg

11. TOXICOLOGICAL INFORMATION

This product has low toxicological effects with the field of industrial cleaners. Prolonged contact with skin may cause irritation and dermatitis. Contact with eyes should be limited to mild conjunctivitis provide adequate irrigation is carried out immediately. This product has a low oral toxicity but may cause irritation and stomach upset if ingested

12. ECOLOGICAL INFORMATION

All surfactant in this product are greater than 80% biodegradable by screening test.

13. DISPOSAL CONSIDERATION

Recycle used containers if facilities are available, if not incineration is recommended. Filling this, use landfill. Be sure to comply with local authority regulation.

14. TRANSPORT INFORMATION

UN Number	-	None
ICAO-Air	-	Not classified
IMO Sea	-	Not classified
ADR Road	-	Not classified
Proper Shipping Name	-	N/A
Additional Data	-	Non hazardous for transport

15. REGULATORY INFORMATION

Supply classification:	Not classified	Hazard pictograms:
Risk phrases:	None	
Safety phrases:	S23 Do not breathe vapour/spray S24/25 Avoid contact with skin and eyes S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37/39 Wear suitable gloves and eye/face protection S46 If swallowed seek medical advice immediately. (show the label if possible)	

16. OTHER INFORMATION

Data from the following sources have been used to compile this document.
 HSE - EH4083: Occupational exposure limited 1993. Suppliers Health and Safety Data.
 HSE - EH29/93: Occupational skin diseases: Health and Safety Precaution.
 HSC - Safety Data Sheets for substances and preparation dangerous for supply.
 Date of issue 05.08.2003

Revision : 1

NOTE:

The information presented is accurate to the best of our knowledge. Since any applications and conditions of use are outside of our control, all recommendations and suggestions must be made without guarantee.
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 Website: <http://www.ursm.com.sg> E-mail: info@ursm.com.sg
 Company Registration No: 19854-S (Sole) 1987 Reg. No. 146-0000000-2

**HEALTH & SAFETY DATA SHEET**

1. **Product Name:** Rig Wash & Pressure Cleaner
Product Code: Formula 1115
General Description: High pressure surface cleaner based on surfactant, citrus solvent mixture.

2. COMPOSITION / INFORMATION OF INGREDIENT

Material	%	Risk Phrase	QEL (ST)	QEL (LT)
2-Butoxyethanol	<20-30	R22 Harmful if swallowed	2 ppm (MEL)	2 ppm (MEL)
Citrus solvent	<5.00	-	-	-
Gilicate	<5-10	-	-	-
Nonionic surfactant	<5.00	R36/38 Irritating to eyes & skin	-	-

Risk phrases in this section apply only to raw material, not necessarily finished product. See 15 regulatory information.

3. HAZARDS IDENTIFICATION

Product is irritating to eyes and can aggravate skin condition. If spill cause slippery floor.

4. FIRST AID MEASURES

	HAZARD	FIRST AID
Skin:	Possible redness at point of contact.	Wash with soap and water and apply emollient cream.
Eyes:	Stinging with some redness.	Wash with clean water for 10 minutes. If stinging persists seek medical attention immediately.
Ingestion:	Possible slight stomach upset.	Rinse mouth out with water, then drink a pint of milk or water. Seek medical help if symptoms persist.
Inhalation:	Inhalation of spray may cause irritation of mucous membranes.	Remove affected person to fresh air. Seek medical attention if symptoms persist.

5. FIRE FIGHTING MEASURES

Extinguishing Media:	Product is non flammable
Special Protective Equipment:	Not applicable
Exposure Hazards:	Noxious and toxic fumes may be evolved if product is involved in a fire.

6. ACCIDENTAL RELEASE MEASURES

Do not allow entry into drain, sewers water courses. Mop up with absorbent material such as sand or earth. Scrap or shovel up and transfer to suitable container. Clean affected area with plenty of water. Prevent slip hazards. See 'Disposal Consideration'.

7. HANDLING AND STORAGE

Store in original container. Store at temperature 5°C - 40°C. / Store away from foodstuffs.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Respiratory:	Do not breathe vapour.	An approved respirator must be worn if the occupational exposure limit is likely to be exceeded.
Hands:	Plastic surgical-type gloves recommended	
Eyes:	Protective eyewear recommended for use with any industrial product.	

{ PTO }

MALLEUS* GL 95



Shell Canada Limited
Material Safety Data Sheet

Effective Date: 2005-08-10
 Supersedes: 2002-08-22

504-680
 Revision Number: 6

SC700

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: MALLEUS* GL 95
 SYNONYMS: EP LUBRICANT
 PRODUCT USE: Lubricating Grease

MANUFACTURER

Shell Canada Limited
 P.O. Box 100, Station M
 400-4th Ave. S.W.
 Calgary, AB Canada
 T2P 2H5

TELEPHONE NUMBERS

Shell Emergency Number 1-800-661-7378
 CANUTEC 24 HOUR EMERGENCY NUMBER 613-996-6868
 For general information: 1-800-661-1600
 For MSDS information: 403-691-3662
 (From 7:30 to 4:30 Mountain Time) 403-691-2220

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited

*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

2. COMPOSITION / INFORMATION ON INGREDIENTS

THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE.
 See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Semi-Solid Grease Tacky Black colour Slight Hydrocarbon Odour
Routes of Exposure: Exposure will most likely occur through skin or eye contact. Inhalation is only possible if the product is heated or mists are generated.

Hazards: May be slightly irritating to the eyes.
 Product may be slightly irritating to skin.
 Inhalation of oil mist or vapours from hot oil may cause irritation of the upper respiratory tract.

For further information on health effects, see Section 11.

4. FIRST AID

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for 15 minutes.

Ingestion: Do not induce vomiting. Give one or two glasses (250-300 ml) of water to dilute material in the stomach unless victim is drowsy, convulsing, or unconscious. Obtain medical attention immediately.

Inhalation: Remove victim from further exposure. Additional first aid treatment is not ordinarily required.

Notes to Physician: The tackiness agent in this product may be coagulated by stomach acids if the product is ingested. If a large volume of this material is swallowed, give a large amount of water. Treat medically for possible abdominal blockage.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Dry Chemical
Carbon Dioxide
Foam
Water Fog

Firefighting Instructions: Caution, spilled material is slippery. Material will not burn unless preheated. Do not use a direct stream of water as it may spread fire. Use water to cool fire exposed containers. Water may be used to flush spills away from exposure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

Hazardous Combustion Products: CO, CO₂, oxides of sulphur and dense smoke are produced on combustion.

6. ACCIDENTAL RELEASE MEASURES

Spilled material is slippery. Isolate hazard area and restrict access. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Contain a land spill by diking. For large spills remove by mechanical means and place in containers. Clean area with appropriate cleaner. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

7. HANDLING AND STORAGE

Handling: Avoid excessive heat, formation of oil mist, breathing of vapours and mist of hot oil and prolonged or repeated contact with skin. Launder contaminated clothing prior to reuse. Properly dispose of contaminated leather articles, including shoes, that cannot be decontaminated. Use good personal hygiene.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

The following information, while appropriate for this product, is general in nature. The selection of personal protective equipment will vary depending on the conditions of use.

OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Oil mist (mineral): 5 mg/m³ (STEL: 10 mg/m³)
Molybdenum (metal and insoluble compounds) as Mo:
10 mg/m³ (inhalable fraction)
3 mg/m³ (respirable fraction)

Mechanical Ventilation: Not normally required. Local ventilation is recommended if oil mist is present or if exposure limit is exceeded. Make up air should always be supplied to balance air exhausted (either generally or locally).

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes.

Skin Protection: Oil impervious gloves (nitrile, neoprene or PVC) should be worn at all times when handling this product.

Respiratory Protection: Not normally required under intended conditions of use. If vaporization of oil component is occurring (i.e. under conditions of high heat), use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges in combination with a P95 particulate filter.

9. PHYSICAL DATA

Physical State: Semi-Solid Grease Tacky	Odour: Slight Hydrocarbon Odour
Appearance: Black colour	Odour Threshold: Not available
Pour Point, °C: Not available	Boiling Point, °C: > 316 °C
Vapour Pressure (absolute): Not available	Vapour Density (air = 1): Not available
Density: Not available	Flash Point, °C: (Baseoil) Cleveland Open Cup 260 - 265 °C
Specific Gravity (Water = 1): 1.076	Lower Explosion Limit: Not available
pH: Not applicable	Upper Explosion Limit: Not available
Viscosity: Not available	Autoignition Temperature: Not available °C
Evaporation Rate (n-BuAc = 1): Not available	Partition Coefficient (K_{OW}): Not available
Water Solubility: Insoluble	Molecular Weight:
Other Solvents: Hydrocarbon Solvents	Formula:

10. STABILITY AND REACTIVITY

Chemically Stable: Yes	Hazardous Polymerization: No
Sensitive to Mechanical Impact: No	Sensitive to Static Discharge: No
Incompatible Materials: Avoid strong oxidizing agents. Strong reducing agents	
Conditions of Reactivity: Avoid excessive heat, open flames and all ignition sources.	

11. TOXICOLOGICAL INFORMATION

Routes of Exposure: Exposure will most likely occur through skin or eye contact. Inhalation is only possible if the product is heated or mists are generated.

Formulation: No data is specifically available for this product and therefore this toxicological information is based on data available for the ingredients.

Irritancy: This product is not a primary skin irritant after exposure of short duration, is not a skin sensitizer and is not irritating to the eyes.

Chronic Effects: Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Long term intensive exposure to oil mist may cause benign lung fibrosis.

12. ECOLOGICAL INFORMATION

Environmental Effects: Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities.

Biodegradability: Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licensed waste disposal facility. Do not attempt to combust waste on-site.

14. TRANSPORTATION INFORMATION

Canadian Road and Rail Shipping Classification: This product is not regulated under the Canadian Transportation of Dangerous Goods Regulations for transport by road and rail.

15. REGULATORY INFORMATION

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

DSL/NDL Status: THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE. This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.

Other Regulatory Status: No Canadian federal standard, however, for general discharge guidance, federal installations limited to 15 mg/L for total oil and grease. Provincial criteria are likely and should be requested when notifying provincial authorities.

16. ADDITIONAL INFORMATION

Revisions: This MSDS has been reviewed and updated. Changes have been made to:
Section 3
Section 4
Section 5
Section 8
Section 15

MSDS
OIL SPILL CHEMICAL

Revised 25 JAN 2014

**SAFETY DATA SHEET****Slickgone NS**

Page 1 of 3

Product name: Slickgone NS	Revision: 9
Description: Internationally approved dispersant for breaking marine oil spills.	Revision date: 18-Apr-2008
Company: Dasic International Ltd Winchester Hill Roseday Hampshire SO51 7YD UK www.dasicintl.com	
Telephone: +44 (0)1794 512419	
Fax: +44 (0)1794 522346	
Emergency telephone number: +44 (0)1794 512419	

2. HAZARD IDENTIFICATION

Main hazards: The product is classified as non hazardous. May cause degreasing of the skin. May cause irritation to eyes.

3. COMPOSITION INFORMATION ON INGREDIENTS

Hazardous Ingredients	Cas.	QAS	ENSCB	Symbol/Risk phrases
Kerosene - alcohols - esters (petroleum), hydrocarbon light	60-70%	64742-47-4	260-540-8	Xn; H228
Sodium diethylphosphonate	1-10%	577-11-7		XN; H302

4. FIRST AID MEASURES

Skin contact: Remove contaminated clothing. Wash with water. Seek medical attention if irritation or symptoms persist. Wash oil contaminated clothing before reuse.

Eye contact: Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Contact lenses should be removed. Seek medical attention.

Inhalation: Move the exposed person to fresh air. Seek medical attention if irritation or symptoms persist.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth thoroughly. Drink 1 to 2 glasses of water. Seek medical attention.

General information: Potential for aspiration if swallowed.

5. FIRE FIGHTING MEASURES

Extinguishing media: Alcohol resistant foam, Carbon dioxide (CO₂) Dry chemical. Do NOT use water jet. Cool fire exposed containers with water spray.

Fire hazards: Burning produces irritating, toxic and obscuring fumes.

Protective equipment: In case of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus.

Revision 2
Revision date 15-Apr-2009**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions	Wear suitable protective equipment. See section 8 for further information.
Environmental precautions	Prevent further spillage if safe. Do not allow product to enter drains. Do not flush into surface water. Do not let product contaminate subsoil. Advise local authorities if large spills cannot be contained.
Clean up methods	Absorb with inert, absorbent material. Transfer to suitable, labelled containers for disposal. Contact a licensed waste disposal company. Clean spillage area thoroughly with plenty of water.

7. HANDLING AND STORAGE

Handling	Wear protective clothing. See section 8 for further information.
Storage	Keep out of the reach of children. Avoid contact with strong oxidising agents. Keep in a cool, dry, well ventilated area.
Suitable packaging	Store in original container.
Specific use	Obtain special instructions from the supplier.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits	Karstina - odorless - dust-free (petroleum) hydrocarbon light		WEL 4 hr limit perc WEL 15 min limit perc	WEL 4 hr limit mg/m ³ : 1000 WEL 15 min limit mg/m ³ :
Engineering measures	Ensure adequate ventilation of the working area.			
Respiratory protection	Not normally required. Wear suitable respiratory equipment when necessary. For short periods of work a combination of charcoal filter and particulate filter is suitable.			
Hand protection	Chemical resistant gloves (PVC)			
Eye protection	Approved safety goggles. Provide eye wash station.			
Protective equipment	Apron (Plastic or rubber) Rubber boots.			

9. PHYSICAL AND CHEMICAL PROPERTIES

Description	Viscous liquid.
Colour	Brown.
Odour	Mild.
Boiling point	162°C
Flash point	72°C
Relative density	0.87
Water solubility	slightly miscible in water.
Viscosity	Flow Time in 3mm ISO cup (ISO 2431) - 40

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to avoid	Burning produces irritating, toxic and obnoxious fumes.
Materials to avoid	Strong oxidising agents.

Revision 2
Revision date 15-Apr-2009**11. TOXICOLOGICAL INFORMATION**

Acute toxicity	Ingestion may cause nausea and vomiting.
Corrosivity	May cause irritation to eyes. May cause degreasing of the skin. Potential for aspiration if swallowed.
Repeated or prolonged exposure	Repeated or prolonged exposure may cause dermatitis.
Mutagenic effects	No mutagenic effects reported.
Carcinogenic effects	No carcinogenic effects reported.
Reproductive toxicity	No teratogenic effects reported.

12. ECOLOGICAL INFORMATION

Degradability	The surfactant(s) contained in this preparation complies (comply) with the biodegradability criteria as laid down in Regulation (EC) No.648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.
Bioaccumulation	Does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

General information	Dispose of as special waste in compliance with local and national regulations.
Disposal of packaging	Dispose of in compliance with all local and national regulations.

14. TRANSPORT INFORMATION

Further information	The product is not classified as dangerous for carriage.
---------------------	--

15. REGULATORY INFORMATION**16. OTHER INFORMATION**

Text of risk phrases in Section 2.	R36 - Irritating to eyes. R38 - Irritating to skin. R65 - Harmful: may cause lung damage if swallowed.
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เอกสารแนบที่ 32

Medical Evacuation Response Plan

MEDICAL EVACUATION RESPONSE PLAN (MERP)

Client: Busrakham Jasmine Ltd

Vessel Name: FPF-003

Project Membership No.: 03APAA671228 (Topside Support)

Location: Gulf of Thailand

Created Date: 1 July 2015

Update Date: 14 October 2024

Version: 6.6



WORLDWIDE REACH. HUMAN TOUCH.

Disclaimer

This report is written as a general guide only and the information stated therein is provided on an "as is" and "as available" basis. International SOS (hereinafter referred to as "Intl SOS") will take reasonable care in preparing this report. However, Intl SOS, its holding, subsidiary, group companies, affiliates, third-party content providers or licensors and each of their respective officers, directors, employees, representatives, licensees and agents (hereinafter collectively referred to as the "Intl SOS Parties") do not make any representations or warranties of any kind, express or implied, about the completeness, accuracy, authenticity, reliability, or suitability with respect to this report. Intl SOS hereby disclaims and Busrakham Jasmine Ltd hereby waives on its behalf and on behalf of its holding, subsidiary, group companies, affiliates and each of their respective officers, directors, employees, representatives and agents its and their respective rights to claim against any or all of the Intl SOS Parties for any or all liability including, without limiting the generality of the foregoing, any loss or damage to property, bodily injury or death, loss or anticipated loss of profit, loss or anticipated loss of revenue, economic loss or loss of data, whether or not flowing directly or indirectly from the information, act or omission in question; business interruption, loss of use of equipment, loss of contract or loss of business opportunity; or indirect, special, incidental, consequential, exemplary, contingent, penal or punitive damages, howsoever arising, including out of negligence or wilful default or out of the information contained in or omitted from the report or other information which is referenced by, or linked to this report.

The entire liability of Intl SOS under or in connection with this report, whether for negligence, breach of contract, misrepresentation or otherwise is limited to the charges paid for the services of Intl SOS for producing this report up to a maximum amounting to charges paid during the period of 1 year preceding the claim.

This document contains information related to emergency response planning and actions for offshore projects.

This Medical Evacuation Response Plan is subject to change in light of experience and feedback and it is the responsibility of all potential users, including but not only any Medical or Physician deployed, to review the plan on arrival on board and contact Intl SOS if any difficulties seem likely in making use of the plan.

This is not a First Phase Evacuation plan and does not include responsibilities for all necessary activities related to onshore incident management whether or not patients and casualties are involved (e.g. H₂S emergency, riot / insurrection, man overboard, epidemic quarantine, etc.).

Author

This document was prepared by the Project Access team, Consulting Knowledge Centre.

Reviewers

This document was issued for review to:

Intl SOS MERP Team	Date
Bangkok & Kuala Lumpur MERP Teams	10 Jul 2015

Correspondence

All correspondence regarding this report should be directed to:



www.internationalsos.com

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Acronyms and Definitions

AP	Authorised Person: The representative identified to act on behalf of a company if a medical emergency involving one of its employees occurs on-site. We recommend that the company nominates several employees to act on its behalf. International SOS must be able to contact one of your company's APs at all times. The AP is always called for financial authorisation prior to International SOS performing a billable service. Throughout the course of the case, we will provide routine updates to keep the AP fully informed of the status and progress of events. We may also contact him/her for advice on how your company would like a case to be handled.
BOM	Business Development Manager: International SOS' sales staff who liaises with the client for business and account maintenance issues.
RCD	Response Centre Doctor: International SOS' duty physician rostered for 24 hours to take medical calls.
Definitive Care Facility	Hospital/Clinic where patients can be admitted for specialised and comprehensive medical care, with the ultimate aim of providing final medical treatment for the patient's condition.
First Phase Evacuation	First Phase Evacuation: A plan that is developed and managed by Busrahham Jasmine Ltd, and entails the movement of the patient from the vessel to a patient handover point (Bangkok Hospital Pattaya). It includes identification and liaising with a transport provider and medical care facility appropriate for stabilisation of a patient presented with a medical emergency.
In-Transit Care Facility	Hospital/Clinic where patients can be admitted for stabilisation prior to onward movement to the nearest level of upgraded care or the definitive care facility.
MD	Medical Director: International SOS' on-duty physician rostered 24 hours to oversee medical assistance, and to be notified of all potential or impending medical transports and disembarkations.
Medsite Medical Escalation Report	Medsite Medical Escalation Report: To be completed by medic on board as soon as possible (ASAP) after initial stabilisation, and handed over to International SOS' RCD. Appendix 2: Medsite Medical Escalation Report
Patient Handover Point	Patient Handover Point: A pre-identified location from where the patient will be entrusted to International SOS, for future care, treatment and case monitoring. This pre-identified location is mutually agreed upon by the client and International SOS, prior to MERP mobilisation.
ROMIF	Release of Medical Information Form: This form is used for 2 purposes: 1. It enables a medical professional to release medical data to International SOS. 2. It allows International SOS to release medical data to certain identified third parties to assist the patient. Appendix 3: Release of Medical Information Form
Second Phase Evacuation	Second Phase Evacuation: This plan is developed and managed by International SOS, and entails the movement of the patient from the patient handover point (Bangkok Hospital Pattaya) to the nearest level of upgraded care or the definitive care facility.

1. Objectives of this Document

A Medical Evacuation Response Plan (MERP) explains the Second Phase Evacuation plan, i.e. the movement of the injured employee from the patient handover point to the nearest level of upgraded care or the definitive care facility. It also includes references to the First Phase Evacuation plan that Busrakham Jasmine Ltd has on-site.

This document is colour coded to clearly explain who does what, i.e.:

- **Busrakham Jasmine Ltd** to verify First Phase Evacuation data in the MERP on a regular basis and update International SOS.
- **Remote site medical services** contracted by International SOS for **FPF-003**, to be provided by Intl.SOS and authorised by Busrakham Jasmine Ltd.
- **International SOS** to document, verify, retain and update Second Phase Evacuation data in the MERP.

Disclaimer: This document addresses only medical emergencies. It does not cover other types of emergency planning, such as fires, security breaches or threats, disaster response, environmental issues, etc. Planning for medical emergencies should be integrated with these other types of planning as part of a master global emergency response plan.

2. Summary of MERP

FPF-003 is a tanker-converted FPSO with an external turret mooring system and is currently operating Offshore Sattahip, Thailand. There are approximately 91 pax on board. In addition, International SOS has deployed a medic on board.

Note: In case of emergency medevac, chopper can land directly on Bangkok Hospital Pattaya helipad or U-Tapao Airport, depending on the case management between field and Intl. SOS medical consultancy. Bangkok Hospital Pattaya landing permit is valid until 13 June 2026.

First Phase Evacuation: Busrakham Jasmine Ltd will activate helicopter to evacuate the patient.

Patient will be flown to U- Tapao airport from where client arranged ambulance will take the patient to Bangkok Hospital Pattaya (patient handover point).

For evacuation via sea route, support vessel / boat will bring the patient to Sattahip port, from where client arranged ambulance will take the patient to Bangkok Hospital Pattaya (patient handover point).

For both scenarios, ambulance will be arranged by client from Bangkok Hospital Pattaya.

The medical escort team is based in Bangkok Hospital Pattaya. For incidents where patients have to be transferred via helicopter, International SOS Bangkok Assistance Centre will activate, brief and coordinate the medical escort team. **Please refer to Escort medic activation flowchart, as below, for detailed process.**

Travel time from project location to Sattahip port via support vessel is approximately 6-9 hours.

Flying time from project location to U-Tapao Airport via chopper is approximately 45 minutes

Note: In case of emergency medevac, chopper can land directly on Bangkok Hospital Pattaya helipad or U-Tapao Airport, depending on the case management between field and Intl. SOS medical consultancy. Bangkok Hospital Pattaya landing permit is valid until 13 May 2018.

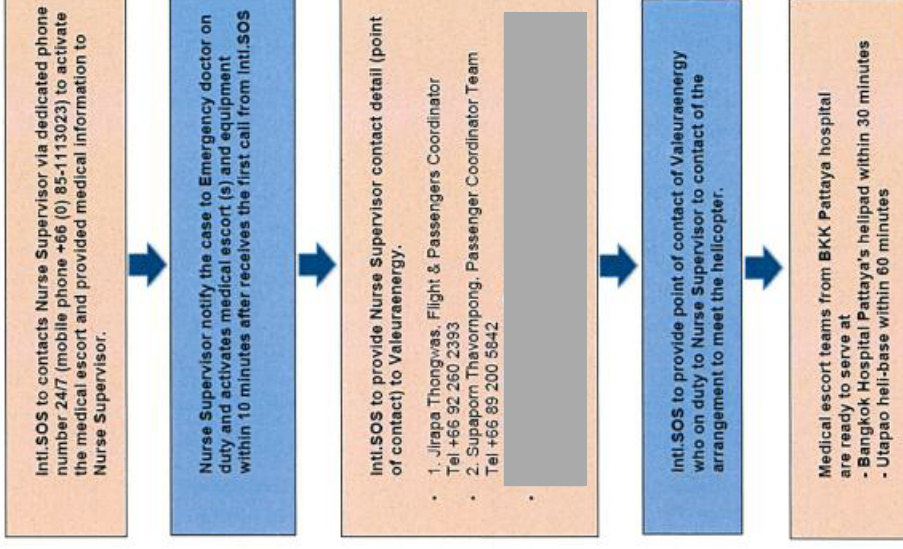
Second Phase Evacuation: Intl SOS will take over patient responsibility once the patient has been brought to Bangkok Hospital Pattaya (patient handover point). If further evacuation is required, Intl.SOS will arrange for patient movement to Bangkok / Singapore using the transport medium deemed most suitable by Intl.SOS.

Note: For select medical cases, depending on the patient's medical condition, International SOS may recommend a direct transfer of the patient to Bangkok. The decision to move the patient directly to Bangkok will be made after discussions between Busrakham Jasmine Ltd and International SOS. The responsibility of patient transfer to Bangkok will liaise with Busrakham Jasmine Ltd.

Medical Escort Activation Flowchart for Bangkok Hospital Pattaya



Medical Escort Activation Flowchart for Bangkok Hospital Pattaya



3. Responsibilities for First and Second Phase Evacuations

On-Site International SOS Medical Staff – On-Site Response

1. Stabilise and provide initial treatment to the patient according to employer's protocols, and assess further needs.
2. Contact International SOS Bangkok Assistance Centre and discuss the case with the coordinating doctor (CD); also inform the on-duty site manager of the incident.
3. Provide patient particulars (including name, nationality, passport details, insurance details, etc.) to the Assistance Centre.
4. Forward the completed Medsite Medical Escalation Report, provided in appendix 2.
5. Obtain patient's consent for International SOS to access patient medical records. Forward the completed and signed Release of Medical Information Form (ROMIF), provided in appendix 3.
6. Follow up the first phone call with verbal and written updates, including patient movement.
7. Provide patient escort, if necessary.

Busrakham Jasmine Ltd – First Phase Evacuation

1. Make pre-identified local transport assets and/or local transport providers under company's control available for First Phase Evacuation, according to section 6.
2. It is the responsibility of Busrakham Jasmine Ltd to ensure International SOS is in possession of the latest First Phase Evacuation plan.
3. Manage and implement the First Phase Evacuation plan.
4. Prepare patients' travel necessities, including passport, other travel documents, clothes, etc.
5. Escalate internally, as appropriate.
6. Inform patient's next of kin, as appropriate.
7. Based on appropriate medical verbal/written communication from International SOS, Busrakham Jasmine Ltd to authorise International SOS to activate necessary resources for repatriation or evacuation and/or guarantee medical expenses, as required.

Note: After Authorized First Phase Evacuation AP1 shall consult with AP2/AP3 for Second Phase Evacuation

International SOS – Medical Monitoring and Second Phase Evacuation

1. Give medical advice and guidance on diagnosis and treatment to the on-board medic.
2. Assistance Centre doctor to recommend whether the patient should be treated on location or at an in-transit care facility.
3. Assistance Centre doctor to also recommend patient movement considering Busrakham Jasmine Ltd's logistics and First Phase Evacuation plan.
4. Contact the designated AP and discuss the case medically, while highlighting any need for a Second Phase Evacuation.
5. Implement and manage the Second Phase Evacuation plan.
6. Organise admission at an appropriate medical facility for Second Phase Evacuation.
7. Organise onward repatriation, if required and requested, beyond Second Phase Evacuation.
8. Keep APs and Busrakham Jasmine Ltd management updated on the case.

Important Notes:

- 1) Intl.SOS ("International SOS") shall use best commercial effort to activate and brief the third party medical escort engaged by Busrakham Jasmine Ltd (the "Company") upon the request of the Company.
- 2) The Parties agree that Intl.SOS's obligations shall be strictly limited to medical services on site and the obligations shall be deemed completed once the patient is handed over to the third party medical escort in accordance to the MERP. For the avoidance of doubt, no clinical supervision service will be rendered to the third party medical escort.
- 3) The Company will indemnify and keep indemnified Intl.SOS against all liability, loss, damage, cost and expense which may be incurred by any of the party arising out of or in connection with the medical care provided by the third party medical escort, including but not limited to the acts or omissions of the third party medical escort howsoever occurring and regardless as to whether the third party medical escort had sought or obtained advice from Intl. SOS.
- 4) The Parties further acknowledge that Intl.SOS' Medical Malpractice Liability Insurance does not extend to the third party medical escort.

4. Key Information

4.1 International SOS Assistance Centre	
4.2 Authorised Person Details	

4.3 Case Management Instructions	<p>1. Work Related Injury (WRI) Disembarkation:</p> <p>1.1 Emergency Disembarkation Cases (ED): Notify AP1 by phone call (AP2, AP3, AP4 if AP1 is not reachable) followed by an email notification to:</p> <p></p> <p>1.2 Non-Emergency Disembarkations (NED): Notify AP1 by phone call (AP2, AP3, AP4 if AP1 is not reachable) followed by an email notification to:</p> <p></p> <p>=====</p> <p>2. Non – WRI (Work Related Injury) Disembarkation:</p> <p>2.1 Emergency Disembarkation Cases (ED): Notify AP1 by phone call (AP2, AP3, AP4 if AP1 is not reachable) followed by an email notification to:</p> <p></p> <p>2.2 Non-Emergency Disembarkations (NED): Notify AP1 by phone call (AP2, AP3, AP4 if AP1 is not reachable) followed by an email notification to:</p> <p></p> <p>=====</p> <p>3. Treatment on Board:</p> <p>3.1 Treatment on Board for Work Related Injury (WRI) Cases:</p> <p>Notify AP1 by phone call follow by an email to Field Manager only, no need for following update unless disembarkation:</p> <p></p> <p>3.2 Treatment on Board for Routine Medical Cases (non - WRI):</p> <p>Email notification to Field Manager only, no need for following update unless disembarkation</p> <p></p> <p>Notification of Case:</p>
Insurance Details:	NA
Delegated Authority:	NA

4.3 Case Management Instructions

Special Instructions / Comments, if any:	NA
Other Client (Contractors) on Vessel	Valeuraenergy/Vinarco/Petrofac
Other Non-Client (Contractors) on Vessel	Other Various contractors dependent on work ongoing at time.

4.4 Client Contact Details

[illegible]

Flight & Passengers Coordinator

Journal of Management Inquiry 26(5) 479-496 479

4.5 Medic Contact Details

Medical Staff on Vessel:
Paramedic: Jeerapun Sonklin and Ahmadamin Satianarat
Direct Tel: +66 2 766 9795

5. Location Geography

5.1 Vessel Details

Vessel Population:	Maximum of 91 personnel
Vessel Coordinates:	
Patient Handover Point:	Bangkok Hospital Pattaya Or Bangkok, Thailand (for special cases)

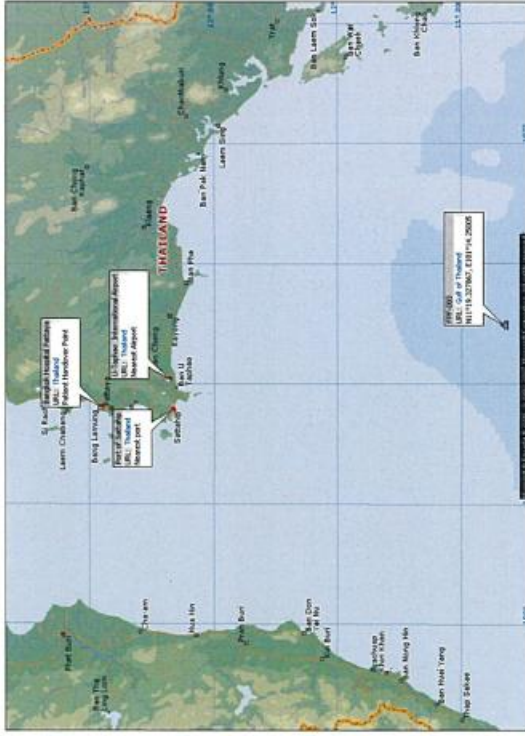
5.2 Vessel Description

FPF-003 is a tanker-converted FPSO with an external turret mooring system and is currently operating Offshore Satahip, Thailand. There are approximately 91 pax on board. In addition, International SOS has deployed a medic on board.

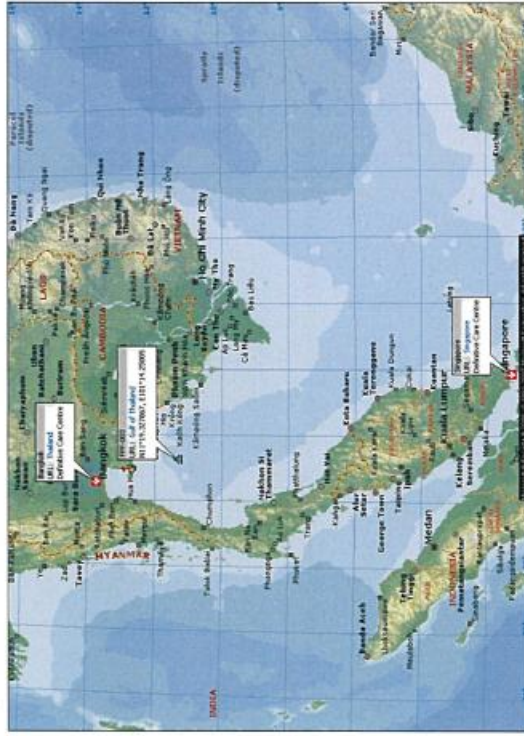


5.3 Maps

Local view



Regional view



6. First Phase Evacuation Details

First Phase Evacuation

Note: In case of emergency medevac, chopper can land directly on Bangkok Hospital Pattaya helipad or U-Tapao Airport, depending on the case management between field and Intl. SOS medical consultancy. Bangkok Hospital Pattaya landing permit is valid until 13 June 2026.

First Phase Evacuation: Busrakham Jasmine Ltd will activate helicopter to evacuate the patient.

Patient will be flown to U-Tapao airport from where client arranged ambulance will take the patient to Bangkok Hospital Pattaya (patient handover point).

For evacuation via sea route, support vessel / boat will bring the patient to Sattahip port, from where client arranged ambulance will take the patient to Bangkok Hospital Pattaya (patient handover point).

For both scenarios, ambulance will be arranged by client from Bangkok Hospital Pattaya.

The medical escort team is based in Bangkok Hospital Pattaya. For incidents where patients have to be transferred via helicopter, International SOS Bangkok Assistance Centre will activate, brief and coordinate the medical escort team. **Please refer to Escort medic activation flowchart, in Section 2, for detailed process.**

Travel time from project location to Sattahip port via support vessel is approximately 6-9 hours.

Flying time from project location to U-Tapao Airport via chopper is approximately 45 minutes

Note: In case of emergency medevac, chopper can land directly on Bangkok Hospital Pattaya helipad or U-Tapao Airport, depending on the case management between field and Intl. SOS medical consultancy. Bangkok Hospital Pattaya landing permit is valid until 13 May 2018.

Note: For select medical cases, depending on the patient's medical condition, International SOS may recommend a direct transfer of the patient to Bangkok. The decision to move the patient directly to Bangkok will be made after discussions between Busrakham Jasmine Ltd and International SOS. The responsibility of patient transfer to Bangkok will lie with Busrakham Jasmine Ltd.

Evacuation Support Logistics

Helideck Information

FPF-003 is equipped with a helideck that is suitable for landing 'Super Puma Type L2' type helicopters.

The design of the helideck is in compliance with the requirement of API RP 2L, CAAP 92.2, for arrangement and structure.

The Maximum Take-off Load for a Helicopter is rated at 9.3 Tonnes.

The current helicopter type used for crew change transport is a Agusta Westland AW139 helicopter with gross weight of 6.8 Tonnes. A non-skid coating is applied to the helideck surface and rope helicopter net is also fitted. The helidecks fitted with a suitable lighting system to allow unrestricted operation of helicopter at night.

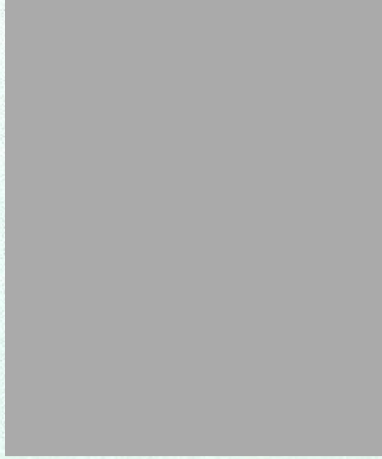
Helicopter Information

Type: Sikorsky S76C+

Location: U-tapao airport.

Busrakham Jasmine Ltd

Provider: United Offshore Aviation Company Limited



Point of Contact:

Travel Time from Vessel to Airport

45 min

Medical Configuration:

Can fit the basket stretcher

Availability:

24 hrs

Night Flight:

Yes, if medevac call

Marine Transport / Supply Vessel

Name: MV SC Summer / MV SC Ganya / CB SC Glory5

Travel Time to Sattahip port: MV SC Summer / MV SC Ganya – 9 hours

CB SC Glory5 - 6 hours

Local Airport Information

Name (ICAO Code): U-Taphao Rayong Pattaya International Airport (VTBU)

Hours of Operation: 24 hrs with restrictions

Airport of Entry: Yes

Local Airport Information

Contact Details: +66 38 245193

Ground Transport from Port to Patient Handover Point / In-Transit Care Facilities

Client will activate ground ambulance from Bangkok Hospital Pattaya

Patient Handover Point / In-Transit Care Facilities

Name: Bangkok Hospital Pattaya

Address: 301 Moo 6 Sukhumvit Rd, KM143 Nakua Banglamung, Pattaya, Chonburi, 20150, Thailand

Tel: +66 38 259999

Fax: +66 38 909051

Notes on In-Transit Care Facilities:

- The in-transit care facility must be mutually pre-agreed upon by International SOS and Busrakham Jasmine Ltd as the patient handover point.
- The in-transit care facility may not be – and in remote areas usually will not be – the medical facility best suited for the patient's definitive treatment.
- Intl.SOS may have administrative agreements with these hospitals and providers to assist with the admission of patients and guarantee payments; however, this does not mean that these hospitals/providers have been credentialed by Intl.SOS as being up to the international standards. Intl.SOS is in no position to direct local hospitals/providers regarding the treatment and management of the patient, but will make all efforts to secure understanding and cooperation from the local medical team.
- Medical facilities recommended only for initial admission and stabilisation prior to onward transfer for more serious cases may be appropriate for definitive care of less serious cases, but in any case these only represent the best locally available option. Onward referral to a regional definitive care facility will be recommended on a case-by-case basis by the International SOS medical team.

7. Second Phase Evacuation Details

Second Phase Evacuation

Second Phase Evacuation: Intl.SOS will take over patient responsibility once the patient has been brought to Bangkok Hospital Pattaya (patient handover point). If further evacuation is required, Intl. SOS will arrange for patient movement to Bangkok / Singapore using the transport medium deemed most suitable by Intl. SOS

Evacuation Support Logistics

Intl.SOS preferred providers in Pattaya, Thailand

Ground Ambulance & In-Transit Care Facility	
Provider:	Bangkok Hospital Pattaya
Provider Address:	301 Moo 6 Sukhumvit Rd, KM143 Nakua Banglamung, Pattaya, Chonburi, 20150, Thailand
Contact Details:	Tel: +66 38 259999 Fax: +66 38 909051

Local Airport Information	
Name (ICAO Code):	U-Tapao Rayong Pattaya International Airport (VTBU)
Hours of Operation:	24 hrs with restrictions
Airport of Entry:	Yes
Contact Details:	+66 38 245193/ +66 38 245965

Notes on In-transit Medical Care Facilities:

- The in-transit care facility must be mutually pre-agreed upon by International SOS and Busrakham Jasmine Ltd.
- The in-transit care facility may not be – and in remote areas usually will not be – the medical facility best suited for the patient's definitive treatment.
- Intl. SOS may have administrative agreements with these hospitals and providers to assist with the admission of patients and guarantee payments; however, this does not mean that these hospitals/providers have been accredited by Intl. SOS as being up to international standards. Intl. SOS is in no position to direct local hospitals/providers regarding the treatment and management of the patient, but will make all efforts to secure understanding and cooperation from the local medical team.
- Medical facilities recommended only for initial admission and stabilization prior to onward transfer for the more serious cases may be appropriate for definitive care of less serious cases; but in any case these only represent the best locally available option. Onward referral to a regional definitive medical care facility will be recommended on a case-by-case basis by the International SOS Medical Team.

Definitive Medical Care Facilities:

Location: Bangkok

Ground Ambulance	
Provider Name	Bumrungrad International Hospital
Provider Location	133 Sukhumvit Road, Soi 3 Nana Nua, Wattana, Bangkok, Thailand 10110
Provider Contact Details	Tel: +66 2 066 8888/+66 2 011 3000 (IPD)/ +66 2 011 2287-89 (OPD)/ +66 2 011 5166 (Referral) Fax: +66 2 011 5160
Travelling time from Pattaya to Bangkok	2.5 hours

Definitive Care Medical Facilities

Name: Bumrungrad International Hospital
Address: 33 Sukhumvit Road, Soi 3 Nana Nua, Wattana, Bangkok, Thailand 10310
Tel: +66 2 066 8888/+66 2 011 3000 (IPD)/ +66 2 011 2287-89 (OPD)/ +66 2 011 5166 (Referral)
Fax: +66 2 011 5100/ 5160
Name: Samitivej Sukhumvit Hospital
Address: 133 Sukhumvit 49, Klong Tan Nua, Vadhana, Bangkok, Thailand 10110
Tel: +66 2 022 2222
Fax: +66 2 712 9810

Airport Information	
Name:	Suvarnabhumi International Airport
ICAO Identification:	VTBS
Operating Hours:	Operational 24 hours
International Clearance Status:	Airport of Entry
Contact Details:	+66 2 132 1888
	+66 2 535 1111

Location: Singapore

Ground Ambulance		
Provider Name:	Comfort Ambulance	Carewell ambulance
Provider Location:	16, Arumugam Road, LTC Building D, #02-04, Singapore, 409961	Blk 531 Serangoon Nth Ave 4, 07-269, Singapore - 550531
Contact Details:	Tel: + 65 9747 8509 Fax: + 65 6320 7080	Tel: + 65 91801710, + 65 91260150, + 65 68580601, + 65 66511360, Fax: + 65 64818347

Definitive Care Facilities in Singapore

Name: Raffles Hospital Pte Ltd/IRMG	
Address: 585 North Bridge Road, Raffles Hospital #01-00, Singapore, 188770	
Tel: +65 6311 1111 (General); +6311 1555 (A&E) / +65 6311 1222 (24hr general appt) / +65 6311 1666 (IPC)	
Mobile: + 65 9828 3784 (IPC)	
Fax: +65 6311 2333 (General)/1555 (A&E)/ 2136 (24 hrs General Appt)	
Name: Gleneagles Hospital Pte Ltd	
Address: 6A Napier Road, Singapore 258500	
Tel: +65 6473 7222 (Main 24rs) / +65 6735 5000 (CPAC)	
Fax: +65 6470 5616 / +65 6470 3309	
Name: Mount Elizabeth Hospital Pte Ltd	
Address: 3 Mount Elizabeth, Singapore 228510	
Tel: +65 67312122/ 6737 2666 (24hr) / 6735 5000 (CPAC 24hrs)	
Fax: +65 67 328906 (GOP)/347525 (BZ Office)	

Airport Information

Name:	Singapore Changi International Airport	Singapore/ Seletar Airport
ICAO Identification:	WSSS	WSSL
Operating Hours:	Operational 24 hours	
International Clearance Status:	Airport of Entry	
Contact Details:	+65 6595 6868	+65 6513 8967 / +65 9152 8265

Air Ambulance and Commercial Carriers

Air Ambulance Option 1: Based at Bangkok		
Type of Aircraft	Cessna Citation Bravo/ Lear 60	Super King Air and Hawker 800
Location	Bangkok - Don Mueang Airport	
Activation time	2 - 3 hr	
Note	Cessna Citation Bravo, Hawker and Superking Air 350 are allowed for domestic route only. In process of AOC recertification Lear 60, VH-AND is only option for International route	

Air Ambulance Option 2: Based at Singapore

Aircraft Model:	Lear 35/Lear 45Lear 60/ Challenger 604/ Challenger 605/ Gulfstream 150/ Gulfstream 550
Medical Configuration:	1 stretcher + 2 Med Team + 1 Companion Medical Team
Flying Time (Singapore to U Taphao Intl):	Approx. 1:46 hours
Flying Time (Singapore to Bangkok):	Approx 2 hour
Activation Time:	2-3 hours before flying time

Commercial Airline Options for Bangkok to Singapore

Evacuation Route	Airline	Flight Duration
Bangkok to Singapore	Bangkok Airways/ Singapore Airlines / Thai Airways International	Approx. 2 hour 15 min

Noteworthy Points to Consider for Evacuations and Repatriations

- Cross-border travel without passport and entry/exit visa is not permitted by immigration authorities, and this must be present with the patient (or a caretaker, if incapacitated) at all times. Even in a medical emergency, a country may not allow a patient entry if the country immigration regulations do not grant emergency visas for certain nationalities.
- All emergency responses are on a reasonable effort basis; unavoidable delays may occur for several reasons, including aircraft availability, weather conditions or other factors affecting the safety of a flight, or unscheduled airport closures.
- Patient suffering from an infectious disease may not be allowed to travel by health authorities either locally, regionally or internationally.
- Second Phase Evacuation to a place where the patient's language is spoken or where he is culturally more comfortable can be arranged upon request, if this is considered medically safe. Repatriation following an initial evacuation to a centre of medical excellence depends on the patient's fitness to fly, as well as the medical clearance of the patient by the commercial airline's medical department.

Appendix 1: Description of International SOS Services On-Site

Description and qualifications of staff on-site: Intl.SOS medic is deployed on-board the vessel

Description of medical equipment on-site: TBA

International SOS Support Contacts
International SOS Support Contacts (page 22)
Intl.SOS Medic Supervisor: Panuwat Buran, Operation and Quality Supervisor

Appendix 2: Medsite Medical Escalation Report

Busrakham Jasmine Ltd Fax to: +66 2 254 0272; Email to: bangkok@internationalsos.com

Case Number:

1. Call Details, Site Details, Request for Assistance

Date of Patient Presentation:	Time of Presentation:	
Name of Client, Project and Project Membership number:		
Intl SOS Membership detail and number to be used for this case if not the above:		
Name of Vessel/Rig/Site:		
Name and Qualification of Site Medical Staff:		
Site phone number:	Mobile	Other
Notification Type:	FIRST NOTIFICATION	
Reason For Escalation:	Medical Advice/Topside Support	Non Urgent Referral
	Urgent Referral	Other
Request For Assistance::		

2. Patient Details

Full Name of Patient:			
Date of Birth:			
Contact Details:		Mobile Number:	
		Email Address:	
Job Position:			
Name of Patient Employer:			
Passport Number:		Nationality	
Location of Passport:			
Date Of Arrival On Site (If relevant):		Departure date (If relevant):	
Has patient consented to release to employer/signed ROMIF:			Yes/No

3. Other Information (To be completed if patient is not assisted under Intl SOS Project Membership or other Intl SOS Membership)

Employer Point of Contact/Patient Manager:	
Contact Number:	
Name of Assistance Company/Insurer managing the case:	
Please confirm Employer has Activated the above Assistance Company/Insurer:	Yes/No

4. Medical Information

Select the relevant Box:	Accident	Illness	Was patient on duty	Yes/No
Known Allergies:			Relevant Vaccinations: (eg Last dose of Tetanus)	
Chronic Medication:				
History & Chronology of Events and Chief Complaint:				
Examination:				
A:	GCS			
B:	BP			
C:	Pulse			
General Appearance:	RR			
Head and Neck:	TEMP			
	SATS			
	HGT			
Chest/Back:	OTHE R			
Abdomen/Back and Perineum:				
Limbs and Periphery:				

Neurological Findings:

--	--

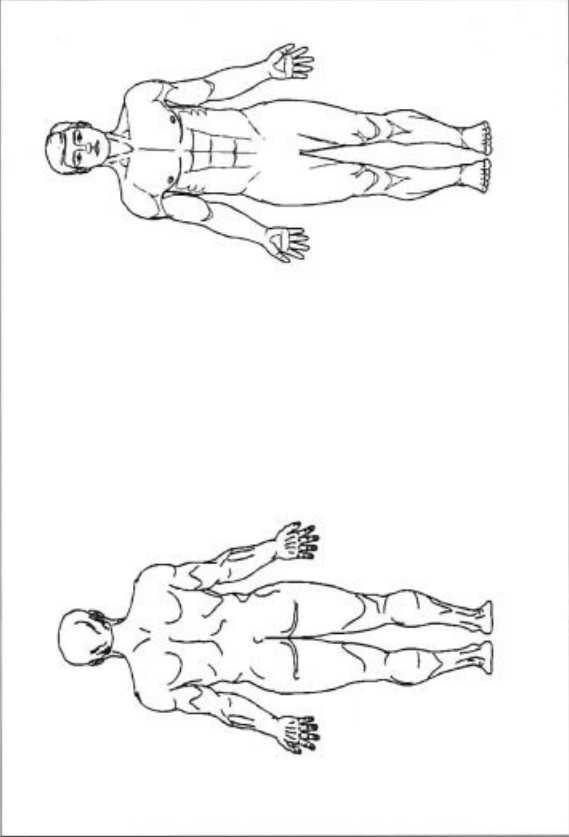
Investigations:

Urine General Appearance:

URINE DIP STICK RESULTS	Leukocytes	
	Nitrite	
	Urobilinogen	
	Protein	
	pH	
	Blood	
	Specific Gravity	
	Ketone	
	Bilirubin	
	Glucose	
Malaria Rapid Test Result	Trop T Test Result	

Provisional Diagnosis:

Treatment Plan Initiated On Site:



PLEASE SEND SUPPORTING PICTURES ON ALL CASES WITH PATIENT CONSENT

Appendix 3: Release of Medical Information Form

For Assistance Centre Use Only	
Escalated to MD on Duty:	Yes / No
Time of Call:	
Assistance Centre Doctor's Name:	
International SOS' Case Number:	
Medical Assistance Centre Recommendations:	
Escorted / Unescorted:	
Receiving Facility:	
Name of Vessel Manager Contacted:	
Vessel Manager's Instructions:	
International SOS to Arrange Ground Transfer:	Yes / No
International SOS to Place Guarantee of Medical Expenses:	Yes / No
No Assistance Required:	Yes / No

International SOS [Bangkok Assistance Centre]
Tel: +66 2 205 7848 (please note this is a dedicated number)
Fax: +66 2 254 0272
Email: bangkok@internationalsos.com

AC/CLINIC

AUTHORISATION FOR RELEASE OF MEDICAL INFORMATION

PATIENT INFORMATION	
Print Name:	First Last (surname)
Birth Date:	Day/Month/Year Case #:
TREATING PHYSICIAN IN COUNTRY OF ORIGIN: (please fill in name, address, e-mail address and telephone number)	TREATING PHYSICIAN IN CURRENT LOCATION: (please fill in name, address, e-mail address and telephone number)
PURPOSE	
This authorisation is to authorise the collection, release, use, storage, processing, amendment and transferring of medical, travel and other personal data for the purpose(s) of providing assistance to me, including arranging medical treatment, assessing and paying and/or obtaining payment for that treatment and assistance; running International SOS' normal business and operations, and to comply with legal obligations and respond to emergencies such as those relating to public health ("Data Collection Purposes").	
AUTHORISATION OF DISCLOSURE	
I hereby authorise any organisation or person who has or may have information concerning me or my health to furnish International SOS [Bangkok Assistance Centre], including the International SOS Group of Companies and/or their respective representatives and/or agents ("International SOS"), who are acting on behalf of Busrahkam Jasmine Ltd. with: (a) all relevant medical information pertaining to my medical history (including any condition for which medical advice or treatment was sought, any form of consultation, investigation, prescription or treatment), it being understood that such disclosure must be compliant with applicable local rules, if any (which may where applicable restrict release to medical professionals only); (b) all relevant information pertaining to my employment history; (c) a medical certificate completed by any health provider which International SOS may require; and (d) travel information including all itineraries, ticket information and proof of payment documentation. (collectively known as "Personal Data") I understand that information related to sexually transmitted diseases, acquired immunodeficiency syndrome (AIDS), human immunodeficiency virus (HIV), genetic test results, behavioral or mental health services, and treatment for alcohol and drug abuse, shall not be disclosed unless: (i) required by law or (ii) I specifically authorise International SOS to make such disclosure by initialing here.	

CONSENT TO USE MEDICAL INFORMATION

I consent to International SOS:

- Collecting by using telephone recordings, electronic, paper or other means, processing and using my Personal Data for the Data Collection Purposes;
- Subject to local legal requirements (which may where applicable prevent disclosure to non-medical personnel and/or restrict release to medical professionals only) disclosing my Personal Data to :
 - entities of Busrakham Jasmine Ltd, and/or of other International SOS entities or their respective representatives and/or agents, my personal representatives or family member involved in my care;
 - the insurer or other entities which will be directly or indirectly responsible for or involved in payment of relevant medical and other costs;
- Transferring my Personal Data outside [Thailand], to and from my doctors in my country of origin, and to and from the doctors where I am currently being treated and to other territories that may not have the same level of personal data protection.

AGREED AND ACCEPTED

I understand and agree that :

- A copy of International SOS' Customer Personal Data Privacy Statement including information about my rights and instructions on how to fill a complaint and access, correct, restrict access to or delete my Personal Data may be obtained by writing to: Director of Assistance, International SOS or may be accessed through the International SOS website at www.internationalsos.com
- I have the right to refuse to sign this authorisation, and that if I do refuse, International SOS may be prevented from or limited in providing the services described above and may not be able to assist me.
- This authorisation expires one (1) year from the date of signature below.
- If I sign this authorisation, I will have the right to withdraw/ revoke it at any time, except to the extent that action has been taken prior to receipt of the withdrawal/ revocation. If I wish to withdraw/ revoke this authorisation, I can write to the Privacy Officer at dpoo@internationalsos.com.
- This authorisation and my Personal Data will be kept no longer than is desirable for the purposes they were collected and, subject to applicable local law, will be destroyed in accordance with the periods set out in International SOS' policy on data retention (published at <https://www.internationalsos.com/privacy>).
- A copy, including photostat, electronic or fax copy of this authorisation, shall be considered as effective and valid as the original and I have specifically authorised its use as such.

Printed Name

Signature of Patient/Legal Representative/ Guardian

Date

Relationship with Patient

Appendix 4: Condition of offshore medical evacuation that requiring medical escorts

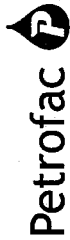
Type of Offshore Case Management	1. EMERGENCY MEDEVAC	2. NON EMERGENCY MEDEVAC	3. MEDICAL REFERRAL END OF HITCH	4. TREATMENT ON BOARD
Component of medical escorts	One escort doctor AND/ one or two nurses	One doctor and/or one nurse	Non-medical escort, unescorted	No medical escort required.
Mode of Movement	Emergency evacuation of sick or injured person(s) requiring urgent medical attention at a hospital using unscheduled flight or marine journey. The casualty shall reach hospital within the response time of 4 hours usually via dedicated or diverted Chopper or Boat.	Non urgent evacuation of cases for medical attention using the next available option of flight or boat e.g. unscheduled flight the next day light crew change chopper or boat.	All others that does not fit the definition of 1 & 2 as recommended by topside remote health support	Medical conditions that medication, facility and room are sufficient and capable for treating the patients onboard.
CONDITION: THE RECOMMENDATION BY TOPSIDE CD IS TOTALLY BASED ON THE CRITICALITY OF THE CASE				
	<ul style="list-style-type: none"> Threatening to Life, Limbs and Eyes Casualties required immediate evacuation to Tertiary Hospital Care (requiring ICU hospitalization) Time critical/sensitive and evacuation should take whether it is day or night Mandatory for Medical Escort to accompany patient 	<ul style="list-style-type: none"> There is no immediate threatening to Life or Limbs. However delay beyond a window of 24 hour will put the casualty at risk of danger to Life or Limbs or affect the health of others on board. (e.g. communicable diseases). Patient would most likely require in-patient treatment on arrival 	<ul style="list-style-type: none"> There is no threatening to Life or Limbs. Casualty can remain on board and receive treatment However casualty should be disembark on scheduled crew change transport or at the end of hitch. No need for any medical escort medic to accompany casualty Casualty expected to receive outpatient treatment 	<ul style="list-style-type: none"> There is no threatening to Life or Limbs. Enough medicine, monitor and room for treatment

Type of Offshore Case Management	1. EMERGENCY MEDEVAC	2. NON EMERGENCY MEDEVAC	3. MEDICAL REFERRAL END OF HITCH	4. TREATMENT ON BOARD
	<p>Example of cases</p> <ul style="list-style-type: none"> Shock (Cardiogenic shock, Hypovolaemic shock, Anaphylactic shock, Septic Shock, Spinal Shock) Acute Myocardial Infarction (heart attack) Cerebral Vascular Accident (stroke) Hypertensive emergencies Sudden hypoxia (could be Pulmonary Embolism) Sepsis / Septic Shock Multiple Trauma Limb/digit Amputations Epilepsy (Status Epilepticus) Spinal injury with neurological impairment Penetrating Eye Injury Head Injury, deteriorating GCS Pelvic Fracture associated with deteriorating vital signs Severe Burns on the face, hands, feet, and genitalia as well as Major burns (> 9%) in other areas of the body and those associated with inhalational injury are often referred to burn centers for specialized expertise 	<ul style="list-style-type: none"> Acute Abdomen: rebound Tenderness, guarding ? appendicitis, gastritis Acute exacerbation of Bronchial asthma unresponsive to treatment Open fractures Corneal Injury Closed fractures of limbs but clinically stable & no neurovascular compromise Pneumonia (not on O2) Symptomatic Uncontrolled Diabetes, Symptomatic Uncontrolled Hypertension Conjunctivitis Renal Colic Unilateral leg swelling with normal SpO2, ECG and no breathing issues Painful scrotal swelling Altered behaviour (need to rule out organic cause) ; escort medic is needed in the event patient needs sedation during transfer 	<ul style="list-style-type: none"> Sprained joints ((responding to first aid category treatment)) Back pain (responding to first aid category treatment) Recurring headache Toothache / dental caries / gingivitis Acute Contact Dermatitis (Irritant or Allergic) Generalised Bronchial Asthma (responding to treatment) Cellulitis Asymptomatic Hypertension (BP normalized with initial treatment) Chickenpox, Measles 	<ul style="list-style-type: none"> COVID-19 infection (5 day isolation) Influenza infection (5 day isolation)

Revision History						
Version	Rev. Date	Description	Prepared By	Reviewed By	Approved By	Date
Draft	1 Jul 2015	First Draft	PM Support, GKSC	Bangkok and Kuala Lumpur MERP Teams	Dr. Akiko Nomura Harlina Ali Haron	10 Jul 2015 8 Jul 2015
1.1	16 Jul 2015	Finalized MERP	-	-	-	-
1.2	3 May 2016	AP2 change	-	-	-	-
1.3	16 Aug 2016	Update: APs and support vessels	-	-	-	-
1.4	05 Oct 2016	Update: AP2 tel	-	-	-	-
1.5	04 November 2016	PM no. + Client name+ AP details	-	-	-	-
1.6	17 November 2016	Update	-	-	-	-
1.7	18 November 2016	Update		-	-	-
1.8	24 February, 2017	Update: Name of Medic Contact	PM Support, GKSC	-	-	-
1.9	08 March 2017	Update: Medic Details	PM Support, GKSC	-	-	-
2.0	14 March 2017	Update	PM Support, GKSC	-	-	-
2.1	15 March 2017	Update: APs Fax no.	PM Support, GKSC	-	-	-
2.2	03 April 2017	Update: AP details	PM Support, GKSC	-	-	-
2.3	03 May 2017	Update: Case Management Instructions, NOC, Escort medic flowchart, AP Details	PM Support, GKSC	KUL MERP Team BKK MERP Team	Dr. Yann Rouaud Phanuphan Neampraphan	03 May 2017
2.4	15 May 2017	Update: Case Management Instructions, Thailand Duty Roster list, AP Details, Medic Staff details	PM Support, GKSC	KUL MERP Team BKK MERP Team	Dr. Yann Rouaud Rakesh Chan	15 May 2017

		Revision History		
2.5	17 May 2017	Update: Thailand Duty Roster Contact List in Poster	PM Support, GKSC	-
2.6	06 Sept, 2017	Update: Dedicated AC number	PM Support, GKSC	-
2.7	23 Oct 2017	Update: Disclaimer, Medic Contact Details	PM Support, GKSC	-
2.8	22 Nov, 2017	Update: AP Designation	PM Support, GKSC	-
2.9	15 Dec, 2017	Update: NOC Change	PM Support, GKSC	-
3.0	25 Jan 2017	Update: Thailand Duty Roster Contact List	PM Support, GKSC	-
3.1	31 Jan 2018	Update: Thailand Duty Roster Contact List	PM Support, GKSC	-
3.2	11 Sep 2018	Update: Change to Correspondence and Vessel Manager E-mail in sec 4.3	PM Support, GKSC	-
3.3	12 Oct 2018	Client contacts	PM Support, GKSC	-
3.4	11 Oct, 2019	Client contacts	PM Support, GKSC	-
3.5	14 Feb, 2019	Client contacts	PM Support, GKSC	-
3.6	15 Feb, 2019	Client contacts	PM Support, GKSC	-
3.7	07 Mar, 2019	Update: Roster	PM Support, GKSC	-
3.8	27 Mar, 2019	AP Update	PM Support, GKSC	-
3.9	27 Mar, 2019	Ap Update	PM Support, GKSC	-
4.0	30 July, 2019	Flowchart	PM Support, GKSC	-
4.1	30 July 2019	Update: Medic	PM Support, GKSC	-
4.2	12 Sep 2019	Update: AP2	PM Support, GKSC	-
4.3	17 Oct 2019	Update: OIM Details	PM Support, GKSC	-

		Revision History		
4.4	Dec 10, 2019	AP Update	PM Support, GKSC	-
4.5	03 Jan, 2020	Update: Thailand duty roster contact list schedule changed	PM Support, GKSC	-
4.6	06 Jan, 2021	AP2 update	PM Support, GKSC	-
4.7	07 Jan, 2021	Update: Medical escort flowchart	PM Support, GKSC	-
4.8	12 Jan, 2021	Client contact details	PM Support, GKSC	-
4.9	16 Feb, 2021	Thailand Duty Roster	PM Support, GKSC	-
5.0	05 Jan, 2022	Thailand Duty Roster	PM Support, GKSC	-
5.1	22 March 2022	Helicopter, helideck details update	PM Support, GKSC	-
5.2	08 April 2022	Update: Client Name	PA Support, GKSC	-
5.3	07 September 2022	Update: Medic	PA Support, GKSC	-
5.4	11 November 2022	Update	PA Support, GKSC	-
5.5	05 January 2023	Update: Roster contact list	PA Support, GKSC	-
5.6	29 March 2023	Multiple minor Updates	PA Support, GKSC	-
5.7	18 Apr, 2023	Update	PA Support, GKSC	-
5.8	12 th May, 2023	Update	PA Support, GKSC	-
5.9	23 rd May, 2023	Update	PA Support, GKSC	-
6.0	02 nd June, 2023	Update	PA Support, GKSC	-
6.1	20 th June, 2023	Update	PA Support, GKSC	-
6.2	08 January 2024	Update: AP2 update	PA Support, GKSC	-
6.3	30 th January 2024	Update: AP3 details	PA Support, GKSC	-
6.4	09 th May, 2024	Update: AP1 and AP3	PA Support, GKSC	-
6.5	31 st May, 2024	Update: helicopter Type	PA Support, GKSC	-
6.6	14 Oct, 2024	Update: Flowchart and AP2	PA Support, GKSC	-



Asset Solutions, East
FPF – 003

MEDEVAC

FPF-003-O-M-1303

REVISION CONTROL

Rev No.		Owner at Revision	Date
03	Reviewed	OIM	April 2014
04	Reviewed	OIM	July 2017
05	Minor amendments including format update	OIM	Feb 2023

DOCUMENT APPLICABILITY

Applicable Area
AS EAST / FPF – 003 JASMINE FIELD

FEEDBACK ON THIS DOCUMENT CAN BE SUBMITTED VIA THE BMS
THE BUSINESS MANAGEMENT SYSTEM GROUP ARE RESPONSIBLE FOR THE CONTROL OF REVISION
FOR LATEST OWNER, APPROVER AND REVIEW DATE PLEASE SEE ASSET SOLUTIONS BMS

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1. PURPOSE

To provide an effective communication and decision route to ensure persons who must urgently be transferred to hospital are transported with minimum delay.

2. SCOPE

This covers the MEDEVAC of any persons involved with the production operations working on the FPF-003.

3. REFERENCE

FPF-003-O-M-1300 Emergency Response Plan.

4. DEFINITIONS

MEDEVAC

Medical Evacuation.

Any transfer of person(s) injured or ill from the workplace.

Offshore Installation Manager

OIM

5. SAFETY REQUIREMENTS

5.1 PETROFAC requires that necessary medical treatment is available for all staff and contractors and trained personnel are provided on the FPSO for immediate treatment of patients. Medical competencies are identified in the relevant position competency training matrices & position descriptions.

5.2 The Offshore Medic, in consultation with the International SOS emergency doctor will advise the OIM when it is necessary for medical treatment to be given onshore. If, for any reason, the International SOS emergency doctor is unavailable the Offshore Medic should determine if the patient requires medical treatment ashore.

5.3 It is the responsibility of the OIM, in conjunction with the Mubadala Representative, to organise and co-ordinate MEDEVACs when required.

6. TASK/ACTIVITY

6.1 MEDICAL EVACUATION PROCEDURES

6.1.1 Accident, injury or illness on Offshore FPSO, Supply Vessel, etc.

Initial treatment will be undertaken by the Offshore Medic or other qualified person so delegated. If illness/injury is serious or likely to require further treatment onshore, the Offshore Medic consults the international SOS emergency doctor and if medical evacuation is considered necessary advises the OIM.

The International SOS emergency doctor in conjunction with the Offshore Medic shall decide on medical transport requirements. The Offshore Medic must contact the International SOS emergency doctor in all MEDEVAC cases.

The OIM advises the Operations Manager who authorises the MEDEVAC and informs Mubadala onshore duty manager. The OIM may liaise directly with the Mubadala Representative, to provide helicopter services. The OIM advises the Operations Manager of all such requests for MEDEVAC.

6.1.2 Evacuation by Routine Flight

Whenever possible evacuation will take place on a routine support flight. In cases where the severity of the illness/injury requires urgent evacuation alternative special or diverted flights shall be considered.

6.1.3 MEDEVAC Patient Form

For PETROFAC and PETROFAC Contractor employees, the Offshore Medic completes the "MEDEVAC Patient" form in Section 7.1 which is signed by the OIM. The original accompanies the evacuee and a copy is mail to the Operations Manager and to the Hospital.

For Mubadala and Mubadala Contractor employees, the Offshore Medic completes the "MEDEVAC Patient" form provided by Mubadala which is signed by the Mubadala Representative. The original accompanies the evacuee and a copy is mail to the Mubadala Operations Manager and to the Hospital.

6.1.4 Medical Referral Form

For PETROFAC and PETROFAC Contractor employees, the Offshore Medic completes the "Medical Referral" form Section 7.2 which is signed by the OIM. The original accompanies the evacuee and a copy is mailed to the Operations Manager and to the Hospital.

For Mubadala and Mubadala Contractor employees, the Offshore Medic completes the "Medical Referral" provided by Mubadala which is signed by the Mubadala Representative. The original accompanies the evacuee and a copy is mailed to the Mubadala Operations Manager, and to the Hospital.

6.1.5 Release of Information Form

For PETROFAC and PETROFAC Contractor employees, the patient, if able, signs the "Consent for Release of Information" form in Section 7.3. The original accompanies the evacuee. A copy is mailed to the Operations Manager and to the hospital.

For Mubadala and Mubadala Contractor employees, the patient, if able, signs the "Consent for Release of Information" form provided by Mubadala. The original accompanies the evacuee. A copy is mailed to the Mubadala Operations Manager and to the hospital.

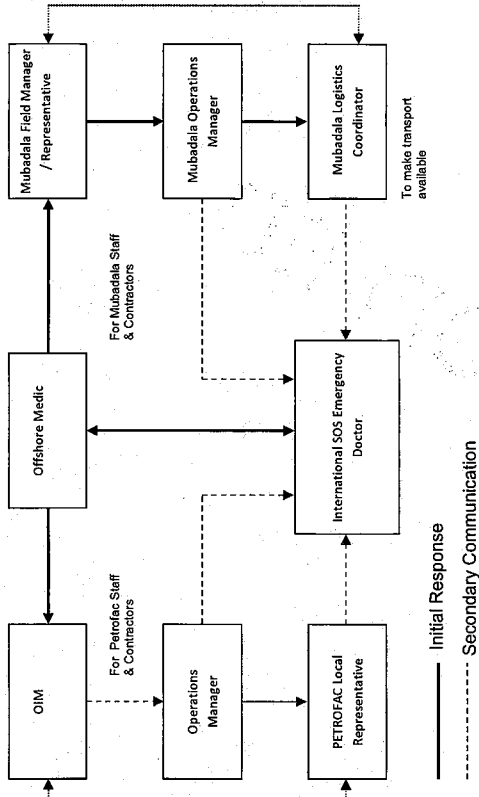
6.1.6 Medical Assistance on the Evacuation

International SOS will arrange a medical escort on helicopters undertaking evacuations of seriously injured patients.

1. All patients evacuated shall be brought back to Sattahip for initial assessment. Those patients requiring transfer to other cities will be assessed further and then co-ordinated by the receiving hospital.
2. If an evacuation does not require a medical escort during the flight, International SOS emergency doctor will decide if there is a requirement for an ambulance with paramedics to meet the flight at the heliport. International SOS will arrange for an ambulance to meet flights where required.
3. Patients may be transferred to appropriate facilities in Bangkok for assessment and treatment depending on the International SOS emergency doctor's decision.
4. For Mubadala and Mubadala Contractor employees – The Mubadala Representative onboard will contact the Mubadala Operations Manager who will arrange to meet the incoming MEDEVAC helicopter in order to take

- responsibility for Mubadala employees and/or Mubadala Contractor employees. The Operations Manager or his designated representative will also arrange for the local PETROFAC representative to meet the incoming MEDEVAC helicopter in order to assist the Mubadala representative if required.
5. For PETROFAC staff – The Operations Manager or his designated representative will arrange for the local PETROFAC representative to meet the incoming MEDEVAC helicopter in order to take responsibility for PETROFAC employees.
 6. For PETROFAC Contractor's staff - The Operations Manager will contact Contractor's representatives and request them to meet the incoming MEDEVAC helicopter in order to take responsibility for PETROFAC Contractor employees. The Operations Manager or his designated representative will also arrange for the local PETROFAC representative to meet the incoming MEDEVAC helicopter in order to assist the Contractor's representative if required.

6.2 FLOWCHART / MEDEVAC



7. ASSOCIATED DOCUMENTATION

Either use of below associated documentation or International SOS Emergency associated documentation are acceptable

7.1 MEDEVAC PATIENT FORM

7.2 MEDICAL REFERRAL

7.3 CONSENT FOR RELEASE OF INFORMATION

File: Personnel File

MEDEVAC PATIENT FORM

Date: Time: Installation:

1. NAME OF PATIENT MALE / FEMALE

2. DATE OF BIRTH NATIONALITY

3. EMPLOYING COMPANY

4. JOB

5. NATURE OF INJURY/ILLNESS

6. VITAL SIGNS

(A) COLOUR

(B) EXTENT OF BLEEDING (IF ANY)

(C) STATE OF CONSCIOUSNESS

(D) PULSE RATE

(E) BLOOD PRESSURE

(F) ANY OTHER SYMPTOMS CONSIDERED IMPORTANT

.....

7. TREATMENT/MEDICATION GIVEN

8. ALLERGIES/MEDICATION USED

9. IF MEDICAL PROBLEM, ANY PREVIOUS HISTORY OF SAME OR SIMILAR NATURE

.....

10. TYPE OF MEDICAL AID REQUIRED

11. IS X-RAY REQUIRED

12. PLEASE STATE IF OPERATION SUPERVISOR HAS SPOKEN TO DOCTOR AND IF SO, WHICH DOCTOR.....

13. IS MEDICAL ESCORT REQUIRED ON FLIGHT?

14. ACCOMMODATION?

15. AMBULANCE?

16. OTHER?

17. IF INCIDENT RELATED, GIVE BRIEF DESCRIPTION OF INCIDENT

.....

18. PATIENT'S DOCUMENTS (PASSPORT, ID, ETC.) ACCOMPANY PATIENT YES/NO

IF NO LOCATION OF THESE DOCUMENTS IS

OFFSHORE MEDIC:

OFFSHORE INSTALLATION MANAGER:

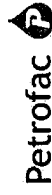
1 WERT

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REV 5

File: Personnel File

**PETROFAC OPERATIONS**

To :

MEDICAL REFERRAL**(PETROFAC Employees & PETROFAC Contractors)**

Please accept our employee Mr/Ms:

Presenting problem :

.....

.....

.....

.....

.....

.....

Vital signs: B.P :

Resp:

Pulse:

Temp:

Other:

.....

.....

.....

PETROFAC Operations agrees to accept liability for payment of all fees incurred in treating the above patient.

Note: PETROFAC Operations expects a post admission report shall be faxed or emailed within 72 hrs of admission, and further as requested by an authorised officer of PETROFAC Operations.

Signed : Offshore Installation Manager

Date :

1 WERT

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REV 5

File: Personnel File



PETROFAC OPERATIONS

CONSENT FOR RELEASE OF INFORMATION

(Petrofac & Petrofac Contractor Staff Only)

I, _____, being an employee of
_____, (Company) hereby authorise:

(Insert name of medical service provider)

it's Managers, Authorised Officers and treating Medical Practitioners to release information
pertaining to my admission and treatment.

Such authority is valid for release of such information to Petrofac Operations and its authorised
Officers only.

Signed : _____

Date : _____

Witness

Name : _____

Signature : _____

DISTRIBUTION LISTING

Copy Number		Document Holder	
Master (electronic)		BMS Administrator	
Controlled Hardcopy Distribution: Only to be used for those without BMS access or for those who require a hardcopy for emergency scenarios (e.g. Emergency Response Team)			
No.	Name	Job Title	Full Postal Address
001	HSEQ Advisor	HSEQ Advisor	Petrofac South East Asia Pte Ltd 10 th Floor, Shinawatra Tower 3, 1010 Viphavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand

ASSOCIATED DOCUMENTS

Doc No.	Document Title

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เอกสารแนบที่ 33

Thailand Typhoon Evacuation Guideline



Thailand Typhoon Evacuation Guideline

Guideline (GUI)

Document Number:
TH-GEN-HS-HS-GUI-0002
Revision R5

Published

Document Number: TH-GEN-HS-HS-GUI-0002 Rev R5
Document Title: Thailand Typhoon Evacuation Guideline

Thailand – Health, Safety, Security and Environment
Thailand Typhoon Evacuation Guideline Guideline (GUI)
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Country Oil Spill Response Plan

Thailand – Health, Safety, Security and Environment

Country Oil Spill Response Plan Part 1
(Exploration, Drilling, and Production Phases)
Manual (MAN)

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(Exploration, Drilling and Production Phases)

Manual (MAN)



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(Exploration, Drilling and Production Phases)

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Emergency Contact

THAILAND EMERGENCY DUTY ROSTER CONTACT LIST

Last updated 5-Oct-23

Duty Roster Team
Team Leader (TL)
Emergency Commander (EC)
Site Contact (SC)
Logistics (LOG)
OHSSE
Admin. Recorder (AR)
Finance (FIN)
Government Affairs Contact (GA)
Communication (COMM)
Human Capital (HC)
IT Representative (IT)
Receptionist

Name	Blue Team	M-Phone

Name	Yellow Team	M-Phone

Name	Red Team	M-Phone

Name	Pool Team	M-Phone

Key Contractors (As necessary)
Vinarco
Petrofac
UOA
EMAS
Hill+Knowlton Strategies
OMNI
BORR MIST
International SOS (ISOS)
OSCT
OSRL
IESG
FPPO PPF-003

Primary contact

Back up # 1

Back up # 2

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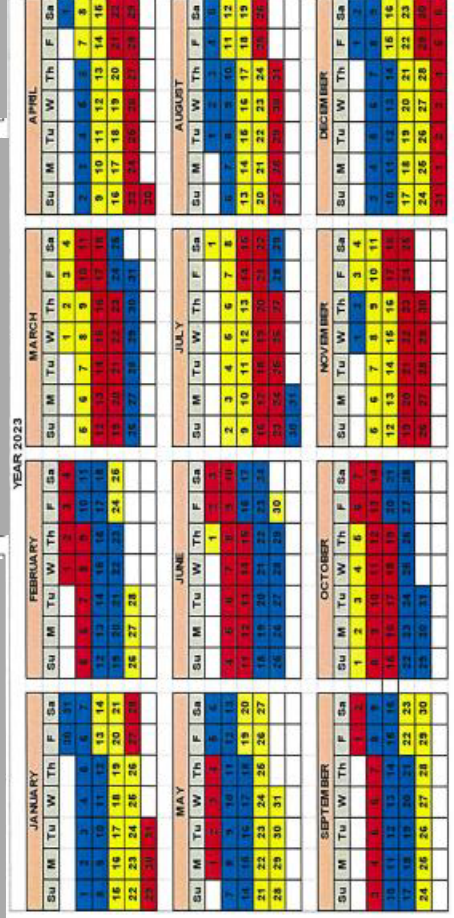
HSSE Corporate Notification:

Jasmine Offshore (EC)

Manora Offshore (EC)

Nong Yao Offshore (EC)

Joint Venture Partners:



APPENDIX E PETROFAC ENERGY EMERGENCY DUTY ROSTER CONTACT

ROSTER - Emergency Duty Manager

2024

January							February							March							April						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6					1	2	3						1	2		1	2	3	4	5	6
7	8	9	10	11	12	13	4	5	6	7	8	9	10	3	4	5	6	7	8	9	7	8	9	10	11	12	13
14	15	16	17	18	19	20	11	12	13	14	15	16	17	10	11	12	13	14	15	16	14	15	16	17	18	19	20
21	22	23	24	25	26	27	18	19	20	21	22	23	24	17	18	19	20	21	22	23	21	22	23	24	25	26	27
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														31													
May							June							July							August						
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5	6	7	8	9	10	11	2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10
12	13	14	15	16	17	18	9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17
19	20	21	22	23	24	25	16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24
26	27	28	29	30	31		23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30	31
							30																				
September							October							November							December						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7			1	2	3	4	5						1	2	1	2	3	4	5	6	7
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
29	30						27	28	29	30	31			24	25	26	27	28	29	30	29	30	31				

EST HOTLINE (66) 2-062-4929

Detail	Mobile Phone
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Rev.01 - 1 Jun 2024

เอกสารแนบที่ 36

HSSE Training Matrix 2024
และ Drill& Exercise Record 2024

2024 Emergency Response & Preparedness Exercise Plan

No.	Exercise Incident Scenarios	Number of plan	Total Completed	Emergency Response & Preparedness Exercise Plan																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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1	Search and Rescue/Man Overboard	3	5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

DRILL EVENT LOG

UNIQUE ID	INCIDENT EVENT LOG	Operation Exercise Scenario	Date	Location	IMS No.
1	Muster and function test manual alarm system.		05-Jan-24	WPA	18523
2	Fire, abandon and structural failure at WPM.		12-Jan-24	WPB / PFB2	18574
3	Muster and function test manual alarm system.		19-Jan-24	WPC	18607
4	Muster and function test manual alarm system.		26-Jan-24	BYA	18657
5	Electrical shock, injury person and medicare.		03-Feb-24	WPB / PFB2	18692
6	Oil / Gas leak.		09-Feb-24	WPC	18703
7	CR3 crew have unconscious internal vessel at WPC (DNC Shift)		15-Feb-24	WPC	18743
8	CR3 liquid cold fire injury at WPC (Day shift).		15-Feb-24	WPC	18744
9	CR3 crew have unconscious internal vessel V.1801 at WPC (DNC Shift)		15-Feb-24	WPC	18745
10	Crew failure while transfer passenger		01-Mar-24	WPA	18826
11	Man overboard		08-Mar-24	WPB / PFB2	18837
12	Fire and abandon		19-Mar-24	WPB / PFB3	18955
13	Electrical shock, CPR by AED unit and medicare		05-Apr-24	WPC	19053
14	Oil spill and CSRE test run on SC Galax		11-Apr-24	WPB, SC Galaxy	19103
15	Muster and function test manual alarm system.		19-Apr-24	BYA	19140
16	Pirates / Terrorists / Refugees / Treasurers.		26-Apr-24	WPC	19165
17	Fire, Abandon and Structural failure.		03-May-24	BYA	19207
18	Muster and function test manual alarm system.		10-May-24	WPB	19252
19	Oil and Gas leak drop to sea.		17-May-24	WPB	19270
20	Headstroke and Crane failure.		24-May-24	WPC	19294
21	Muster and function test manual alarm system		01-Jun-24	BYA	19378
22	Man overboard and rescue.		08-Jun-24	WPA	19190
23	Unconscious and structural failure.		15-Jun-24	WPC	19403
24	Unconscious Person while Working at Height by 400NXP (Rope Access Team)		29-Jun-24	PFB2	19491
25	Well blowout while HWO operate & search missing person		05-Jul-24	WPB	19540
26	Muster and function test manual alarm system		12-Jul-24	WPD	19574
27	Electrical shock, injury person and medicare.		19-Jul-24	BYA	19599
28	BEST- 340N Emergency Drill (Oil spill).		30-Jul-24	WPB	19697
29	Muster and function test manual alarm system		01-Aug-24	WPA	19717
30	Well blowout, fire and abandon while HWO operation		10-Aug-24	WPC	19774
31	Subsea pipeline leaking between WPD and WPB		16-Aug-24	WPD, WPB	19789
32	Isolation practice of HWO at WPC		23-Aug-24	WPC	19790
33	Structure failure (unknown bow contact platform, fire and abandon)		30-Aug-24	BYA	19931
34	Muster and function test manual alarm system		11-Sep-24	BYA	20002
35	Muster and function test manual alarm system		23-Sep-24	WPB / PFB2	20300
36	Electrical shock, injury person and medicare		11-Oct-24	WPA	20397
37	Oil spill and CSRE test run on SC Nata		18-Oct-24	WPC and BYA	20381
38	Muster and function test manual alarm system		25-Oct-24	WPB / PFB2	20311
39	Muster and function test manual alarm system at WPA with CTU project		30-Oct-24	WPA	20420
40	Source tender caught fire during offshore operation.		01-Nov-24	FW	

24	Helicopter crash on helideck during landing.	30-Jun-24	FPSO
25	Crew injury in Pump Room.	07-Jul-24	FPSO
26	Chemical Spill in Steering Gear Room & First Aid.	14-Jul-24	FPSO
27	ESD blowdown familiarization.	23-Jul-24	FPSO
28	Man fall down from deck crane AFT side.	28-Jul-24	FPSO
29	Casualty in FWD machinery room and First Aid.	04-Aug-24	FPSO
30	Tabletop exercise Crude oil overflows from slop tank PV valve and spills into the sea.	13-Aug-24	FPSO
31	Boiler Explosion and Fire in Engine Room.	18-Aug-24	FPSO
32	Man overboard.	25-Aug-24	FPSO
33	No.1 Boiler Explosion.	03-Sep-24	FPSO
34	Security Drill, Bomb Threat.	08-Sep-24	FPSO
35	Oil spill.	15-Sep-24	FPSO
36	Casualty handling and first aid.	22-Sep-24	FPSO
37	Fire in the L-deck laundry room.	28-Sep-24	FPSO
38	Fire in Paint Store.	06-Oct-24	FPSO
39	Chemical Spill & Injury.	13-Oct-24	FPSO
40	Oil Spill from Export Hose.	20-Oct-24	FPSO
41	Ship Abandonment.	27-Oct-24	FPSO
42	Shuttle tanker caught fire during offtake operation.	03-Nov-24	FPSO
43	Fire at Main Diesel Generator Engine / Fire in Engine room.	10-Nov-24	FPSO
44	Helicopter crash on helideck during landing.	17-Nov-24	FPSO
45	Electrical shock in Engine Room	29-Nov-24	FPSO
46	Man Overboard	06-Dec-24	FPSO
47	Pump Room Incident & Rescue	08-Dec-24	FPSO
48	Fire on Process Area & Abandonment	17-Dec-24	FPSO
49	Chemical Spill & Injury	22-Dec-24	FPSO
50	Oil spill into sea	29-Dec-24	FPSO
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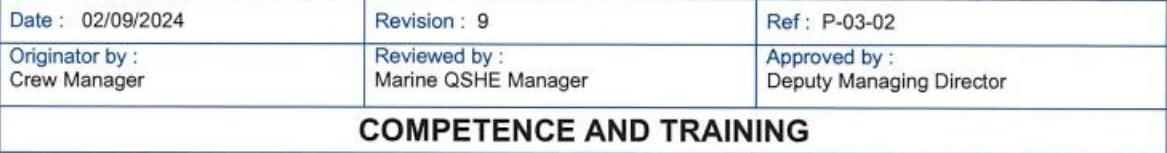
Course	Statutory - MML Arrange / Pay by Petrofac	Training Provider	Duration(Days)	Validity(Yr)	Attendee	Plan											
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Further Offshore Training (FOET)	Statutory - MML Arrange / Pay by Petrofac	TPTI-MOGIT/RelyonNuteac	2	3	20	Completed 1			Completed	Completed	Completed	Completed	Completed	Completed	Completed		
Basic Offshore Safety Induction & Emergency Training (BOSIET)		TPTI-MOGIT/RelyonNuteac	3	4	2												
Further Offshore Emergency Training (FOET)		TPTI-MOGIT/RelyonNuteac	1	4	1				Completed 1				Completed 1				
Tropical Basic Offshore Safety Induction & Emergency Training (T-BOSIET)		TPTI-MOGIT/RelyonNuteac	3	4	1				Completed 2								
Tropical Further Offshore Emergency Training (T-FOET)		TPTI-MOGIT/RelyonNuteac	1	4	1	Completed 1											
Statutory - Petrofac																	
Qualified Offshore Crane Operator Refresher (offshore)		3M	1	2	3			Completed 3									
Offshore Crane Operator Classification (offshore)		3M	1	2	3			Completed 3									
Banksman and Rigging & Slings Techniques-Refresher (offshore)		3M	1	2	1			Completed 1									
Further Offshore Helicopter Landing Officer		TPTI-MOGIT/RelyonNuteac	1.5	3	2								Completed 2				
Work at Height for Authorized Person		3M	1	2	3			2									
Work at Height for Rescuer		3M	1	2	1			1			1						
Work at Height for Authorized Person Refresher		3M	0.5	2	1						1						
Work at Height for Rescuer Refresher		3M	0.5	2	1			Completed 1									
General Operator's Certificate for GMDSS		GM School - IMO Model 1.25	6	5	1												
Confined Space Entry		NPC S&E/3M	4	5	1												
Refresher Confined Space Entry		NPC S&E/3M	0.5	5	1												
Safety Committee		Siam Safety / NPC S&E	2	Once	10						Completed 4	Completed 2	Completed 3	Completed 1	Completed 2	Completed 1	
Safety Management Level		Siam Safety / NPC S&E	2	Once	2						Completed 1	Completed 1	Completed 1	Completed 1	Completed 1	Completed 1	
Safety Management Level (ENG)		Siam Safety / NPC S&E	2	Once	1												
Safety Supervisory Level		Siam Safety / NPC S&E	2	Once	14						Completed 8	Completed 2	Completed 2	Completed 2	Completed 2	Completed 2	
Head of Safety Unit		Siam Safety / NPC S&E	5	Once	1						Completed 1	Completed 1	Completed 1	Completed 1	Completed 1	Completed 1	
Refresher Boiler Controller		NPC S&E	1	2	10			Completed 2			Completed 5	Completed 5	Completed 5	Completed 5	Completed 5	Completed 5	
Offshore Helideck Assistant		TPTI-MOGIT/RelyonNuteac	1	3	4												
Client's Mandatory																	
Dangerous Goods Regulations - Cat.12, 13, 14 and 15		UOA	1	2	8						Completed 8						
Nice to have - Petrofac																	
Advance Fire Fighting (Refresher)		GM School - IMO Model 2.03	1	5	1												
Medical First Aid (Refresher)		GM School - IMO Model 1.14	1	5	1												
Offshore Installation Manager Controlling Emergencies (OIM CE)		MOGIT	2	Once/Rec 3	7												
Major Emergency Management Initial Response (MEMIR)		MOGIT	4	Once/Rec 3	9												
Data Protection Office Advance Course		SGS	5	Once	2												
Administrative Relative Training		TBC	TBC	TBC	1												
Accountance & revenue Relative Training		TBC	TBC	TBC	2												
Certified Infrared Thermographer Level I		Infrared Training Center	4	Once	4												
Integrity Training Course (ISO 55000 - AIM) or (API 580 RBI Training)		TBC	5	Once	1												
ISO 9001:2015 Lead Auditor		SGS	5	Once	2												
PowerBI		TBC	3	Once	2												
Basic Laboratory & Relevant FPSO Laboratory		Intertek	2	Once	8												
PPF-003-O-S-1700 Safety Training Courses For Offshore Personnel																	
Client's Mandatory																	
Nice to have																	

Plan Note:

1. Old certificate or no certificate reference against with training matrix record to be agree with offshore to remove and update with existing information start from 2014.
2. Remain price to be consider of additional training in case of request
3. Training budget control including accommodation and meal (meal 500/day,accommodation 1800,4500 Baht/N) refer training announcement on April 18,2012 ** accommodation is not calculate include at the last day of training.
4. Advance Cardiovascular Life support and Basic Truma Life Support train for medical person only
5. The total number is not including transportation (Round trips)
6. cost is calculate per maximum attendee

DRILL MATRIX 2024

Week Ending	7 Jun 24	14 Jun 24	21 Jun 24	28 Jun 24	5 Jul 24	12 Jul 24	19 Jul 24	26 Jul 24	2 Aug 24	9 Aug 24	16 Aug 24	23 Aug 24	30 Aug 24	6 Sep 24	13 Sep 24	20 Sep 24	27 Sep 24	4 Oct 24	11 Oct 24	18 Oct 24	25 Oct 24	1 Nov 24	8 Nov 24	15 Nov 24	22 Nov 24	29 Nov 24	6 Dec 24	13 Dec 24	20 Dec 24	27 Dec 24	3 Jan 25	3 Jan 25	10 Jan 25	17 Jan 25	24 Jan 25	31 Jan 25	7 Feb 25	14 Feb 25	21 Feb 25	28 Feb 25	6 Mar 25	13 Mar 25	20 Mar 25	27 Mar 25	3 Apr 25	10 Apr 25	17 Apr 25	24 Apr 25	1 May 25	12 May 25	19 May 25	26 May 25	2 Jun 25	9 Jun 25	16 Jun 25	23 Jun 25	30 Jun 25	7 Jul 25	14 Jul 25	21 Jul 25	28 Jul 25	4 Aug 25	11 Aug 25	18 Aug 25	25 Aug 25	1 Sep 25	8 Sep 25	15 Sep 25	22 Sep 25	29 Sep 25	6 Oct 25	13 Oct 25	20 Oct 25	27 Oct 25	3 Nov 25	10 Nov 25	17 Nov 25	24 Nov 25	1 Dec 25	8 Dec 25	15 Dec 25	22 Dec 25	29 Dec 25	5 Jan 26	12 Jan 26	19 Jan 26	26 Jan 26	2 Feb 26	9 Feb 26	16 Feb 26	23 Feb 26	2 Mar 26	9 Mar 26	16 Mar 26	23 Mar 26	30 Mar 26	6 Apr 26	13 Apr 26	20 Apr 26	27 Apr 26	4 May 26	11 May 26	18 May 26	25 May 26	1 Jun 26	8 Jun 26	15 Jun 26	22 Jun 26	29 Jun 26	6 Jul 26	13 Jul 26	20 Jul 26	27 Jul 26	3 Aug 26	10 Aug 26	17 Aug 26	24 Aug 26	31 Aug 26	7 Sep 26	14 Sep 26	21 Sep 26	28 Sep 26	5 Oct 26	12 Oct 26	19 Oct 26	26 Oct 26	2 Nov 26	9 Nov 26	16 Nov 26	23 Nov 26	30 Nov 26	7 Dec 26	14 Dec 26	21 Dec 26	28 Dec 26	4 Jan 27	11 Jan 27	18 Jan 27	25 Jan 27	1 Feb 27	8 Feb 27	15 Feb 27	22 Feb 27	1 Mar 27	8 Mar 27	15 Mar 27	22 Mar 27	29 Mar 27	5 Apr 27	12 Apr 27	19 Apr 27	26 Apr 27	3 May 27	10 May 27	17 May 27	24 May 27	31 May 27	7 Jun 27	14 Jun 27	21 Jun 27	28 Jun 27	5 Jul 27	12 Jul 27	19 Jul 27	26 Jul 27	2 Aug 27	9 Aug 27	16 Aug 27	23 Aug 27	30 Aug 27	6 Sep 27	13 Sep 27	20 Sep 27	27 Sep 27	4 Oct 27	11 Oct 27	18 Oct 27	25 Oct 27	1 Nov 27	8 Nov 27	15 Nov 27	22 Nov 27	29 Nov 27	6 Dec 27	13 Dec 27	20 Dec 27	27 Dec 27	3 Jan 28	10 Jan 28	17 Jan 28	24 Jan 28	31 Jan 28	7 Feb 28	14 Feb 28	21 Feb 28	28 Feb 28	6 Mar 28	13 Mar 28	20 Mar 28	27 Mar 28	3 Apr 28	10 Apr 28	17 Apr 28	24 Apr 28	1 May 28	8 May 28	15 May 28	22 May 28	29 May 28	5 Jun 28	12 Jun 28	19 Jun 28	26 Jun 28	3 Jul 28	10 Jul 28	17 Jul 28	24 Jul 28	31 Jul 28	7 Aug 28	14 Aug 28	21 Aug 28	28 Aug 28	4 Sep 28	11 Sep 28	18 Sep 28	25 Sep 28	2 Oct 28	9 Oct 28	16 Oct 28	23 Oct 28	30 Oct 28	6 Nov 28	13 Nov 28	20 Nov 28	27 Nov 28	4 Dec 28	11 Dec 28	18 Dec 28	25 Dec 28	1 Jan 29	8 Jan 29	15 Jan 29	22 Jan 29	29 Jan 29	5 Feb 29	12 Feb 29	19 Feb 29	26 Feb 29	5 Mar 29	12 Mar 29	19 Mar 29	26 Mar 29	2 Apr 29	9 Apr 29	16 Apr 29	23 Apr 29	30 Apr 29	7 May 29	14 May 29	21 May 29	28 May 29	4 Jun 29	11 Jun 29	18 Jun 29	25 Jun 29	2 Jul 29	9 Jul 29	16 Jul 29	23 Jul 29	30 Jul 29	6 Aug 29	13 Aug 29	20 Aug 29	27 Aug 29	3 Sep 29	10 Sep 29	17 Sep 29	24 Sep 29	1 Oct 29	8 Oct 29	15 Oct 29	22 Oct 29	29 Oct 29	5 Nov 29	12 Nov 29	19 Nov 29	26 Nov 29	3 Dec 29	10 Dec 29	17 Dec 29	24 Dec 29	31 Dec 29	7 Jan 30	14 Jan 30	21 Jan 30	28 Jan 30	4 Feb 30	11 Feb 30	18 Feb 30	25 Feb 30	4 Mar 30	11 Mar 30	18 Mar 30	25 Mar 30	1 Apr 30	8 Apr 30	15 Apr 30	22 Apr 30	29 Apr 30	6 May 30	13 May 30	20 May 30	27 May 30	3 Jun 30	10 Jun 30	17 Jun 30	24 Jun 30	1 Jul 30	8 Jul 30	15 Jul 30	22 Jul 30	29 Jul 30	5 Aug 30	12 Aug 30	19 Aug 30	26 Aug 30	2 Sep 30	9 Sep 30	16 Sep 30	23 Sep 30	30 Sep 30	7 Oct 30	14 Oct 30	21 Oct 30	28 Oct 30	4 Nov 30	11 Nov 30	18 Nov 30	25 Nov 30	2 Dec 30	9 Dec 30	16 Dec 30	23 Dec 30	30 Dec 30	6 Jan 31	13 Jan 31	20 Jan 31	27 Jan 31	3 Feb 31	10 Feb 31	17 Feb 31	24 Feb 31	3 Mar 31	10 Mar 31	17 Mar 31	24 Mar 31	31 Mar 31	7 Apr 31	14 Apr 31	21 Apr 31	28 Apr 31	5 May 31	12 May 31	19 May 31	26 May 31	2 Jun 31	9 Jun 31	16 Jun 31	23 Jun 31	30 Jun 31	7 Jul 31	14 Jul 31	21 Jul 31	28 Jul 31	4 Aug 31	11 Aug 31	18 Aug 31	25 Aug 31	1 Sep 31	8 Sep 31	15 Sep 31	22 Sep 31	29 Sep 31	6 Oct 31	13 Oct 31	20 Oct 31	27 Oct 31	3 Nov 31	10 Nov 31	17 Nov 31	24 Nov 31	1 Dec 31	8 Dec 31	15 Dec 31	22 Dec 31	29 Dec 31	5 Jan 32	12 Jan 32	19 Jan 32	26 Jan 32	2 Feb 32	9 Feb 32	16 Feb 32	23 Feb 32	2 Mar 32	9 Mar 32	16 Mar 32	23 Mar 32	30 Mar 32	6 Apr 32	13 Apr 32	20 Apr 32	27 Apr 32	4 May 32	11 May 32	18 May 32	25 May 32	1 Jun 32	8 Jun 32	15 Jun 32	22 Jun 32	29 Jun 32	6 Jul 32	13 Jul 32	20 Jul 32	27 Jul 32	3 Aug 32	10 Aug 32	17 Aug 32	24 Aug 32	31 Aug 32	7 Sep 32	14 Sep 32	21 Sep 32	28 Sep 32	5 Oct 32	12 Oct 32	19 Oct 32	26 Oct 32	2 Nov 32	9 Nov 32	16 Nov 32	23 Nov 32	30 Nov 32	7 Dec 32	14 Dec 32	21 Dec 32	28 Dec 32	4 Jan 33	11 Jan 33	18 Jan 33	25 Jan 33	1 Feb 33	8 Feb 33	15 Feb 33	22 Feb 33	1 Mar 33	8 Mar 33	15 Mar 33	22 Mar 33	29 Mar 33	5 Apr 33	12 Apr 33	19 Apr 33	26 Apr 33	3 May 33	10 May 33	17 May 33	24 May 33	31 May 33	7 Jun 33	14 Jun 33	21 Jun 33	28 Jun 33	5 Jul 33	12 Jul 33	19 Jul 33	26 Jul 33	2 Aug 33	9 Aug 33	16 Aug 33	23 Aug 33	30 Aug 33	6 Sep 33	13 Sep 33	20 Sep 33	27 Sep 33	4 Oct 33	11 Oct 33	18 Oct 33	25 Oct 33	1 Nov 33	8 Nov 33	15 Nov 33	22 Nov 33	29 Nov 33	6 Dec 33	13 Dec 33	20 Dec 33	27 Dec 33	3 Jan 34	10 Jan 34	17 Jan 34	24 Jan 34	31 Jan 34	7 Feb 34	14 Feb 34	21 Feb 34	28 Feb 34	5 Mar 34	12 Mar 34	19 Mar 34	26 Mar 34	2 Apr 34	9 Apr 34	16 Apr 34	23 Apr 34	30 Apr 34	7 May 34	14 May 34	21 May 34	28 May 34	4 Jun 34	11 Jun 34	18 Jun 34	25 Jun 34	2 Jul 34	9 Jul 34	16 Jul 34	23 Jul 34	30 Jul 34	6 Aug 34	13 Aug 34	20 Aug 34	27 Aug 34	3 Sep 34	10 Sep 34	17 Sep 34	24 Sep 34	1 Oct 34	8 Oct 34	15 Oct 34	22 Oct 34	29 Oct 34	5 Nov 34	12 Nov 34	19 Nov 34	26 Nov 34	3 Dec 34	10 Dec 34	17 Dec 34	24 Dec 34	31 Dec 34	7 Jan 35	14 Jan 35	21 Jan 35	28 Jan 35	4 Feb 35	11 Feb 35	18 Feb 35	25 Feb 35	4 Mar 35	11 Mar 35	18 Mar 35	25 Mar 35	1 Apr 35	8 Apr 35	15 Apr 35	22 Apr 35	29 Apr 35	6 May 35	13 May 35	20 May 35	27 May 35	3 Jun 35	10 Jun 35	17 Jun 35	24 Jun 35	1 Jul 35	8 Jul 35	15 Jul 35	22 Jul 35	29 Jul 35	5 Aug 35	12 Aug 35	19 Aug 35	26 Aug 35	2 Sep 35	9 Sep 35	16 Sep 35	23 Sep 35	30 Sep 35	7 Oct 35	14 Oct 35	21 Oct 35	28 Oct 35	4 Nov 35	11 Nov 35	18 Nov 35	25 Nov 35	2 Dec 35	9 Dec 35	16 Dec 35	23 Dec 35	30 Dec 35	6 Jan 36	13 Jan 36	20 Jan 36	27 Jan 36	3 Feb 36	10 Feb 36	17 Feb 36	24 Feb 36	3 Mar 36	10 Mar 36	17 Mar 36	24 Mar 36	31 Mar 36	7 Apr 36	14 Apr 36	21 Apr 36	28 Apr 36	5 May 36	12 May 36	19 May 36	26 May 36	2 Jun 36	9 Jun 36	16 Jun 36	23 Jun 36	30 Jun 36	7 Jul 36	14 Jul 36	21 Jul 36	28 Jul 36	4 Aug 36	11 Aug 36	18 Aug 36	25 Aug 36	1 Sep 36	8 Sep 36	15 Sep 36	22 Sep 36	29 Sep 36	6 Oct 36	13 Oct 36	20 Oct 36	27 Oct 36	3 Nov 36	10 Nov 36	17 Nov 36	24 Nov 36	1 Dec 36	8 Dec 36	15 Dec 36	22 Dec 36	29 Dec 36	5 Jan 37	12 Jan 37	19 Jan 37	26 Jan 37	2 Feb 37	9 Feb 37	16 Feb 37	23 Feb 37	2 Mar 37	9 Mar 37	16 Mar 37	23 Mar 37	30 Mar 37	6 Apr 37	13 Apr 37	20 Apr 37	27 Apr 37	4 May 37	11 May 37	18 May 37	25 May 37	1 Jun 37	8 Jun 37	15 Jun 37	22 Jun 37	29 Jun 37	6 Jul 37	13 Jul 37	20 Jul 37	27 Jul 37	3 Aug 37	10 Aug 37	17 Aug 37	24 Aug 37	31 Aug 37	7 Sep 37	14 Sep 37	21 Sep 37	28 Sep 37	5 Oct 37	12 Oct 37	19 Oct 37	26 Oct 37	2 Nov 37	9 Nov 37	16 Nov 37	23 Nov 37	30 Nov 37	7 Dec 37	14 Dec 37	21 Dec 37	28 Dec 37	4 Jan 38	11 Jan 38	18 Jan 38	25 Jan 38	1 Feb 38	8 Feb 38	15 Feb 38	22 Feb 38	1 Mar 38	8 Mar 38	15 Mar 38	22 Mar 38	29 Mar 38	5 Apr 38	12 Apr 38	19 Apr 38	26 Apr 38	3 May 38	10 May 38	17 May 38	24 May 38	31 May 38	7 Jun 38	14 Jun 38	21 Jun 38	28 Jun 38	5 Jul 38	12 Jul 38	19 Jul 38	26 Jul 38	2 Aug 38	9 Aug 38	16 Aug 38	23 Aug 38	30 Aug 38	6 Sep 38	13 Sep 38	20 Sep 38	27 Sep 38	4 Oct 38	11 Oct 38	18 Oct 38	25 Oct 38	1 Nov 38	8 Nov 38	15 Nov 38	22 Nov 38	29 Nov 38	6 Dec 38	13 Dec 38	20 Dec 38	27 Dec 38	3 Jan 39	10 Jan 39	17 Jan 39	24 Jan 39	31 Jan 39	7 Feb 39	14 Feb 39	21 Feb 39	28 Feb 39	5 Mar 39	12 Mar 39	19 Mar 39	26 Mar 39	2 Apr 39	9 Apr 39	16 Apr 39	23 Apr 39	30 Apr 39	7 May 39	14 May 39	21 May 39	28 May 39	4 Jun 39	11 Jun 39	18 Jun 39	25 Jun 39	2 Jul 39	9 Jul 39	16 Jul 39	23 Jul 39	30 Jul 39	6 Aug 39	13 Aug 39	20 Aug 39	27 Aug 39	3 Sep 39	10 Sep 39	17 Sep 39	24 Sep 39	1 Oct 39	8 Oct 39	15 Oct 39	22 Oct 39	29 Oct 39	5 Nov 39	12 Nov 39	19 Nov 39	26 Nov 39	3 Dec 39	10 Dec 39	17 Dec 39	24 Dec 39	31 Dec 39	7 Jan 40	14 Jan 40	21 Jan 40	28 Jan 40	4 Feb 40	11 Feb 40	18 Feb 40	25 Feb 40	4 Mar 40	11 Mar 40	18 Mar 40	25 Mar 40	1 Apr 40	8 Apr 40	15 Apr 40	22 Apr 40	29 Apr 40	6 May 40	13 May 40	20 May 40	27 May 40	3 Jun 40	10 Jun 40	17 Jun 40	24 Jun 40	1 Jul 40	8 Jul 40	15 Jul 40	22 Jul 40	29 Jul 40	5 Aug 40	12 Aug 40	19 Aug 40	26 Aug 40	2 Sep 40	9 Sep 40	16 Sep 40	23 Sep 40	30 Sep 40	7 Oct 40	14 Oct 40	21 Oct 40	28 Oct 40	4 Nov 40	11 Nov 40	18 Nov 40	25 Nov 40	2 Dec 40	9 Dec 40	16 Dec 40	23 Dec 40	30 Dec 40	6 Jan 41	13 Jan 41	20 Jan 41	27 Jan 41	3 Feb 41	10 Feb 41	17 Feb 41	24 Feb 41	3 Mar 41	10 Mar 41	17 Mar 41	24 Mar 41	31 Mar 41	7 Apr 41	14 Apr 41	21 Apr 41	28 Apr 41	5 May 41	12 May 41	19 May 41	26 May 41	2 Jun 41	9 Jun 41	16 Jun 41	23 Jun 41	30 Jun 41	7 Jul 41	14 Jul 41	21 Jul 41	28 Jul 41	4 Aug 41	11 Aug 41	18 Aug 41	25 Aug 41	1 Sep 41	8 Sep 41	15 Sep 41	22 Sep 41	29 Sep 41	6 Oct 41	13 Oct 41	20 Oct 41	27 Oct 41	3 Nov 41	10 Nov 41	17 Nov 41	24 Nov 41	1 Dec 41	8 Dec 41	15 Dec 41	22 Dec 41	29 Dec 41	5 Jan 42	12 Jan 42	19 Jan 42	26 Jan 42	2 Feb 42	9 Feb 42	16 Feb 42	23 Feb 42	2 Mar 42	9 Mar 42	16 Mar 42	23 Mar 42	30 Mar 42	6 Apr 42	13 Apr 42	20 Apr 42	27 Apr 42	4 May 42	11 May 42	18 May 42	25 May 42	1 Jun 42	8 Jun 42	15 Jun 42	22 Jun 42	29 Jun 42	6 Jul 42	13 Jul 42	20 Jul 42	27 Jul 42	3 Aug 42	10 Aug 42	17 Aug 42	24 Aug 42	31 Aug 42	7 Sep 42	14 Sep 42	21 Sep 42	28 Sep 42	5 Oct 42	12 Oct 42	19 Oct 42	26 Oct 42	2 Nov 42	9 Nov 42	16 Nov 42	23 Nov 42	30 Nov 42	7 Dec 42	14 Dec 42	21 Dec 42	28 Dec 42	4 Jan 43	11 Jan 43	18 Jan 43	25 Jan 43	1 Feb 43	8 Feb 43	15 Feb 43	22 Feb 43	1 Mar 43	8 Mar 43	15 Mar 43	22 Mar 43	29 Mar 43	5 Apr 43	12 Apr 43	19 Apr 43	26 Apr 43	3 May 43	10 May 43	17 May 43	24 May 43	31 May 43	7 Jun 43	14 Jun 43	21 Jun 43	28 Jun 43	5 Jul 43	12 Jul 43	19 Jul 43	26 Jul 43	2 Aug 43	9 Aug 43	16 Aug 43	23 Aug 43	30 Aug 43	6 Sep 43	13 Sep 43	20 Sep 43	27 Sep 43	4 Oct 43	11 Oct 43	18 Oct 43	25 Oct 43	1 Nov 43	8 Nov 43	15 Nov 43	22 Nov 43	29 Nov 43	6 Dec 43	13 Dec 43	20 Dec 43	27 Dec 43	3 Jan 44	10 Jan 44	17 Jan 44	24 Jan 44	31 Jan 44	7 Feb 44	14 Feb 44	21 Feb 44	28 Feb 44	5 Mar 44	12 Mar 44	19 Mar 44	26 Mar 44	2 Apr 44	9 Apr 44	16 Apr 44	23 Apr 44	30 Apr 44	7 May 44	14 May 44	21 May 44	28 May 44	4 Jun 44	11 Jun 44	18 Jun 44	25 Jun 44	2 Jul 44	9 Jul 44	16 Jul 44	23 Jul 44	30 Jul 44	6 Aug 44	13 Aug 44	20 Aug 44	27 Aug 44	3 Sep 44	10 Sep 44	17 Sep 44	24 Sep 44	1 Oct 44	8 Oct 44	15 Oct 44	22 Oct 44	29 Oct 44	5 Nov 44	12 Nov 44	19 Nov 44	26 Nov 44	3 Dec 44	10 Dec 44	17 Dec 44	24 Dec 44	31 Dec 44	7 Jan 45	14 Jan 45	21 Jan 45	28 Jan 45	4 Feb 45	11 Feb 45	18 Feb 45	25 Feb 45	4 Mar 45	11 Mar 45	18 Mar 45	25 Mar 45	1 Apr 45	8 Apr 45	15 Apr 45	22 Apr 45	29 Apr 45	6 May 45	13 May 45	20 May 45	27 May 45	3 Jun 45	10 Jun 45	17 Jun 45	24 Jun 45	1 Jul 45	8 Jul 45	15 Jul 45	22 Jul 45	29 Jul 45	5 Aug 45	12 Aug 45	19 Aug 45	26 Aug 45	2 Sep 45	9 Sep 45	16 Sep 45	23 Sep 45	30 Sep 45	7 Oct 45	14 Oct 45	21 Oct 45	28 Oct 45	4 Nov 45	11 Nov 45	18 Nov 45	25 Nov 45	2 Dec 45	9 Dec 45	16 Dec 45	23 Dec 45	30 Dec 45	6 Jan 46	13 Jan 46	20 Jan 46	27 Jan 46	3 Feb 46	10 Feb 46	17 Feb 46	24 Feb 46	3 Mar 46	10 Mar 46	17 Mar 46	24 Mar 46	31 Mar 46	7 Apr 46	14 Apr 46	21 Apr 46	28 Apr 46	5 May 46	12 May 46	19 May 46	26 May 46	2 Jun 46	9
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[illegible]



Date : 01/09/2018

Revision : 04

Ref : F-11-QAS/04

ISM DRILL & EXERCISE SCHEDULE

Schedule for year : 2024

กำหนดการฝึกประจำปี : 2567

Vessel Name : _____

Revised.03

Title (หัวข้อการฝึก)	Month (เดือน)	Type of vessel			Interval	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		AHTS PSV/AV	CrewB	Towing		(ม.ก)	(ก.พ)	(มี.ค)	(เม.ย)	(พ.ค)	(มิ.ย)	(ก.ค)	(ส.ค)	(ก.ย)	(ต.ค)	(พ.ย)	(ธ.ค)
1. Fire & Explosion on board (Accom, Bridge, E/R, On cargo deck)		X	X	X	1 M	4	22	6	16	30	25	25	14	13	17	12	19
2. Abandon ship		X	X	X	1 M	5	22	6	16	30	25	25	14	13	17	12	19
3. Oil spills		X	X	X	1 M	11	22	6	16	22	25	25	15	08	15	13	20
4. Noxious Liquids Substances spills (Chemical) (if any)		X			1 M	10	11	22	2	9	22	21	15	08	15	13	20
5. Rescue from Enclosed Space		X	X	X	2 M	-		-		9		21		22		20	
6. Man Overboard & Search & Rescue + Rescue Boat drill Maneuvers in the Water		X	X	X	2 M		8			22			18			17	
7. Steering Gear Failure		X	X	X	3 M			22			22			26			22
8. Emergency Contingency Drill and Ship/Shore Exercise + MEDIA response																	
Stop Work Authority (SWA)		X	X	X	1 M	12	4	3	6	5	8	8	12	22	21	17	22
Personal's Injury, Sickness (Medevac)		X	X	X	3 M	15			6	TCVN	9				21		
Generator Failure (Black out)		X	X	X	3 M		11			5			24			20	
Bridge Controls Failure		X	X	X	1 Y		18				SCGL2						
Collision + Flooding		X	X	X	1 Y		SCWT										
Emergency Breakaway from berth		X	X	X	1 Y								24				
Emergency towing		X	X	X	1 Y				13						TC89		
Main Engine Failure + Grounding + Salvage		X	X	X	1 Y							17					
Gyro Compass Failure		X	X	X	1 Y										21	SNST	
8. Additional for specific contractual assignment																	
Typhoon Evacuation (if any)		X	X	X	3 M	16			13			17			21		
DP Failure (if any)		X			1 Y												
Anchor Handling System Failure (if any)		X		X	3 M			3			22			26			22
Emergency Towing Release (if any)		X		X	2 M		4			9			24			22	

Date of announcement (ประกาศ ณ วันที่) : 24th May 2024Note : * **For Drill** : "All vessels" shall conduct "Emergency Contingency Drills" that are displayed by Highlighted Box* **For Exercise** : "The Designated Vessel" that displayed 4 letter abbreviation, should be conducted "LIVE" table top exercise with Company's ERT.

Prepared By: _____

Approved By: _____

ISM DRILL & EXERCISE SCHEDULE

Schedule for year : 2025

กำหนดการฝึกประจำปี : 2568

Vessel Name :

Title (หัวข้อการฝึก)	Month (เดือน)	Type of vessel			Interval	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		AHTS PSV/AV	CrewB.	Towing		ม.ค	ก.พ	มี.ค	เม.ย	พ.ค	มิ.ย	ก.ค	ส.ค	ก.ย	ต.ถ	พ.ย	ธ.ค
1. Fire & Explosion on board (Accom, Bridge, E/R, On cargo deck)		X	X	X	1 M												
2. Abandon ship		X	X	X	1 M												
3. Oil spills		X	X	X	1 M												
4. Noxious Liquids Substances spills (Chemical) (if any)		X			1 M												
5. Rescue from Enclosed Space		X	X	X	2 M												
6. Man Overboard & Search & Rescue + Rescue Boat drill Maneuvers in the Water		X	X	X	2 M												
7. Steering Gear Failure		X	X	X	3 M												
8. Emergency Contingency Drill and Ship/Shore Exercise + MEDIA response																	
Stop Work Authority (SWA)		X	X	X	1 M												
Personal's Injury,Sickness (Medevac)		X	X	X	3 M												
Generator Failure (Black out)		X	X	X	3 M												
Bridge Controls Failure		X	X	X	1 Y												
Collision + Flooding		X	X	X	1 Y												
Emergency Breakaway from berth		X	X	X	1 Y												
Emergency towing		X	X	X	1 Y												
Main Engine Failure + Grounding + Salvage		X	X	X	1 Y												
Gyro Compass Failure		X	X	X	1 Y												
9. Additional for specific contractual assignment																	
Typhoon Evacuation (if any)		X	X	X	3 M												
DP Failure (if any)		X			1 Y												
Anchor Handling System Failure (if any)		X		X	3 M												
Emergency Towing Release (if any)		X		X	2 M												

Date of announcement (ประกาศ ณ วันที่) : 2nd January 2025

Revised. 00

Note ; * **For Drill** : "All vessels" shall conduct " Emergency Contingency Drills " that are displayed by Highlighted Box

* **For Exercise** : "The Designated Vessel" that displayed 4 letter abbreviation, should be conducted "LIVE" table top exercise with Company's ERT.

Prepared By :

Approved By :



SC MANAGEMENT CO.,LTD.

Ship Security Plan

SSP - F - 2601

SECURITY DRILL PLAN

ตารางการฝึกปฏิบัติประจำสัปดาห์ และการฝึกซ้อมระหว่างเรือกับบริษัทฯ

Vessel name / ชื่อเรือ :		2025											
Schedule for year / กำหนดการฝึกประจำปี		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Security Threats / ประเภทของภัยคุกคาม													
Bomb threat and/or Hoaxus		D			D			D			D E= TC89		
ความเสียหายหรือถูกทำลายของเรือหรือท่าเรือ													
Terrorism (Piracy and Hijack and Sabotage)		D			D			D			D		
การก่อการร้าย (โจรสลัด และการชิงยึดเรือ และการก่อวินาศกรรม)													
Vessel under Attack		D			D			D			D		
การบุกรุก หรือการจู่โจมเรือ (โดยวิธีต่าง)													
Vessel being Pursued			D			D			D			D	
เมื่อเรือถูกไล่ติดตาม													
Slowways			D			D			D			D	
การลดความเร็วของเรือ													
Crew insubordination			D			D			D			D	
การก่อความไม่สงบโดยคนประจำเรือ													
Discovery of Unauthorized weapons, munitions, drugs and other contraband smuggling													
ตรวจพบการลักลอบขนยาสูบ, วัตถุระเบิด, ยาเสพติด หรือสิ่งของผิดกฎหมาย													
Criminal offence (Non-terrorist related)													
การก่ออาชญากรรม (ซึ่งไม่เกี่ยวข้องกับการก่อการร้าย)													
Evacuation			D			D			D			D	
การอพยพหรือออกจากเรือ													
Ship Security Alert System (SSAS) Testing													
การทดสอบระบบเตือนภัยตามปกติของเรือ													
Remark(s) หมายเหตุ :													

Revised:00

- 1) T = Training >> should be conducted at least once every THREE (3) months or within ONE (1) week of the change. (Comprehensive and/or Demonstration elements of plans)
คือ การฝึกซ้อมเป็นประจำอย่างน้อยทุก ๆ 3 เดือน / หรือภายใน 1 สัปดาห์ เมื่อมีการเปลี่ยนแปลงมากกว่า 25% (อสังหาริมทรัพย์และ/หรือการฝึกซ้อมของแผน)
- 2) D = Drills >> should be conducted at least ONCE every THREE (3) months or within ONE (1) week of the change. (Individual test elements of the plan for each Security Threat)
คือ การฝึกปฏิบัติเป็นประจำอย่างน้อยทุก ๆ 3 เดือน / หรือภายใน 1 สัปดาห์ เมื่อมีการเปลี่ยนแปลงมากกว่า 25% (ทดสอบ และทดลองการประจำสถานี ตามหน้าที่ที่ได้รับมอบหมายไว้ในแผนต่าง ๆ)
- 3) E = Exercises >> should be carried out at least ONCE each calendar year with no more than eighteen (18) months between the exercises (Communications, Coordinations, Resource availability and Responses)
คือ การฝึกซ้อมร่วมกับเจ้าหน้าที่รักษาความปลอดภัยประจำเรือ (CSO) / เจ้าหน้าที่รักษาความปลอดภัยของเรือ (SSO) อย่างน้อย 1 ครั้งต่อปี (PFSO) และไม่เกิน 18 เดือน นับจากครั้งสุดท้าย
- 4) Testing >> The Master should ensure this system is effective perform, when needs, by regularly testing with all parties concerned at least ONCE a year.
(Minimum, but not limit to, the first is Flag's Marine Security (MARSEC), the others is company's CSO(S) Records of communication testing shall be kept and maintained in place.)
- (*) Change is the case that more than 25% of the ship's personnel has been changed - การเปลี่ยนแปลง คือ การเปลี่ยนแปลงจำนวนคนประจำเรือมากกว่าร้อยละ 25

Approved by

Acknowledged by

เอกสารแนบที่ 37

Safety Equipment Inspection Record

Safety Equipment Inspection Record of BYA Platform

[illegible]

SAFETY & EMERGENCY EQUIPMENT WEEKLY TEST RECORD

No.	DESCRIPTION	DATE	REMARK
1	EMERGENCY FIRE PUMP	22.12.24	SATISFACTORY
2	EMERGENCY GENERATOR	22.12.24	SATISFACTORY
3	EMERGENCY AIR COMPRESSOR	22.12.24	SATISFACTORY
4	E/R, P/P RM & FWD DELUGE P/P RM BLIGRE HIGH LEVEL ALARM	22.12.24	SATISFACTORY
5	No.1 LIFEBOAT ENGINE AND LIGHTINGS (PORT-SIDE)	22.12.24	SATISFACTORY
6	No.2 LIFEBOAT ENGINE AND LIGHTINGS (STARBOARD-SIDE)	22.12.24	SATISFACTORY
7	No.3 LIFEBOAT ENGINE AND LIGHTINGS (PORT-SIDE)	22.12.24	SATISFACTORY
8	EMERGENCY BATTERIES.	22.12.24	SATISFACTORY
9	EMERGENCY BATTERIES.	22.12.24	SATISFACTORY
10	CARGO PUMP EMERGENCY STOP	22.12.24	SATISFACTORY
11	DELUGE SYSTEM AUTO CUT-IN TEST	22.12.24	SATISFACTORY

FURTHER REMARK & MAINTENANCE DETAILS:

Emcy fire pump running test = Fuel 90% / Lube sump tank 3/4 / Governor oil 3/4 / HYD oil 70% / Cooling water 3/4
Emcy air compressor = Fuel 80% / Lube oil 3/4 / Cooling water 3/4
No.1 Lift boat engine = Fuel 80% / Lube oil 3/4 / Cooling water 3/4
No.2 Lift boat engine = water cooling circulation pump abnormal noise and water seep from shaft seal
No.3 Lift boat engine = Fuel 85% / Cooling water 3/4

CHECKS PERFORMED BY:

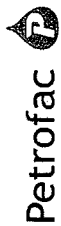
SAFETY & EMERGENCY EQUIPMENT WEEKLY TEST RECORD

No.	DESCRIPTION	DATE	REMARK
1	FIRE DAMPER & FUNNEL DAMPERS	22.12.24	SATISFACTORY
2	E/R, FWD DELUGE P/P RM & STEERING GEAR ROOM BLIGE PUMP	22.12.24	SATISFACTORY
3	PUMP ROOM CHECK & TEST BILGE PUMP	22.12.24	SATISFACTORY
4	B. A. COMPRESSOR	22.12.24	SATISFACTORY
5	RESCUE BOAT	22.12.24	SATISFACTORY
6	BLACKSTART	22.12.24	SATISFACTORY

FURTHER REMARK & MAINTENANCE DETAILS:

Blackstrat = Fuel 80% / Lube oil 3/4 / Cooling water 3/4
Blackstrat parameter = Battery 27V / Fuel press. 368 kpa. / Lube oil press. 635kpa.
Rescue boat(P)engine = Fuel 100% / Lube oil 3/4 / Cooling water good condition

ACKNOWLEDGED BY:



FPF-003

SAFETY & EMERGENCY EQUIPMENT WEEKLY TEST RECORD

No.	DESCRIPTION	DATE	REMARK
1	CO2 ALARM TEST & AIR BLOW		
2	CARGO PUMP EMERGENCY STOP	22.12.2024	SATISFACTORY
3	AUXILIARY ENGINE SAFETY TEST		
4	BOILER SAFETY TEST		
5	DELUGE SYSTEM AUTO CUT-IN TEST	22.12.2024	SATISFACTORY
6	TURBO GENERATOR SAFETY TEST		


FURTHER REMARK & MAINTENANCE DETAILS:

- All functional tests of Deluge system are normally.

- Functional test of COPT. Emergency stop It is satisfactory.

CHECKS PERFORMED BY:













	Date : 02/09/2024	Revision : 10	Ref : P.09.05
	Originator by : SHE Division Manager	Reviewed by : Marine OSHE Manager	Approved by : Deputy Managing Director
	PERSONAL PROTECTIVE EQUIPMENT		








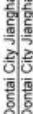












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SC GROUP	Date : 11/11/2021		Revision : 1		Ref :	
	SC GROUP		LSA & FFA INVENTORY			

Dontai City Jianghai (JHY-II)	1415334	1	Cabin No.301		01/11/2021
Hwayan(HYJ-A3)	17030801	1	Cabin No.302		01/11/2021
Hwayan(HYJ-A3)	17030835	1			01/11/2021
Hwayan(HYJ-A3)	17030803	1			01/11/2021
Hwayan(HYJ-A3)	17030802	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415288	1	Cabin No.303		01/11/2021
Dontai City Jianghai (JHY-II)	1415249	1	Cabin No.304		01/11/2021
Dontai City Jianghai (JHY-II)	1415269	1	Cabin No.308		01/11/2021
Dontai City Jianghai (JHY-II)	1415291	1	Cabin No.309		01/11/2021
Hwayan(HYJ-A3)	17030805	1			01/11/2021
Hwayan(HYJ-A3)	17030804	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415294	1	Cabin No.311		01/11/2021
Dontai City Jianghai (JHY-II)	1415381	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415307	1	Cabin No.312		01/11/2021
Dontai City Jianghai (JHY-II)	1415263	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415990	1	Cabin No.314		01/11/2021
Dontai City Jianghai (JHY-II)	1415246	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415297	1	Cabin No.201		01/11/2021
Dontai City Jianghai (JHY-II)	1415268	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415267	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415237	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415285	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415292	1			01/11/2021
Hwayan(HYJ-A3)	17030831	1	Cabin No.202		01/11/2021
Hwayan(HYJ-A3)	17030832	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415282	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415295	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415261	1	Cabin No.203		01/11/2021
Dontai City Jianghai (JHY-II)	1415266	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415309	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415244	1	Cabin No.204		01/11/2021
Dontai City Jianghai (JHY-II)	1415238	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415293	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415305	1			01/11/2021

SC GROUP	Date : 11/11/2021		Revision : 1		Ref :	
	SC GROUP		LSA & FFA INVENTORY			

Dontai City Jianghai (JHY-II)	1415301	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415300	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415303	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415281	1	Cabin No.207		01/11/2021
Dontai City Jianghai (JHY-II)	1415285	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415388	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415302	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415299	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415310	1			01/11/2021
Hwayan(HYJ-A3)	17030826	1	Cabin No.210		01/11/2021
Hwayan(HYJ-A3)	17030827	1			01/11/2021
Hwayan(HYJ-A3)	17030834	1			01/11/2021
Hwayan(HYJ-A3)	17030828	1			01/11/2021
Hwayan(HYJ-A3)	17030820	1			01/11/2021
Hwayan(HYJ-A3)	17030853	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415270	1	Cabin No.211		01/11/2021
Dontai City Jianghai (JHY-II)	1415243	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415206	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415385	1			01/11/2021
Hwayan(HYJ-A3)	17030830	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415308	1	Cabin No.212		01/11/2021
Dontai City Jianghai (JHY-II)	1415283	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415845	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415382	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415389	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415247	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415242	1			01/11/2021
Dontai City Jianghai (JHY-II)	1415304	1	Cabin No.213		01/11/2021
Dontai City Jianghai (JHY-II)	1415280	1			01/11/2021
Immersion Suits (Exemption)	54	2	Wheel House		01/11/2021
		2	Engine Control Room		01/11/2021
		2	Mess Room		01/11/2021
		1	Cabin No.301		01/11/2021
		2	Cabin No.302		01/11/2021
		1	Cabin No.303		01/11/2021
		1	Cabin No.304		01/11/2021
		2	Cabin No.308		01/11/2021
		1	Cabin No.309		01/11/2021
		2	Cabin No.311		01/11/2021
		2	Cabin No.312		01/11/2021
		2	Cabin No.314		01/11/2021
		4	Cabin No.201		01/11/2021
		4	Cabin No.202		01/11/2021
		4	Cabin No.203		01/11/2021
		4	Cabin No.204		01/11/2021
		4	Cabin No.207		01/11/2021
		4	Cabin No.210		01/11/2021
		4	Cabin No.211		01/11/2021
		4	Cabin No.212		01/11/2021
		2	Cabin No.213		01/11/2021
6	Line Throwing Appliances 1 Set	4	Bridge Locker (Stbd)		30/11/2025
7	Parachute 12 PCS (Bridge)	12	Bridge Locker (Port)		01/11/2025
8	Hand flare 12 PCS (Bridge)	12	Bridge Locker (Port)		01/11/2025
9	Smoke Signals 12 PCS (Bridge)	12	Bridge Locker (Port)		30/09/2025



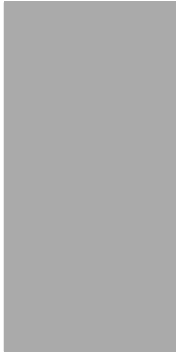
Date : 11/11/2021

Revision : 1

Ref :

LSA & FFA INVENTORY

10	GNDSS wakle-takle (2-way VHF)							
	NSR (NTW-1000)	TW18396 5	1	Bridge	01/01/22	20/01/22		Batt 5945 03/2027
	NSR (NTW-1000)	TW18396 6	1	Bridge	01/01/22	20/01/22		Batt 5945 03/2027
	NSR (NTW-1000)	TW18396 7	1	Bridge	01/01/22	20/01/22		Batt 5945 03/2027
11	EPIRB	EB 197967	1	Bridge Wing (Sbd)	13/03/2024	13/03/2024		
	EPIRB battery					01/07/2024		
	EPIRB HRU		1	Bridge Wing (Sbd)		01/07/2024		
12	SART Cert. No.1	RT191669	1	Bridge (Port)	23/09/2024	23/09/2024		Batt 5945 03/2027
	SART Cert. No.2	RT191670	1	Bridge (Sbd)	23/09/2024	23/09/2024		Batt 5945 03/2027
13	International Shore Connection		1 set					
	.1 Connection flange		1					
	.2 head Bolts		6					
	.3 brass Nuts		6					
	.4 Washers (ring)		12					
	.5 Spanners		2					
	.6 Gasket		1					



เอกสารแนบที่ 38

ตัวอย่างโปรแกรมการตรวจสอบสุขภาพ
และสรุปผลการตรวจสอบสุขภาพประจำปี พ.ศ. 2567

เอกสารแนบที่ 39

สรุปผลการประเมินผลกระทบทางสุขภาพของผู้ปฏิบัติงาน

Hazard Rating

The relevant Hazard Rating categories are:

Hazard Rating	Definition (Consequence Category: Harm to people)
1 (Negligible)	Occupational accident resulting in FALC (First Aid Cases)
2 (Minor)	Occupational accident or security breach resulting in a MTC (Medical Treatment Cases) or RWC (Resuscit Work Cases)
3 (Moderate)	Occupational accident or security breach resulting in single LTI (Lost Time Incident) and / or serious reportable illness
4 (Major)	Occupational accident or security breach resulting in a single heavy / knapping and / or multiple LTI and / or multiple serious reportable illnesses
5 (Catastrophic)	Occupational accident or security breach resulting in multiple fatalities / kidnappings and / or acute or chronic terminal illness

Control Chart

When the Hazard and Exposure Rating are contained in a Control Chart, they provide a visual representation of the urgency of action required to strengthen controls.

Hazard Rating	Exposure Rating →				
	Very Low (a)	Low (b)	Medium (c)	High (d)	Very High (e)
1	No Immediate Action Required				
2					
3	Third Priority		Third Priority	Second Priority	First Priority
4			Second Priority	First Priority	For Action
5	Third Priority		Third Priority	Second Priority	First Priority
Exposure Band			0.5 x oel - 1 x oel	1 x oel - 2 x oel	> 2 x oel

Health Risk Assessment Matrix, Control Chart

Exposure Rating

The exposure rating categories are:

Exposure Rating (Based on assessed effectiveness of controls in place)	Exposure Band	Definition
(a)	< 0.1 x OEL	Exposure are negligible
(b)	< 0.5 x OEL	Exposure are controlled well below OEL and likely to remain so in accordance with standards
(c)	> 0.5 - 1 x OEL	Exposure are currently controlled below OEL, to meet standards but control may be reliant on less robust measures such as personal protective equipment
(d)	> OEL	Exposure are adequately controlled to meet standards and consistently regularly exceed OEL
(e)	>> OEL	Exposure are excessive and will almost certainly result in health damage to person exposed

OEL: Occupational Exposure Limit - is an upper limit on the acceptable concentration of a hazardous substance in workplace air for a particular material or class of materials. It is typically set by competent national authorities and enforced by legislation to protect occupational safety and health. It can be a tool in risk assessment and in the management of activities involving handling of dangerous substances.

The exposure Rating should take into account measures used to reduce exposure via all relevant routes, e.g., skin contact, breathing effects on mucous-membrane system, etc. dependent on the hazard. It is easiest to assign a particular Exposure Rating category if measurement data are available, since that data can be compared directly against the OEL. Exposure measurement data are only one indicator of adequacy of control and are not always readily available. The Exposure Rating category should also consider the reliability of the existing measures, including engineering methods, procedures, and personal protective equipment, to reduce exposure. This is done by comparing the controls with standard of good practice using experience and judgment.

Index	SEG or Job titles	Main Tasks Undertaken by SEG	Hazardous Agent	Control Measures	Severity (Pre)	Likelihood (Pre)	Risk Score (Pre)	Risk Ranking (Pre)	Addition Control Measures	Severity (Post)	Likelihood (Post)	Risk Score (Post)	Risk Ranking (Post)	SEG
1	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Heat & UV Radiation	<ul style="list-style-type: none"> > Engineering controls such as surface insulation, sun shades > Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management > Awareness and Education programs > Welfare facilities, portable water, temporary welfare facilities / water stations, > PPE such as coveralls, appropriate PPE 	4	b	4b	Medium	<ul style="list-style-type: none"> > Provide electrolyte oral powder, beverage, sunscreen > Limited working time / Break & rest period > Periodical Emergency response and rescue Drill > Medical First Aid Training > MEDEVAC Plan and SOS consult services 	4	b	4b	Medium	SEG-1
2	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Noise	<ul style="list-style-type: none"> > Awareness and Education > Appropriate PPE - noise protection > Regular monitoring of noise exposure > Health Surveillance of identified high risk workers 	4	b	4b	Medium	<ul style="list-style-type: none"> > Annual Workplace Monitoring - Workplace noise level (Leq 12hr), Personnel Noise Dose > Noise Contour Map > Annual Hearing test 	4	b	4b	Medium	SEG-1
3	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Vibration	<ul style="list-style-type: none"> > Limited exposure to hazard > Specification of the tools and equipment > Proper operations and maintenance of equipment, equipment calibration 	3	a	3a	Low		3	a	3a	Low	SEG-1
4	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	H2S (5 to 10 ppm)	<ul style="list-style-type: none"> > Engineering controls is Site design General Ventilation Alarms and personal H2S monitors, > Procedures such PTW, Emergency Procedures, Routine gas / leak testing PPE 	2	a	2a	Low		2	a	2a	Low	SEG-1
5	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	BTX (principally Benzene)	<ul style="list-style-type: none"> > Engineering controls: closed collection system, double seals and no venting, specially designed sampling points > Gas testing and detectors > Health surveillance & Exposure monitoring > PPE - gloves, OV masks 	4	b	4b	Medium	> Annual Benzene in urine test	4	b	4b	Medium	SEG-1
6	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Lubricants & Greases	<ul style="list-style-type: none"> > Procedure for hazardous material and waste management > Welfare facilities / personal hygiene > PPE 	2	b	2b	Low		2	b	2b	Low	SEG-1
7	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Total inhalable sulphur dust	<ul style="list-style-type: none"> > Engineering controls such as bag filters > PPE - Dust masks Good Housekeeping practices > Administrative: Good Housekeeping practices 	2	b	2b	Low		2	b	2b	Low	SEG-1
8	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / Ab / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Sulphur Dioxide [SO2]	<ul style="list-style-type: none"> > Engineering design of stack to ensure dispersion, flare out alarms automatic reigniting system Continuous monitoring of in-stack concentrations, ambient air quality monitoring, wind socks 	3	a	3a	Low		3	a	3a	Low	SEG-1

9	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / AB / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Manual Handling	<ul style="list-style-type: none"> Procedure for manual handling, engineering controls - storage area design to minimize storage of heavy items, up high or down low Handling and lifting equipment Awareness and education 	2	b	2b	Low	2	b	2b	Low	SEG-1
10	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / AB / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	DSE & Workstations	<ul style="list-style-type: none"> Engineering controls: review of Site design human factors Rest and exercises Awareness and education 	3	b	3b	Medium	3	b	3b	Medium	SEG-1
11	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / AB / Deck Crew)	Working outside and near hot surface Working near noisy area Working inside, climbing up and down stairs / ladders Sampling, draining, preparing for maintenance Housekeeping loading and unloading general Housekeeping Moving equipment and material	Stress	<ul style="list-style-type: none"> Rest and exercises, Recreation activities / team building Awareness and education 	4	b	4b	Medium	4	b	4b	Medium	SEG-1
12	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / AB / Deck Crew)	Working in the site, Sampling, draining, preparing for maintenance	Process Chemicals	<ul style="list-style-type: none"> Various procedures for minimizing exposure, PTW, waste disposal Proper storage (drainage / ventilation / containment / signage / labelling / entry control / limited supplies retained on site) PPE Adequate maintenance, Regular / routine monitoring 	3	b	3b	Medium	3	b	3b	Medium	SEG-1
13	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / AB / Deck Crew)	Working in air conditioned areas Showering, fire hoses / fire systems	Legionella; Mould, Fung	<ul style="list-style-type: none"> PPE Regular / routine monitoring 	3	a	3a	Low	3	a	3a	Low	SEG-1
14	SEG-1: Operators & Operating Assistants (Bosun / Crane Opr. Crane Operator / AB / Deck Crew)	Working in air conditioned areas Showering, fire hoses / fire systems	Sewage	<ul style="list-style-type: none"> Routine operating procedures Training and awareness PPE Personal hygiene Engineering controls such as surface insulation, sun shades Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management Awareness and Education programs Welfare facilities, portable water, temporary welfare facilities / water stations, PPE such as coveralls, appropriate PPE 	4	b	4b	Medium	4	b	4b	Medium	SEG-1
15	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities;	Heat & UV Radiation	<ul style="list-style-type: none"> Engineering controls such as surface insulation, sun shades Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management Awareness and Education programs Welfare facilities, portable water, temporary welfare facilities / water stations, PPE such as coveralls, appropriate PPE 	4	b	4b	Medium	4	b	4b	Medium	SEG-2
16	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities;	Noise	<ul style="list-style-type: none"> Awareness and Education Appropriate PPE Regular monitoring of noise exposure Health Surveillance of identified high risk workers 	4	b	4b	Medium	4	b	4b	Medium	SEG-2
17	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities;	Vibration	<ul style="list-style-type: none"> Limited exposure to hazard Specification of the tools and equipment Proper operations and maintenance of equipment, equipment calibration Engineering controls is Site design General Ventilation Alarms and personal H2S monitors, Procedures such PTW, Emergency Procedures, Routine gas / leak testing PPE 	3	b	3b	Medium	3	b	3b	Medium	SEG-2
18	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities;	H2S (5 to 10 ppm)	<ul style="list-style-type: none"> Engineering controls is Site design General Ventilation Alarms and personal H2S monitors, Procedures such PTW, Emergency Procedures, Routine gas / leak testing PPE 	2	a	2a	Low	3	b	3b	Medium	SEG-2
19	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities;	BTX (principally Benzene)	<ul style="list-style-type: none"> Engineering controls: closed collection system, double seals and no venting, specially designed sampling points gas testing and detectors Health surveillance & Exposure monitoring PPE - gloves, OV masks 	4	a	4a	Low	4	a	4a	Low	SEG-2

20	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Lubricants & Greases	<ul style="list-style-type: none"> Procedure for hazardous material and waste management Welfare facilities / personal hygiene PPE 	2	b	2b	Low	2	b	3b	Low	SEG-2
21	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Total inhalable sulphur dust	<ul style="list-style-type: none"> Engineering controls such as bag filters PPE - Dust masks Good Housekeeping practices Administrative: Good Housekeeping practices 	2	c	2c	Medium	2	c	2c	Medium	SEG-2
22	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Sulphur Dioxide [SO ₂]	<ul style="list-style-type: none"> Engineering design of stack to ensure dispersion, flare out alarms automatic reigniting system Continuous monitoring of in-stack concentrations, ambient air quality monitoring, wind socks 	3	a	3a	Low	3	a	3a	Low	SEG-2
23	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Manual Handling	<ul style="list-style-type: none"> Procedure for manual handling, engineering controls - storage area design to minimize storage of heavy items, up high or down low Handling and lifting equipment Awareness and education 	2	b	2b	Low	2	b	3b	Low	SEG-2
24	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Process Chemicals	<ul style="list-style-type: none"> PTW, waste disposal Proper storage (drainage / ventilation / containment / signage / labelling / entry control / limited supplies retained on site) Training and awareness PPE 	3	b	3b	Medium	3	b	3b	Medium	SEG-2
25	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	DSE & Workstations	<ul style="list-style-type: none"> Engineering controls, human factors review of plant Rest and exercises Awareness and education 	3	b	3b	Medium	3	b	3b	Medium	SEG-2
26	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Stress	<ul style="list-style-type: none"> Rest and exercises, Recreation activities / team building Awareness and education 	4	b	4b	Medium	4	b	4b	Medium	SEG-2
27	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Legionella, Mould, Fungi	<ul style="list-style-type: none"> Adequate maintenance, Regular / routine monitoring Routine operating procedures Training and awareness PPE Personal hygiene 	3	a	3a	Low	3	a	3a	Low	SEG-2
28	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Sewage	<ul style="list-style-type: none"> Engineering controls-designated welding bay, ventilation system Respiratory protection and appropriate PPE 	4	b	4b	Medium	4	b	4b	Medium	SEG-2
29	SEG-2: Technicians and Assistants (Electrical / Mechanical/Instrument)	Conducting Planned and unplanned maintenance activities.	Welding Fumes (including metal constituents)	<ul style="list-style-type: none"> Engineering controls - Well- designed equipment Rest and exercises, Recreation activities / team building Awareness and education Adequate maintenance, Regular / routine monitoring 	3	a	3a	Low	3	a	3a	Low	SEG-2
30	SEG-3: Control Room Operators	Observation of site & Utilities Parameters; Dealing with site Outings and Alarms, etc.	DSE & Workstations	<ul style="list-style-type: none"> Engineering controls - Well- designed equipment Rest and exercises, Recreation activities / team building Awareness and education Adequate maintenance, Regular / routine monitoring 	3	b	3b	Medium	3	b	3b	Medium	SEG-3
31	SEG-3: Control Room Operators	Observation of site & Utilities Parameters; Dealing with site Outings and Alarms, etc.	Stress	<ul style="list-style-type: none"> Rest and exercises, Recreation activities / team building Awareness and education Adequate maintenance, Regular / routine monitoring 	4	b	4b	Medium	4	b	4b	Medium	SEG-3
32	SEG-3: Control Room Operators	Observation of site & Utilities Parameters; Dealing with site Outings and Alarms, etc.	Legionella, Mould, Fungi	<ul style="list-style-type: none"> Engineering controls such as surface insulation, sun shades Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management Awareness and Education programs Welfare facilities, portable water, temporary welfare facilities / water stations, PPE such as coveralls, appropriate PPE 	3	a	3a	Low	3	a	3a	Low	SEG-3
33	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Heat & UV Radiation	<ul style="list-style-type: none"> Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management Awareness and Education programs Welfare facilities, portable water, temporary welfare facilities / water stations, PPE such as coveralls, appropriate PPE 	4	b	4b	Medium	4	b	4b	Medium	SEG-4
34	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Noise	<ul style="list-style-type: none"> Awareness and Education Appropriate PPE Regular monitoring of noise exposure Health Surveillance of identified high risk workers 	4	a	4a	Low	4	a	4a	Low	SEG-4

35	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Vibration	<ul style="list-style-type: none"> ↔ Limited exposure to hazard ↔ Specification of the tools and equipment ↔ Proper operations and maintenance of equipment, equipment calibration 	3	a	3a	Low	3	a	3a	Low	SEG-4
36	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	H2S (5 to 10 ppm)	<ul style="list-style-type: none"> ↔ Engineering controls is Site design ↔ General Ventilation Alarms and personal H2S monitors, ↔ Procedures such as PTW, Emergency Procedures, Routine gas / leak testing PPE 	2	a	2a	Low	3	a	3a	Low	SEG-4
37	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	BTX (principally Benzene)	<ul style="list-style-type: none"> ↔ Engineering controls: closed collection system, double seals and no venting, specially designed sampling points ↔ gas testing and detectors ↔ Health surveillance & Exposure monitoring ↔ PPE - gloves, OV masks ↔ Procedure for hazardous material and waste management ↔ Welfare facilities / personal hygiene ↔ PPE 	4	a	4a	Low	4	a	4a	Low	SEG-4
38	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Lubricants & Greases	<ul style="list-style-type: none"> ↔ Engineering controls such as bag filters ↔ PPE - Dust masks Good Housekeeping practices ↔ Administrative: Good Housekeeping practices 	2	a	2a	Low	2	a	2a	Low	SEG-4
39	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Total Inhalable sulphur dust	<ul style="list-style-type: none"> ↔ Engineering controls such as bag filters ↔ PPE - Dust masks Good Housekeeping practices ↔ Administrative: Good Housekeeping practices 	2	c	2c	Medium	2	c	2c	Medium	SEG-4
40	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Sulphur Dioxide [SO2]	<ul style="list-style-type: none"> ↔ Engineering design of stack to ensure dispersion, flare out alarms automatic reigniting system ↔ Continuous monitoring of in-stack concentrations, ambient air quality monitoring, wind socks 	3	a	3a	Low	3	a	3a	Low	SEG-4
41	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Process Chemicals	<ul style="list-style-type: none"> ↔ Various procedures for minimising exposure, PTW, waste disposal ↔ Proper storage (drainage / ventilation / containment / signage / labelling / entry control / limited supplies retained on site) ↔ Training and awareness ↔ PPE 	3	b	3b	Medium	3	b	3b	Medium	SEG-4
42	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	DSE & Workstations	<ul style="list-style-type: none"> ↔ Engineering controls: review of Site design ↔ human factors Rest and exercises ↔ Awareness and education 	3	b	3b	Medium	3	b	3b	Medium	SEG-4
43	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Stress	<ul style="list-style-type: none"> ↔ Rest and exercises, Recreation activities / team building ↔ Awareness and education 	4	a	4a	Low	4	a	4a	Low	SEG-4
44	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Legionella; Mould, Fungi	<ul style="list-style-type: none"> ↔ Adequate maintenance, ↔ Regular / routine monitoring 	3	a	3a	Low	3	a	3a	Low	SEG-4
45	SEG-4: Lab Technicians	Sampling well streams, materials, process chemicals, and products equipment	Xylene, Hexane	<ul style="list-style-type: none"> ↔ Engineering controls: closed collection system, double seals and no venting, specially designed sampling points ↔ gas testing and detectors ↔ Health surveillance & Exposure monitoring ↔ PPE - gloves, OV masks 	2	a	2a	Low	2	a	2a	Low	SEG-4
46	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	Working in airconditioned areas, fire hoses / fire systems Supervision of routine and non-routine activities Site inspections, planning, technical support,	Heat & UV Radiation	<ul style="list-style-type: none"> ↔ Engineering controls such as surface insulation, sun shades ↔ Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management ↔ Awareness and Education programs ↔ Welfare facilities, portable water, temporary welfare facilities / water stations, ↔ PPE such as coveralls, appropriate PPE 	4	a	4a	Low	4	a	4a	Low	SEG-5
47	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	Working in airconditioned areas, fire hoses / fire systems Supervision of routine and non-routine activities Site inspections, planning, technical support,	Noise	<ul style="list-style-type: none"> ↔ Awareness and Education ↔ Appropriate PPE ↔ Regular monitoring of noise exposure ↔ Health Surveillance of identified high risk workers 	4	a	4a	Low	4	a	4a	Low	SEG-5

48	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	Working in airconditioned areas, fire hoses / fire systems Supervision of routine and non-routine activities Site inspections, planning, technical support,	H2S (5 to 10 ppm)	<ul style="list-style-type: none"> Engineering controls is Site design General Ventilation Alarms and personal H2S monitors, Procedures such PTW, Emergency Procedures, Routine gas / leak testing PPE 	2	a	2a	Low	3	a	3a	Low	SEG-5
49	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	Working in airconditioned areas, fire hoses / fire systems Supervision of routine and non-routine activities Site inspections, planning, technical support,	Total inhalable sulphur dust	<ul style="list-style-type: none"> Engineering controls such as bag filters, design of stack to ensure dispersion Continuous monitoring of in-stack concentrations, ambient air quality monitoring PPE - Dust masks Good Housekeeping practices Administrative: Good Housekeeping practices 	2	b	2b	Low	2	b	2b	Low	SEG-5
50	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	General Office Work	DSE & Workstations	<ul style="list-style-type: none"> Engineering controls: review of Site design human factors Rest and exercises Awareness and education 	3	b	3b	Medium	3	b	3b	Medium	SEG-5
51	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	General Office Work	Stress	<ul style="list-style-type: none"> Rest and exercises, Recreation activities / team building Awareness and education 	4	b	4b	Medium	4	b	4b	Medium	SEG-5
52	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	Working in air-conditioned areas Showering, fire hoses / fire systems	Legionella, Mould, Fungi	<ul style="list-style-type: none"> Adequate maintenance, Regular / routine monitoring 	3	a	3a	Low	3	a	3a	Low	SEG-5
53	SEG-5: OIM, Supervisors and Team leads (mechanical, electrical, instrument, process)	Working in airconditioned areas, fire hoses / fire systems Supervision of routine and non-routine activities Site inspections, planning, technical support,	BTX (principally Benzene)	<ul style="list-style-type: none"> Engineering controls: closed collection system, double seals and no venting, specially designed sampling points gas testing and detectors Health surveillance & Exposure monitoring PPE - gloves, DV masks 	4	a	4a	Low	4	a	4a	Low	SEG-5
54	SEG-6: BKK office Team	Office work, office support, cleaning, document control, training	Manual Handling	<ul style="list-style-type: none"> Handling and lifting equipment Procedure for manual handling, Awareness and education 	2	a	2a	Low	2	a	2a	Low	SEG-6
55	SEG-6: BKK office Team	Office work, office support, cleaning, document control, training	DSE & Workstations	<ul style="list-style-type: none"> Engineering controls Rest and exercises Awareness and education Survey and questionnaire 	3	b	3b	Medium	3	b	3b	Medium	SEG-6
56	SEG-6: BKK office Team	Office work, office support, cleaning, document control, training	Stress	<ul style="list-style-type: none"> Buddy system Rest and exercises, Recreation activities / team building Awareness and education Adequate maintenance, Regular / routine monitoring 	3	b	3b	Medium	3	b	3b	Medium	SEG-6
57	SEG-6: BKK office Team	Office work, office support, cleaning, document control, training	Legionella, Mould, Fungi	<ul style="list-style-type: none"> Engineering controls such as surface insulation, sun shades Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management Awareness and Education programs Welfare facilities, portable water, temporary welfare facilities / water stations, PPE such as coveralls, appropriate PPE 	3	a	3a	Low	3	a	3a	Low	SEG-6
58	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	Heat & UV radiation	<ul style="list-style-type: none"> Engineering controls such as surface insulation, sun shades Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management Awareness and Education programs Welfare facilities, portable water, temporary welfare facilities / water stations, PPE such as coveralls, appropriate PPE 	4	a	4a	Low	4	a	4a	Low	SEG-7
59	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	Noise	<ul style="list-style-type: none"> Engineering controls is site design has specified low level (Leq-12hr) Awareness and Education Appropriate PPE Regular monitoring of noise exposure Health Surveillance of identified high risk workers 	4	a	4a	Low	4	a	4a	Low	SEG-7
60	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	Lubricants & Greases	<ul style="list-style-type: none"> Procedure for hazardous material and waste management Welfare facilities / personal hygiene PPE 	2	a	2a	Low	2	a	2a	Low	SEG-7
61	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	Manual Handling	<ul style="list-style-type: none"> Handling and lifting equipment Procedure for manual handling, Awareness and education Lifting Equipment 	2	b	2b	Low	2	b	2b	Low	SEG-7

62	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	DSE & Workstations	<ul style="list-style-type: none"> <> Engineering controls <> Rest and exercises <> Awareness and education 	3	a	3a	Low	3	a	3a	Low	SEG-7
63	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	Process Chemicals	<ul style="list-style-type: none"> <> Chemical handling procedures, MSDS, Procedure for hazardous material and waste management <> Ventilation, hygiene standards <> PPE - gloves, OV masks, <> Health surveillance & Exposure monitoring Welfare facilities 	3	b	3b	Medium	3	b	3b	Medium	SEG-7
64	SEG-7: Material Control	Stock inventory, receipt of goods, inventory control	Legionella; Mould, Fungi	<ul style="list-style-type: none"> <> Adequate maintenance, <> Regular / routine monitoring 	3	a	3a	Low	3	a	3a	Low	SEG-7
65	SEG-8: HSE Personnel	Supervision of routine and non-routine activities Site inspections, planning, technical support, Site monitoring and inspections	Heat & UV Radiation	<ul style="list-style-type: none"> <> Engineering controls such as surface insulation, sun shades <> Procedural and administrative control such as PTW, controls on operators work time / scheduling of work tasks, Heat stress management <> Awareness and Education programs <> Welfare facilities, portable water, temporary welfare facilities / water stations, <> PPE such as coveralls, appropriate PPE 	4	b	4b	Medium	4	b	4b	Medium	SEG-8
66	SEG-8: HSE Personnel	Supervision of routine and non-routine activities Site inspections, planning, technical support, Site monitoring and inspections	Noise	<ul style="list-style-type: none"> <> Engineering controls is site design has specified low <> Awareness and Education <> Appropriate PPE <> Regular monitoring of noise exposure <> Health Surveillance of identified high risk workers 	4	a	4a	Low	4	a	4a	Low	SEG-8
67	SEG-8: HSE Personnel	General Office Work	DSE & Workstations	<ul style="list-style-type: none"> <> Engineering controls, human factors review of plant <> Rest and exercises <> Awareness and education 	3	b	3b	Medium	3	b	3b	Medium	SEG-8
68	SEG-8: HSE Personnel	General Office Work	Stress	<ul style="list-style-type: none"> <> Fatigue policy Rest and exercises, Recreation activities / team building <> Awareness and education <> Adequate maintenance, <> Regular / routine monitoring 	4	b	4b	Medium	4	b	4b	Medium	SEG-8
69	SEG-8: HSE Personnel	General Office Work	Legionella; Mould, Fungi		3	a	3a	Low	3	a	3a	Low	SEG-8