

ภาคผนวก จ

อาชีพอนามัย ความปลอดภัยและสิ่งแวดล้อม



ภาคผนวก จ-1
มาตรการปฏิบัติการกรณีเกิดเหตุฉุกเฉิน



ระยะดำเนินการขุดเจาะ



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Emergency Respond plan and Emergency Respond flowchart	
preparedness and effectively cooperate with the clients, partners and local government authorities to cope with the unexpected incidents.	协同应对意外事件。
1.3.4 Adhere to the principle of HSE training and drill to improve professional qualification. Strengthen the training and emergency drill to enhance comprehensive ability of self rescue, mutual rescue and coping with various incidents.	1.3.4 坚持培训演练，提高素质的原则。加强培训演练工作，提高全体员工自救、互救和应对各类事件的综合能力。
1.3.5 Adhere to the principle of relying on the client and the win-win cooperation. Obey the command of the client's supervisor after the occurrence of the accident or incident, except that the command may endanger the person's safety or cause significant property damage.	1.3.5 坚持依靠甲方、合作共赢的原则。事故发生后要服从甲方监督的指挥。但如甲方监督的指令有可能危及人员安全或造成重大财产损失时可拒绝执行。
1.4 Prerequisite for Activation of the Emergency Response Plan 1.4 应急启动条件	
1.4.1 If the local governmental authorities or superior organizations have activated their emergency response plans, the project should activate its plan accordingly.	1.4.1 所在国家政府机构或上级组织已启动应急预案的，项目部应相应启动本项目的应急预案；
1.4.2 In case that one of the following accidents or incidents occurs at rig site, the corresponding emergency response plan should be activated and the accident / incident be reported to the superiors as required.	1.4.2 现场发生以下事故事件时，项目现场启动应急预案，并按规定上报。
- Out of Control Blowout; - H ₂ S Leakage; - Fire Incident; - Personal Injury and Illness; - Environment Pollution Incident; - Road Traffic Accident; - Natural Disaster; - Public Health Incident; - Public Security Incident; - Other accidents or incidents.	- 井喷失控事故; - 硫化氢气体泄漏事故; - 火灾事故; - 人员受伤/生病事件; - 环境污染事件; - 道路交通事故; - 自然灾害事件; - 公共卫生事件; - 公共安全事件; - 其他事故事件。

1 General		1 总则	
1.1 Purpose		1.1 目的	
The purpose of this guideline is to guide staffs at drilling projects to cope with various accidents or incidents occurred at rig site during operation. Each drilling project should revise and implement this guideline in accordance with actual condition at rig site.		为指导钻井项目人员正确地应对井场作业期间发生的各种事故和突发事件，特制定本指南。各钻井项目应在本指南的基础上，根据现场实际情况修订使用。	
Generally, the client's emergency response plan should be implemented as per stipulations in the contract if such plan is provided. However, in case that the client does not provide its emergency plan, this guideline can be used as a guide for making actual emergency response plan for the drilling project.		一般情况下，如果甲方有应急预案，则应按合同要求执行甲方的预案。如果甲方未提供预案的，本指南可指导钻井项目编写应急预案。	
1.2 Basis		1.2 依据	
The guideline is formulated on the basis of the following systems: SINOPEC SERVICE HSE Management System; SINOPEC SERVICE Emergency Response Plan for Major Accident / Incident.		本指南编制依据以下制度： 《中国石化集团国际石油工程有限公司健康、安全和环境管理体系》； 《中国石化集团国际石油工程公司重特大事件应急预案》。	
1.3 Principles for Emergency Work		1.3 应急工作原则	
1.3.1 Adhere to the principle of people the first and harm reduction, give top priority on protection of lives and health of staffs and local residents, adopt positive measures to reduce injury and casualty as much as possible. The priority order of protection should be first the people, and then environment, property and work progress.		1.3.1 坚持以人为本、减少危害的原则。把保障员工和公众的生命和健康作为首要任务，采取积极措施，最大限度地减少人员伤亡。保护对象的优先顺序为：人、环境、财产、工作进度。	
1.3.2 Adhere to the principle of centralized leadership and line responsibility. Project manager and rig manager should be responsible for establishing the emergency response mechanism at work site and defining emergency responsibility for each position.		1.3.2 坚持统一领导、分级负责的原则。项目经理、平台经理负责建立健全项目现场应急机制，确定岗位应急职责。	
1.3.3 Adhere to the principle of sharing resources and team work. Make necessary emergency		1.3.3 坚持资源共享、协同应对的原则。做好必要的应急准备，与甲方、合作者及所在国家政府机构有效合作，	

Emergency Respond plan and Emergency Respond flowchart	
1.5 Alarm Signals	
1.5.1 Alarm Devices	
Alarm devices at rig site: air horn (at driller's console and mud tanks) and manual horn. Alarm device at camp site: manual horn.	
1.5.2 Alarm Signals	
Alarm signals can be divided into three types, long siren, short siren and continuous siren. The long siren is 60s, the short siren is 6s, the interval between any two sirens is 3s, and the continuous siren means the uninterrupted ringing for a long time. - Alarm signal for well kick: One long siren; - Alarm signal for first aid: One short siren and one long siren; - Alarm signal for H ₂ S leakage: Two short sirens and one long siren; - Alarm signal for fire: Three short sirens and one long siren; - Alarm signal for emergency evacuation: Continuous siren.	
2 Organization and Responsibility	
If the project department and rig site locate at two different places, the emergency organization should include both emergency response team for the project and emergency response team for rig crew.	
2.2 Emergency Response Team for the Project	
Leader: Project Manager Deputy Leader: Deputy Project Manager Members: The managers or superintendents from engineering, HSE, mechanical, administration, procurement and financial departments.	
Responsibility: - Organize and manage the project emergency accidents / incidents; - Establish and maintain the project emergency response plan; - Supervise and guide the rig crew emergency team in routine emergency management; - Send officers to the accident/incident site to	
1.5 报警信号	
1.5.1 报警装置	
井场的报警装置有：气喇叭（司控台上、泥浆罐上）和手动喇叭。 营地的报警装置有：手动喇叭。	
1.5.2 报警信号	
报警信号分为三种长、短、长鸣。长为 60s，短为 6s，任何两声之间间隔 3s，长鸣为不间断发出报警信号； - 井涌时报警信号为：一长； - 急救时报警信号为：一短一长； - 硫化氢泄漏时报警信号为：两短一长； - 火灾时报警信号为：三短一长； - 紧急撤离时报警信号为：不间断长鸣	
2 组织机构及职责	
按项目管理部门和现场不在一地的情况，项目应急组织机构分为项目应急领导小组和钻井队应急领导小组。	
2.1 项目应急领导小组	
组长：项目经理 副组长：项目副经理 成员：工程、HSE、机动、行政、采办、财务经理或主管	
职责： - 负责项目内应急事故/事件的组织领导； - 制订和维护项目的应急预案； - 监督、指导钻井队应急组织的日常应急管理； - 向事故/事件现场派出人员组织和协调现场应急抢	

organize and coordinate the emergency rescue work;

- Issue orders for commencing project operation and rescue operation;

- Report to the superior emergency command center about the emergency rescue situation and progress;

- Provide relevant information to Chinese embassy in local country as well as the client and partners to seek for support from external resources;

- Report to local governmental authorities about the accident as per stipulations in the contract (usually the client is responsible for the reporting);

- Contact medical treatment units and allocate project resources;

- Provide emergency support to the employees during their business trip;

- Organize emergency evacuation.

险;

- 负责下达项目工程施工及抢险作业指令;

- 向上级应急指挥中心汇报应急抢险情况及进度;

- 向中国驻所在国大使馆、甲方及合作方提供相关信息, 寻求外部资源的支持;

- 按合同规定向所在国政府机构汇报(一般由甲方负责汇报);

- 负责联系医疗救治单位和项目资源的调配;

- 对项目人员差旅途中的突发事件提供应急支持;

- 组织应急撤离。

2.2 Emergency Response Team at Rig Site

Leader: Rig Manager

Members: Tool-pusher, HSE officer, engineer, mechanic, electrician, camp manager, rig-crew doctor, etc.

Responsibility:

- Organize and manage the emergency accident / incident at rig site;
- Formulate and maintain the emergency response plan at rig site;
- Organize the training on emergency response plan and perform the routine emergency drills;
- Take immediate response measures to the accident occurred and try as much as possible to avoid the injury and casualty of persons and damage to environment and property;
- Report to the project and the client's supervisor immediately after the accident occurs and obey the order of the client's supervisor;
- Collect information at the accident site and timely report to the client's supervisor and the project about the progress of emergency rescue work.

2.2 钻井队应急领导小组

组长: 平台经理

成员: 带班队长、安全官、工程师、机械师、电气工程师、营房经理、驻井医生等。

职责:

- 负责现场应急事故事件的组织领导;
- 负责制定和维护现场应急预案;
- 组织应急预案的培训和日常演练;
- 对发生的应急事故事件应立即按照应急预案采取应急措施, 尽最大可能减少伤亡、环境破坏和财产损失;
- 发生事故/事件后立即报告项目部和甲方监督, 听从甲方指挥;
- 负责事故现场的信息收集及时向甲方监督和项目部汇报应急处理进度。

Note: Rig manager is the leader of the emergency team and the commander-in-chief at rig site during emergency period. He is authorized to command the emergency work and readjust the emergency rescue plan and staffs at rig site. If the superior emergency command center assigns another person as the commander-in-chief for the rig-site emergency work, the rig manager will be a member of the emergency team and assist the new leader in the emergency rescue work.

Several sub-emergency teams should be established under the leadership of the rig-crew emergency response team, e.g. emergency rescue team, first-aid team, security team and catering support team. The organization and responsibility of them are as follows:

2.2.1 Emergency Rescue Team

Leader: Rig Manager

Members: Toolpusher, HSE officer, engineer, mechanic, electrician and the whole on the on-duty shift staffs.

Responsibility:

- Perform rescue work in accordance with the emergency response plan.
- Follow the instruction of the rig-site emergency team and perform the rescue work.

2.2.2 Medical Treatment Team

Leader: Doctor at rig site

Members: off-duty shift assistant driller, 2 floor men, 2 mechanics or electrician, (The Chinese and foreign staffs should be reasonably staffed for well external communication).

Responsibility:

- Be responsible for on-site medical treatment of the injured staffs and send them to hospital if necessary;
- Prepare and disinfect the rescue equipment and apparatus at the site.

2.2.3 Security Team

注意: 平台经理是现场应急领导小组组长, 是现场应急的总指挥, 有权指挥和随时调整现场应急抢险方案和人员。若上级应急指挥中心指定新的现场总指挥到达现场后, 平台经理则作为应急小组成员协助新的现场总指挥进行应急抢险工作。

在钻井队应急领导小组的领导下, 现场一般分为以下几个小组: 应急抢险组、医疗救护组、安全保卫组、生活保障组。其组成和职责如下:

2.2.1 应急抢险组

组长: 平台经理

成员: 带班队长、安全官、工程师、机械师、电气工程师及全体当班人。

2.2.2 医疗救护组

组长: 驻井医生

成员: 副班副司钻、钻井工 2 名、机电工 2 名(考虑到语言因素, 中外人员宜合理搭配)。

职责:

- 负责现场伤员的现场救治和转院工作;
- 负责事故现场抢险救护的设备和消毒工作。

2.2.3 安全保卫组

Leader: Driller of the off-duty shift

Members: 2 floor men or derrick men from the off-duty shift, (The Chinese and foreign staffs should be reasonably staffed for well external communications).

Responsibility:

- Establish barricade line and perform security guarding work at the accident site and direct the vehicle transportation;
- Be responsible for evacuating the relevant staffs out of the accident/incident area.

2.2.4 Catering Support Team

Leader: Camp Manager

Members: Chef and camp site staffs

Responsibility:

- Supply catering for on-site emergency rescue personnel;
- Arrange accommodation for external emergency rescue staffs.

3 Emergency Report

3.1 Emergency Report

When an accident or incident occurs at rig site, rig manager reports to both the project manager and the client's supervisor. The project manager shall report to the client and its superior organization in accordance with SINOPEC SERVICE Emergency Response Plan for Major Accident / Incident.

Project manager should, on the basis of the situation and severity of the accident/incident, provide relevant information to the Chinese embassy and relevant agencies at local country such as medical treatment, transportation departments and the partners to seek for support from external resources.

3.2 Report Mode

Oral report: Report to both the project and the client's supervisor about the status of accident / incident through telephone, mobile phone or radio.

组长: 副班司钻

成员: 副班并架工或者钻井工 2 名(考虑到语言因素, 中外人员宜合理搭配)。

职责:

- 负责设置警戒线和事故现场安全保卫工作, 疏导交通;
- 负责事故/事件警戒区内相关人员的撤离和疏散工作。

2.2.4 生活保障组

组长: 营房经理

成员: 厨师及营房雇员

职责:

- 负责现场应急救援人员生活物品的供给;
- 安排外来救援人员的食宿。

3 应急报告

3.1 应急报告

当现场发生事故事件时, 平台经理向项目经理汇报的同时向甲方现场监督汇报, 项目经理向甲方汇报, 并根据《中国石化集团国际石油工程公司重特大事故事件应急预案》规定向上级报告。

项目经理应根据事态的发展和严重性, 向中国驻所在国大使馆、相关部门(医疗救治、交通)、合作方提供相关信息, 寻求外部资源的支持。

3.2 报告方式

口头报告: 通过电话、手机或者电台将事故/事件的基本情况及时报告项目部的同时报告给甲方监督;

Written report: Report to the project in writing detailed about the accident / incident through fax or E-mail.

书面报告: 通过传真或者 Email 将事故/事件的详细情况报项目部。

3.3 Report Content and Format

Reference is made to the following table for the content and format of the report, which includes but not limited to the items herein.

3.3 报告内容和格式

报告内容和格式见下表, 包括但不限于其内容。

Accident / Incident Report Form 事故/事件报表								
Project Name 项目名称				Local Country 项目所在国				
地理位置 Geographical Location	Brief description of the incident point(The rig site should be indicated by coordinates of latitude and longitude);事发地简要描述（井场以经纬度表示）。							
Project Manager 项目经理				Tel 电话: Fax 传真: E-mail				
Receiving Unit 接收单位				Tel 电话: Fax 传真: E-mail				
				Tel 电话: Fax 传真: E-mail				
				Tel 电话: Fax 传真: E-mail				
Date and Time of Accident/ Incident 事故事件发生日期和时间	Date 日期: 当地时间 Local Time:			Place of Accident / Incident 事故发生地点				
	格林威治时间 GMT Time:							
Accident / Incident Categories 事故/事件类别	<input type="checkbox"/> out of control blowout 井喷失控 <input type="checkbox"/> Fires incident 火灾 <input type="checkbox"/> Road traffic accident 道路交通事故 <input type="checkbox"/> Natural disaster 自然灾害 <input type="checkbox"/> Public security incident 公共安全事件			<input type="checkbox"/> H ₂ S leakage 硫化氢气体泄漏 <input type="checkbox"/> Personal injury and illness 人员受伤/生病 <input type="checkbox"/> Environment pollution incident 环境污染事件 <input type="checkbox"/> Public health incident 公共卫生事件 <input type="checkbox"/> Other accident or incident 其他事故/事件				
Status of Onsite Staff 现场人员状况	Number of Chinese Staffs 中方人数:		Injury and Casualty 现场伤亡情况	Number of Chinese Staffs 中方人数: ____ Casualty No. 亡: ____; Injury No.伤: ____; Others as Kidnapping, etc. 其它:（如绑架等） ____;				
	Number of Foreign Staffs 外方人数:			Number of Local Staffs 外方人数: ____ Casualty No. 亡: ____; Injury No.伤: ____; Others as Kidnapping, etc. 其它:（如绑架等） ____;				
Personnel Injury and Casualty Description 伤亡人员详细情况	Work Unit 工作单位	Name 姓名	Sex 性别	Age 年龄	Nationality 国籍	Employer 雇主	Position 岗位	Injury Status 受伤情况



Security Condition at the Site 现场安全保卫情况								
Muster Point for Evacuation 应急撤离集合地点				Evacuation Time 撤离时间				
Description of the accident / incident (Including the details of accident / incident, preliminary analysis on the reason and developing status) 事故/事件情况描述 (包括事故/事件经过、初步原因分析、发展状态等):								
Result of accident/ incident and potential danger to personnel, environment, society, assets, work progress and business reputation 事故/事件结果及可能的危害 (对人员、环境、社会、财产、工程进度、商誉等):								
Emergency rescue measures which have already been adopted and will be adopted, including those from the contractor, the client, local governmental authorities and other relevant organizations 已采取及计划将采取的应急救援措施 (包括我方、甲方、当地政府、其他相关组织的救援措施):								
Suggestion 建议:								
Other information related to the accident / incident 与事故/事件有关的其他信息:								
Basic Information on the Well 施工井基本情况	Well No.井号:		Well Type 井别:					
	Designed Depth 设计井深:		Actual Depth 实际井深:					
	Purpose for Drilling 钻探目的:		Hole Structure 井身结构:					
		Well-head Device 井口装置:						
Basic Information on the Client 甲方基本情况								
Report Dept. 报告单位		Reported by 报告人		Report Time 报告时间				



		报告人			
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3.4 Report Frequency

- Report to the superior emergency command center every 4 hours if the accident / incident has occurred and continued without further deterioration.
- Report to the superior emergency command center every 2 hours if the accident / incident has occurred and continued with further deterioration.
- Report to the superior emergency command center every 12 hours if the accident / incident has temporarily occurred without further deterioration.
- Report to the superior emergency command center every 6 hours or at any time if the accident / incident has temporarily happened with further deterioration

3.4 报告频率

- 事故/事件发生并持续, 后果未继续恶化的, 每 4 小时向上级应急救援指挥中心报告 1 次;
- 事故/事件发生并持续, 后果继续恶化的, 每 2 小时或随时向上级应急救援指挥中心报告 1 次;
- 事故/事件短暂发生后, 后果未继续恶化的, 每 12 小时向上级应急救援指挥中心报告 1 次;
- 事故/事件短暂发生后, 后果继续恶化的, 每 6 小时或随时向上级应急救援指挥中心报告 1 次。

4. Emergency Preparedness**4.1 Communication Preparation**

Following preparations should be considered:

- Establish emergency directory such as the telephone numbers of the client, superior emergency command center, Chinese embassy in local country, local police station, fire brigades, hospitals, and international rescue organizations. Emergency card for staffs can be made based on above information. Please refer to the emergency directory hereafter.
- Communication devices should be equipped in accordance with the local communication capability and resources, such as telephone, satellite phone, mobile phone, radio, E-mail, walkie-talkie, etc.

4 应急准备**4.1 通讯准备**

应考虑如下准备:

- 建立应急通讯录 (如甲方、上级应急指挥中心、中国驻所在国大使馆、当地警察局、消防部门和医院、国际救助组织电话。可根据以上内容给员工制作应急卡片), 请参见下面的应急通讯录;
- 根据当地通讯能力和资源情况, 配备通讯设备 (如: 固定电话、卫星电话、手机、电台、Email、对讲机等)。

Emergency Directory(recommended) 应急通讯录 (推荐)

No. 序号	Units 单位	Address 地址	Name 姓名	Title/Position 职务/岗位	Telephone 电话	Mobile Phone 移动电话	Remark 备注
1	Project Manager 项目经理						
2	Logistics Base 基地						
3	Subsidiaries 分(子)公司						



No. 序号	Units 单位	Address 地址	Name 姓名	Title/Position 职务/岗位	Telephone 电话	Mobile Phone 移动电话	Remark 备注
4	Domestic Company 国内公司						
5	SINOPEC SERVICE 国际工程公司						
6	Chinese Embassy 中国大使馆						
7	Consulate 领事馆						
8	Client (Local)甲方 (当地)						
9	Client (Subsidiary)甲方 (分部)						
10	Client (Headquarter)甲方 (总部)						
11	Fire Brigade (Local)消防队 (当地)						
12	Fire Brigade A (Nearby)消防队 1 (邻近)						
13	Fire Brigade B (Nearby)消防队 2 (邻近)						
14	Oil-spills Cleaning Co.溢油清理公司						
15	Transportation Co.运输公司						
16	Hospital (Local) 医院 (当地)						
17	Hospital (Neighbor)医院 (周边)						
18	Hospital(Orthopaedics) 医院 (骨科)						
19	Hospital (Nerve Medicine)医院 (神经内科)						
20	Sanitation & Epidemic Prevention Dept. 卫生防疫部门						
21	Airport (Local) 机场 (当地)						
22	Airport (Neighbor) 机场 (周边)						
23	Police Station (Local)警察局 (当地)						
24	Police Station (Neighbor)警察局 (周边)						
25	Armed forces (Local)军队 (当地)						
26	International Rescue Organization A 国际救援组织 1						
27	International Rescue Organization B 国际救援组织 2						



No. 序号	Units 单位	Address 地址	Name 姓名	Title/Position 职务/岗位	Telephone 电话	Mobile Phone 移动电话	Remark 备注
28	Meteorological Dept.气象部门						
29	Seismology Dept.地震部门						
30	Neighboring Units 相邻单位						
31	Vehicle Renting Co.租车单位						
32	Cooperation Unit A 合作单位 1						
33	Cooperation Unit B 合作单位 2						

4.2 Transportation Preparation

The following preparations should be considered:

- Maintain vehicles to keep them in good condition all the time. Prepare necessary accessories such as spare tires, light bulbs, maps, flashlights and GPS if possible;
- Establish relation and sign agreement with the external units for emergency resources such as vehicles, ambulances, helicopters, etc.

4.2 交通准备

应考虑如下准备:

- 做好车辆维护保养, 保证车辆始终处于完好待用状态, 并备有必要的配件 (如备胎、灯泡、地图、手电筒等, 如可能给配备 GPS);
- 与外部应急资源单位 (如: 车辆、救护车、直升机等) 建立联系并签订协议。

4.3 Material Preparation

The following preparations should be considered:

- Prepare and install emergency shut down devices and automatic monitoring devices for key facilities in accordance with the regulations or the client's requirement such as fixed monitors, portable H₂S monitors, portable combustible gas detector, portable SO₂ detector, positive pressure respirators, inflatable pump, emergency generator, etc.;
- Prepare appropriate quantity of fire-fighting devices, medical devices and emergency escape devices, etc.;
- Prepare appropriate quantity of emergency materials

4.3 物资准备

应考虑如下准备:

- 按规定或者甲方要求配备安装关键设施紧急切断装置、自动监测装置等 (如固定式监测仪器、便携式 H₂S 监测仪、便携式可燃气体检测仪、便携式 SO₂ 检测仪、正压式空气呼吸器、充气泵、应急发电机等);
- 配备适当数量的灭火器材、医疗器具、紧急逃生装备等;
- 配备适当数量的抢险物资 (如重晶石、除硫剂等);

- such as barite, de-sulfur, etc.;
- Prepare appropriate quantity of first-aid materials such as tourniquet, disinfected gauze, bandages, sterilized sling, disinfection tampon, splint, cough relief spray, first aid kits, etc.;
- Prepare appropriate quantity of catering material such as instant noodles, mineral water, etc.;
- Other materials such as gunnysack, flashlights, maps, cotton yarn, etc.
- 配备适当数量的急救物资（止血带、消毒纱布、绷带、消毒三角巾、消毒棉球、夹板、止喘喷雾剂、急救包等）；
- 配备适当数量的生活物资（如方便面、矿泉水等）；
- 其他物资（如麻袋、手电筒、地图、棉纱等）。

5. Emergency Response

There are 9 emergency response plans defined for different scenarios in accordance with nature of the drilling activities, Please refer to the 9 Emergency Cases for detailed information. The emergency response team of the project and rig crew should immediately activate the corresponding emergency response plan and perform emergency treatment if the situation conforming to 1.4.2 Prerequisite for Activation of Emergency Response Plan.

6. Information Release

Only authorized staff is entitled to release relevant information regarding the accident / incidents.

7. Emergency Termination and Follow-up

7.1 Emergency Termination

When confirming that the onsite status meets the termination condition after emergency treatment, report to the superior emergency command center for approval. The emergency condition can only be terminated after receiving the emergency-termination order from the superior emergency command center.

7.2 Follow-up

7.2.1 Emergency Sum-up

After the emergency is terminated, the project should sum up the emergency response work including but not limited to the followings.

- Description of the accident/ incident: including the time, place, affected scope, loss, casualty, initial reason, etc.;
- Emergency handling process;

5 应急响应

根据钻井项目特点，确定了 9 种情况下的应急预案，具体内容请参见 9 应急状况。当符合第 1.4.2 中应急启动条件时，项目和钻井队应急领导小组应立即启动相应的应急预案，按照要求实施应急处置。

6 信息发布

只有经过授权的人员有权对外发布事故/事件的相关信息。

7 应急终止与后期处置

7.1 应急终止

经应急处置后，现场确认满足终止条件时，向上级应急指挥中心报告，上级应急指挥中心下达应急终止指令后可终止应急行动。

7.2 后期处置

7.2.1 应急总结

应急终止后，项目部应编写应急总结，包括以下但不限于以下内容：

- 事故/事件情况：包括事件发生时间、地点、波及范围、损失、人员伤亡情况、事件发生初步原因；
- 应急处置过程；

security incident and unexpected environment pollution incident, emergency drill should be performed once every year.

境污染事件应急预案演练应每年举行一次。

8.3 Emergency Drill Record

Refer to the following form for emergency drill record.

8.3 应急演练记录

见下表：

Form for Emergency Drill Record 应急演练记录

Work Unit 单位		Group 参加班组	
Item of Drill 演练项目		Time 时间	
Person in Charge 主持人		Place 地点	
Work Condition 井上工况		Actual Well Depth 实际井深	
Staffs Participated 参加人员			
Process of the drill 演练过程：			
Evaluation of the drill 演练评估：			
Modification and improvement required (including the suggestion on modification of emergency response plan)需要修正和改进的内容（包括对应急预案的修改意见）：			

- Emergency resources used during the emergency treatment process;
- Problems encountered, experience gained and lessons learned during the emergency handling process;
- Suggestions on revision of the emergency response plan;
- Others,
- 处置过程中动用的应急资源；
- 处置过程遇到的问题、取得的经验和应吸取的教训；
- 对预案的修改建议；
- 其他。

7.2.2 Accident / Incident Investigation

The project should provide relevant information in accordance with the requirement of the accident / accident investigation team.

7.2.2 应急事件的调查

按照事故/事件调查组的要求，项目部应如实提供相关材料。

7.2.3 Insurance and Claims

The project should provide relevant information regarding the accident / incident in accordance with the requirement of insurance agencies. .

7.2.3 保险理赔

按照保险理赔机构的要求，项目部应如实提供相关材料。

8. Emergency Drill

8.1 Purpose of Emergency Drill

- Regular emergency drill can verify the correctness and effectiveness of the emergency response plans. The emergency response plans may be updated and improved according to the deficiencies identified during the emergency drills;
- The drill is an important means to promote the staff to fulfill their tasks and demonstrate how to perform the tasks. In the drills, use of some relevant equipment and test of telecommunication devices should be included. Relevant entities should be informed regarding the drills, and they are preferably invited to join the drills;

8.2 Frequency of Emergency Drill

- For out of control blowout accident and H₂S leakage incident at rig site, emergency drill should be performed by each shift once every month according to four kinds of work scenarios;
- For fire, personal injury/illness, spills of hazardous chemicals and road traffic accident, emergency drill should be performed once every quarter;
- For natural disaster, public health incident, public

8 应急演练

8.1 应急演练目的

- 定期进行应急预案的模拟演练可以检验和完善应急预案的正确性和有效性。同时根据演练中发现的问题，对应急预案进行检查、修订和完善；

- 应急预案的演练是促进作业人员执行或演示他们的任务的重要手段。在这样的演练中，要包括动用设备和测试通信设备。这些演练应通知相关部门参加。

8.2 应急演练频率

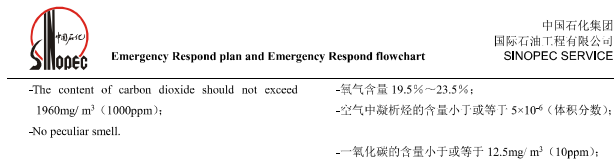
- 井喷失控事故、硫化氢气体泄漏事件应急预案演练按 4 种工况每班每月举行一次；
- 火灾事故、人员受伤/生病事件、道路交通事故应急预案演练应每季度举行一次；
- 自然灾害事件、公共卫生事件、公共安全事件和环

9. Emergency Cases

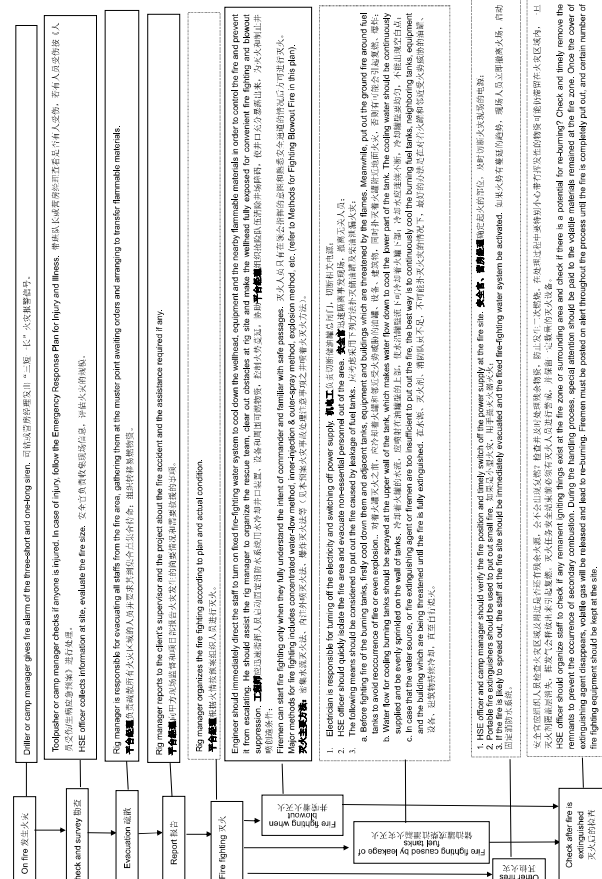
- Case 1 Emergency Response Plan for out of control Blowout Incident
- Case 2 Emergency Response Plan for Hydrogen Sulphide Leakage
- Case 3 Emergency Response Plan for Fire Incident
- Case 4 Emergency Response Plan for Personal Injury and Illness
- Case 5 Emergency Response Plan for Road Traffic Accident
- Case 6. Emergency Response Plan for Environment Pollution Incident
- Case 7 Emergency Response Plan for Natural Disaster
- Case 8 Emergency Response Plan for Public Health Incident
- Case 9 Emergency Response Plan for Public Security Incident

9 应急状况

- 状况 1 井喷失控事故应急预案
- 状况 2 硫化氢气体泄漏应急预案
- 状况 3 火灾事故应急预案
- 状况 4 人员受伤/生病应急预案
- 状况 5 道路交通事故应急预案
- 状况 6 环境污染事件应急预案
- 状况 7 自然灾害应急预案
- 状况 8 公共卫生事件应急预案
- 状况 9 公共安全事件应急预案



Case 3 Emergency Response Plan for Fire Incident 狀況 3 火災事故應急預案
1. Emergency Response Procedures for Fire Incident 火災事故應急程序



2. Handling of Fire Accident at Rig Site

A. Weather Condition

Weather condition should be considered when organizing fire fighting, including wind force, wind direction, temperature, humidity, weather condition, rainfall, etc..

B. Methods for Fighting Blowout Fire

a. Concentrated Water-flow Method: Water gun with caliber not less than $\Phi 19\text{mm}$ and nozzle pressure not less than 5 kg/cm^2 is preferred. Depending on the blowout pressure and the flame size, 1 to 3 layers of crossed water flow will be adopted. The bottom-layer crossed water flow should be pointed at the center of the un-burnt oil/gas column at the bottom flame while the above layers of water flows have a vertical distance of 1 to 2 meters between adjacent layers and the crossed point of water flows should be at the center of the flame. When water is sprayed, water guns of various layers should be moved upwards simultaneously to force the flame to move upwards. At certain altitude as the oil/gas blowout slows down, the strengthened water flow can isolate the flame from the un-burnt oil and gas, and at this moment spray water forcibly on the flame to put out the fire.

d. Inner-injection and Outer-spray Method: The available blow-down pipeline or other pipelines at rig site should be used to inject high-performance chemical agent into borehole to inhibit and put out the burning fire during the blowout of oil & gas flow and finally extinguish the fire. In order to accelerate the extinguishing process, heavy duty fire extinguishers are used to quickly spray dry powders to the wellhead, cover the flame and stop the burning of oil and gas. The inner-injection and outer-spraying methods can be adopted either separately or jointly depending on the blowout pressure and the flame size.

c. **Explosion Method:** Explosives, such as TNT, etc., should be used since they are not easily to explode at such circumstances as high temperature, strong impact, vibration and even effective when wet by

2 井场火灾事故处理注意事项

A. 天气条件

组织灭火时要考虑当时的天气情况：包括风力及风向、气温、湿度、天气情况、降雨量等。

B.井噴着火滅火方法:

a 密集水流法:一般使用口径不小于 19mm 的直流水枪, 喷嘴压力不小于 $5\text{kg}/\text{cm}^2$, 视井喷压力和火势情况, 可设 1-3 层交叉水流, 第一层水流交叉点集中在火焰下部未燃烧油气柱的中心, 以上各层水流的垂直距离约为 1-2m, 水流的交叉点应射在火焰的中心。射水开始后, 各层水枪要同时向上移动, 迫使火焰也向上移动, 到一定高度时, 因油气流速度减小, 强力的水流可将火焰与未燃烧的油气分隔开来。同时用水流冲击火焰, 扑灭火灾。

b 内注外喷法:利用井场上现有的防喷管线或其他管线,将高效化学灭火剂,通过管线注入井内,随着油气流从井口喷出,抑制燃烧过程,使火熄灭。为了加速灭火的速度,在注入的同时,利用干粉炮车,将大量干粉迅速喷向井口,覆盖包围火焰,终止油气的燃烧。根据井喷压力和火势情况,内注、外喷的灭火方法,可分别采用,也可联合使用。

C 爆炸灭火法:要选用受高温、撞击、震动不易爆炸和遇水不失效的炸药(如 TNT 炸药等)。炸药的数量要视火焰的大小和形状而定,炸药的包装应注意防水隔热。灭火时,可采用固定扒杆,钢丝绳吊运,拖拉机



water. The quantity of the explosive depends on the size and shape of the flame, and the explosive package should be water-proof and heat-proof type. The explosive can be lifted and hung above the flame center with a fixed beam, or a tensing wire line or tractor dragging, and detonated by electrical detonator. A professional dynamiter is necessary to perform the explosion in order to put out the fire without damage to the wellhead facilities.

d. If every effort has been made but still in vain, drilling of a rescue well should be considered to put out the fire.

C. Procedures for Handling Fire Caused by Leakage of Fuel Tanks

If the ground surrounding fuel tank is on fire, cooling water should be quickly sprinkled on the fuel tank, which is exposed to the flame in order to prevent the explosion due to overheat of fuel tanks.

a. There should be sufficient fire extinguishing agents and fire fighting equipment.

b. Weather condition should be considered for fire fighting, since the wind and rain will affect the fire extinguishing agents and inhibit its efficiency.

c. The cooling water should be evenly and largely sprayed on the whole exposed area by sweeping the sprinkled water.

d. When spraying fire extinguishing agent onto the heated burning fluid, proper preparation should be made to deal with oil boiling and spilling.

e. When both the fuel tank and the surrounding ground are on fire, it is a common practice to first put out the fire on the ground and then the tanks.

f. When using extinguishing agent, its validity and efficiency for fighting fire should be judged and the agent be replaced if deemed necessary.

牵引的方法将炸药吊升到火焰中心附近,采用电雷管引爆。使用此方法时,应满足只起到灭火作用而不炸坏井口装置,并由爆破专业人员组织实施。

d 在一切努力均无效后,应采取钻救援井的办法来实现灭火。

C. 儲油罐或柴油泄瀉着火处置步驟

储油罐周围发生地面火灾时,应迅速地向暴露在火焰中的储油罐施放冷却水,防止储油罐过热发生爆炸事故。

a 有足够的灭火剂和设备;

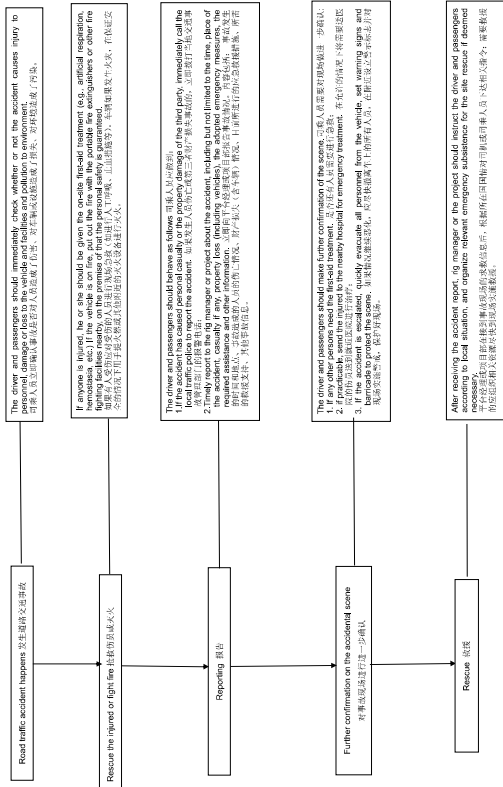
b 灭火必须考虑天气条件（风和雨会破坏灭火剂覆盖层并限制消防灭火剂的效用）；

c 应采用扫射的方式将冷却水最大限度地施放在整个暴露区域上;

d 当将灭火剂施放到高热燃烧流体上时要想到油会沸溢，并应有所准备；

e 当储油罐和地面都着火时，通常在设法扑灭储油罐火之前先扑灭火地面的火；

f 在施放灭火剂期间,应对该灭火操作的有效性进行判断,如果需要应进行更换;



2. Emergency Response Procedures for Road Traffic Accident

Accident

- If a traffic accident occurs and causes minor damage to the vehicle without influence on safe driving on road, the accident may be reported to rig manager or the project in details after returning to rig site or project. If major damage to the vehicle is caused, the accident should be immediately reported to rig crew and the project in details.
- If a traffic accident occurs and causes serious casualty of the driver or passengers, immediately call the medical entities for emergency treatment or try to stop passing vehicles for help on sending the injured to hospital. Report to rig manager and project ASAP so that emergency measures can be taken.
- If the accident causes leakage of flammables, dangerous chemicals, toxic and corrosive materials, such as liquefied petroleum gas, oil, acid, alkaline, etc., which may further cause serious casualties, inform the personnel in the surrounding area to evacuate to safe area, and timely report to the local traffic police about the accident.
- If the accident causes the vehicle on fire, the driver and passengers should try to put out the fire by fire extinguishers equipped on the vehicle. If the fire is too fierce to be put out, evacuate the staff to safe area and then call the local fire brigade for help.
- If the accident causes the third-party casualty, call the local traffic police and the hospital for help and protect the scene of accident.
- The driver and passengers should keep regular contact with the rig crew and project based on local security situations. If no information is received from the driver and passengers at the agreed time, the rig manager should actively contact the persons in question. Rig manager should report to the project if he fails to contact them and collect information to judge if they are detained or abducted and make decision on whether or not starting the emergency response plan

2 道路交通事故应急处置注意事项

- 因单方肇事，仅造成本车轻微损坏且不影响安全运行的交通事故，可回井队（项目部）后要向台经理或项目部进行详细汇报；造成本车严重损坏的应及时向井队或项目部报告具体情况。
- 因单方肇事，造成本车可乘人员严重伤亡的交通事故，应拨打医疗急救电话求救，或尽可能拦截过往车辆，将伤者送往就近医院进行抢救，并及时报告平台经理或项目部领导，以便采取应急措施。
- 因交通事故，造成易燃易爆物品、危险化学品、有毒品、腐蚀性物质（如液化气、油品、酸、碱等），有可能会造成重大人员伤亡的，应及时告知现场周围人员尽快撤离至安全区域，同时报告当地交通事故管理部门。
- 因交通事故造成车辆火灾，可乘人员应取出车辆上配置的灭火器进行现场灭火；若火势较大，难于灭火时，应首先将人员撤离至安全地带，再拨打当地救火电话。
- 因交通事故造成第三人人员伤亡的，应拨打交通事故报警电话和医疗急救电话，并尽可能保护好现场。
- 根据所在国安全形势按时和项目部或井队进行电话联系。如果员工或车辆没有按时联系，平台经理应立即与当事人进行不间断联系，如果多次联系不上，有可能遭遇扣押或绑架，平台经理应立即向项目部报告，收集人员信息，判断是否遭遇扣押或绑架，决定是否启动相应的应急预案。

g. After the extinguishing agent has been sprayed on the flame for a period of time, observe if the flames are significantly weakened and the color changed. If no change is made, consider to use other fire fighting method instead.

h. The facilities around the fire should be timely cooled down in order to prevent the fire from escalating.

i. When the fire is out of control, close attention should be paid to the burning fuel tanks and other facilities. Once abnormal phenomena happens, emergency measures, such as evacuating personnel out of dangerous areas, should be adopted timely. When evacuating the residents of the vicinity areas, joint efforts should be made by both the onsite emergency response team and the client's supervisor.

Warning! When firemen enter the area where there is spilled fuel, special attentions should be paid to the danger of combustion.

g 在施放灭火剂以后经过一段时间，要确认火势是否有明显的减弱或烟雾颜色是否改变；如果未有变化，有必要重新考虑改用其他灭火方法；

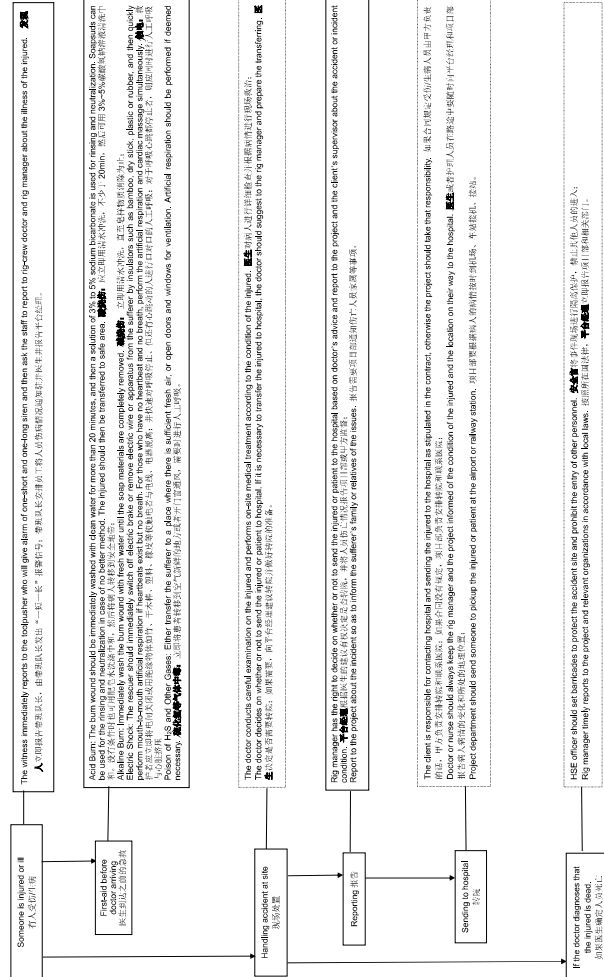
h 对灾区附近受威胁的设施，及时采取冷却等措施，防止火灾的进一步升级；

i 当火灾失控时，应密切关注井场储油罐、设施的燃烧情况。一旦发现异常征兆，应及时采取紧急撤离危险区的人员等应急措施；当疏散现场周边人群时，现场应急领导小组与甲方现场监督共同做好相关工作。

警告：消防人员在进入有溢出燃料的区域时，必须对燃烧危险性特别注意。

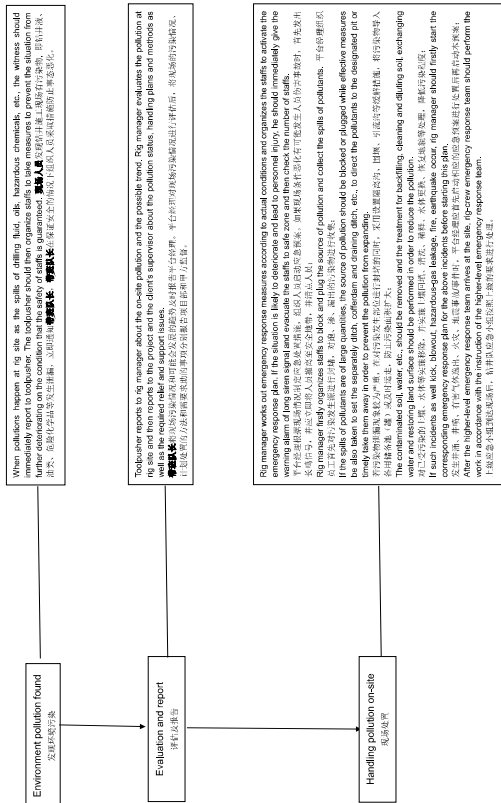
Case 4 Emergency Response Plan for Personnel Injury and Illness 附件4 人员受伤/生病应急救援预案

1. Emergency Response Procedures for Personnel Injury and Illness 人员受伤/生病应急程序



Case 6 Emergency Response Plan for Environment Pollution Incident 环境6 环境污染事件应急预案

1. Emergency Response Procedures for Environment Pollution Incident 环境6 环境污染事件应急预案



2 Emergency Response Procedures for Handling Environment Pollution Incident

Environment pollution Incident occurred at rig site is usually accompanied by other kinds of incidents, and the commencement of emergency work is usually lagging behind that of other incidents. Generally the company is responsible for dealing with the environment pollution incident under the contract.

A Fluid leakage

a. When liquid spills are widely spread at the ground surface, it will be difficult to collect and dispose, so it is necessary to set embankment to intercept or drain the pollutants to a safe zone. In case of liquid leaking at the tanks area, valves should be immediately closed.

b. Foam extinguishing agents should be used to cover the spilled combustible materials, to prevent the occurrence of secondary incident and reduce the evaporation of pollutants into the atmosphere.

c. For a larger quantity of liquid leakage, the diaphragm pump can be used to pump the spilled liquid into the container or tanker. For a small quantity of liquid leakage, sands, absorbent and neutralized materials can be used to neutralize or solidify the spilled pollutants.

B Solid Chemicals

For the spilled and scattered solid chemicals, staffs should be timely organized to collect them, and the contaminated soils, instruments, facilities and other items should be cleaned.

C Others

a. If the environment pollution incident is triggered by natural disaster, this emergency response plan should be started along with the Emergency Response Plan for Natural Disaster so as to reduce the secondary incident from happening and escalating.

2 环境污染事故处理注意事项

井队发生环境污染事件一般都是伴随其它事故/事件而发生的，应急处置一般都稍滞后于或其它事故/事件。而且环境污染事件一般根据合同由甲方负责处理。

A. 液体泄漏

a 液体泄漏到地面上时会四处蔓延扩散，难以收集处理，要筑堤堵截或者引流到安全地点。对于储罐区发生液体泄漏时，要及时关闭阀门。

b 可用泡沫灭火剂对外溢可燃物进行覆盖，可防止次生事故的发生和减少污染物向大气中的蒸发。

c 对于大量液体泄漏，可选择用隔膜泵将泄漏出的物料抽入容器内或槽车内；当泄漏量小时，可用沙子、吸附材料、中和材料等吸收中和或者用固化法处理泄漏物。

B. 固体化学物质

对于固体化学物质散落应及时组织人员进行回收，并对污染的土壤、仪器和其他物品进行清洗。

C. 其他

a 因自然灾害引起的环境污染事故，应在启动《自然灾害应急预案》的同时启动本预案，尽量减少次生事故的发生或扩大。

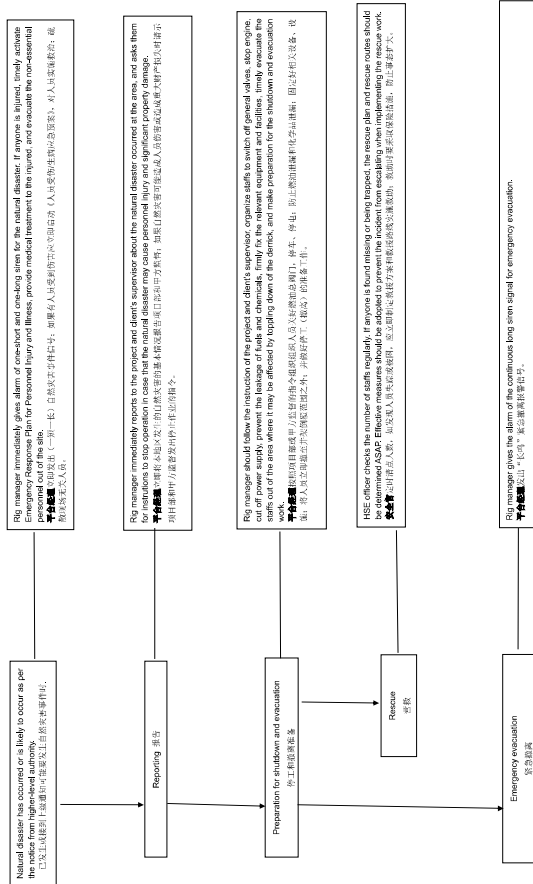


b. The collected spills should be handled as per the requirement in Section 10.2 Environmental Influence Assessment or 10.3 Handling of Drilling Cuttings and Mud in this manual. The remained materials should be washed by water for fighting the fire, and the flushed water shall be treated as per 10.5.Solid Waste Management in this manual.

b 将收集的泄漏物按照钻井HSE手册10.2环境影响评价或10.3 钻屑及钻井液的处理来进行处理；用消防水冲洗剩下的少量物料，冲洗水按10.5 固体废物管理来进行处理。

Case 7 Emergency Response Plan for Natural Disaster 环境7 自然灾害应急预案

1. Emergency Procedures for Natural Disaster 自然灾害应急预案



2. Emergency Response Procedures for Handling Natural Disaster	2 自然灾害应急处理注意事项
A. Type of Natural Disasters Natural disasters which may affect the rig crews are earthquake, flood, gale, sand storm, thunder lightning, heat waves, etc.	A. 自然灾害种类 与井队有关的自然灾害有地震、洪涝、大风、沙尘暴、雷电、热浪等。
B. Earthquake Earthquake may cause secondary disasters with the characteristics of unpredictable and severe destructions mainly as follows: Earthquake may trigger tsunamis or violent lake wave and endanger the rig crew located nearby the sea, lake and coastal region. Earthquake may trigger such disasters as the burst of reservoir bank, debris flow, landslide, cave-in collapse, flood, etc., which may endanger the rig crews at the downstream area. Earthquake may cause sand and soil flow and lead to toppling down of derrick due to subsidence of ground foundation. Earthquake may cause fracture and misplacement in the formation and lead to stuck of downhole drill strings, cause rupture and crush of casings in the completed wells, and lead to blowout from the drilled oil and gas zone. The following measures should be adopted at rig site in case of earthquake: 1. Adopt self-protective measures to ensure personal safety; 2. Close the general valves on diesel tanks, switch off the power supply and stop all the operating equipment in case of emergency. 3. Collect information at the site, be in charge of formulating and carrying out the onsite response plans and timely	B. 地震灾害 地震易诱发二次灾害,并具有突发性和严重破坏性等特点。主要有: 诱发的海啸、湖啸危及处于海域、湖区及其滨邻地区作业的钻井队。 诱发的水库决堤、泥石流、山崩、滑坡、坍塌、水灾等,危及其下方的井队。 因砂土流动导致地地下沉降使井架倾倒。 因地裂、错位使井下钻具被卡、完成井的套管断裂、挤扁,导致已钻穿的油、气层发生井喷等事故。 当地震发生时,井队应采取如下措施: 1 采取自我保护措施,确保人身安全; 2 切断柴油罐总阀门、电源开关,特别紧急时关停一切生产设施;

informing the project and the client of the relevant information.	3 收集现场信息,组织制定现场处置方案并负责实施,并及时将相关情况报告项目部和甲方;
4. Coordinate the internal and external emergency resources and centrally command the emergency work. Refer to 4. Earthquake Intensity Scale.	4 协调现场内外部应急资源,统一指挥抢险工作。
C. Flood and Water-logging Flooding and waterlogging disaster is mainly characterized by mountain torrent along with landslides. Meanwhile, rainfall with waterlogging and river flooding may pose the double threat to the middle and lower reaches of rivers at plain area. Rig crew should be camped at a higher terrain where bank and ditch should be constructed around rig site to drain flood away, for which drain pumps should be prepared. When the disaster occurs, the staff should be evacuated from the operation site if necessary. Operation should be stopped before the flood comes and relevant protective measures be adopted to prevent diesel oil from leaking. Rig manager should timely check the number of staff at rig site and make rescue plan and route for the rescuing of missed and trapped staff. Local authority, armed forces and social community should be requested for the rescue work if necessary.	参见 4 地震烈度表。 C.洪水、内涝灾害 洪涝灾害主要表现为山洪及其伴随的泥石流,河流中下游平原地区,往往同时受当地雨水内涝和江河洪水的双重威胁; 钻井队应选择较高的地势宿营,在井场四周修堤、挖沟排洪、准备好排水泵。灾害发生时,如必要,则撤离作业区; 在洪汛灾害到达前停止生产作业,做好相关保护措施,防止柴油泄漏; 平台经理及时清点工作区域人员数量,对失踪或受困人员,制定营救方案和营救路线;
D. Windstorm and Gale The potential hazards due to windstorm or gale are derrick collapse, which may further cause damage of ground facilities or hurt of staff During typhoon period, all outdoor operations should be stopped except the necessary job. The derrick, guy line and ground anchor, etc. should be closely monitored and controlled.	必要时请求当地政府、部队和社会团体参与营救。 D. 风灾 风灾对井队造成的损害主要为井架被刮倒,地面设备受损,甚至人员伤亡; 台风期间,除必要的作业外,停止户外施工作业;

Other operations should be arranged rationally. Major operations such as running-in casing, wireline logging, cementing, etc should be performed after the windstorm or gale stops. The drill strings should be run into hole if they had been tripped out of the hole to avoid the derrick from being toppled down due to overweight of derrick. For the well which is being drilled, stop drilling, pull the drill strings up above the bottom of the hole, or pull the drill string into the intermediate casing in advance. For the longer open-hole intervals, slowly lower down the drill strings at speed about 0.5m every 15-30s. After lowering the drill strings to the bottom, continue lower down to press the drill strings bend in the borehole so as to prevent them from being stuck. For the well which has been drilled through some oil/gas pay zone, if special circumstance occurred, such as well kick and well loss during the windstorm or gale period, such actions should be taken as to close BOP and observe wellhead pressure and handle it after the gale stops. Stop the jobs such as rigging-up/down operation, overhead operation and hoisting operation. Refer to 5. Classification of Wind Force Scale (Bofu Wind Scale).	对井架、缆绳、锚墩等生产设施应加强监控; 合理安排施工:下套管、电测、固井等大型施工待大风过后再进行作业。起完钻的井应将钻具下入井内,避免井架偏重倒塌; 正在钻进 的井应停止钻进,并将钻具提离井底,或提前起至技术套管管内。裸眼井段较长的井,每隔 15—30 秒,下放一次钻具(0.5m)。当钻具到底后,将井内钻具压弯,防止井下钻具粘附卡钻; 已打开油气层的井,在出现井涌、井漏等特殊情况下,因大风不能作业时,先关闭防喷器、观察井口压力,待大风后再行处理;
E. Sandstorm Keep close contact with the project and relevant departments, regularly check the number of staffs at rig site and be clear about their status, request assistance from local government, armed forces and social community if deemed necessary.	应停止起放井架作业、高空作业和吊装作业; 参见 5 风力等级划分标准(蒲福风级表)。
F. Thunder and Lightning Stop all the outdoor operations which are not urgent and necessary. Try to avoid staying outside of living quarters. Check and inspect the lightning arresters and grounding facilities.	E. 沙尘暴 保持与项目部和相关单位的通讯联系,按时清点作业场所人员数量,了解人员信息;必要时请求当地政府、部队和社会团体参与营救。

Make decision on whether or not stop the operation based on the weather forecast and the instruction from the project and client's supervisor.	F. 雷电 停止所有非紧急和不必要的户外工作,避免在非生活区以外的地方停留;检查防雷设施和接地网;
G. High-temperature Alert If the temperature of fuel tanks reaches the designed alarm level, the walls of tanks should be sprayed with water for cooling down. Minimize the outdoor operations as far as possible according to actual condition. Ensure that the staffs have adequate drinking water. Refer to 9.5 Work in Adverse Weather in this manual for detailed information.	根据预报的情况,按项目部或甲方要求决定是否停止生产。 G. 高温警报 如果罐体达到设计的警戒温度,应对罐体实施喷淋降温; 根据实际情况,尽可能减少户外的的工作; 确保人员有足够的饮用水; 详细情况参见钻井 HSE 手册 9.5 在恶劣气候下作业。

Case 8 Emergency Response Plan for Public Health Incident 次例8 公共衛生事件應急

Case 8 Emergency Response Plan for Public Health Incident 次例 8 公共衛生事件應急



2. Handling of Public Security Incident

c. **Orange:** Political situation is turbulent and there is a possibility of triggering large-scale social unrest and armed clashes. The status of social order is deteriorated, criminal activities are rampant and the

2 公共安全事件应急注意事项

c 橙色：政局动荡，有引发大规模社会动乱、武装冲突的现实可能性；社会治安状况恶化，犯罪活动猖獗；且政府处置能力较弱；针对我人员和机构的武装袭击、绑架等恶性事件曾经发生并可能再次发生时。应采取以下措施：





ability of local authority to cope with the incident is weak. The vicious incidents such as armed attack and kidnapping against Chinese citizen and organizations have already occurred and may occur again. The following measures should be adopted:

- All means of transportation and the support system are in the state of immediate response.
- Adopt relevant measures to protect all the facilities at rig site.
- Evacuate all Chinese staffs.
- Ensure that the armed forces are deployed at the appropriate place for the defending purpose.

- 所有的运输手段和支持系统处于立即响应状态;
- 对所有现场设备等采取相关措施;
- 疏散所有中方人员;
- 保证部队所在位置是需要保卫的地方。

d 红色等级: 政局动荡, 已引发大规模社会动乱、武装冲突; 情报显示突发事件威胁逼近、或将发生恐怖袭击; 且政府处置能力较弱; 针对我人员和机构的武装袭击、绑架等恶性事件已多次发生并极有可能再次发生, 此时应疏散所有人员。

在警报情况下注意

Attention should be paid under the situation of alert status:

- Always maintain contact with the client.
- Always maintain contact with the project emergency team.
- Strengthen all the staffs' confidential awareness and prevent the loss caused by divulging of secrecy.

2.2 Security Organization

2.2.1 Staffs at Rig Site

- The staffs at rig site should enable themselves be found by the emergency team at anytime, anywhere under any circumstance. Therefore, the staffs on duty must at all times be aware of :
 - The number of employees presented at rig site.
 - The number of employees outside the rig site and their location.
 - The way to reach each employee.

- 一直与甲方保持联系;
- 一直与项目部应急领导小组保持联系;

对所有人员加强保密意识的教育, 防止泄密而造成损失。

2.2 安全组织

2.2.1 井场人员

井场人员必须让现场应急小组无论在发生何种情况时都能找到属于在井队的任何人员。因此, 在网人员必须始终明确:

- 井场内员工的人数;
- 井场外及其它地方员工的人数;
- 能够找到每个员工的方式。

安全顾问根据后勤人员和钻台人员情况负责按时



Security consultant will be in charge of updating the number of on-duty staffs in accordance with the logistical worker and shift crew.

- The number of staffs should be checked and updated twice a day when the level of alert is Orange.
- The number of staffs should be checked and updated every 2 hours when the level of alert is Red.

更新在岗人员名单:

- 在警戒级别为橙色时, 每天要检查和更新两次井场人员;
- 在警戒级别为红色时, 每两小时要检查和更新一次井场人员情况。

2.2.2 外来人员控制

2.2.2 Personnel Access Control

- Any visitor's access to the site is subject to prior notification / approval of the client's supervisor.
- Any person arriving at the rig site must comply with the implemented formalities and present himself/herself to rig manager, or client's supervisor or security consultant.
- Any person arriving at the rig site must request for an identity badge or ID card.

- 任何到井场的人员都应得到甲方监督的事先允许和批准;
- 任何进入井场的人员必须履行所实施的手续, 并向平台经理或钻井监督以及安全顾问说明;
- 任何到达井场的人员都应取得有效身份徽章或 ID 卡。

2.2.3 Vehicles Access Control

Each incoming or outgoing vehicle will be checked and registered by Security personnel. Equipment and materials transported to rig site should be accompanied with the appropriate documentation ("Freight Waybill") in order to facilitate the access to the site.

To enter rig site, the driver shall display the follow information:

- Department or Company
- Name of driver (license number and phone number)
- Position
- Type and License plate of the vehicle.
- Date of arrival and departure.

要进入井场, 司机应提供下列信息:

- 所在部门或公司;
- 司机姓名 (驾驶证号和电话号码);
- 职位;
- 车辆的类型和牌照号;
- 确定到达和离开的日期。

2.2.4 撤离车辆准备

2.2.4 Preparation of evacuation Vehicles

- All the contractor-owned vehicles should be always kept in good condition in order for the urgent use.
- After receiving the security incident report and road evacuation is required, client or project emergency team should dispatch vehicles for the purpose, which are buses, mini van, pick-up and 4-wheels drive cars.
- If client or project emergency team can not assign any vehicle in time for the evacuation. The rig crew will

- 所有自用车辆必须始终保持完好状态, 供应急时使用;
- 在接到公共安全事件报告后需要实施道路撤离时, 甲方或项目应急领导小组应派出车辆, 它们应为大轿车, 小面包车, 皮卡车和其它四轮车辆;
- 如果甲方或项目应急领导小组不能及时派出用于撤离的车辆, 井队人员应使用自用车辆。



use its own vehicles.

2.3 Emergency Precautions

2.3.1 Setting barricades

- Bulletproof barriers are the means for protection and control which determine the boundaries of work sites or restricted areas. Security fencing is the primary and permanent security barrier around the rig. Security fencing will:
 - Define the protected areas.
 - Prevent the people from entering the site.
 - Delay intrusion, thus enabling security personnel to intercept the potential intruders.
 - Provide designated and readily identifiable locations for entry of personnel and vehicles.

2.3 应急防范

2.3.1 设置屏障

设置防弹墙是确定工作现场和限制区域边界的一种防护和控制手段。铁丝网是钻机周围的主要安全屏障。其目的是:

- 界定保护区域;
- 阻止人群随意进入现场;
- 阻止入侵, 使安全保卫人员能拦截可能的入侵者;
- 为人员和车辆进入控制的区域提供定位。

2.3.2 Safe Room

- In case of attack or crisis, the safe room is the muster point where all the rig staffs gather. The safe room shall be reinforced with a bullet proof door and must be equipped with:
 - An autonomous power generator.
 - An air condition system.
 - Reliable communication means (radios, spare batteries, battery charger, telephone and satellite phone).
 - Enough subsistence materials for 12 hours (and food and water should be permanently stored in safe room).
 - A lavatory.
 - A table, some chairs and camp beds.Under particular circumstances, the safe room can also be used as a medical treatment room.

2.3.2 安全室

在发生袭击或在危险情况下, 安全室是井队人员集合的地方。安全室应当安装防弹门。安全室应配备下列装置:

- 独立的发电机;
 - 空调系统;
 - 可靠的联络方式 (电台、备用电池, 电池充电器, 电话和卫星电话);
 - 12 小时的充足的物资支持 (食品和水, 永久存放在安全室内);
 - 一个洗手间;
 - 一张桌子、一些椅子和行军床;
- 在特殊情况下, 安全室还可用作抢救室。

2.3.3 管理防范措施

2.3.3 Management Precaution Measures

- Throughout the operation period, the staffs who go outside of the rig site should be registered and approved and he (they) should state the purpose of the trip, departure time, expected return time, name of driver and the companions who should be at least two persons. If they can not return to rig site at the due time, report to rig manager in advance.
- The staffs who go outside may be accompanied by the

- 必要时员工外出可由持枪军警护送;



armed police if deemed necessary.

- The staffs should carry such items when they go out as copy of passport and visa, emergency card, satellite phone, cash, contact list, sufficient food and drinking water, etc..
- Employ sufficient number of security personnel (military or police) to ensure the need for security and patrol purpose at rig site.
- Rig crew doctor is responsible for storing certain amount of emergency medical supplies.

- 所有外出员工应携带以下物品: 护照复印件、工作签证复印件、应急卡片、卫星电话、现金、通信录、配备足够的食品和饮用水等;
- 应用足够数量的安全保卫人员 (部队或警察), 保证现场安全和巡逻的要求;
- 医务室贮备一定数量的应急医疗品, 由医生负责管理。

2.3.4 Precautions of the Staffs

- The staffs should learn how to manage the relations with local residents and respect local people's religious belief and living customs, and eliminate the racial discrimination.
- The staffs should abide by the management rules and regulations of rig crew or the project, and are not allowed to leave position or go out for private affairs without approval.
- The staffs should properly manage the relationships with local employees during the operation at rig site and prevent intensification of the contradiction and emerging of clash.

2.3.4 个人防范措施

- 员工应学会处理与当地人的关系, 尊重当地人的宗教信仰、生活习惯, 杜绝种族歧视;
- 遵守项目 (井队) 管理规定, 严禁私自外出, 严禁私自离开工作岗位;
- 在现场管理工作中, 妥善处理与当地雇员的关系, 防止激化矛盾, 产生冲突。

2.3.5 Communications

- Ensure 24-hour smooth telecommunication via phones and walkie-talkies between the rig site and base camp, rig manager and various teams or operational shift.
- Acquire the latest information regarding local country and the world security situation via internet and keep contact with relevant domestic departments.
- Maintain close contact and cooperation with the client, and assign dedicated persons to investigate, communicate and coordinate the complex relations with local communities.
- Keep regular contact with the following units for their help in case of unexpected incidents as the overseas subsidiaries or branches of Sinopec Group, Chinese embassies or consulates in local countries or states as well as the clients, projects, etc..

2.3.5 信息沟通

- 井场与营地、平台经理与各班组通过电话、对讲机保持 24 小时通讯畅通;
- 通过 Internet, 及时获取所在国、世界各地安全形势发展的最新信息, 与国内相关部门保持联系;
- 与甲方紧密联系和配合, 安排专人全面了解、掌握、沟通、协调当地复杂的社区关系;
- 与以下单位保持经常性联系, 以应对突发事件时, 向他们寻求帮助, 获取营救: 中国石化驻所在国 (子) 公司、中国驻所在国 (州) 大使 (领事) 馆、甲方、项目部等。

2.4 应急撤离



2.4 Emergency Evacuation

2.4.1 Evacuation means and conditions

In accordance with the site environment and the proximity of communities, the evacuation of personnel under hostile conditions is not feasible. Waiting for the stabilization of the situation is generally less risky than travelling here and there to avoid the risks.

The following two evacuation means should be considered:

- Preventive evacuation in case of major national or regional level of crisis.
- Evacuation as reaction to a major crisis (violent protest, invasion of the site).

Successful evacuation relies on:

- Adequate transportation means (vehicles or helicopter).
- Communication and contact smoothly with the project.
- Subsistence materials for 24 hours.
- Necessary personal documentation (passport, ID card, and health certificate).
- Basic effects of all the staffs (cash and necessities).
- Coordination among the rig emergency team, the client and the project emergency team.

2.4.2 Helicopter Evacuation

The best means for coping with the crisis is to evacuate rig staffs to safe area by helicopter. The project should make agreement with the client or third party on such issue so that the helicopter evacuation can be timely performed in case of the crisis.

Safe evacuation area should be selected at the place where it is near to the site of incident so as to shorten the flight distance, save time and increase the number of flights.

Before evacuation, plans for staffs on board the helicopters should be carefully arranged so as to avoid chaos and adverse influence on evacuation.

2.4.1 撤离方式和条件

根据现场环境和周边社区的情况，在敌对情况下进行人员撤离是不可行的，应等待局势稳定往往比四处躲避风险要小的多。

有两种撤离方式需要考虑：

- 在出现较大的危机时（国家或地区级别）的预防性撤离；
- 应对较大的危机（暴力抗议、对现场的入侵）的撤离。

成功撤离的主要条件是：

- 充足的交通工具（如飞机、车辆）；
- 能够和项目始终保持联络和沟通；
- 能维持 24 小时生活物资；
- 准备所有人员的文件记录（如护照、ID 卡、健康证等）；
- 所有人员的基本财产（如现金和必要用品等）；
- 现场应急领导小组、甲方以及项目应急领导小组之间的运作和协调。

2.4.2 飞机撤离

用直升机将现场人员撤离至安全地带是应对危机的最好的方法。项目部应和甲方或第三方有这方面的协议，以便在危机时，能实施飞机撤离。

安全撤离地带应选在距事发地较近的安全区域，以缩短飞机的航程，节约时间，增加撤离班次。

撤离前，应排好现场人员登机班次表，避免混乱，影响撤离。

2.4.3 道路撤离



2.4.3 Road Evacuation

Evacuation through road can be decided only if the security situation in surrounding region allows and if security forces are available to escort the evacuation. The starting point should be the at rig site and the destination should be the safe area or the designated place.

2.4.3.1 The following aspects must be taken into account when performing road evacuation.

- Order the employees to pack their personal items (when the situation allows) and prepare their personal documentation.
- Check if the cars can be started-up at any time and if there are enough spare tires and necessary spare parts, tools, routes maps, and flash-torches.
- Muster staffs at corresponding muster points or in the safe room.
- Organize the convoy and appoint one chief per vehicle.
- Decide an assembly point in case the convoy is separated.
- Camp boss should prepare the subsistence materials as food and drinking water for at least 24 hours for each evacuated personnel.

2.4.3.2 Organization of Vehicle Evacuation

- The Rig Security Coordinator and Security forces should act as the heading when road evacuation is performed.
- The client Security Consultant is in the second vehicle after the Security Coordinator.
- Distance between each vehicle should be about 20 meters.
- Each vehicle shall have at least one employee with communication means (radio, walkie-talkie, or satellite phone).
- The communication devices shall be workable between the client Security consultant and the first /last vehicle to communicate.

During the evacuation, there must be a radio silence, except for the Security personnel or in case of major occurrence.

只有当周边地区安全形势允许，而且有安全部队护卫时，才能做出道路撤离的决定。起点是井场，到达的目的地是安全地带或指定的安全地带。

2.4.3.1 在实施道路撤离时，要考虑下列内容：

- 命令雇员整理个人用品（在情况允许的情况下）并准备好个人的资料；
- 检查车辆是否能随时启动，是否有备用轮胎和必要的配件、工具，是否有地图、手电筒等必需品；
- 把雇员召集到相应的集合地点或安全室内；
- 组织车队并为每台车辆指定一个负责人；
- 在车辆疏散时，应指定一个集合点；
- 营房经理应当为每一位撤离的人员提供至少 24 小时所需的必要食品和饮用水。

2.4.3.2 撤离车队的组织

- 在实施道路撤离的任何情况下，钻井安全协调员和护卫队必须带头阵；
- 甲方安全顾问要坐在钻井安全协调后的第二辆车上；
- 每辆车相距 20m；
- 每辆车上至少有一个拥有通讯工具（电台、对讲机或卫星手机）的雇员；
- 对讲装置应能使甲方安全顾问与第一辆和最后一辆车之间都能进行交流。

在撤离过程中，应保持无线电静默，安全人员或遇到重大的情况时除外。



The speed of the motorcade depends on:

- Road and Traffic Condition.
- Weather condition.
- Regional security situation.
- Instruction should be given by the client security consultant during the trip.

车辆的前进速度应当取决于下列因素：

- 道路和交通状况；
- 天气情况；
- 区域的安全情况；
- 在行动过程中，由甲方安全顾问给出的指令。

2.4.3.3 General behavior during Road Evacuation

- The basic rule is to remain calm.
- Any contact with dubious article is banned.
- Local employee should be designated for the negotiation of local issue if Community Relation Officer is unavailable.
- It is recommended that each vehicle takes no more than 4 persons (not include bus). Such arrangement is considered suitable for changing drivers in turn and relocating passengers if the vehicle breakdown.
- The driver must keep his rank in the motorcade and pay attention to the car(s) behind. If a rear vehicle stops, the former ones should be stopped for support between each other.
- If it is necessary to change the route, the first car will wait at the turning point until he assures that the following car has noticed the turning point and all the vehicles must do the same at each turning point where direction changes.

2.4.3.3 道路撤离时的一般行为

- 保持镇静；
- 禁止接触可疑物品；
- 如果无安全关系协调员，在发生任何问题时，应当选派当地雇员去商讨有关问题；
- 建议每辆车（不包括巴士）最多乘坐 4 人（包括司机）。这是近司机轮换驾车的一个比较合适的人数，也有利于在汽车出故障时重新安置乘车人员；
- 每一个司机都应保持其车辆在其车队中的位置，并注意后面的车辆。如果后面的车辆停止了，前面的司机也要停车，以确保整个车队能够相互照顾；
- 如果需要改变行车路线，第一辆车应站在拐弯点直到确定后面的车辆看见拐弯点后才能继续前进，所有的车辆都必须在拐弯时这样做。

2.4.3.4 撤离中的应急反应

- 如果汽车出故障或者爆胎，乘客应当进入后面的车辆；
- 如果车队受到袭击，车辆应当直驶到下一个就近的安全地点；
- 安全顾问应按时查看人数，看是否有人失踪或受伤。

2.4.3.4 Emergency Reaction in Evacuation

- If a vehicle breaks down or has a flat tyre, the passengers should take the vehicle followed.
- If the motorcade is attacked, the vehicles must head to the next and closest safe point.
- The Security Consultant should check the number of persons as scheduled to see if anyone is missing and/or injured.

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ECO ORIENT ENERGY (THAILAND) LIMITED
ECO ORIENT RESOURCES (THAILAND) LIMITED

EMERGENCY RESPONSE MANUAL

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Rev	Date	Description	Originator	Approved
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ECO HSE	Hong Kong	02	
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All WB Staff	Wichian Buri Server	04	

FOREWORD

ECO Orient Energy (Thailand) Limited and ECO Orient Resources (Thailand) Limited ("the Company") recognizes that effective health, safety and environmental management contributes significantly to its long-term business success.

This document sets out the Company's Emergency Response Procedures. It emphasizes the systematic approach in the way we manage incidents and emergencies at our upstream sites. The integration of health, safety and environmental protection into our day-to-day activities is the key to successful health and safety management.

The application and success of this system requires the participation and commitment of management, employees and contractors at all levels.

These procedures have the Board's full support but we require your commitment through a personal understanding of this document and full participation as required in the effective implementation of the procedures, should they be required.

It is imperative that everyone involved in the business of the Company identifies themselves with their roles and responsibilities as in this document. Only by total commitment by everyone can we ensure the best possible protection of our personnel, contractors, the public, our assets and the environment.

Signed



General Manager

Date: 25 July 2013

Area of Application

These Emergency Response Procedures apply to all ECO Orient activities in Thailand.

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1 INTRODUCTION

It is the Company's intention to properly manage any emergency situation so as to minimise the impact it may have upon all personnel, the environment, the Company's financial position and the Company's reputation.

The key to effective response to emergencies and incidents is having a pre-established organisation, on-call and capable of mobilising and responding to the extent required by different levels of emergency. It should be staffed with competent individuals, organised into teams, with allocated and clearly defined roles, and practised in those roles.

This manual details the procedures to be followed by the Thailand Emergency Management Group from the Emergency Co-ordination Centre in the Company's Head Office in the Bangkok, Rasa Tower Office Building to ensure a prompt and efficient Company response to emergency situations at any of the Company's sites where ever in the Country they are located.

1.1 Policy & Principles

This manual is issued under the authority of the General Manager. Recommendations for any change should be addressed to the General Manager who is responsible for reviewing this document. The HSE manager will ensure that:

- A meeting with all Emergency Response Group (ERG) Members, including all positions identified within this document, is conducted annually to review and update the procedures.
- A database of all ECO Orient Energy (Thailand) personnel charged with emergency management responsibilities within this manual is maintained. The database will include name, job title, office, and mobile and home telephone numbers.
- The Emergency Co-ordination Centre (ECC) and associated systems and equipment to support these procedures are maintained in a state of readiness and tested regularly.
- Regular training and exercises are conducted to test the robustness of these emergency procedures and the preparedness of all personnel to respond to an emergency situation.

1.2 Purpose & Scope

The purpose of this document is to ensure that Country Head Office personnel based in the Bangkok, who are appointed to the Emergency Response Group (ERG), are aware of their roles and responsibilities and the emergency response procedures. This document also details the procedures to be followed by members of the ERG to ensure a prompt and efficient management response, should an emergency situation occur at any of the Company's assets including office and remote site activities (Production, Seismic and Drilling) or locations under the management of this Head Office.

The Emergency Response Group as shown in Table 2.1 is made up of Managers, Supervisors and Support Staff. Personnel who form the Emergency Response Group will be notified of their role. If an emergency situation develops the Emergency Response Group will be mobilised and as the situation develops other personnel may be called to provide assistance to the Emergency Response Group.

Copies of this manual will be issued to relevant personnel. Those with specific duties for dealing with an emergency must ensure that they are aware of their responsibilities and duties as contained in this manual, and the manner in which these procedures interface with the remote location emergency response plan for the Company's operations.

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1.3 ECO Orient Energy (Thailand) Emergency Response Organisation

The Company's emergency response management is handled through a three-tiered structure with teams for each of the following locations:



The Incident Response Team (IRT), based at the remote locations (Wichianburi), is trained and responsible for dealing with all envisaged incidents and emergency situations which may occur at the location. Where additional support, in the way of resources and advice, may be required by the IRT at a remote location this will be requested through and provided by the Country Emergency Response Group. On all occasions that a remote location IRT is mobilised due to an incident or emergency situation the Emergency Response Group Manager must be notified immediately.

The Emergency Response Group (ERG) is based in the Bangkok Office. The ERG is responsible for providing tactical response, support, assistance and advice to all incident and emergency situations at any of the sites or locations within the Country and for providing operational response to any emergency situation which may occur in the or affecting the Bangkok Office.

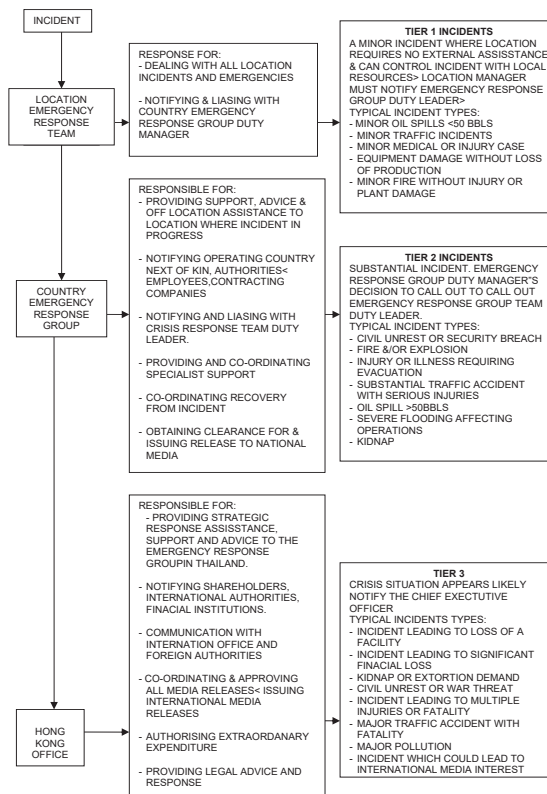
This Emergency Response Manual describes how the ERG should handle both the "technical" crises e.g. fire, explosion, oil spill, and "social" crises e.g. illness, injury, kidnap, civil unrest.


On all occasions that the Country ERG is mobilised due to a major incident or emergency situation the Corporate Office must be notified immediately.

1.4 Response Group Interfaces

The relationship between the Corporate Office, the Country ERG and Remote Location IRT and a classification of emergencies is illustrated below:

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2 EMERGENCY RESPONSE ORGANISATION

The key to effective emergency response is to have a pre-established organisation on-call and capable of mobilising and responding quickly and appropriately to all envisaged emergency situations. This organisation should be staffed by personnel with appropriate experience, organised into a team, with allocated and defined roles, responsibilities and practised in dealing with emergency situations.


The composition and organisation of the emergency response organisation is formalised to meet operational requirements. The emergency organisation at each location is similar to the normal day-to-day organisation. It is the Country Emergency Response Group's responsibility to respond to and control the immediate response to all emergencies, which occur within the Country in which it is based.

The Country emergency response organisation, called the Emergency Response Group (ERG), the roles and responsibilities of its members and the procedures for dealing with emergency situations are described as follows in this document.

2.1 Country Emergency Response Group (ERG) Overall Responsibilities

The primary responsibilities of the ERG are:

- To manage all emergency situations within the Country.
- To provide emergency support, advice and assistance to all the remote locations, assets and operations within the Country.
- To manage any emergency situation which may occur in or affect the Country Office
- To notify the General Manager and keep him/her informed of the situation.
- To notify the Corporate Office within 2 hours of the Emergency Response Group being mobilised and to keep them informed of the situation.
- To notify and liaison with Government and local authorities in accordance with legal and legislative requirements.
- To prepare and release media holding statement.
- To prepare national media releases and obtain authority from the Corporate Office to release media statements. To notify and provide assistance to the next of kin of all ECO Orient Energy (Thailand) nationals involved at the emergency site.
- To inform the Corporate Office of the names and conditions of all personnel involved at the emergency location.
- To communicate with all national Companies, with employees or equipment at the emergency location and notify them of the names and condition of their employees.
- To arrange the reception and treatment for all personnel evacuated from the emergency site.
- A designated ERG Leader will be available at all times, who will be of Senior Manager level. In all situations, which have resulted in the mobilisation of the ERG, it is the ERG Leader's responsibility to report the situation to the General Manager and to the Corporate Office.
- The actions of the ERG will vary depending on the nature of the emergency and it is the ERG Leader's responsibility to determine the extent of the response required. The ERG

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may call on additional staff to assist them in responding to any emergency or incident situation.


All ERG members are required to read and familiarise themselves with this document, in particular their own respective functions, for which checklists are provided on the following sections. ERG members should ensure that they have access to this document at all times.

2.2 ERG and Support Team Individual Roles and Responsibilities

The primary roles and responsibilities of the Emergency Response Group members are outlined below:

Table 2-1 Bangkok Emergency Response Group

Emergency Response Group Leader	<ul style="list-style-type: none"> Responsible for managing and co-ordinating the overall response of the ERG to the emergency situation. Reports to the General Manager and the Corporate Office. Responsible for mobilising the ERG and Support personnel. Responsible for informing and updating the Corporate Office. Responsible for compliance with the actions and procedures laid down in this document for dealing with emergency situations. Responsible for obtaining authority from the General Manager and the Corporate Office for the release of information to the Media.
Drilling Operations Technical Co-ordinator	<ul style="list-style-type: none"> Reports to the ERG Leader and responsible to him/her for providing operational and technical drilling related information. Responsible for providing operational and technical advice, including production, drilling and subsurface, to the emergency site Responsible for all communications with the IRT Leader at the emergency site.
Production Operations Technical Co-ordinator	<ul style="list-style-type: none"> Reports to the ERG Leader and responsible to him/her for providing operational and technical Well Production/Testing information. Responsible for providing operational and technical advice, including production, drilling and subsurface, to the emergency site Responsible for all communications with the IRT Leader at the emergency site.


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Health Safety & Environmental (HSE) Co-ordinator

- Reports to the ERG Leader and responsible to him/her for providing risk, health, safety and environmental information.
- Responsible for compliance with legislation and appropriately informing and liaising with National Government and Regulatory authorities.
- Responsible for providing HSE advice & support and information to the ERG and the IRT at the emergency site.
- Responsible for co-ordinating office security.
- Responsible for advising and maintaining the emergency responses in line with the Company emergency response procedures.
- Responsible for maintaining the information on the status boards.

Administration Co-ordinator Bangkok


- Reports to the ERG Leader and responsible to him/her for providing information and managing all human resources matters.
- Responsible for providing welfare support and advice to employees and their families if required.
- Responsible for co-ordinating with the Logistics Co-ordinator onward travel for personnel being evacuated.
- Responsible for communication with and notifying the next of kin of national Company employees in collaboration with ERG Leader.
- Responsible for providing information about all expatriate personnel at the emergency site to the ERG Team.
- Responsible for providing information to Contractor Companies about their personnel at the emergency site.
- Responsible for co-ordinating the arrangements for the disposal of fatalities.
- Responsible for providing IT support to the ERG.
- Responsible for co-ordinating the office switchboard and reception services.

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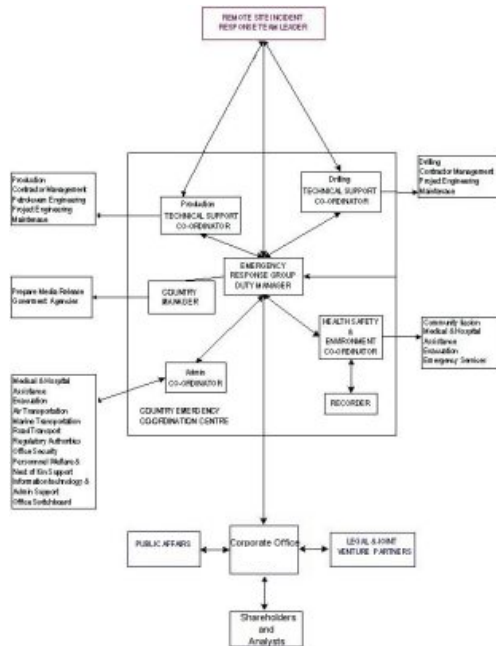
Wichian Buri Administration


- Reports to the IRT Leader and responsible to him/her for providing information and managing all human resources matters upcountry.
- Responsible for arranging temporary accommodation, transportation and assistance for personnel being evacuated from emergency site if required.
- Responsible for co-ordinating with the IRT Leader regarding onward travel for personnel being evacuated.
- Responsible for communication with and notifying the next of kin of national Company employees as directed by IRT/ERG.
- Responsible for providing information about all expatriate personnel at the emergency site to the IRT Co-ordinator.
- Responsible for co-ordinating the arrangements for the disposal of fatalities.
- Responsible for co-ordinating the office switchboard and reception.

Additional personnel may be mobilised by the ERG Co-ordinators to provide support and assistance. The personnel mobilised to provide support would, so far as possible, be from the appropriate department or have the necessary skill to provide the required support.

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The relationship between the ERG, IRT, Corporate Office, and external parties is shown schematically in the diagram below:



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2.3 Location of Emergency Response and Support Personnel


When the Emergency Response Group and Support Personnel are mobilised they will proceed immediately to the Emergency Response Co-ordination Centre (ECC) in order to carry out the tasks and actions required.

The floor plan showing the layout of the Emergency Co-ordination Centre located at is shown in Attachment 9.

The main Meeting Room at Rasa Tower 2 is designated as this Centre. The General Manager, in consultation with the Emergency Response Group (ERG) will declare if an Emergency has escalated to a crisis, or has the potential to do so and advises the Corporate Office.

2.4 Office Incident Response

In the event of an emergency in the Office, the Administration Manager is responsible for the evacuation of all personnel from the office and the Emergency Response Group is responsible for the Recovery Process. This procedure is more fully described in Section 5.0.

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3 EMERGENCY RESPONSE GROUP (ERG) PROCEDURES

The following is the procedure to be followed by the ERG Leader, when the Incident Response Controller, as a result of an incident in Remote Location, has contacted him and the ERG Leader decides that the incident requires the activation of the ERG.

3.1 Notification and Activation of the ERG

In the event of a Remote Location activating the Incident Response Team (IRT), the Incident Response Controller will contact the duty ERG Leader and inform him/her of the situation. The ERG Leader must be informed within 30 minutes of the activation of an Incident Response Team.

The ERG Leader is the principal point of contact in Bangkok. The IRT Leader will contact the duty ERG Leader if a Remote Location operation contacts them with information regarding an incident.

The call originator will need to provide:

- Persons name;
- Originator's location and contact telephone number;
- Nature of the Incident;
- Local time of report.

Further details of the Emergency should not be transmitted.

Once the ERG Leader has made contact with the Incident Response Controller and has details of the incident he/she will decide whether there is a requirement for the Emergency Response Group to be activated, and what the initial composition of the ERG is to be. The ERG Leader is responsible for initiating the activation and call out of the duty ERG.

On any occasion that the ERG is activated, due to an emergency situation, the ERG Leader will notify the Corporate Office and inform the General Manager within 30 minutes.

3.2 Contact Details

The duty ERG and Support Personnel are on 24-hour call out for the duration of their duty period.


Although office, home and mobile telephone numbers are given in the weekly contact list, the policy is to contact ERG and Support members via their mobile number first.

It is essential that people on duty fully understand their responsibilities and can be contacted 24 hours per day, on one of their listed numbers, during the whole period they are on call.

ERG members are responsible for maintaining a list of contact details of the personnel they would call out to support them in the event of the ERG requiring assistance. It is their responsibility to activate, inform, and direct any support personnel they consider necessary to provide them with the appropriate level of assistance. The respective ERG members are also responsible for briefing activated support personnel about the incident and giving them direction.

3.3 Call Out and Delegation of Authority

It is the responsibility of individual members of the ERG to ensure that their emergency response function is delegated to another from the same nominated group, see Attachment 10, when they are unavailable (i.e. unable to reach the ECC within 60 minutes). They must ensure their alternate is appropriately briefed and the alternate remains within contact.

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At the end of the duty period, the ERG member must handover his duty in person thus ensuring the next on duty has acknowledged the responsibility.

3.4 Emergency Co-ordination Centre (ECC) Initial Actions

On the activation of the ERG, all the team members should immediately proceed to the Emergency Co-ordination Centre (ECC). The first to arrive must assume the role and duties of the ERG Leader until the duty Leader arrives. A copy of this manual is available in the Emergency Co-ordination Centre.

The most important early action for the first persons to arrive in the Emergency Co-ordination Centre is to ensure that:

- Telephones are set up to establish and establish communications with the affected emergency location and the Incident Response Leader.
- They identify the facts of the incident and ensure that they are written up on the status boards.

These actions, see Attachment 7, should not be delayed until the ERG Leader's arrival. The layout of the Emergency Co-ordination Centre and the equipment for use during the management of an Emergency situation is shown in Attachment 9.

3.5 Formal Updates of Information to ERG

The ERG Leader should conduct updates to the whole ERG Group at frequent intervals throughout the duration of an incident, at least every hour in the early stages of the incident.

All available ERG members should attend updates. The individual ERG member should report and update any relevant information to Support personnel as soon, as is practicable.

A checklist for holding a Formal Update of Information is contained in Attachment 1.

3.6 Media Response

The ERG Leader, in consultation with the General Manager is responsible for the preparation and early release of the Media Holding Statement see Attachment 5.

The Corporate Office must approve all further information for release to national and international media groups. The ERG Leader is responsible for obtaining any approvals before release.


Once approval for release of information to the national Media is received the ERG Leader, in consultation with the General Manager, is responsible for arranging for the release of such information. All personnel must be instructed to direct external telephone calls requesting media comment on any incident to the nominated ERG spokesperson.

3.7 External Notifications

There may be a requirement during an incident to notify and liaise with a number of national companies, authorities and agencies. It is important that the ERG maintains a record of all these external communications and liaises effectively to ensure overall co-ordination and to ensure they speak with one voice.

The HSE Co-ordinator is responsible for advising the ERG Leader of the requirement, and for making the relevant contact and or notify to national Government and Regulatory authorities.

The HR Co-ordinator is responsible for making contact with the next of kin of national staff and the employing Company of national contractors. He/she is also responsible for providing the CRT HR

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Co-ordinator with information regarding expatriate personnel. The HR Co-ordinator is also responsible for notifying the appropriate national authority regarding any fatalities.

In general, existing business channels of communication should be retained during an incident, but the ERG must retain overall responsibility and control for this communication. The range of contacts will inevitably vary greatly depending on the location of the affected site.

A checklist of contacts is contained in **Attachment 2**. This list should be developed further at the time of the incident, where appropriate.

3.8 Kidnap and/or Extortion

While the basic ERG procedures remain much the same, kidnap and/or extortion require some different methods to address them. In some cases the information may need to be retained by a very small core team and the negotiations may take place over a protracted period of time.

The ERG are to gather and records the information available regarding the kidnap/extortion situation in line with checklist see **Attachment 3**.

Due to the extreme sensitive nature of a kidnap and/or extortion negotiation it is imperative that the ERG Leader makes immediate contact with the Corporate Office. The Corporate Office will either take over the responsibility for the negotiations or will provide guidance to the ERG Leader.

3.9 Civil Unrest or War Threat

If civil unrest or war threat occurs or appears likely either in operating area or close to an area where operations are in progress the ERG will be required to consider and discuss the threat with the General Manager and the Corporate Office.

The primary objective must be to safeguard and evacuate all personnel from the danger area. A plan will be drawn up identifying actions to be taken in order to safeguard personnel, their families and Company assets if the situation continues to deteriorate.

The plan of action should state what the Company considers to be the trigger points which, when reached, will require actions to commence. Once the action plan has been developed it should be clearly communicated to those who require to know.

3.10 Bomb Threat


Bomb threats have become increasingly commonplace in recent years and used by various groups that want to cause disruption of business. Although 99% of the bomb threats are hoaxes all should be treated seriously. In all circumstances the first thing that must be done is to determine the nature of the threats to the organisation.

The ERG is to gather and record the information available regarding the Bomb Threat in line with checklist see **Attachment 19A**.

The ERG are to assess the credibility of the threat and possible consequences and devise an evacuation plan of the premises. See **Attachment 19**

3.11 Installation Loss or Significant Business Loss

A situation may occur, for example a loss of key equipment, which could result in a significant delay in bringing a field into operation, or the shutdown of a field or installation as the result of an incident. Such a situation will inevitably result in a significant loss of business and therefore loss of revenue to the Company unless it is addressed immediately.

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Such a situation will require the ERG to consider what actions have to be taken immediately, and by whom, in order to avoid or minimise loss to the Company.

3.12 Pollution Incident

A pollution incident can refer to a number of different types of pollution. They can be broadly categorised as:

- Oil spill
- Chemical spill
- Smoke or fumes into the atmosphere.

It is the responsibility of the ERG to ensure that:

- The spill plans are activated immediately any pollution situation is detected or reported
- The source of the pollution is quickly identified and stopped
- That specialist clean up contractors is mobilised as quickly as possible
- That the appropriate authorities and agencies are notified.

The ERG has to also consider that any pollution type wherever it may occur can result in significant media and environmental group interest. The ERG Leader must be prepared to consider and address the issues that the media or environmental groups may raise with the Company. Failure to take this seriously can result in public concern, loss of shareholder confidence, and possible disruption to business and the associated loss of revenue.

3.13 Extended Emergencies

Some emergencies may extend over a long period of time. When this is the case the relief of ERG members and Support personnel should be considered in order to avoid fatigue.


In the event that the ERG is likely to be required to sit for longer than 8 - 12 hours the following procedures should be observed:

- Alert alternates for each group member, giving them the time that they will be required to start their take-over
- Change over times of individual team members should be spread out over a reasonable period of time
- The hand over is to include a complete brief on the incident. The departing team member must sit with the alternate until he/she is satisfied that the alternate is fully conversant with the situation and his/ her duties
- Relieved group members must ensure they get adequate rest and sustenance, in case they are required further.

Responsibility for managing the arrangements for alternates to ensure group efficiency lies with ERG Leader.

3.14 Supporting Information

Individual ERG members must ensure that information that they may be required to support their specific function is readily available.

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4 CHECKLISTS FOR EMERGENCY RESPONSE GROUP


Checklists are provided to facilitate swift, organised and comprehensive action and should be used by ERG members to assist them to carry out their functions. In general checklists should be used to confirm that appropriate actions have been taken and to check if any actions have been missed.

Checklists are available at the Emergency Co-ordination Centre (ECC) and made available to the group members concerned as part of the setting up process. However group members are advised to maintain and improve their own checklists to be used when their group is activated. All group members should examine the checklists as part of their preparedness and propose improvements to the General Manager. Checklists are to be reviewed following any exercise or incident in common with other procedures. Responsibility for updating checklists lies with individual functions rather than the General Manager.


4.1 Emergency Response Group (ERG) Leader

Upon being informed of an emergency situation, follow the steps and the checklist given below:


- Establish communications with the emergency site IRT Leader and establish the facts of the situation, support and assistance required at the scene.
- Decide whether the ERG should be activated.
- Issue instruction to mobilise ERG members and decide the requirement for and mobilise Support personnel.
- Proceed to the Emergency Co-ordination Centre (ECC).
- Inform the General Manager and keep him/her updated at regular intervals.
- Review the facts of the emergency situation and determine whether the incident is contained or escalating.
- Ensure that the ECC has been set up and that all incident and status boards are positioned, and that data is being recorded.
- Ensure that the emergency site IRT has ERG/Corporate Office contact telephone numbers.
- Notify the Corporate Office, as information becomes available.
- Confirm that the ERG has arrived and brief them; see **Attachment 16** ERG and Support Group Status Board.
- Brief all ERG members on arrival, state plan and delegate actions.
- Ensure that Support personnel are briefed and that the Reception is manned.
- Ensure clear lines of communication with the emergency site and IRT are established and continue to monitor situation and provide appropriate support and assistance.
- Ensure that next of kin are being notified.
- Ensure that appropriate Authorities are notified.
- After approval from General Manager Issue Media Holding Statement - **Attachment 5**.
- After approval from General Manager Issue Statement to Staff - **Attachment 6**.

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- Agree the media strategy with General Manager, including the management of the media release process.
- Monitor and maintain the up-to-date picture of the emergency situation.
- Prepare information for national media release.
- Provide Corporate Office and General Manager with information for release to international media groups.
- Organise media briefings.
- Ensure that the Receptionist is aware of the situation and have a copy of the holding statement to be read out to callers.
- Ensure that media enquiry numbers have been released and brief the Receptionist that the Media Response telephone line is available.
- List who should receive the media statements and issue e.g.:
 - Media agencies
 - Internal office staff
 - Operating Companies in other Countries
 - Partners
 - Contractors
- Update information frequently and issue statements at regularly intervals.
- Brief Reception on the handling of any media persons arriving at the office.
- Brief the IRT Leader at the incident site on what information to release in the event of receiving media enquiries.
- Arrange media monitoring, and playback of any appropriate broadcasts to ERG.
- Prepare; obtain authorisation and issue of an incident update report to all employees.
- Arrange for distribution of press packs to media.
- Update ERG at regular intervals on actions taken and media releases.
- Identify the need for and mobilise additional Support personnel
- Identify if a representative from senior management is required at the incident site.
- Identify and obtain authorisation for extraordinary expenditure.
- Confirm that the IRT is coping. Consider if extra support is required.
- Confirm that the ERG is satisfactorily supporting the IRT.
- Hold ERG updates on a regular basis see **Attachment 1**
- Consider the following local aspects of the incident:
 - Local Government
 - Local population

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- Environmental
 - Ensure that office personnel are being kept informed of the incident.
 - Confirm that interfaces with external bodies are being managed effectively.
 - Monitor the level of stress in the ERG, IRT and Support personnel.
 - Identify if the emergency likely to be extended. Implement rotation of ERG members

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INCIDENT CHECKLIST – STATUS BOARD	
Detail	Comment/Notes
Incident <ul style="list-style-type: none"> • Where? • What facilities/vehicles are involved? • When? • What is happening? (Fire, Explosion, Collision, Gas Leak, Toxic Gas Leak, Oil Spill, Well Control problem, Blowouts, Person Missing, Structural Failure, Equipment Failure, Storm, Transport Incident, Medical Emergency, Criminal Act, Terrorism, Bomb Threat, Kidnapping, Extortion, Industrial Dispute, Natural Disaster).	
Current State of Incident <ul style="list-style-type: none"> • Contained? • Potential to escalate? • Escalating? • Who is handling the response? • How is it going? • Who has legal control of the incident? 	
Accuracy and timeliness of information <ul style="list-style-type: none"> • How good is information? • Is it complete • Is it coming from the right sources? • How can it be improved? 	
Damage/ Loss <ul style="list-style-type: none"> • Installation • Equipment • Third Parties • Major • Minor 	
Drilling <ul style="list-style-type: none"> • Stopped • Delayed • Continuing 	
Company Involvement <ul style="list-style-type: none"> • Operator/ Non-operator 	
Casualties <ul style="list-style-type: none"> • Deaths • Injuries • Missing 	
Environmental	

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INCIDENT CHECKLIST – STATUS BOARD	
Detail	Comment/Notes
<ul style="list-style-type: none"> • Oil Spill • Chemical Spill • Air Pollution • Quantity • Sensitivity of area 	
Production <ul style="list-style-type: none"> • Stopped • Delayed • Lost • Continuing 	
Parties involved at Incident <ul style="list-style-type: none"> • Company • Partners • Contractors • Neighbours • Other Third Parties 	
Is everyone being kept informed? <ul style="list-style-type: none"> - Emergency Services - General Manager - Corporate Office - Next of Kin - Company Employees - Contractors - Partners - Environmental Agencies - Local Government - National Government - Media - Other Oil Companies - Pressure Groups - Neighbours - Unions 	
What Media Activity and Coverage <ul style="list-style-type: none"> • Tone of media 	

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ERG LEADER - PUBLIC AFFAIRS STRATEGIC CHECKLIST	
EFFECTS /IMPAIRMENTS	ACTIONS
Current / likely public perception of the incident/ Company?	Confirm media strategy Establish media monitoring Review media coverage and tone. What is the media saying? Ensure Q & As and Media Releases are available, read and understood by spokesperson Identify spokesperson
Government at home or abroad concerned?	What are the Authorities saying? How are they reacting? Establish policy for lobbying Consider Government/ Partner briefings
International perception of the incident?	Inform Company offices abroad
Likely effects on the Company's reputation? • At home/Abroad	Monitor and advise the General Manager regarding image considerations.
Will this affect/ influence planned/ future Company operations in country and abroad?	
Likely impacts on/ responses from: <ul style="list-style-type: none"> • National governments • Local government • Regulators/ legislators • Pressure Groups • Environmental agencies • Neighbours at this and other sites • Community PR near site 	Consider regulatory repercussions Consider Community PR near site Counsel and reassure neighbours at affected site <ul style="list-style-type: none"> - Information on incident - Decisions on future operations - Establish enquiry centre.
Other industry companies and agencies <ul style="list-style-type: none"> • Customers • Suppliers • Partners • General Public • Third parties affected by the incident 	Communicate with customers

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4.2 Drilling Operations Co-ordinator

In the event of an emergency and being mobilised follow the steps and the checklist given below:

- Proceed to the Emergency Co-ordination Centre and obtain a full briefing from the ERG Leader.
- Establish and take over communications with the IRT Leader and request an update on the situation, identify support and assistance required.
- Brief ERG on the current situation and support requirements
- Maintain a close liaison with the IRT and regularly update ERG.
- Confirm ERG/ECC telephone numbers/fax numbers with IRT. Consider communications security.
- Start logging messages. Pass message sheets to the Recorder and ensure that the Status Boards reflect the latest situation.
- Ensure that appropriate site and operational documents, diagrams and plans are available to the ERG.
- Ensure that the ERG is aware of the IRT actions, decisions and concerns.
- Advise ERG on the operational and technical aspects and impacts of the incident.
- Assess the requirements for specialist or technical support at the site.
- Keep the IRT advised on actions being taken to support them.
- Establish the morale and effectiveness of the IRT. Are they coping?
- Remind the ERG Leader, if necessary, that an update is required.
- Advise ERG Leader if external contacts are required to be made to:
 - Local and/or central government authorities;
 - Contractors concerned;
 - Joint Venture Partners;
 - Others
- Where appropriate arrange cover for normal job.
- Keep a personal log of all communications and actions taken.

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DRILLING TECHNICAL CO-ORDINATOR STRATEGIC CHECKLIST	
EFFECTS / IMPACTS	ACTIONS
Own equipment/ property? Denial of use? Consequential loss? Loss of output? Inability to meet commitments?	Arrange for site survey
Impact on customers?	
Inability to supply customers? • Short Term • Long Term Impact on suppliers? Inability to accept supplies? • Short Term • Long Term	Examine alternative sources of product supply Arrange stoppage/ diversion of supply
Other direct business interruption? Impact on contractors/ consultants?	
Effects on other Companies/ businesses? Any indirect constraints on other businesses?	Keep other Companies/ businesses informed
Need to shut down similar operations? Consider threat to new/planned operations and opportunities?	Consider revised business plan Decide on whether to continue operations
How long for repair/ replacement?	
Potential ban on product/ operations?	
Any regulatory impacts? • Local • National • International	Ensure regulators are kept well informed Manage regulators proactively
Overall effect likely on the industry? Additional loads placed on management? • Managing incident • Managing recovery	Consider disclosing information to other operators

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4.3 Production Operations Co-ordinator

In the event of an emergency and being mobilised follow the steps and the checklist given below:

- Proceed to the Emergency Co-ordination Centre and obtain a full briefing from the ERG Leader.
- Establish and take over communications with the IRT Leader and request an update on the situation, identify support and assistance required.
- Brief ERG on the current situation and support requirements
- Maintain a close liaison with the IRT and regularly update ERG.
- Confirm ERG/ECC telephone numbers/fax numbers with IRT. Consider communications security.
- Start logging messages. Pass message sheets to the Recorder and ensure that the Status Boards reflect the latest situation.
- Ensure that appropriate site and operational documents, diagrams and plans are available to the ERG.
- Ensure that the ERG is aware of the IRT actions, decisions and concerns.
- Advise ERG on the operational and technical aspects and impacts of the incident.
- Assess the requirements for specialist or technical support at the site.
- Keep the IRT advised on actions being taken to support them.
- Establish the morale and effectiveness of the IRT. Are they coping?
- Remind the ERG Leader, if necessary, that an update is required.
- Advise ERG Leader if external contacts are required to be made to:
 - Local and/or central government authorities;
 - Contractors concerned
 - Joint Venture Partners
 - Others
- Where appropriate arrange cover for normal job.
- Keep a personal log of all communications and actions taken.

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PRODUCTION TECHNICAL CO-ORDINATOR STRATEGIC CHECKLIST	
EFFECTS / IMPACTS	ACTIONS
Own equipment/ property? Denial of use? Consequential loss? Loss of output? Inability to meet commitments?	Arrange for site survey
Impact on customers?	
Inability to supply customers? • Short Term • Long Term Impact on suppliers? Inability to accept supplies? • Short Term • Long Term	Examine alternative sources of product supply Arrange stoppage/ diversion of supply
Other direct business interruption? Impact on contractors/ consultants?	
Effects on other Companies/ businesses? Any indirect constraints on other businesses?	Keep other Companies/ businesses informed
Need to shut down similar operations? Consider threat to new/planned operations and opportunities?	Consider revised business plan Decide on whether to continue operations
How long for repair/ replacement?	
Potential ban on product/ operations?	
Any regulatory impacts? • Local • National • International	Ensure regulators are kept well informed Manage regulators proactively
Overall effect likely on the industry? Additional loads placed on management? • Managing incident • Managing recovery	Consider disclosing information to other operators

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4.4 HSE Co-ordinator

In the event of an emergency and being mobilised follow the steps and the checklist given below:

- When directed by the ERG Leader, activate the call out the ERG and Support personnel in accordance with the ERG duty list.
- Proceed to the Emergency Co-ordination Centre and obtain a full briefing from the ERG Leader.
- Commence logging information onto the Status Boards, and ensure that they are kept up-to-date throughout the incident.
- Advise the ERG Leader of the safety, environmental, and regulatory aspects of the incident.
- Assess damage and potential damage to environmental and sensitive areas, which might be affected by the incident.
- Obtain total personnel numbers, names, company and nationality at incident site.
- Identify and mobilise Support persons required to assist with:
 - Next of Kin notification and assistance
 - Emergency travel arrangements
 - Medical and Casualty treatment
 - Reception and handling of evacuees from incident site
 - Personnel enquiry information
 - Office Reception
- Obtain accurate information on person's casualties at incident site with their status, location and intended movements.
- Obtain Next of Kin data for national staff members and contractor personnel at incident site.
- Maintain up-to-date movement and status list of all personnel evacuated from the site.
- Ensure that casualties being evacuated from incident site are being attended to correctly.
- Advise ERG what actions should be taken to minimise the effects on the environment.
- Mobilise Oil Spill Response specialist contractor to spill site if required.
- Ensure that the General Manager is aware of the Company's safety and environmental record.
- Keep a personal log of all communications and actions taken.

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HSE CO-ORDINATOR STRATEGIC CHECKLIST	
EFFECTS / IMPACTS	ACTIONS
Has there been any environmental impact from? <ul style="list-style-type: none"> Oil spill Gas release Smoke Chemical spill Radio Active material Other substance 	
What are the likely effects on people? <ul style="list-style-type: none"> At the site Surrounding community 	
What are likely to be the effects on the environment? <ul style="list-style-type: none"> Land Air Shorter Term Longer Term 	
What are the short and long term effects of pollution? <ul style="list-style-type: none"> What quantity has been released? 	Implement short term response to pollution Decide on longer term response to pollution Effect rapid containment and clean-up Implement immediate monitoring of perimeter and as yet unaffected areas Consider and implement long term clean-up and monitoring plan
How is the clean up progressing?	What quantities have been released?
Which Agencies have been notified?	
Have all appropriate environmental bodies and agencies been notified?	

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4.5 Administration Co-ordinator Bangkok

In the event of an emergency and being mobilised follow the steps and the checklist given below:

- Proceed to the Emergency Co-ordination Centre and obtain a full briefing from the ERG Leader.
- Inform Crisis Response Team of details of all expatriate personnel at the incident site and give details of any casualties.
- Arrange travel and accommodation for evacuees, including reception of expatriates in own country.
- Ensure that personnel and casualty information is accurately recorded on the Status Boards.
- Ensure that enquiry numbers have been released and inform Reception when and where to divert calls.
- Establish contact with Contracting Companies give them information regarding their personnel at the incident site and disposition of casualties and evacuees. Confirm that they will notify next of kin of their employees.
- Consider and arrange for the provision of translators.
- Support the evacuation of casualties or others.
- Arrange travel and accommodation for Next-of Kin to visit casualties.
- Ensure that the next of kin of all personnel at the affected site are notified.
- Ensure that arrangements are being made to support families.
- Ensure that liaison with hospitals is undertaken.
- Ensure Next of Kin of casualties or fatalities are notified.
- Ensure procedure for the disposal of fatalities being followed.
- Arrange for Government and Environmental personnel to go to the site.
- Implement notification of relevant Government and Environmental agencies.
- Keep a personal log of all communications and actions taken
- Obtain appropriate financial authorities for advances and travel.

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ADMINISTRATION CO-ORDINATOR BKK STRATEGIC CHECKLIST	
EFFECTS / IMPACTS	ACTIONS
Consider long term welfare of casualties	Make arrangements for specialist and follow up medical treatment of all casualties Follow up on persons in hospital and recuperating at home. Consider moral and financial support.
Consider the morale of all personnel. What are the impacts on <ul style="list-style-type: none"> Site workforce Families <ul style="list-style-type: none"> Other company employees (concern at loss of employment, guilt) Contractors/ consultants Neighbours (fear of recurrence, casualties, property damage, loss of business) 	Provide compassionate assistance to injured/ evacuated employees and support to the families, to include: <ul style="list-style-type: none"> Medical checks Counselling Travel assistance/ accommodation Loans Cash Keep all employees informed on personnel issues Reaffirm positive aspects of Company actions. Counsel and reassure neighbours affected by site and similar company locations Disclosures about incident
What effect on morale of Company personnel?	Reinforce Company morale
What are the likely effects of the incident on the workforce and its relationship with the Company?	Reaffirm positive aspects of Company to all
Stress. Who might be affected? <ul style="list-style-type: none"> Site personnel Response/ telephone teams Families Third party witnesses 	Reaffirm positive aspects of Company to all Monitor for stress at site and in teams Arrange for stress counsellors Arrange for relief's where signs of serious stress are detected Put in place a stress counselling programme

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4.6 Administration Co-ordinator Wichian Buri

In the event of an emergency and being mobilised follow the steps and the checklist given below:

- Proceed to the IRT meeting and obtain a full briefing from the IRT Leader.
- Identify and assist with:
 - Arranging transportation of evacuees
 - Transporting materials and equipment
 - Local Hospital reception arrangements.
 - Locating and mobilising land transport.
- Identify and arrange mobilisation of Local emergency support such as Fire Service, Police, Military Services, Ambulance, Hospitals.
- Co-ordinate together with the IRT Leader:
 - Evacuation actions
 - All transport movements.
- Locate and mobilise materials and equipment required at the incident site.
- Co-ordinate transportation of casualties to hospitals once left incident site.
- Update ERG at regular intervals on actions taken.
- Keep a personal log of all communications and actions taken

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WB ADMINISTRATION CO-ORDINATOR STRATEGIC CHECKLIST	
EFFECTS / IMPACTS	ACTIONS
What are the impacts on Incident location, Vehicles, Facilities and inability to meet the requirements?	Keep identify
Impact on Emergency Services and Equipment	Arrange to send required Emergency Services
Available resources status	Mobilise resources when and where needed
What are the likely effects of the incident and need repair/replacements	Provide assistance
Inability to supply/arrange	Arrange alternate source
Additional supports and services	Keep ready

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4.7 Support Positions

The following are the procedures for Support personnel who will or may be mobilised to support the Emergency Response Group in the event of an incident or emergency situation.

4.7.1 Recorder


In the event of an emergency and being mobilised follow the steps below:

- Proceed to the Emergency Co-ordination Centre and obtain a full briefing from the HSE Co-ordinator.
- Check off all ERG members against Call-out and Arrival Checklist
- Record and maintain the incident information on the Status Boards.
- Support the ERG by providing maps, plans, diagrams, stationary
- Summarise the main points from the Status Boards for the ERG.
- Where appropriate arrange cover for normal job.
- Keep a personal log of all communications and actions taken.

4.7.2 Reception

In the event of an emergency and being mobilised follow the steps below:

- On arrival in the office advise the Admin Co-ordinator Bangkok who will give a briefing on what to do and how to handle callers.
- Receive instruction from Admin Co-ordinator Bangkok on how to respond to visitors and callers such as:
 - Media
 - Next of Kin
 - VIPs
 - General Public
 - Normal business
- Direct visitors and callers as instructed.
- Inform Admin Co-ordinator Bangkok when visitors are at Reception.
- Request assistance from Security if required to control visitors.
- Keep a log of all calls that come through to reception.
- Contact the Admin Co-ordinator Bangkok for additional advice and support.

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5 OFFICE EMERGENCY RESPONSE

The Company's Emergency Response objectives require that the Company is effectively and efficiently prepared to address any foreseeable emergency situation, which involves any of its assets wherever they are located in Thailand.

In order to comply with this the Bangkok Office has two levels of emergency response:

- **Emergency Response** for dealing with any incident or emergency situation that could occur at any of the Company's assets over which the Bangkok Office has responsibility or interest. The operation of the Emergency Response Group is described in the previous sections of this manual.
- **Office Incident Response** for dealing with any incident which may affect the people or operation of the Bangkok Office.

The Emergency Response Group shall also respond to any Office Incident and co-ordinate the actions and activities required in order to deal with the office incident.

In order to ensure that the Emergency Response Group (ERG) can carry out both the Emergency response and Office Incident response actions in an efficient and effective manner the ERG is required to carry out exercises and drills at regular intervals. These exercises and drills will be carried out in accordance with the plan shown in **Section 5.5**.

In order to test the effectiveness of the office emergency procedures and to ensure that all personnel based in the office are conversant with the office fire and emergency procedures there will be regular drills as shown in **Section 5.5** which will involve everyone in the office.

The Bangkok Office emergency and incident response procedures are contained in the following sections and the details require to be completed by the Administration Manager.

5.1 IDB Office Emergency Alarms and Actions

Fire and Evacuation Alarms for Rasa Tower II are: **Ringing Bells!!** or **'Whistle Blowing' preceded by Shouting 'Fire', 'Fire', 'Fire'.**

5.2 Evacuation Procedure

All personnel shall follow the following procedure on hearing the alarm. All personnel will be trained and exercised in the procedures to follow in the event of an incident in the office require the office to be evacuated.


5.2.1 General

All personnel are to observe emergency alarm and proceed immediately to the Muster Point at the SCB side of the building at Road Level.

See Attachment 18 – RASA TOWER II FIRE / EVACUATION

In the event of a person discovering a fire or smoke they must activate the fire alarm by alerting the Reception or the Administration manager.

The Company occupies the 12th Floor in the Rasa Tower II building. Fire Wardens have been appointed. All personnel must follow the instruction issued by a Fire Warden.

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5.2.2 Fire Wardens and Duties

	Name	Duty
Fire Warden	Khun Monsicha	Administration Manager
Alternate Fire Warden	Khun Kannika	Administration

5.2.3 Fire Warden – Roles and Responsibilities

The Fire Warden is responsible to the Emergency Response Group Leader for implementing the office emergency procedures. His/her duties are as follows:


- Ensure the safe evacuation of and accounting for all personnel from Rasa Tower II office.
- In the event of an emergency in the Office, the Fire Warden is responsible for the management of the incident/emergency. Alternate Fire Warden will carry the duties of Fire Warden in his/her absence.
- To ensure that all Employees, Contractors and visitors are familiar with the aspect of Office Emergency Procedure.
- To ensure that emergency drills are conducted in accordance with Section 5.5 and personnel are trained to a level of competence as appropriate to their emergency responsibilities.
- Interface with Emergency Response Group for assistance and support and to co-ordinate the office emergency response with Emergency Response Group Leader.
- To mobilise external assistance from the local Emergency Services.
- To co-ordinate office response with that of the Emergency Services and provide them with information and assistance.
- To identify missing persons and make arrangements to locate any missing person or persons.
- In the case of an emergency, the Fire Warden should confirm the location and nature of the emergency.
- Confirm that it is safe for people to re-enter and resume duties in the office, arrange for "All Clear" signal, terminating the emergency.

5.2.4 Personnel in Office without Emergency Duties

Pre-Emergency

- Must remain alert at all times for situations, which have the potential to escalate into an emergency.
- Must read and observe office emergency response procedures posted on the Floor Notice Board

Emergency Actions

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- Report any unusual situation to the Fire Warden or Administration Manager immediately; provides brief details.
- If observe an emergency situation raise alarm or seek assistance urgently; speak clearly and slowly.
- Remove yourself or any injured persons from any immediate exposure or danger.
- Ensure safety of other personnel and secure/isolate area.
- If safe and trained to do so, attempt to extinguish the fire using available resources.
- If alarm is raised, make your way to the Muster Point; remain there until given further instructions.
- If civil unrest/protest occurs, avoid the disturbance area if possible; do not confront, aggravate or interfere with protestors.

Office Personnel receiving Visitors:

- It is the responsibility of ECO office based staff to take care of their visitors at all times and not to allow them to move around the office unescorted.
- In the event of an alarm he/she must escort the visit to their Muster Point and ensure the Floor Fire Warden accounts for the visitor.


Contractors working in the Office:

- It is the responsibility of the engaging departments to ensure that Contractors working are made familiar with the office emergency procedures and the actions they are to follow.

5.3 End of Emergency

Prior to demobilising the Emergency Response Group the ERG Leader must ensure that the following issues are be considered:

- Confirm that the emergency is concluded.
- What resources are required for recovery?
- Issue of final information release, notification and stand down to all those notified or involved in the emergency response.
- De-brief all personnel involved in the emergency situation and gather all logs and records.
- Close down additional security arrangements
- Continuing counselling for those involved in the emergency
- Compile and file all documents relating to the response
- Initiate investigation into the emergency.
- Initiate a review of the effectiveness of and lessons learnt from the emergency response.
- Recommend revision of Emergency Plans as required.

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5.4 Emergency Response Group Training and Drills

Drill/Exercise Type	Frequency	Who	Remarks
ERG & IRT Exercise	Alternate 2 monthly x 1 hour	All ERG & Support personnel.	Desktop exercise to test responses to a specific incident. Test call out system.
Combined Company wide emergency response exercise	Annually x 3-4 hours	Corporate Office, ERG and a remote location.	Scenario based real time exercise to test effectiveness of the combined Corporate Office & ERG response to a specific incident. Test all call out systems. Test effectiveness of Crisis and Emergency Response procedures.
Office Fire Drill	6 monthly x 30 minutes	All personnel & visitors in the office	All personnel proceed to muster points. Test Office emergency response procedures.

6 BANGKOK OFFICE INCIDENT

In the event of an incident that affects the Bangkok Office it may render the Office unavailable through, for example: -

- Evacuation of the Office Building (s)
- Denied Access
- Partial destruction/failure of business systems

In such cases the ERG function is to act as the Incident Response Team and in the short term is to manage and co-ordinate the continuation of essential business functions and in the medium term to facilitate the restoration of all elements of the business.


Call out of the ERG will follow the established procedures and the ERG Leader will decide on the location for the ERG to convene. In the event that the Bangkok Office is totally unavailable alternative facilities will be brought into use.

In the event that the Bangkok Office is evacuated the ERG Leader should be contacted and the response co-ordinated through mobile phones. The basis for communication is through observance of the preparatory actions listed in the checklists.

A summary checklist is included below.

6.1 Emergency Response Group (ERG) Business Recovery Actions

The principal actions for each of the ERG members are listed below; the points are included to complement the ERG Member Roles and Responsibilities listed below.

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6.1.1 Emergency Response Group Leader

Pre-planning:

- Familiarise with Alternative Business Location

Actions:

- Assess extent of non-availability of the Office, duration of unavailability and the need to use alternative ERG location.
- Decide if/where ERG should convene.
- Ensure that the necessary ERG members are present and identify any additional needs
- Ensure the identified critical business functions are able to function
- Ensure all department managers are contacted to establish how secondary needs are being addressed.
- Ensure communication is made with appropriate staff.
- Ensure all external parties are contacted as appropriate.
- Ensure overall business recovery strategy is in place and is being effective


6.1.2 Administration Co-ordinator with I.T. Manager

Pre-planning:

- Ensure backup and recovery IT requirements are in place (hardware, systems, data and information) for all functions.
- Align backup office facilities with requirements, monitor and implement changes.
- Ensure appropriate protection is in place against system failures (e.g. Virus protection, Firewall requirements etc).
- Ensure roles of outsource companies are defined and agreed.
- Ensure that all Bangkok Office staff are contacted and given instruction on how they are to proceed.

Actions:

- Establish communications systems for ERG and critical business functions
- Re-route or enable alternative, telephone numbers, holding messages, e-mail, network, and fax.
- Obtain required data, information and systems for backup as/if required.
- Liaise with staff at backup facility and/or the outsource contractors.
- Mobilise IT support personnel.
 - Establish disaster recovery requirements.
 - Provide assistance and instruction to core business functions.
 - Arrangements for hardware/software and communications links to enable home working where necessary.

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- Review re-routing of Bangkok Office e-mails.
- Identify and establish alternative contact numbers for business units.
- Assess need for additional alternative office facilities, identify contacts
- Co-ordinate provision of instruction to all staff in the event of office evacuation and provide support for transport, cash loans etc.
- Liaise with department managers to ensure on-going provision of information and instruction for staff and contact all Staff to provide basic instruction or delegate to department management.
- Establish trauma counselling if required.

6.1.3 Administration Co-ordinator Bangkok

Pre-planning:

- Liaison with authorities (City Authorities, Police, Government Departments etc.)
- Familiarise with alternative facilities.
- Conduct exercises and awareness initiatives.

Actions:

- Liaise with ERG Leader to call out ERG and Support personnel.
- Ensure safety and security procedures for alternative office.
- Liaise with appropriate authorities.


6.1.4 Country Manager

Pre-planning:

- Ensure contact data for external support and department staff is maintained off-site (Media contact, call-out and contact list etc.)
- Ensure necessary Legal and Contractual data and information to support the Business Recovery is backed up offsite

Actions:

- Review the need for a Media Release and if necessary establish general Media statement
- Liaise with IT to establish communications and external enquiry room
- If necessary establish 'Media Room' and management of Media.
- Monitor media response to the incident.
- Provide Legal Advice to Business Recovery/ERG on key actions.
- Review the statutory obligations.
- Advise on and initiate contacts with Joint Venture Partners.

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6.1.5 Finance Co-ordinator

Pre-planning:

- Arrangements for securing cash for Business Recovery work
- Ensure key contact data is kept off-site for insurers and support staff
- Ensure key policy information is available off-site.


Actions:

- Provide support to Business Recovery activities requiring cash transfers.
- Review insurance implications of the incident.
- Liaise with Corporate Finance Co-ordinator.
- Ensure remedial actions taken are acceptable on insurance terms.
- Ensure that appropriate records are kept for recovery of losses, increased costs of working etc.
- Support ERG to procure goods and services as part of Business Recovery

6.2 All ERG & Support Team Members


In the unlikely event of a concurrent Bangkok Office incident and a Remote Location incident the ERG function should be performed at the alternative office site.

The ERG Members together with the General Manager must ensure that the information required to support the ERG is backed up at the alternative office.

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6.3 Checklist for Business Recovery

BUSINESS RECOVERY CHECKLIST		
ACTIONS		Responsibility
1	Assess the ERG size and scope requirements for business continuation and identify an alternative address for CRT.	ERG Leader
2	Call-out ERG	ERG Leader
3	Contact the critical business functions and department representatives as per the Disaster Recovery Plan.	ERG Leader
4	Make alternative arrangements for critical business functions, CRT and other functions; if necessary involve alternative facilities as set out in the Business Recovery Plan.	Admin Co-ordinator
5	Ensure effective communications are in place for all individuals and locations.	I.T.
6	Acquire back-up CD's and files and establish the hardware/software facilities at the alternative facilities for critical business functions.	I.T.
7	As soon as the alternative facilities are operational, call-out the critical business functions.	ERG
8	Assess the duration for non-availability of the Bangkok Office and consider to rent alternative office space for all other office users.	ERG
9	Arrange hardware/software facilities for essential staff who are able to work from their home address (PC Rental)	I.T.
10	Inform all office users about the situation	Admin Co-ordinator
11	Inform all other Business Units of the situation	Operations Technical Co-ordinator(s)

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ATTACHMENT 1 - INCIDENT SITUATION UPDATE PROCEDURE CHECKLIST

The ERG Leader should conduct formal updates on at regular intervals to all members of the ERG and Support personnel.

Updates should normally be held once a month. The ideal duration of an update should be no more than 15 minutes.


Procedure

- ERG Leader gives a 10-minute notice.
- All ERG and Support personnel to attend.
- All telephones in the Emergency Co-ordination Centre (except the ERG telephone line) are diverted to the Reception and instruction given to hold all calls until Update is over.
- Inform IRT of the update meeting.
- Commence update with operations brief on the latest state of incident.
- Follow with short statements from all the ERG members giving the latest situation update and actions from their own area of responsibility.
- Clarification of points of fact, if required, following each statement.
- Update completed. Individual ERG members revert to carrying out their actions.
- Telephone lines diverted back to Emergency Co-ordination Centre.
- Recorder to make a summary of the update / prepare and issue with copies to all ERG members. One copy to be retained on the central incident log.

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ATTACHMENT 2 – EXTERNAL CONTACTS CHECKLIST


Agencies to be Contacted	Date / Time Contacted
• Other Countries / Operations	
Government	
• Thailand	
• Local	
Airlines	
Contractors (i.e. Oil Spill Contractors)	
Consulate(s)	
Consultants	
Customers	
Embassies/ High Commissions	
Environmental Agencies	
Financiers	
Foreign & Commonwealth Office (FCO)	
Hospitals/ Medical Agencies	
Insurers	
Joint Venture Partners	
Lawyers	
Other Oil Companies	
Pressure Groups	
Police	
Security Consultants	
Specialists	
Suppliers	
Others	

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ATTACHMENT 3 - KIDNAP AND EXTORTION CHECKLIST

This checklist supplements the normal ERG checklists where Kidnap or other extortion is occurring or is possible.

Kidnap And Extortion Checklist	
	Responsibility
1. Call-out Emergency Response Team	ERG Leader
- ERG Leader	
- HSE Co-ordinator	
- Administration Co-ordinator Bangkok	
- Drilling Operations Co-ordinator	
- Production Operations Co-ordinator	
2. Establish secure communications link with IRT	ERG Leader
3. Ensure secure meeting room for ERG.	ERG Leader
4. Maintain effective logs	All
5. Establish:	ERG
- The current situation	
- The political and operational background	
- If any contacts or demands have been made by the instigators.	
- Who is aware of the incident	
• Government	
• Security Forces/Police of country	
• The Embassy/High Commission	
• Local employees	
• Relatives	
- What the country's policy is concerning negotiation with kidnappers etc.	
6. Notify General Manager	ERG Leader
7. Notify Corporate Office and pass on details	ERG Leader
8. Evaluate the situation	ERG
- Is there positive evidence of kidnap?	
- How reliable is the available information?	
- Are the instigators known to be criminals, psychopaths or terrorists?	
- What are the likely future actions of the instigators?	
- What is the risk?	
• What threats have been made? Likely to be carried out?	
• Is there a threat to life - hostage or others?	
• Are other employees/families at risk?	
• What is the business risk?	
• What is the local Government likely to do if you negotiate?	

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Kidnap And Extortion Checklist	
	Responsibility
- Need for containment of information	ERG
- Is containment of information possible, likely to last and appropriate?	
- What time scale may the Company have to work to?	
- What is likelihood rescue?	
- What attitude is local Government likely to take?	
- What are the immediate implications on operations?	
11. Confirm Company objectives	ERG Leader/ Corporate Office
- Remove threat to life	
- Display Company's determinations to show firm resolves and remain a responsible corporate citizen.	
12. Advise ERG on local laws and potential liabilities relating to communication and negotiation with kidnappers etc. and other liabilities.	Legal Counsel
13. Consider basic Company policies/strategies	Corporate Office
a. Response	
b. Control/secretcy	
c. Risk	
14. ERG Leader to take instruction from Corporate Office.	ERG Leader
15. Discuss options with the Corporate Office (remember security). Confirm roles, powers and delegated authority of both the ERG and the IRT.	ERG Leader
- Who is to be the ultimate Decision Maker?	
- Who is to conduct any negotiations?	
- Who will make up the Negotiating team locally?	
- Is additional support required in Country?	
16. Decide basic policies and initial way ahead. How much is to be pro-active, and how much sit-and-wait?	Corporate Office
17. If agreed by Corporate Office, notify national Police/Security forces if not already aware.	ERG Leader
18. Take all other actions as instructed by Corporate Office	ERG Leader


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ATTACHMENT 4 - EVACUATION CHECKLIST


This checklist supplements the ERG checklists in an Evacuation situation.

It is unlikely that a total or partial evacuation from a country will occur without prior knowledge of a deteriorating situation. Routine monitoring should ensure that a planned and controlled evacuation is possible. The ERG must however be prepared to respond to an evacuation at little or no notice if the unexpected should happen.


Evacuation Checklist	
	Responsibility
1. Call-out ERG. In a potential evacuation situation the ERG is likely to require conducting many of the lower level roles normally associated with the IRT.	ERG Leader
2. Establish communications with the IRT. If communications are not possible, best use must be made of alternative sources, e.g. FCO, Embassies, other companies, airlines etc.	ERG Leader
3. Establish:	ERG
- The current situation locally	
• Political	
• Security	
• Operational sites/equipment	
• And other offices	
- The current alert state	
- The expected rate of change in the situation	
- The immediate plans and intentions of the local management	
4. Confirm objectives:	ERG
- Safety of and associated personnel and their families.	
- Safety of property and operations.	
- Maintenance, where possible, of good relationships with the host government.	
5. Confirm the responsibilities of the General Manager/ERG in relation to the Corporate Office at this stage.	ERG Leader
6. Is additional professional advice required at this time? Does the ERG have the right people available to it?	ERG
7. Evaluate the situation.	
- How reliable is the available information?	
- What is the threat to personnel and their families?	
- What is the threat to contractors and their families?	
- What is the threat to operations/equipment?	
- What are the threat to and other associated offices?	
- What are the implications of Company's relationships with the host Government?	
8. What is the likely change in events	ERG

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Evacuation Checklist	
	Responsibility
<ul style="list-style-type: none"> - in the next few hours. - over the next few days. - over the next two weeks and more. 	
9. If the decision has already been taken to evacuate all or part of the community: <ul style="list-style-type: none"> - How is this to be done? - Who is leaving? - Where are they going? - What arrangements are being made by the IRT? - What arrangements need to be made by the ERG? - What is happening to active operations? - What is to happen to offices? - What is to happen to confidential documents? 	ERG
10. ERG makes necessary evacuation arrangements. If possible, keep HR ERG informed. <ul style="list-style-type: none"> - Flight bookings. - Charter aircraft. - Ship bookings. - Other transport. - Reception party at local arrival point. - Reception party in arrival Country - Accommodation at local arrival area. - Accommodation in arrival Country - Clothing, cash, immediate needs. - Keep Next-of-Kin or Expatriate based (extended) families informed. 	Admin Co-ordinator
<ul style="list-style-type: none"> - Make necessary arrangements for families to meet evacuees. - Consider safety and welfare of any employees/contractors and families remaining in country. - Safety and welfare of national employees. - Protection of residences, offices and other property. 	Admin Co-ordinator
11. If no decision to evacuate yet, ERG should: <ul style="list-style-type: none"> - Consider arrangements that could be required - Conduct advance planning for transport, accommodation, greeting parties etc. - Keep families outside of affected country informed. - Keep employees updated. - Maintain communications with IRT. 	Admin Co-ordinator
12. Once evacuation has started: <ul style="list-style-type: none"> - Implement agreed actions. - Monitor evacuation progress. 	ERG

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Evacuation Checklist	
	Responsibility
<ul style="list-style-type: none"> - Maintain communication with ERG as long as possible - Keep families informed 	Admin Co-ordinator
<ul style="list-style-type: none"> - Keep employees informed - Provide PR advice to employees and family 	ERG Leader
13. Establish Media policy. Prepare immediate defensive Press Statement for use if media enquire about the evacuation and its effects upon business.	ERG
14. Consider broader implications <ul style="list-style-type: none"> - Impacts on Company's operations, image and liabilities - Impacts on trading, oil sales and cash flow. - Relationships with host government 	ERG
<ul style="list-style-type: none"> - Likelihood of commercial or other sanctions - Effect on the current and longer term trading position of the Company in the affected country. - How entry back into the country might be effected - Effects on employee morale (local, national, companywide) 	
15. Consider legal and other potential liabilities relating to the evacuation	Legal Counsel

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ATTACHEMNT 5 – MEDIA HOLDING STATEMENT

Date:
Press Release No 1
Time:

ECO Orient Energy (Thailand) Limited regrets to confirm that an incident – (describe in broadest terms) –

occurred at – (site/location) –

at – (time) –

today/yesterday – (date)–.

ECO Orient Energy (Thailand) has mobilised its Emergency Response Teams, and is working closely with the Local Emergency Services and is in contact with the relevant authorities.

Details of the incident are not yet confirmed, but every action is being taken to safeguard lives and the environment.


A further statement will be issued as soon as more information becomes available.

Direct enquiry lines have been established as follows:

Media ****

Relatives ****

Notes for Editors:

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ATTACHMENT 6 - INITIAL STATEMENT TO STAFF

Note: To be sent by electronic mail to all within the Bangkok office, and to all site locations and offices.

From ERG Leader, (name of location)

Date

Time

INCIDENT REPORT

All staff should be aware that an incident has occurred at (place) at (time)


today/yesterday.

(Briefest description of incident, e.g. The Installation is on fire following an explosion).

The local Incident Response Team and the Emergency Response Group in (location name) are taking necessary action.


More information will be made communicated, as it becomes available. In the meantime any staff member approached for information by outside sources should refer them to the ERG Media Information Group in (location tel. No.xxxxx)

ERG Leader (Name/Location)

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ATTACHMENT 11 – GENERAL NOTIFICATION

NOTIFY		(Circle either Notifying of, or Updating Emergency Information)		UPDATE	
Location		No:		Date:	
Priority		Urgent <input type="checkbox"/>		Immediate <input type="checkbox"/>	
Emergency		Medical <input type="checkbox"/>		Fatality <input type="checkbox"/>	
		Environment <input type="checkbox"/>		Natural Disaster <input type="checkbox"/>	
Oil Spill		<input type="checkbox"/> Marine		<input type="checkbox"/> Explosion	
		<input type="checkbox"/> Fire		<input type="checkbox"/> Aviation	
Other:				<input type="checkbox"/> Extortion	
Injuries		No. Of Fatalities		No. Of Serious Injuries	
				No. Of Minor Injuries	
DO NOT LIST NAMES ON THIS FORM - Report names verbally to EC/ERG Leader					
Injuries This Report:					
Updated Weather		Dry <input type="checkbox"/>		Wet <input type="checkbox"/>	
Forecast:		Windy <input type="checkbox"/>		Wind Direction	
Impact on Immediate Operations:				Wind Speed	
External Assistance		Govt. <input type="checkbox"/>		Mutual Aid <input type="checkbox"/>	
Mobilised:		Other:		External Agency <input type="checkbox"/>	
Forward Response Plan:				Medical <input type="checkbox"/>	
Next 30 Mins:				Police <input type="checkbox"/>	
				Fire <input type="checkbox"/>	
Next 6 Hrs:					
Next 12 Hrs:					
Last External Contact:					
Agency		Time		By	
Aviation				Agency	
Medical				Govt.	
Police					
Response Room Incumbents: (Role and Person)					
Prepared by:					
Distribution: ERG <input type="checkbox"/>					
Approved by:					

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ATTACHMENT 12 - GOVERNMENT EMERGENCY NOTIFICATION

1. (a) Company Name:		Date:		Time:	
(b) Address:		Ph:		Fax:	
(c) (i) Vehicle Registration Number: (as applicable)					
(d) (i) Nature of Activity:					
Emergency Medical <input type="checkbox"/>					
Fatality <input type="checkbox"/>					
Environment <input type="checkbox"/>					
Natural Disaster <input type="checkbox"/>					
Oil Spill <input type="checkbox"/>					
Blowout <input type="checkbox"/>					
Explosion <input type="checkbox"/>					
Fire <input type="checkbox"/>					
Aviation <input type="checkbox"/>					
Extortion <input type="checkbox"/>					
Other:					
3. Description of the Incident:					
(a) Date:		Shift:		Time:	
(b) Department:		Name:		Location:	
(c) Summary of Incident:					
4. Emergency Measures Taken:					
5. Causes of Incident:					
- Known (specify)					
- Not Known					
- Information to be Supplied ASAP					
6. Nature and Extent of Damage:					
(a) Within the Location		No. Of Fatalities		No. Of Injuries	
				No. Of Illness	
Persons Exposed to Incident					
Material Damage		<input type="checkbox"/> Danger Still Present		<input type="checkbox"/> Danger No Longer Exists	
(b) Offsite		No. Of Fatalities		No. Of Injuries	
				No. Of Illness	
Persons Exposed to Incident					
Material Damage		<input type="checkbox"/> Danger Still Present		<input type="checkbox"/> Danger No Longer Exists	
Damage to the Environment					
7. Data Available for Assessing Effects of the Incident on Persons and Environment:					
8. Corrective Actions and Follow up:					
(a) To Alleviate Medium or Long-term Effects					
(b) To Prevent a Recurrence					
(c) Any Other Relevant Information					

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ATTACHMENT 13 - SPILL NOTIFICATION

รายงานการหกรั่วไหลของน้ำมันและสารเคมี

Spill Notification


ระดับของการหกรั่วไหล :	
Spill classifier :	
.....น้อยมาก น้อยกว่า 1 – 10 บาร์เรล(
Housekeeping spill (< 1 – 10 bbl)	
.....น้อย มากกว่า 10 – 50 บาร์เรล(
Minor spill (> 10 – 50 bbl)	
.....ปานกลาง มากกว่า 50 – 100 บาร์เรล(
Significant spill (> 50 – 100 bbl)	
.....รุนแรง มากกว่า 100 บาร์เรล(
Major spill (> 100 bbl)	

รายละเอียดของการหกรั่วไหล :	
Spill description :	
1. ชื่อ - สกุล ของผู้สังเกตการณ์	
Spill observer	
2. ประเภทของสารที่หกรั่วไหล	
Material spilled	
3. แหล่งกำเนิด/ สาเหตุ	
Apparent source/ Cause	
4. ผู้รับผิดชอบ	
Responsible person/ Contractor	
5. วันและเวลาที่เกิดเหตุ	
Date and time spill occurred	
6. สถานที่เกิดเหตุ/ ชื่อหลุม	
Location of spill/ Well site name N E	

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7. ปริมาณการหกรั่วไหล (บาร์เรล)
Volume of discharge barrel
8. ขนาดพื้นที่ที่หกรั่วไหล ตารางเมตร(
Area size of spill m ²
9. การหกรั่วไหลอยู่ในพื้นที่กักเก็บหรือไม่ ใช่/ ไม่ใช่(
Is spill contained? (Yes/ No)
10. มีการปล่อยของเหลวลงน้ำหรือไม่ ใช่/ ไม่ใช่(
Is spill being released into water body? (Yes/ No)
11. สภาพอากาศขณะที่เกิดการหกรั่วไหล
Weather condition
12. ภาพถ่ายขณะที่เกิดการหกรั่วไหล (หากมี)
Photograph taken (if required)

ขั้นตอนการเก็บกู้ :	
Clean up procedure :	
13. จำเป็นต้องเรียกหน่วยงานภายนอก/ ใช้อุปกรณ์หนักในการเก็บกู้หรือไม่ ใช่/ ไม่ใช่(
Is third party/ heavy equipment required to clean spill? (Yes/ No)	
14. หากจำเป็น ระบุเวลาที่เรียก	
If yes, time third party/ equipment called out	
15. เวลาที่หน่วยงาน/ อุปกรณ์ มาถึงที่เกิดเหตุ	
Time third party/ equipment arrived at scene	
16. เวลาที่เริ่มการเก็บกู้	
Time start of clean up	
17. เวลาที่เก็บกู้เสร็จ	
Time clean up completed	
18. จำเป็นต้องมีการตรวจสอบการปนเปื้อนในดิน/ น้ำ หรือในน้ำ ใช่/ ไม่ใช่(
Is soil or water monitoring necessary, as per EIA requirement? (Yes/ No)	

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ATTACHMENT 17 - BOMB THREAT RESPONSE ACTIONS

Response Actions - Bomb Threat

The person receiving the call will:

- Activate recording equipment if fitted and the threat is received by telephone.
- Adopt helpful attitude and be conciliatory.
- Make written notes using guidelines issued for that purpose - (see Appendix 17A).
- Report immediately to General Manager.

Management will assess the credibility of the threat and possible consequences and consider whether to:

- Do nothing, evacuate or stay and search.
- Notify law enforcement agencies/emergency services.
- Alert neighbouring business/residents.
- Implement emergency shutdown procedures.

Search (only if search is not a Police responsibility)

Searches may be undertaken in response to a specific warning. Attention points:

- Know the police policy and role on search and evacuation.
- Prepare search plans in advance to ensure that premises are checked as quickly and effectively as possible.
- Divide the area into manageable-sized sectors.
- Form search teams familiar with the area.
- Define search priorities.
- Search in a logical and thorough manner so that no part of the sector is left unchecked.

"Do not touch or move any suspicious object"

Suspicious Object


If a suspicious object is found:

- If possible leave a marker near the device.
- Inform the General Manager.
- Stay out of sight of the object at a safe distance (normally at least 25 metres) and report every possible detail to the General Manager.

Evacuation

The decision to evacuate will be taken by management on the advice of the General Manager. The police will be consulted for advice:

- Evacuate as quickly and efficiently as possible using all available exits.
- Provide alternative routes to avoid the danger of passing close to any suspicious device.
- Consult neighbouring premises and emergency services.
- Gather all people in pre-designated "Assembly Areas" taking personal belongings with them.
- Check that everyone has left the premises

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ATTACHMENT 17A - BOMB THREAT CHECKLIST

- SWITCH ON TAPE RECORDER (IF CONNECTED)
- TELL THE CALLER WHICH TOWN/DISTRICT YOU ARE ANSWERING FROM
- RECORD THE EXACT WORDING OF THE THREAT

ASK THESE QUESTIONS

- Where is the bomb right now?.....
- When is it going to explode?.....
- What does it look like?.....
- What kind of bomb is it?.....
- What will cause it to explode?.....
- Did you place the bomb?.....
- Why?.....
- What is your name?.....
- What is your address?.....
- What is your telephone number?.....

- RECORD TIME CALL COMPLETED.....
- KEEP TELEPHONE LINE OPEN
- WHERE AUTOMATIC NUMBER REVEAL EQUIPMENT IS AVAILABLE RECORD NUMBER
- INFORM THE GENERAL MANAGER

Time informed.....

THIS PART SHOULD BE COMPLETED ONCE THE CALLER HAS HUNG UP AND THE GENERAL MANAGER HAS BEEN INFORMED

Time and date of call.....
Length of call.....
Number at which call is received (Your extension number).....

♦ ABOUT THE CALLER

Sex of caller?.....Male ☐ Female ☐
Nationality?.....Age?

♦ THREAT LANGUAGE


Well Spoken ☐ Irrational ☐ Taped ☐
Foul ☐ Incoherent ☐

Message read by threat-maker ☐

♦ CALLER'S VOICE

Calm ☐ Crying ☐ Clearing throat ☐
Angry ☐ Nasal ☐ Slurred ☐
Excited ☐ Stutter ☐ Disguised ☐
Slow ☐ Lisp ☐ Accent ☐
Rapid ☐ Deep ☐ Familiar ☐
Laughter ☐ Hoarse ☐

If the voice sounded familiar, who did it sound like?
.....

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♦ BACKGROUND SOUNDS

Street noises ☐ House noises ☐
Animal noises ☐ Crockery ☐ Motor ☐
Clear ☐ Voices ☐ Static ☐
PA system ☐ Booth ☐ Music ☐


Factory machinery ☐ Office machinery ☐
Other (specify).....

♦ REMARKS

.....
Signature.....Date.....

Letter and Parcel Bomb Recognition Points

- Foreign mail, air mail and special delivery
- Restrictive markings such as confidential, personal etc.
- Excessive postage
- Hand-written or poorly typed address
- Incorrect titles
- Titles but no names
- Mis-spellings of common words
- Oily stains or discolourations
- No return address
- Excessive weight
- Rigid envelope
- Lopsided or uneven envelope
- Protruding wires or tinfoil
- Excessive securing material such as making tape, string etc.
- Visual distractions


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ATTACHMENT 18. IRT MEDICAL EMERGENCY INFORMATION

Total number of injured persons		
Names of injured persons		
Present location of injured persons	Location	
	Crew	
	Hospital	
	Doctor/s	
	Name	
	Phone	
	Fax	
Brief medical description		
Medical treatment given so far (on site, local hospital, etc.)		


Other Emergency

Nature of the emergency.	
Location of the emergency.	
Assistance required	


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ATTACHMENT 18A. IRT MAJOR EMERGENCY MEDICAL INFORMATION
(Form to be completed by a Doctor)

1. NAME OF CALLER a) Name: b) Telephone: c) Fax: d) Company:		
2. NAME OF PATIENT a) Name: b) First Name: c) Age: d) Sex: e) Company	F / M	
3. LOCATION OF PATIENT a) Country: b) Telephone: c) Address:		
1. Has the patient been seen by a doctor?	Yes / No	
5. Name of Doctor: Telephone Number:		
6. Medical Condition:	a) Is the patient conscious b) Is patient agitated/confused c) Breathing problems d) Significant bleeding e) Chest pain f) Burns g) Fractures h) Abdomen pain i) Trauma j) Fever k) Vomiting/diarrhea/de-hydration l) Multiple/Serious/Head injury	Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No Yes / No


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7. Comments:	
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IN CASE OF AN ACCIDENT

1. Date and time of accident	
2. Details of the accident (eg. Fall, traffic accident, etc)	
3. Is there any fracture?	Yes / No
A – probable	Yes / No
B – obvious	Yes / No
C – confirmed by x-ray	Yes / No
1. Localisation:	
A – skull	()
B – face	()
C – cervical column (neck).....level	()
D – vertebral column	()
E – ribs.....side.....how many	()
F – pelvis	()
G – upper limb left ()	
right ()	
H – lower limb left ()	
right ()	()
I – other places	
5. Wounds. Are there any? Locate them, especially the ones located in the thorax and the abdomen; indicate their size and depth:	
6. Bleeding. Has there been profuse bleeding?	


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IN CASE OF BURN


1. Date and time of burn?				
2. Cause of burn:				
A – Explosion	()			
B – Fire (flames)	()			
C – Chemical products	()			
D – Others (specify)	()			
3. Localisation and degree of the burn:		1 st deg	2 nd deg	3 rd deg
A Face				
B Neck				
C Thorax				
D Abdomen				
E Left arm				
F Right arm				
G Left leg				
H Right leg				
1. Time of the first treatment:				
2. When did patient last pass urine:				

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IN CASE OF ILLNESS	
1. Date of first symptoms:	_____
2. Presumed diagnosis of this illness	_____
3. Temperature	_____
4. Spontaneous respiration:	Yes / No
If Yes: normal	()
laboured	()
5. Respiratory rhythm: regular	()
Irregular	()
6 Artificial respiration effective	()
ineffective	()
7 Number of respiratory movements per minute:	_____
8 Colour of the nails, lips, ears:	
White () Pink () Black ()	
9 Does the patient cough?	Yes / No
10 Does the patient cough up sputum?	Yes / No
11. Does the patient cough up blood?	Yes / No
12. Has a thorax x-ray been carried out?	Yes / No
If so, results:	_____
13. Blood pressure	_____
14. Pulse rate	_____
15. Has the patient urinated?	Yes / No
16. If yes, how much per 24 hour?	_____
17. Are the extremities cold? (hands, feet, ears)	Yes / No
18. Is he paralysed?	Localisation:
	A right arm ()
	B left arm ()
	C right leg ()
	D left leg ()
	E respiratory ()

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19. Is the patient agitated?	Yes / No
20. Is the patient conscious?	Yes / No
21. Is the patient in a coma? If so, time/date coma began	_____
22. The pupils are:	
Right A normal ()	
B dilated ()	
C contracted ()	
Left A normal ()	
B dilated ()	
C contracted ()	
23. Is patient in pain?	Yes / No
If so, localisation and degree?	_____
21. Has patient had malaria?	Yes / No
25. Is patient diabetic?	Yes / No
26. Does patient vomit?	Yes / No
27. Does patient have diarrhea?	Yes / No
28. Does patient have intestinal bleeding?	Yes / No
29. Is there any other bleeding?	Yes / No
If so, where?	_____
30. Is patient a psychiatric patient?	Yes / No


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ALL CASES TREATMENT ALREADY GIVEN	
1. Has the patient been operated on?	Yes / No
If so, indicate nature and result of the operation:	
2. If fracture, how has it been immobilised?	Yes / No
3. Is the patient on drip?	Yes / No
Nature of infusion	
1. Treatment initiated – present medications	
5. Does the patient need blood?	Yes / No
6. If known, blood type:	
7. Give any other useful, precise details on the nature of the illness and the patient's condition:	
8. Was the patient suffering from an illness known previously?	
9. Were laboratory tests carried out?	
If so, which one and state results:	
10. Has the patient been given with any Medicine/ Drugs? If so give details	

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ATTACHMENT 19. FIELD INFORMATION REQUIRED FOR PROPERTY OR ENVIRONMENT DAMAGE


Name and location of the rig/crew/workshop/other place	
Date and time of the accident	
Description of the accident	
Number of personnel at the location	
Extent / number of casualties (see above)	
Detail of equipment down	
Evacuation / rescue requirements	
Extent of loss	
Action being taken to control losses	
Any external assistance participating	
Weather Conditions if applicable	
Has the client been informed?	
Client contact person and telephone number for this event	
Extent of nature of Environmental damage	
Immediate actions taken to contain the environmental damage.	

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ATTACHMENT 20A - BANGKOK AREA HOSPITALS


Recommended Hospitals (Closest to the office)

Name	Contact Number

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ATTACHMENT 20. IMPORTANT TELEPHONE NUMBERS

Organisation	Service/Supplier	Position	Phone	Mobile
ECOE/R (T)	Bangkok Office		02-937-1124-9 ext 112	
			02-937-1124-9 ext 111	
			02-937-1124-9 ext 107	
			02-937-1124-9 ext 127	
			02-937-1124-9 ext 128	
	Wichian buri Office		056-718-318 ext 108	
			056-718-318 ext 312	
			056-718-318 ext 316	
			056-718-318 ext 203	
DMF Office	DMF		02-794-3391	
			02-794-3002	
			02-794-3375	
			02-794-3377	
			02-794-3383	
			02-794-3390	
			02-794-3359	
			-	
			-	
			-	
Drilling Rig Company	ELITE Drilling		-	
Drilling Fields Supplier	Scomi Oiltool		02-204-2910-3	
Logistics	Onshore Logistics		02-279-6380-1	
Wireline Logging	Schlumberger		02 - 937 - 0700	
Waste Disposal	NMI Logistics		02-322-7979	

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ATTACHEMENT 20B – WICHIAN BURI EMERGENCY CONTACT NUMBERS AND LOCAL EMERGENCY SERVICES

Type of Medical service provider	No. of beds	No. of Emergency room	No. of Operation room	No. of Nurse	No. of Doctor	Basic medical equipment	Contact Number
	150	1	2	90	10	X-ray =1, Blood bank Lab =1, Ambulance = 4	
	5	-	-	3	-	-	
	2	-	-	1	3	-	
	2	-	-	1	-	-	
	30	1	1	40	4	X-ray =1, Lab =1, Ambulance = 2	
	508	1	8	300	48	X-ray = 2 Blood bank =1 Ambulance= 2	

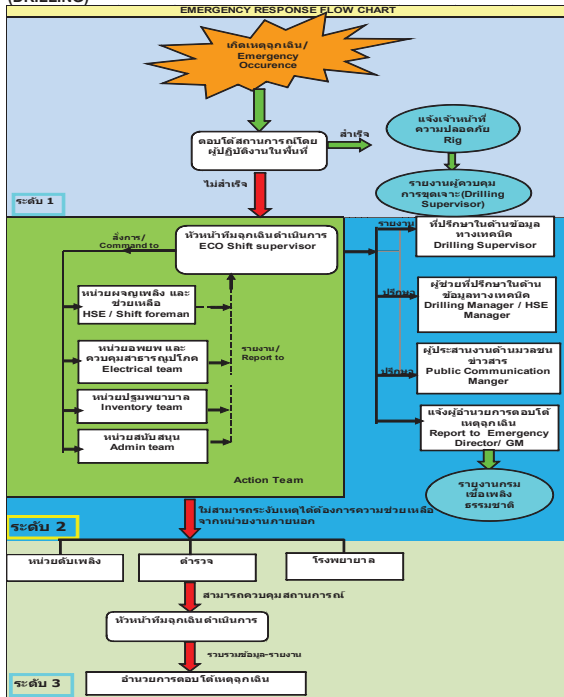
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ATTACHEMENT 20B – WICHIAN BURI EMERGENCY CONTACT NUMBERS AND LOCAL EMERGENCY SERVICES (CONTINUED)

Name of Fire Brigade/ Police	No. of Fire Truck	No. of Water Truck	No. of Foam Truck	No. of Hose	No. of Portable Fire extinguisher	Other Equipment	Contact Number
	-	-	-	-	-	Communication device available for police network - 30 staff	
	4	1 x 1,000 L 1 x 2,000 L 1 x 6,000 L 1 x 12,000 L	40 Liter	1 1/2" = 7 2 1/2" = 2	Dry chemical 15 lb =15 Cylinders	Fire suit 7 suits	
	-	-	-	-	-	Communication device available for police network - 30 staffs	
	1	1x 6,500 L	-	1 1/2" = 10 2 1/2" = 10	Dry 15 lb = 6 Cylinders	Fire suit 5 suits	

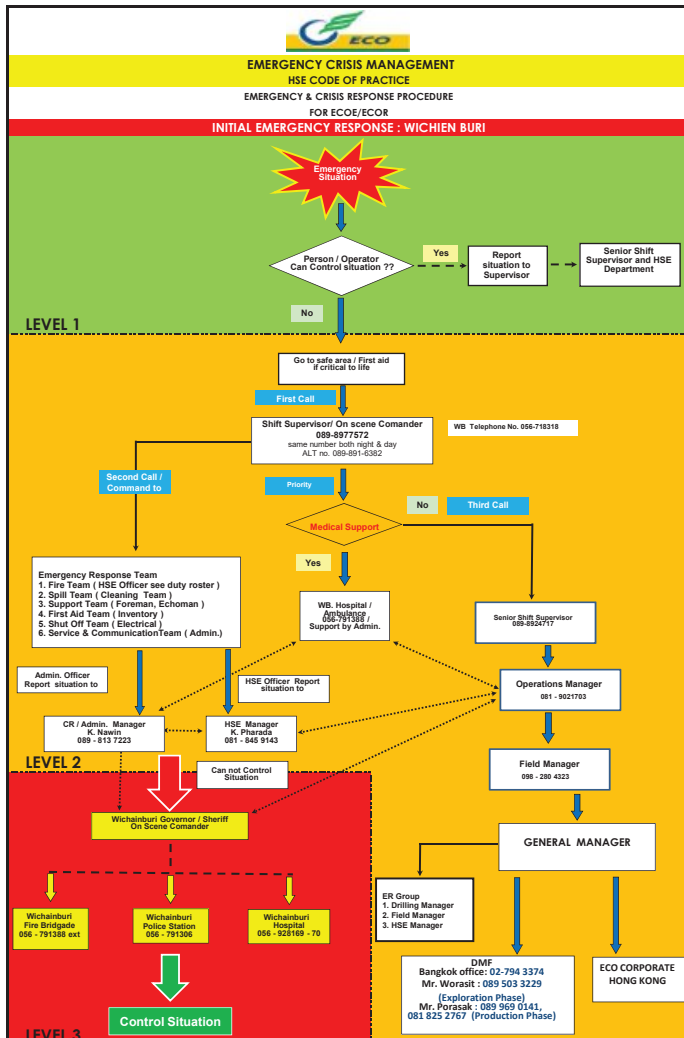
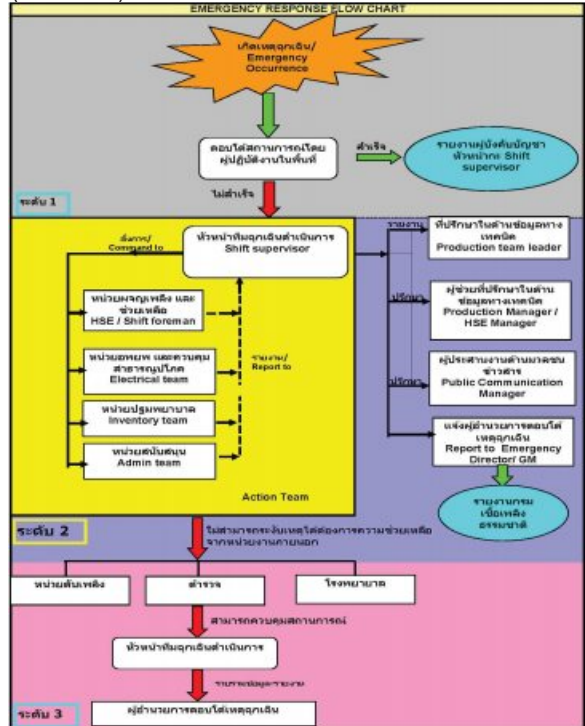
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ATTACHMENT 21 A, WICHIAN BURI EMERGENCY RESPONSE DIAGRAM (DRILLING)



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ATTACHMENT 21 B, WICHIAN BURI EMERGENCY RESPONSE DIAGRAM (PRODUCTION)



ภาคผนวก จ-2
การตรวจสอบเครื่องจักรอุปกรณ์




ระยะดำเนินการขุดเจาะ



PREVENTIVE MAINTENANCES



	PREVENTIVE MAINTENANCES 1 – Maintenance Guideline	HSEM
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Maintenances

MAINTENANCE

1.1 Purpose

SINOPEC is committed to a program of regular maintenance of equipment owned and operated by the Company to maximize the safety of all personnel, equipment, and the environment by use of maintenance program for all tools and equipment. Maintenance will be completed with safety compliance as a priority, and performed by workers who are experienced, and competent in completing maintenance tasks. The maintenance completed on each piece of equipment, heavy or light, will be documented, and placed in a unit file. The guidelines identified within the SINOPEC Equipment Maintenance Manual as well as the following standards will be used in the performance of maintenance of equipment:

- All maintenance will adhere to applicable regulation, standards and manufacturers specifications
- Service will be completed by appropriately qualified personnel
- Scheduling and documentation of all maintenance work will follow the SINOPEC Equipment Maintenance Manual Guidelines
- Workers will follow maintenance repair reporting procedures, including the documentation of minor repairs completed, on pre-use inspection forms.
- Tag out procedures will be used when completing repairs to applicable equipment and tools

1.2 Responsibilities

Employees

- Shall report and remove from service any equipment, which is defective, and note the deficiency in the unit logbook or on the pre-use inspection form.
- Report in writing all repairs needed
- Shall fill out logbooks for any equipment or lifting equipment they operate.
- Will not operate equipment that has been tagged out of service, until it has been repaired and the tag has been removed by a qualified worker.

Superintendents

- The supervisor shall be responsible for the application of the program in their area of responsibility.
- Shall report and remove from service any equipment, which is defective.


Mechanics

- Are responsible for the scheduling and documentation of all maintenance work.
- Remove from service any equipment that is defective.
- Management
- Make available the necessary resources to maintain this program
- Assist in the inspection program, to train workers and identify deficient equipment.

1.3 General Guidelines

- 1) All servicing will be completed to the standards set out in the guidelines of this manual, manufacturer's standards, and government regulations. An approved dealer will complete all repairs, after being authorized by the job supervisor.
 - i) Trip Inspection Reports and Evidence of Repair
 - ii) Vehicle Inspection/Maintenance Records
 - a) Vehicle Identification Information

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	PREVENTIVE MAINTENANCES 1 – Maintenance Guideline	HSEM
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- b) Dated Vehicle Inspection Reports
 - c) Dated Work orders Describing Repairs Made
 - d) Axle and Suspension Modifications
 - e) Manufacturer's Notices of Defect
- iii) Recall System
 - iv) Staff Training and Development Records
 - a) In-House Instructor Records
 - b) Recall System
 - v) Compliance Records
 - a) Accident Records
 - b) Miscellaneous
- 2) The documentation of vehicle maintenance will be kept to the standards set out in the Canadian Motor Carrier Standards and Motor Transport Act and Regulations. Diaries will be distributed to employees to document maintenance completed on equipment. The information written in the diary will be transferred to the file for the unit. All maintenance will be documented on maintenance logs; this will keep track of expenses on each unit.
 - 3) All vehicles will have a pre-trip inspection completed, with any deficiencies found in the pre-job inspections to be repaired in a timely fashion.
 - 4) Heavy equipment will be serviced as per the information in the SINOPEC Equipment Maintenance Manual and have all servicing completed as per the applicable form. Every service, as determined by an engine hour meter, an oil change will be completed on the motors. Along with this guideline, chassis's and equipment will be greased weekly, as a minimum.
 - 5) All heavy equipment will be warmed up and cooled down, as per guidelines in the Work Procedures Section of the Safety Manual.

	PREVENTIVE MAINTENANCE 2 – Lifting Equipment Inspection	HSEM
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LIFTING EQUIPMENT INSPECTION

2.1 Purpose

SINOPEC is committed to conducting its operations in a manner which prevents any adverse effects on the health and safety of its employees, contractors, and visitors.

To establish the minimum requirements for the safe use and maintenance of equipment, including overhead lifting equipment, located on SINOPEC-Yemen worksites, all SINOPEC employees and contractors will comply with the following standards.

2.2 Scope

This program covers all SINOPEC operations. This program will focus on the major components of the traveling system. Such as : traveling block sheaves and shaft, crown sheaves and shaft, fast line sheave and shaft, dead line anchor, elevator balls, elevators, swivel ball bolts and pins, top drive components (if applicable), hook and support pins, etc.

Also included in this program is the handling equipment such as: lift subs, slips (casing, drill pipe, drill collar) and tongs.

2.3 Procedures

Testing

Periodic testing must be conducted on the previously mentioned equipment. Testing refers to magnetic particle inspection (MPI). Other types of tests may also be included if appropriate.

Testing will show areas where cracks have occurred in the metal. Upon detecting defects in the metal of any of the named equipment, repair or replacement must be done according to the manufacturer's recommendations before resuming operations with that equipment.

Frequency of Testing

It depends on different equipment and we also should followed manufacturer's recommendations. There are other conditions that may warrant an inspection. They are as follows:


- Any of the listed equipment that has had field repairs or modifications performed that involved heating, welding or cutting must have a MPI test conducted before it is allowed to be placed back into service or inventory.

Note: - Proper documentation must accompany each piece of equipment.

- Equipment that has been stacked beyond the one year period, or has been subjected to adverse weather conditions that might cause problems with rusting, corrosion, etc.
- When equipment has been involved in a significant amount of jarring.
- When equipment has been involved in handling excessive amounts of weight near its rated capacity, such as large diameter or heavy casing strings.

Some equipment may receive inspections more frequently than others, however, all appropriate equipment is to be inspected a minimum of once a year.

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	PREVENTIVE MAINTENANCE 2 – Lifting Equipment Inspection	HSEM
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2.4 Responsibilities

Workers are required to comply with this procedure, including the responsibility to ensure, for their own and their fellow workers safety, that all overhead equipment has been inspected and certified prior to its use.

Rig Managers

- Review and sign the lifting equipment inspection Log Book and ensure correct entries are made and action items have been carried out
- Ensure damaged slings and chains have been removed from service and destroyed
- Ensure that all lifting operations are properly planned and supervised
- When required utilize a Safe Work Permit System to, ensure that all foreseeable risks have been taken into account

Lifting Equipment Operator

- Visually inspect all slings and chokers prior to use and every six months, recording the findings of the six month inspections in a log sheet, using the identification number of the sling.
- Service and maintain lifting equipment, as identified in the SINOPEC Equipment Inspection Inventory list.
- Refuse to carry out lifts if, on reasonable and probable grounds, the worker believes that it may present imminent danger to the health or safety of himself, or another worker present at the worksite.

2.5 Documentation of Inspections

All inspections of the listed equipment must be documented at the time of the inspection. Supervisory personnel are required to sign and submit this documentation to division operations managers as soon after the inspection as possible. These files must be kept in the division office to be used as required.

Transfer of Equipment: Should any of the listed equipment be transferred from one division to another, the appropriate documentation must accompany the equipment.

2.6 Definitions

Bird Cage(ing)


Occurs with the sudden release of a load, and the strands or wires of the wire rope do not return to their original condition or position.

Competent Person

A person who has both practical and theoretical knowledge and such experience of the lifting equipment used in the operation, as is necessary to carry out the tasks assigned to the device, in a safe and efficient manner. The person will be identified and authorized by the Rig Manager or Driller after conducting manual and/or oral tests. Where possible, this person shall be certified.

Imminent Danger

A danger that is not normal, for that occupation, or a danger under which a person engaged in that occupation would not normally carry out the person's work

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classifications, 6 x 37 classifications) states that the length of lay should not exceed 7¼ times the nominal diameter of the rope. However, it may be advisable to consult the wire rope manufacturer regarding specific measurements.

Reduction in the area due to abrasion is another indicator of how much a sling-line has been worked. Again the critical areas are those sections of the sling-line which bend and pass over sheaves. Included in this category is reduction in rope diameter due to core failure.

b) Wear Due to corrosion

This type of wear is primarily evident in the sling-lines that have not been maintained through proper sling-line lubrication. The damage may be due to operational or environmental conditions; but once the rust or corrosion has penetrated the inner surfaces of the strands and wires, the sling-line should be replaced. The reason here is that free movement required to develop the full strength of the rope is prohibited by the presence of the corrosion. The best way to guard against this type of wear is to periodically lubricate the wire rope. Check with the wire rope manufacturer regarding the appropriate type of lubricant for use in a specified territory.

c) Wear Due to Incidental Damage

Incidental damage is due to incorrect handling of sling-lines. This may result in bends, kinks or birdcages in the wire rope. Sling-lines should not be left hanging in the mast, but should be stored on reels or coils. Proper handling and storage of sling-lines is similar to any other wire rope product and is discussed elsewhere in this manual.


d) Certified Pull-Test

If a good visual inspection of the sling-line reveals little in terms of damage due to operation, corrosion or incidental damage, a certified test pull may prove helpful in determining the safety of the sling-line. Due to the variations in mast design, the nominal strength of the sling-lines used by SINOPEC will differ. Reference should be made to the reeving diagrams for detailed information.

2.8 Rejection Criteria

Wire Rope

- Six randomly distributed broken wires in one rope lay, or 3 wires broken in one strand in any lay.
- Evidence of kinking, bird-caging or other damage, resulting in distortion of the rope's structure.
- Crown wear (circumference of the rope) and nicking of strands.
- Fatigue breaking, indicated by a square break of a wire.
- Mechanical abuse, such as pinched strands or cut wires.
- Evidence of any heat damage.
- Damaged, worn, pinched or loose eyes.
- Movement of the core, either in or out, particularly on non-rotating wire rope.
- Wire rope that has been run through the eye of the sling to serve as a choker.
- Safety catches on the hooks are missing or have been disabled.

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Independent Inspection

An inspection of lifting equipment by an approved independent inspection company to ensure all equipment complies with the applicable Standard or equivalent. SINOPEC Workover operation inspections shall be conducted to CAODC standards, identified below.

Overhead Lifting Equipment:

Is defined as equipment that is specifically designed to lift or hoist materials above normal working surfaces or above workers completing normal work activities.

Safe Load Limit (SWL)

- Sling -** Is the maximum mass that a sling, choker or hoist has been designed to raise, lower or suspend in normal usage.
- Lifting Device** The maximum load that can be safely handled by a crane, hoist, loader, mast, draw-works, winch, or any equipment integral to the operations to the lifting device, at a specified position and under specified conditions. The maximum SWL at minimum radius should be as per manufacturer's data noted on the device.

2.7 Sling-Line Maintenance

Due to the importance of the sling-line during mast raising and lowering, SINOPEC considers it imperative to perform proper sling-line maintenance before and after each use. While it might be possible to develop a formula, which would indicate the service life for a sling-line, variations in operational and environmental conditions could reduce the effectiveness of the formula. For these reasons SINOPEC considers a thorough visual inspection and, if necessary, a certified pull-test to be the safest, and most accurate, methods to determine the service life of sling-lines. The following information is provided to assist operational personnel in performing proper sling-line maintenance.

As indicated above, the best way to determine whether a sling-line has outlived its usefulness is by means of a visual inspection. Although some personnel might consider such an inspection an imposition on their time, the benefits of the inspection heavily offset the time required.


During the inspection, consideration should be given to three principle factors that can affect the life of a sling-line. These are "wear" due to operation, corrosion and incidental damage. When conducting the inspection, the following points may be used as general guidelines in determining the type and extent of wear on the sling-line.

a) Wear Due to Operation

This can be defined as that wear which occurs through the normal use of the sling-line. This type of wear is primarily evident in the areas near the sling-line sockets and those sections of sling-line which bend and travel over sheaves. Emphasis should be placed on locating broken wires, elongation and reduction in area of the wire rope.

The inspection of the sling-line for broken wires must be very thorough, since much of the time the breaks occur on the inner wires that form the strands. Wire rope manufacturers suggest the best time to inspect for broken wires is after the mast has been raised or lowered and the load on the wires is relaxed. Reference SINOPEC Slip and Cut Program

Elongation of the wire rope in a sling-line is a good indicator of how much it has been worked. While wire rope is designed to have a certain amount of elasticity, an overworked wire rope or sling-line will tend to stretch without returning to its normal lay length. The length of lay in a wire rope is the length of travel which any strand makes in one full revolution about the wire rope core. When a significant increase in the length of the lay is evident in any section of the sling-line, it should be replaced. The API specifications for wire rope used in sling-lines (6 x 19

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- Stretched wire rope cable slings,

- Not color coded to the current standard.

Note: the pre-use inspection of wire rope is to ensure that a minimum of seven wraps of wire is left on drum at the greatest extension of the rope.

Synthetic Web Slings

- Acid or caustic burns, or
- Melting or charring of any surface part, or
- Snags, punctures, tears or cuts, or
- Broken stitches, or
- Distorted fittings/ends, or
- Color coded to the current standard.


Note: The durability of synthetic web slings is much less than that wire rope slings. This requires a higher degree of skill by the Rigger/ Slinger to prevent damage and subsequent removal from service.

Chains:

- Wear - the reach of each sling leg to ensure that they correspond to the value stamped on the ID tag, and the length hasn't increased over 3%.
 - Localized bending, nicks and gouges – inspect for twisted or bent chain links, if any are discovered remove chain from service.
 - Stretching - the wear on any portion of any chain link is in excess of 15%.
 - Condition of hook - hook(s) have been opened more than 15%, or twisted more than 10% from the plane, or if the safety catch is disabled or missing.
 - Indications that the chain has been contacted by an electrical arc or by molten metal
- Note:** - Chains can cause damage when used with some equipment and they slide easily on other items. The failure of a single part can drop the load. They can catch and become damaged easier than wire rope. This indicates that wire rope slings are preferable to using chains for lifting.

Lifting Devices

- Capacity plates - attached to all lifting devices and the safe load for max/min positions of the boom clearly marked.
- Functioning anti two-block device/alarm – lifting devices won't be operated until the anti two block device, crown saver or any other alarms have been tested for malfunction, unless the device was constructed and approved by the Manufacturer to operate without a device/alarm, i.e catline.

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- Functioning weight indicator – blocks and cranes shall be operated with a safe load indicator.
 - Completed Safe Work Permit - in hazardous/restricted areas, or during hazardous operations such as rig moves, the operation of lifting devices shall comply with the Safe Work Permit procedure.
 - Stable outriggers/support legs (if equipped by manufacturer) – outriggers are to be firmly on solid ground on placed on adequate blocking to maintain the lifting device in a level position.
Note: The following concerns will also be addressed prior to the lift of any equipment or materials.
 - Flow-lines, wellheads, overhead equipment or electrical lines - lifts will only be made over/under live equipment with due consideration and adequate spacing and protection, as identified on the Safe Work Permit.
 - Known load weight - where a load weight is not known or cannot be readily estimated, it should be weighed as part of the initial lifting.
 - Weather conditions – lifting devices shall not be operated in extreme weather conditions until a hazard assessment has been completed by the Drilling/Completion superintendent, site supervisor and lifting device operator.
- Note:** any of the faults identified for wire rope, synthetic slings or chains during inspections is sufficient cause for rejection and removal from service. All lifting slings and chains removed from service will be destroyed.

2.9 Inspections

The inspection and certification frequencies identified below meet the requirements identified within CAODC recommendations. (CAODC Recommended Practices 3, 4, 7) Hours of operation will be added to the equipment monthly calculation utilizing rig days (spud to release), not including moving, rig-up or tear-out days. Each rig must adhere to the Overhead Logbook (SINOPEC utilizes and recognizes the CAODC issued logbook as its standard). Slings, shackles and winch lines will be inspected to a SINOPEC standard, which includes a visual inspection against the identified criteria, and color coding, to assist workers in selecting inspected equipment.


Certification criteria for the major components on drilling and completion rigs are divided into four categories:

- Level I** Visual observation of the equipment by the rig crew during daily operations and/or during routine service. Level I inspections are to be completed by crew members and equipment operators.
- Level II** Is considered a level I inspection, plus a more thorough inspection of load areas by the driller and rig manager to check for proper lubrication, obvious external cracks, pre-mature wear or deterioration, missing parts and guards. Level II inspections are to be completed by senior crew members, equipment operators and the SINOPEC site supervisor.
- Level III** Is considered a thorough inspection of load areas, pick up joints, pins and wear tolerances, and must be conducted to determine the condition of the equipment. The individual supervising the Level III inspection must possess the adequate knowledge and experience, such as engineers, NDT technicians and/or senior drilling operations personnel. Level III inspections will be documented in the "Overhead Equipment Logbook", the inspector(s). A copy of the inspection will also be forwarded to the Drilling and Completions maintenance and safety representatives. Level III inspections are to be completed by NDT technicians, senior drilling or managers and senior drilling personnel to complete the inspections.
- Level IV** Is considered an inspection that requires the equipment to be disassembled, as required, to do a complete

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inspection that includes a Non-destructive test of all critical areas and a mechanical fit for purpose inspection. NDT inspectors for a Level IV inspection are required, as a minimum, to have certification by a professional engineer or an OEM representative. A copy of the Level IV inspection, and associated certification documents, will be forwarded to Drilling and Completions maintenance.

Inspection of lifting devices, winch lines, chains, wire rope and synthetic slings, shackles and associated devices are to be completed using the criteria indicated in the following table.


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Appendix I WORKOVER EQUIPMENT INSPECTION Inventory and Certification Program

Equipment Description	Weight/ Size Rating	Daily	Weekly	Monthly	250 Days	500 Days	750 Days	1000 Days
Mast		Level I	Level II	SINOPEC Rig Inspection	Level III	Level III	Level III	Level IV
Crown		Level I	Level II	SINOPEC Rig Inspection	Level III	Level III	Level III	Level IV
Block(s)	<150 ton	Level I	Level II	SINOPEC Rig Inspection	Level III	Level IV		
	>150 ton	Level I	Level II	SINOPEC Rig Inspection	Level III	Level III	Level III	Level IV
	M300 Failing	Level I	Level II	SINOPEC Rig Inspection	Level IV			
Hook	<150 ton	Level I	Level II	SINOPEC Rig Inspection	Level III	Level IV		
	>150 ton	Level I	Level II	SINOPEC Rig Inspection	Level III	Level III	Level III	Level IV
Swivel	<150 ton	Level I	Level II	SINOPEC Rig Inspection	Level III	Level IV		
	>150 ton	Level I	Level II	SINOPEC Rig Inspection	Level III	Level III	Level III	Level IV
Elevators		Level I	Level II	SINOPEC Rig Inspection	Level III	Level IV		
Links/Bales		Level I	Level II	SINOPEC Rig Inspection	Level III	Level IV		
Fall Arrest		Level I	Level II	SINOPEC Rig Inspection	YEARLY INSPECTION/CERTIFICATION BY O.E.M.			
Draw-works		Level I	Level II	SINOPEC Rig Inspection	Level III	Level IV		
Raising Line Equalizer		Level II prior to					Level IV (and when lines replaced)	

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		USE			
Crane/picker		Level I	Level II	SINOPEC Rig Inspection	YEARLY INSPECTION/CERTIFICATION BY O.E.M.
Guy Wires		Level I	Level II	SINOPEC Rig Inspection	REPLACED EVERY 1000 HOURS UNLESS DAMAGED SOONER
Wire rope/line		Visual	Level II	SINOPEC Rig Inspection	REPLACED EVERY 1000 HOURS UNLESS DAMAGED SOONER
Cloth Slings		Visual	Visual	Level II	VISUALLY INSPECT, INVENTORY AND COLOR CODE EVERY 6 MONTHS
Wire Slings		Visual	Visual	Level II	VISUALLY INSPECT, INVENTORY AND COLOR CODE EVERY 6 MONTHS
Lifting Chain		Visual	Visual	Level II	VISUALLY INSPECT, INVENTORY AND COLOR CODE EVERY 6 MONTHS


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Appendix II

GENERAL EQUIPMENT INSPECTION INVENTORY

Equipment Description	Inspection Frequency (Inspection Items are Identified on Applicable Inspection Sheet)						
Allison Transmission(s)	Daily	60-100 Hrs	240-300 Hrs	1000 Hrs			
Service Rig Air System	Daily						
Gear Box(s)		80-100 Hrs	240-300 Hrs	1000 Hrs			
Replace Filters				1000 Hrs			
Drive Line/Shafts							
Service Rig Brake System	Daily			1000 Hrs			
Service Rig Brake Cooling System	Daily						
Service Rig Chain Guard		80-100 Hrs	240-300 Hrs	1000 Hrs			
Service Rig Chain case				1000 Hrs			
Crown Saver	Daily						
Service Rig Gears				1000 Hrs			
Service Rig Hydraulic System(s)			240-300 Hrs	1000 Hrs			
Service Rig Pneumatic System(s)			240-300 Hrs	1000 Hrs			
Weight Indicator							
Service Rig Levers				1000 Hrs			
Rotary Table	Daily	150-180 Hrs	450-540 Hrs				
Swivel	Daily / Pre-Use						
Skid Mounted Rig Pump	Pre-Use	40 Hrs	200 Hrs	1000 Hrs			
Radiator(s)							
Caterpillar Engine (s)	Daily		250 Hrs	1000 Hrs	3000 Hrs	5000 Hrs	4-Year / 10,000 Hrs

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Generator Set	Daily	50 Hrs	5-600 Hrs	800 Hrs	2000 Hrs	2400 Hrs	5000 Hrs
High-Pressure Manifold	Daily						
Power Tong(s)	Pre-Use						
Trailer Chassis	Pre-Trip	Monthly	Yearly				
Trailer Brakes	Pre-Trip	Monthly	Yearly				
Trailer (Lights)	Pre-Trip	Monthly	Yearly				

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	PREVENTIVE MAINTENANCE 3 - Inspection Standard	HSEM
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3.1 Purpose

The identification of deficiencies and the associated repair procedures will be categorized as either:

- | | |
|-------|--|
| Major | (1) All weld repairs to any load bearing components |
| | (2) Any modification to load bearing equipment, such as over-sizing or under-sizing of pin fits |
| | (3) Any replacement of load bearing parts, such as hook shanks, axels, pins, etc. |
| Minor | (1) Repair of guards, non-loaded attachments, sheave re-grooving, repairs to API connections (threaded on swivels), etc. |

3.2 Procedure

All repairs completed to SINOPEC-Yemen equipment will follow the original equipment manufacturer' agent or professional engineers' policy and/or procedure. The certifying engineer or O.E.M. agent will supply maintenance workers with an engineered procedure and certification document. All components, where practical, will have a serial or identification number, stamped on them to verify certification. Repairs will be performed to meet the certifying engineers or O.E.M. representative' satisfaction, prior to being put back in service.

Minor repairs can be completed by competent rig personnel, but the repairs must be completed utilizing acceptable industry practices and/or guidelines.

The re-certifying engineer or O.E.M. representative will provide SINOPEC, and the rig, with a certification document for equipment that has undergone major repairs, as defined above, which will be entered into the "Overhead Equipment Logbook" for verification. The SINOPEC rig inspection will include a review of certification documents, ensuring that serial or identification numbers and documents correspond.

All workers are responsible to ensure that equipment is repaired and modified to an engineered standard, and where applicable, has gone through a certification process.

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SINOPEC 9001 Preventive Maintenance

VFD Control VFD 控制房



SINOPEC Huadong Oilfield Service Corporation (Thailand)

VFD Control

Preventive Maintenance Inspection

Ensure adequate safety precautions while work is being performed (disconnected power)

Equipment No. _____

Rig No: SP9001

Well No. _____

Logogram: 简写: OK好 O; Repair Needed要修理 R; Repair Made已做修理 M; Mechanic/Electrician Measurement机械师/电工测量 PW

2023.

Date 日期	1.5	1.6	1.7	1.8	1.9	1.10	1.11
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0

1. Inspect exterior surfaces of panels for dirt, grease, oil or physical damage.
2. Inspect interior for dust, dirt, oil, grease, metal, water or corrosion.
3. Inspect all air filters for cleanliness; clean or replace as necessary.
4. With power off, check for loose hardware in the equipment, preferably during rig moves or down time.
5. During rig operation, inspect all meters, instruments and lamps for faulty operation or damage.
6. Check all contactor tips for pitting or wear.
7. Inspect plugs and connectors for damage or looseness.

Comments: 1. 1.1 进地后显示 P=0.9 1.2 进地后显示 P=0.9 1.3 进地后显示 P=0.9 1.4 进地后显示 P=0.9 1.5 进地后显示 P=0.9 1.6 进地后显示 P=0.9 1.7 进地后显示 P=0.9 1.8 进地后显示 P=0.9 1.9 进地后显示 P=0.9 1.10 进地后显示 P=0.9 1.11 进地后显示 P=0.9

1.1 进地后显示 P=0.9

1.2 进地后显示 P=0.9

1.3 进地后显示 P=0.9

1.4 进地后显示 P=0.9

1.5 进地后显示 P=0.9

1.6 进地后显示 P=0.9

1.7 进地后显示 P=0.9

1.8 进地后显示 P=0.9

1.9 进地后显示 P=0.9

1.10 进地后显示 P=0.9

1.11 进地后显示 P=0.9



SINOPEC 9001 Preventive Maintenance

BOP 封井器



SINOPEC Huadong Oilfield Service Corporation (Thailand)

BOP (封井器)

2023.1.5

Preventive Maintenance Service

Ensure adequate safety precautions while work is being performed (disconnected power)

Equipment No. _____

Rig No: 9001

Well No. NSB-F3A

Logogram: 简写: OK好 O; Repair Needed要修理 R; Repair Made已做修理 M; Mechanic/Electrician Measurement机械师/电工测量 PW

Daily running time

Date	1.5	1.6	1.7	1.8	1.9	1.10	1.11
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0

- 1 Check all pipe connections, no leaking
检查各连接管, 有无漏油
- 2 Check oil pressure correct, pipe ram 1500psi/hydro 1000psi 检查工作压力, 闸板1500 PSI, 玛形1000
- 3 Check grommet and side door is sealed or not
检查侧门胶垫及侧门密封
- 4 Check all gate valves working properly
检查各平板阀工作是否正常
- 5 Check all flange connections
检查所有法兰连接螺栓是否松动, 渗漏

Comments:



SINOPEC 9001 Preventive Maintenance

Air Compressor 空气压缩机



SINOPEC Huadong Oilfield Service Corporation (Thailand)

Air Compressor 空气压缩机

Preventive Maintenance Service

Ensure adequate safety precautions while work is being performed (disconnected power)

Equipment No. _____

Serial No: _____

Rig No: 9001 Well No: NSE-F3A

Total Running time(h): _____

Logogram: 简写: OK好_O; Repair Needed要修理_H; Repair Made已修

修理_M; Mechanic/Electrician Measurement机械师/电工的测量_TN

Daily running time

1. Check the voice of it's running 检查机体运行声音.

2. Check volume and quality of the oil 检查油类的容量和质量.

3. Check temperature of the body 检查机体的温度.

4. Check leak of all connections 检查所有线路是否泄漏.

5. Check fixation of the body 检查机体的固定.

6. Inspect all meters for normal 检查所有表是否工作正常.

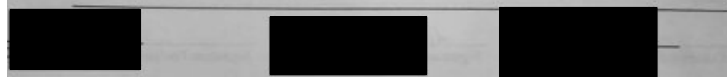
7. Check air pressure for normal 检查气压是否正常.

8. Inspect safety valves for normal working 检查安全阀是否工作正常.

9. Check pressure regulator valves and adjust it for as required 检查调压阀且调节至所要求值.

Date	1.5	1.6	1.7	1.8	1.9	1.10	1.11
1.5	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0
1.7	0	0	0	0	0	0	0
1.8	0	0	0	0	0	0	0
1.9	0	0	0	0	0	0	0
1.10	0	0	0	0	0	0	0
1.11	0	0	0	0	0	0	0

Comments: _____



Spill Kit	Good	Poor
Spill Kit	1	

The amount of Fire extinguisher				
Type	Size (lbs)	Amount	Good	Poor
Dry chemical	5	13	13	0
	10	1	1	0
	15	9	9	0
	20	3	3	0
CO2	6	4	4	0
	10	0	0	0
	15	9	9	0
Foam	20	9	9	0
	50	0	0	0
	110	1	1	0
Total		49	49	0

Fire Fighting Equipment		Condition	
No.	Equipment list	Good	Poor
1	Emergency Horn	2	
2	Fire Pump	2	
3	Fire Fighting Suit	4	
4	Fire Gun	2	
5	Fire Hose	5	
6	Axe (Big)	3	

Inspection By _____
(HSE Officer)


Acknowledge By _____
(Rig Manager)

ระยะดำเนินการผลิต




แบบฟอร์มการตรวจสอบเครื่องจักรอุปกรณ์



 HSE Wellsite Audit				Well Name (ชื่อน้ำมัน) : Date (วันที่):					
รายการที่ต้องตรวจเช็ค Checklist				Good ปกติ	Broken ผิดปกติ	รายละเอียดอาการ ผิดปกติ Broken Condition Description	การทำการ แก้ไข Corrective actions required	ผู้รับผิดชอบ Respondent	เสร็จวันที่ Estimated close out date
แหล่งพลังงาน Power supply									
1	Power cord สายไฟ ตรวจสอบว่ามีรอยฉีกขาด หรือไหม้								
2	Ground wire สายดิน มีการต่อสายดิน และ สายไฟกับแท่งสายดินต้องไม่มีหลุด หรือมีการฉีกขาดของสายไฟ								
3	Power plug extension ปลั๊กไฟ ตรวจสอบ ว่ามีรอยแตก หรือรอยไหม้ ปลั๊กกับเต้าเสียบ ต่อกันแน่นสนิท								
4	Cable tray รางสายไฟ ตรวจสอบรางสายไฟต้อง ไม่มีบิดเบี้ยวหรือบน สายไฟ ต้องวางอยู่บนรางไม่หลุดออกมาข้างนอก								
หัวหลุม Wellhead									
5	Wellhead valve & stuffing box. วาล์วหัวหลุม ตรวจสอบวาล์วต่างๆ และ สดไฟฟุ้ง บล็อกสที่หัวหลุม ต้องไม่มีการรั่วซึม ปิดได้สนิท ตามจับต่าง ๆ ต้องอยู่ครบ								
6	Wellhead nameplate. มีป้ายบอกชื่อที่หัวหลุม								
7	Sampling point จุดเก็บตัวอย่าง วาล์วปิดสนิทไม่มีการรั่วซึม และมีคราบน้ำมันและสกปรกอยู่ตรงพื้นบริเวณที่เก็บหรือไม่								
8	Cellar grating ตะแกรงพื้นหัวบ่อ มีการติดตั้งไวให้ครบทุกหลุม หรือไม่ รวมทั้งหลุมที่ยังไม่มีได้ชุดเจาะด้วย อันที่มือยกก็ต้องปิดสนิท แข็งแรง ไม่มีรั่วให้ร่วงตกหล่น และควรตรวจดู รอยผ หรือสนิม								
9	Mouse hole grating ตะแกรงพื้นเมาส์โฮล มีการติดตั้งไวให้ครบทุกหลุม หรือไม่ รวมทั้งหลุมที่ยังไม่มีได้ชุดเจาะด้วย อันที่มือยกก็ต้องปิดสนิท แข็งแรง ไม่มีรั่วให้ร่วงตกหล่น และควรตรวจดู รอยผ								
10	Cellar หลุมใต้หัวบ่อ มีช่องเหลว น้ำมันสกปรก ซิงอยู่หรือไม่ ระดับ ช่องเหลวหรือ น้ำมันซึ่งสูงมากน้อยเท่าไร								
11	Flow line piping ท่อผลิตมีการรั่วซึมหรือไม่ รอยต่อข้อต่อต่าง ๆ แน่นสนิทหรือไม่								
บริเวณ แทงค์ผลิต Storage tank area									
12	Storage tank แท็งค์ผลิต มีการรั่วซึมหรือไม่ บันไดมี ราวจับ และ สายดินต่างๆ มีติดตั้งไว้และอยู่ในสภาพดี หรือไม่								
13	Stack Storage tank ปล่องควันแท็งค์ผลิต ใช้งานได้ดี หรือไม่								
14	Storage tank Burner เบอรันเนอร์ ที่แท็งค์ผลิต ใช้งานได้ตามปกติ ไม่รั่ว								
15	Storage bundle แผงคอนกรีตรอบบริเวณ แท็งค์ผลิต มีครบทุกด้านและ อยู่ในสภาพดีหรือไม่ ต้องไม่มีการแตก กระเทาะของปูน และการเจาะรู เพื่อป้องกันน้ำมันไหลออกนอกบริเวณ								
บริเวณโหลดน้ำมัน Loading Bay									
16	Ground rod แท็งค์และสายดินถูกติดตั้งไว้ถูกต้อง และไม่มีขาด หรือชำรุด								
17	Loading arm จวงโหลด สามารถหมุนอย่างสมดุลย์และใช้งานได้ตามปกติ หรือไม่ ต้องไม่หย่อนห้อย สามารถ หมุนเก็บได้อย่างถูกต้อง								
18	Concrete pad ลานคอนกรีต ต้องไม่แตก และไม่มีสิ่งกีดขวางเส้นทางรถ และ ไม่มีคราบน้ำมันหยดเปรี้ยว								
สภาพแวดล้อมหัวบริเวณ Site location environment									
19	Fence รั้วรอบอาณาเขต เสาร์ต้องตั้งตรง และลวดหนาม ไม่ถ่าง และ ขาด								
20	Main Gate ประตูทางเข้า มีป้อมยาม, ประตูกัน และยามมาประจำสถานที่ หรือไม่ ป้ายชื่อหลุม และป้ายเตือนต่างๆ ต้องมีครบ และอยู่ในสภาพดี ไม่แตกหัก สดหาย								
21	Waste pit ป่อพักน้ำเสีย ตรวจสอบสภาพบ่อคอนกรีต ต้องไม่แตกร้าวรั่วซึม และไม่มีขยะ								
22	Drainage & Oil trap ร่องระบายน้ำ และ บ่อดักไขมัน อยู่ในสภาพดีหรือไม่ ต้องไม่แตกหัก และไม่มีสิ่งกีดขวางเส้นทางน้ำไหล								
23	Flare bund & shield แนวกันไฟแฟลร์ พื้นและแนวกันต้องเป็นปูน ไม่มีการเจาะรู และ สามารถกันไม่ให้น้ำมันรั่วไหลลงสู่พื้นได้ สังเกตสีกันไฟ ควรอยู่ในสภาพที่ดี ไม่ผพัง หลุดลย และมี สลิ่ง								
24	Oil spill spot คราบน้ำมัน พบเห็นมีคราบน้ำมันหยด ตามพื้นรอบๆ อาณาบริเวณ หรือไม่ โดยเฉพาะบริเวณที่โหลดน้ำมัน และ บริเวณที่วางเครื่องปั้นไฟ								
25	Spill cleaning kits อุปกรณ์ทำความสะอาดคราบน้ำมันต้องมีอยู่ครบ และพร้อมใช้งาน ได้แก่ พลาสติก กระป๋อง ถังทราย และผ้าดูดซับคราบน้ำมัน								
26	Waste bin มีถังขยะอยู่ภายในอาณาบริเวณ 2 ชนิด คือ ถังขยะทั่วไป และ ถังขยะปนเปื้อน ขยะที่นำมาทิ้ง ต้องคัดแยก และทิ้งลงถังให้ถูกประเภท								
27	Well site good housekeeping บริเวณบ่อผลิตไม่มีขยะและจัดของเป็นระเบียบ								
28	Toilet ห้องน้ำอยู่ในสภาพใช้งานได้ดี สะอาด								
29	Tree Planting มีการปลูกต้นไม้รอบอาณาบริเวณ								
อุปกรณ์ ความปลอดภัย Safety Equipment									
30	Fire Extinguisher ถังดับเพลิง อยู่ในสภาพพร้อมใช้งาน และตรวจดูแรงดันจากเกจว่ามีอยู่ในระดับที่ใช้งานได้								
31	First aid box & Eye washer ตู้ยาและ ที่ล้างตาฉุกเฉิน ต้องมียาและน้ำล้าง และอยู่ในสภาพพร้อมใช้งาน								
32	Wind sock & Safety sign กรวยลม อยู่ในสภาพดีไม่ขาด ป้ายความปลอดภัยอยู่ในสภาพที่ดีไม่ชำรุดเสียหาย								
33	PPE. พนักงานที่ปฏิบัติงานสวมใส่อุปกรณ์ความปลอดภัยครบ								
34	Access road ถนนพื้นที่ในบ่อผลิต ไม่เสียหาย								

ตัวอย่างการติดตามตรวจสอบ และซ่อมบำรุงของเจ้าหน้าที่



		LOADING ARM PM CHECKLIST		DATE: 8-7-2023	
		MECHANICAL ENGINEERING DOCUMENT		LOCATION: BRN-5B	
PROJECT NO.		AREA	Revision		0
TAG NO.		SYSTEM	Sheet		
Checking Procedure: <ol style="list-style-type: none"> 1) Prepare permit to work and necessity facilities to work 2) Prepare equipment which is used for work preventive maintenance 3) Onsite PM practice by recognising & strict to HSE commandment 4) Take recording the inspection results in the lost as table below 5) Check the work area clean and tidy then call to Production Operator sign close permit to work document 					
JOB TASK			INSPECTED		
			YES	NO	
1 Observe any unusual of top loading			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2 Check any leakage			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Check all bolts and retighten			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4 Check condition of ground system			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5 Fill up grease all bearing			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6 Clean up vaccum breaker			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7 Clean up top loading arm			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Remark: <hr/> <hr/> <hr/> <hr/>					
TEST / VERIFIED BY		FOREMAN WITNESS BY		ENGINEER WITNESS BY	
[Redacted]		[Redacted]		[Redacted]	
DATE: 8-7-23		DATE:		DATE: 8-30-23	
				DATE:	

ภาคผนวก จ-3

การฝึกอบรมด้านอาชีพอนามัยและความปลอดภัย



ระยะดำเนินการขุดเจาะ





HSE meeting and Training Record

Rig: Sinopec 9001

Location: NSE-F3A

Presenter: [Redacted]

Date: 15 January 2023

Topic of discussion:

Weekly HSE meeting on 15 January 2023

"Forklift and Crane safety Rule , COVID-19 situation "



1. Safety knowledge

HSE officer talking about Forklift and Crane safety Rule.
Forklift safety rule , Hazard while working with Forklift such as Blind Spot , Line of fire , signal and Previous accident.
Crane , Crane Thai law , Type of crane Safety Rule and Hand signal

2. Medication and Health knowledge

Medic continue update the current situation of the Covid-19 in Thailand and update COVID-19 news.
Emphasize all people keep social distancing and wear mask. How to use mask correctly and how to keep mask to use for a long time, must do body temperature check before start each shift and washing hand.

Pictures:



Prepared By: [Redacted]
(HSE Officer)

Approved By: [Redacted]
(Rig Manager)



Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : [Redacted]

Date : 5 January, 2023

Place : Meeting room NSE-F

Time: 6:00 - 18:00 H

No.	Name - Surname	Position	Company	Signature	Remark
1	[Redacted]	Derrick man	Sinopec	[Redacted]	
2	[Redacted]	Floorman	Sinopec	[Redacted]	
3	[Redacted]	Floorman	Sinopec	[Redacted]	
4	[Redacted]	Floorman	Sinopec	[Redacted]	
5	[Redacted]	Floorman	Sinopec	[Redacted]	
6	[Redacted]	RB	Sinopec	[Redacted]	
7	[Redacted]	RB	Sinopec	[Redacted]	
8	[Redacted]	RB	Sinopec	[Redacted]	
9	[Redacted]	RB	Sinopec	[Redacted]	
10	[Redacted]	Derrick man	Sinopec	[Redacted]	
11	[Redacted]	Floorman	Sinopec	[Redacted]	
12	[Redacted]	Floorman	Sinopec	[Redacted]	
13	[Redacted]	Floorman	Sinopec	[Redacted]	
14	[Redacted]	Floorman	Sinopec	[Redacted]	
15	[Redacted]	Floorman	Sinopec	[Redacted]	
16	[Redacted]	RB	Sinopec	[Redacted]	
17	[Redacted]	RB	Sinopec	[Redacted]	
18	[Redacted]	RB	Sinopec	[Redacted]	
19	[Redacted]	RB	Sinopec	[Redacted]	
20	[Redacted]	RB	Sinopec	[Redacted]	
Performed by: [Redacted]		Approved by: [Redacted]			
Signature: [Redacted]		Signature: [Redacted]			
Name: [Redacted]		Name: [Redacted]			
Position: Safety officer		Position: Rig manager			
Date: January 5, 2023		Date: [Redacted]			



Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : Signal man and lifting equipment

Date : January 04, 2023

Place : Meeting room NSE-F

Time: 13.00-16.00

No.	Name - Surname	Position	Company	Signature	Remark
1	[Redacted]	Derrick man	Sinopec	[Redacted]	
2	[Redacted]	Floorman	Sinopec	[Redacted]	
3	[Redacted]	Floorman	Sinopec	[Redacted]	
4	[Redacted]	Floorman	Sinopec	[Redacted]	
5	[Redacted]	Floorman	Sinopec	[Redacted]	
6	[Redacted]	RB	Sinopec	[Redacted]	
7	[Redacted]	RB	Sinopec	[Redacted]	
8	[Redacted]	RB	Sinopec	[Redacted]	
9	[Redacted]	RB	Sinopec	[Redacted]	
10	[Redacted]	Derrick man	Sinopec	[Redacted]	
11	[Redacted]	Floorman	Sinopec	[Redacted]	
12	[Redacted]	Floorman	Sinopec	[Redacted]	
13	[Redacted]	Floorman	Sinopec	[Redacted]	
14	[Redacted]	Floorman	Sinopec	[Redacted]	
15	[Redacted]	Floorman	Sinopec	[Redacted]	
16	[Redacted]	RB	Sinopec	[Redacted]	
17	[Redacted]	RB	Sinopec	[Redacted]	
18	[Redacted]	RB	Sinopec	[Redacted]	
19	[Redacted]	RB	Sinopec	[Redacted]	
20	[Redacted]	RB	Sinopec	[Redacted]	
Performed by: [Redacted]		Approved by: [Redacted]			
Signature: [Redacted]		Signature: [Redacted]			
Name: [Redacted]		Name: [Redacted]			
Position: Safety officer		Position: Rig manager			
Date: 4 Jan 2023		Date: [Redacted]			



Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : Safety Orientation

Date : January 03, 2023

Place : Meeting room NSE-F

Time: 8.00-16.00

No.	Name - Surname	Position	Company	Signature	Remark
1	[Redacted]	Derrick man	Sinopec	[Redacted]	
2	[Redacted]	Floorman	Sinopec	[Redacted]	
3	[Redacted]	Floorman	Sinopec	[Redacted]	
4	[Redacted]	Floorman	Sinopec	[Redacted]	
5	[Redacted]	Floorman	Sinopec	[Redacted]	
6	[Redacted]	RB	Sinopec	[Redacted]	
7	[Redacted]	RB	Sinopec	[Redacted]	
8	[Redacted]	RB	Sinopec	[Redacted]	
9	[Redacted]	RB	Sinopec	[Redacted]	
10	[Redacted]	Derrick man	Sinopec	[Redacted]	
11	[Redacted]	Floorman	Sinopec	[Redacted]	
12	[Redacted]	Floorman	Sinopec	[Redacted]	
13	[Redacted]	Floorman	Sinopec	[Redacted]	
14	[Redacted]	Floorman	Sinopec	[Redacted]	
15	[Redacted]	Floorman	Sinopec	[Redacted]	
16	[Redacted]	RB	Sinopec	[Redacted]	
17	[Redacted]	RB	Sinopec	[Redacted]	
18	[Redacted]	RB	Sinopec	[Redacted]	
19	[Redacted]	RB	Sinopec	[Redacted]	
20	[Redacted]	RB	Sinopec	[Redacted]	
Performed by: [Redacted]		Approved by: [Redacted]			
Signature: [Redacted]		Signature: [Redacted]			
Name: [Redacted]		Name: [Redacted]			
Position: Safety officer		Position: Rig manager			
Date: 3 Jan 2023		Date: [Redacted]			

Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : Waste management

Date : January 8, 2023

Place : Meeting room NSE-F

Time : 6.00, 18.00h.

No.	Name - Surname	Position	Company	Signature	Remark
1		Derrick man	Sinopec		
2		Floorman	Sinopec		
3		Floorman	Sinopec		
4		Floorman	Sinopec		
5		Floorman	Sinopec		
6		RB	Sinopec		
7		RB	Sinopec		
8		RB	Sinopec		
9		RB	Sinopec		
10		Derrick man	Sinopec		
11		Floorman	Sinopec		
12		Floorman	Sinopec		
13		Floorman	Sinopec		
14		Floorman	Sinopec		
15		Floorman	Sinopec		
16		RB	Sinopec		
17		RB	Sinopec		
18		RB	Sinopec		
19		RB	Sinopec		
20		RB	Sinopec		
Performed by		Approved by			
Signature :		Signature :			
Name :		Name :			
Position : Safety officer		Position : Rig manager			
Date : January 8, 2023		Date :			

Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : Working at height

Date : January 02, 2023

Place : Meeting room NSE-F

Time : 13.00-15.00

No.	Name - Surname	Position	Company	Signature	Remark
1		Derrick man	Sinopec		
2		Floorman	Sinopec		
3		Floorman	Sinopec		
4		Floorman	Sinopec		
5		Floorman	Sinopec		
6		RB	Sinopec		
7		RB	Sinopec		
8		RB	Sinopec		
9		RB	Sinopec		
10		Derrick man	Sinopec		
11		Floorman	Sinopec		
12		Floorman	Sinopec		
13		Floorman	Sinopec		
14		Floorman	Sinopec		
15		Floorman	Sinopec		
16		RB	Sinopec		
17		RB	Sinopec		
18		RB	Sinopec		
19		RB	Sinopec		
20		RB	Sinopec		
Performed by		Approved by			
Signature :		Signature :			
Name :		Name :			
Position : Safety officer		Position : Rig manager			
Date : 2/Jan/2023		Date :			

Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : Fire Fighting

Date : January 7, 2023

Place : Meeting room NSE-F

Time : 6.00, 18.00h.

No.	Name - Surname	Position	Company	Signature	Remark
1		Derrick man	Sinopec		
2		Floorman	Sinopec		
3		Floorman	Sinopec		
4		Floorman	Sinopec		
5		Floorman	Sinopec		
6		RB	Sinopec		
7		RB	Sinopec		
8		RB	Sinopec		
9		RB	Sinopec		
10		Derrick man	Sinopec		
11		Floorman	Sinopec		
12		Floorman	Sinopec		
13		Floorman	Sinopec		
14		Floorman	Sinopec		
15		Floorman	Sinopec		
16		RB	Sinopec		
17		RB	Sinopec		
18		RB	Sinopec		
19		RB	Sinopec		
20		RB	Sinopec		
Performed by		Approved by			
Signature :		Signature :			
Name :		Name :			
Position : Safety officer		Position : Rig manager			
Date : January 7, 2023		Date :			

Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

Event : Chemical handling and hazard

Date : January 04, 2023

Place : Meeting room NSE-F

Time : 8.00-12.00

No.	Name - Surname	Position	Company	Signature	Remark
1		Derrick man	Sinopec		
2		Floorman	Sinopec		
3		Floorman	Sinopec		
4		Floorman	Sinopec		
5		Floorman	Sinopec		
6		RB	Sinopec		
7		RB	Sinopec		
8		RB	Sinopec		
9		RB	Sinopec		
10		Derrick man	Sinopec		
11		Floorman	Sinopec		
12		Floorman	Sinopec		
13		Floorman	Sinopec		
14		Floorman	Sinopec		
15		Floorman	Sinopec		
16		RB	Sinopec		
17		RB	Sinopec		
18		RB	Sinopec		
19		RB	Sinopec		
20		RB	Sinopec		
Performed by		Approved by			
Signature :		Signature :			
Name :		Name :			
Position : Safety officer		Position : Rig manager			
Date : 4/Jan/2023		Date :			

Meeting and Training Record

Record of Participations

Company/Operation : SINOPEC RIG 9001

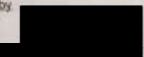
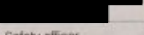
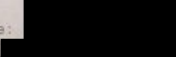

Event : *Spill case and Emergency case*

Date : *January 6, 2023*

Place : Meeting room NSE-F

Time : *6.00 , 18.00 H.*

No.	Name - Surname	Position	Company	Signature	Remark
1		Derrick man	Sinopec		
2		Floorman	Sinopec		
3		Floorman	Sinopec		
4		Floorman	Sinopec		
5		Floorman	Sinopec		
6		RB	Sinopec		
7		RB	Sinopec		
8		RB	Sinopec		
9		RB	Sinopec		
10		Derrick man	Sinopec		
11		Floorman	Sinopec		
12		Floorman	Sinopec		
13		Floorman	Sinopec		
14		Floorman	Sinopec		
15		Floorman	Sinopec		
16		RB	Sinopec		
17		RB	Sinopec		
18		RB	Sinopec		
19		RB	<i>Sinopec</i>		
20		RB	<i>Sinopec</i>		

Performed by Signature :  Name :  Position : Safety officer Date : <i>January 6, 2023</i>	Approved by Signature :  Name :  Position : Rig manager Date :
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ระยะดำเนินการผลิต



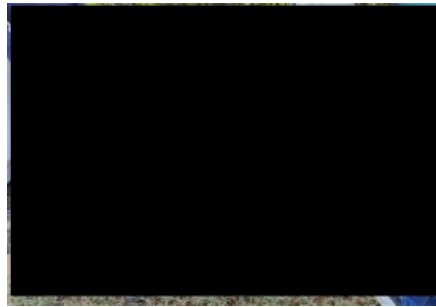
**Annual Emergency drill exercise Spill case / Fire case
and First Aid Case on 15 November 2023
At L44V – D3 well site**



**Annual Emergency drill exercise Spill case / Fire case
and First Aid Case on 15 November 2023
At L44V – D3 well site**



Annual Emergency drill exercise Spill case / Fire case
and First Aid Case on 15 November 2023
At L44V – D3 well site



Annual Emergency drill exercise Spill case / Fire case
and First Aid Case on 15 November 2023
At L44V – D3 well site



Annual Emergency drill exercise Spill case / Fire case
and First Aid Case on 15 November 2023
At L44V – D3 well site



Summary Inhouse Training 2023

หลักสูตร คปภ.ในการขับรถโฟล์คคลิฟท์ รถยก

Safe work for Forklift - 10 Mar 2023

วันที่ 10 มีนาคม 2566



หลักสูตร ความปลอดภัยในการทำงาน+การจัดเก็บสารเคมีและการโต้ตอบกรณีเกิดเหตุฉุกเฉิน

Safe work for Chemical usage , handling and emergency response - 12 June 2023

วันที่ 12 มิถุนายน 2566



หลักสูตร ดับเพลิงเบื้องต้น

Basic Fire Fighting - 25 Sep 2023

วันที่ 25 กันยายน 2566



ภาคผนวก จ-4
ระบบบริหารอาชีพอนามัย ความปลอดภัย และสิ่งแวดล้อม



ระยะดำเนินการขุดเจาะ





HSE MANAGEMENT PROCEDURE

1 Policy on Safety, Health and Environment

1.1 Policy Statement and Objectives

Sinopec Huadong oilfield service corporation will conduct its operations in such a manner as to:

- Provide a safe working environment.
- Ensure the safety and health of Sinopec Huadong oilfield Service Corporation's crew and personnel working within the Sinopec Huadong oilfield service corporation directed areas of operation.
- Protect the public from injury or ill health and prevent loss or damage to properties resulting from its activities.
- Ensure and safeguard the conservation of the environment.

1.2 Safety Targets

In taking steps to ensure a safe working environment, COMPANY and Sinopec Huadong oilfield service corporation Personnel are to aim for:

- No fatalities.
- Prevention of loss time and any significant accidents.

1.3 Implementation Aspects

The policy is implemented with special attention to the following specific aspects:

- The requirements of all relevant government legislation are followed.
- COMPANY'S standards, specifications, procedures and regulations are applied.
- Safety is given equal importance to productivity and cost.
- Each employee is given specific procedures related to his work.
- Each employee receives suitable technical and safety training.
- Work instructions are clear and pay due regard to safety requirements.
- Experience gained, lessons learned from accidents/incidents and new technical developments to be widely distributed amongst staff.
- Work Sites, work area are designed, built and operated in such a way that work can be carried out safely and in an environmentally sound manner.
- Only materials, tools and equipment which meet high standards are used.



j) The safety aspects of work sites, work area, materials and tools are reviewed continually.

k) Sinopec Huadong oilfield Service Corporation is required to adopt and maintain the same high standards as per COMPANY expectation.

l) All work carried out, whether by the Sinopec Huadong oilfield service corporation or its SubSinopec Huadong oilfield service corporations, is effectively monitored by COMPANY Representatives.

m) Regular safety meetings to be held at all levels in the organization to ensure safety occupies important aspect of work planning and execution, and the minutes will audited or submitted to Company if required.

2 Responsibility

2.1 Safety Officer

Sinopec Huadong oilfield service corporation shall have at all times a fulltime responsible person appointed as the crew's Safety Officer. The Safety Officer shall oversee all matters pertaining to safety in all crews operation and shall:

- Conduct fortnightly safety meetings/briefing with all his crews.
- Follow-up safety items raised during safety meetings/briefing.
- Ensure accident/incident reports are completed and forwarded to COMPANY'S Representative within twenty four (24) hours.
- Set up a system to enhance the safety attitudes and awareness of all his crews.

2.2 All Personnel

It is the responsibility of every personnel to maintain a safe working environment, both at his assigned work place and in other parts of the survey area.

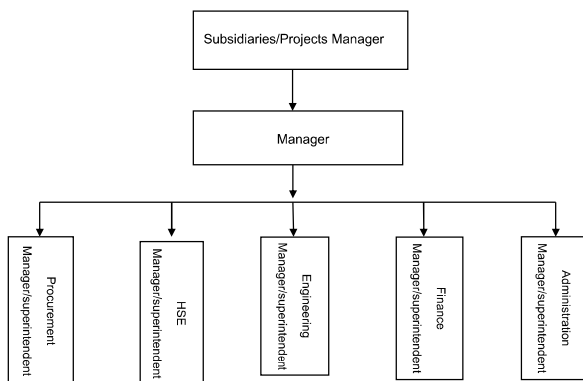
No inappropriate conduct or mischievous acts shall be allowed, as this presents a safety hazard to the entire crew. Subject to regulation enforced, no firearms, weapons, prohibited drugs or alcohol will be allowed at base camp or work place.

All Sinopec Huadong oilfield service corporation Personnel are to undergo an annual medical check-up at Sinopec Huadong oilfield service corporation expense, to certify their fitness for duties in harsh environment. Valid medical certificates are to be kept together with the personnel records for inspection purposes.

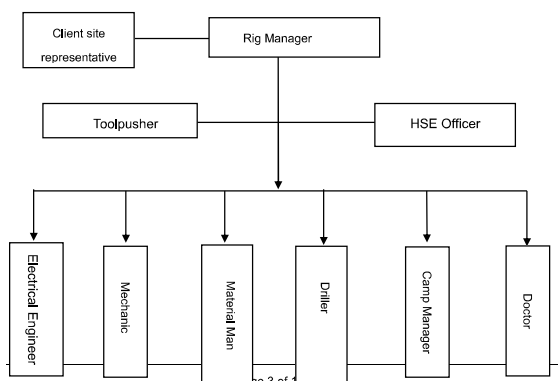


2.3 HSE Organization Chart

Sinopec Huadong oilfield service corporation HSE Organizational Structure



HSE Organization Chart at Well Site



3 Training

3.1 First Aid, Resuscitation and Fire-Fighting

- There must be an adequately trained first aid at work location.
- All personnel must be trained to operate fire-fighting equipment at their own workstations.

3.2 Operation of all said Equipment / Machinery

- Formal training must be provided for operators of all said equipment /machinery.
- No trainee shall be left to work unsupervised.

4 Safety Meeting and Audits

4.1 Safety Inspections/Audits

Prior to work, Sinopec Huadong oilfield service corporation's equipments shall be inspected by COMPANY'S Representative(s), satisfied for operation and must meet all COMPANY'S safety specifications and regulations.

4.2 Safety Awareness / Meetings

Sinopec Huadong oilfield service corporation must be responsible for maintaining and enhancing the safety awareness of its personnel and subSinopec Huadong oilfield service corporation personnel, including arranging and/or participating in regular safety meetings/briefing and emergency drills.

The objectives of safety meetings are to:

- Provide opportunities for personnel to voice their concern over unsafe situations or procedures in their respective work places.
- Provide information and warning for other personnel in regard to potential or existing hazards.
- Allow collective solutions to be put forward through discussion.

It is COMPANY's requirement that all Sinopec Huadong oilfield service corporation personnel attend regular safety meetings and names of attendees shall appear on the minutes of such meetings. Non-attendance at a safety meeting must be authorized by a responsible person and a reason for non-attendance must be given in the minutes.



4.3 Frequency

a) The meeting shall be held fortnightly and include a safety talk or presentation on a chosen subject aimed at enhancing safety awareness on site.

b) Safety audits shall be conducted by the Party Chief / Safety Officer in conjunction with the COMPANY'S representative on a monthly basis or whenever deemed necessary.

5 Reporting

5.1 All safety meetings are to be minuted and forwarded to COMPANY'S representative.

5.2 All emergency drills are also to be forwarded to COMPANY'S representative.

5.3 All safety audits are to be reported to COMPANY'S representative monthly, with action points listed.

5.4 All accidents and incidents related to the operation shall be reported to COMPANY'S representative, within twenty four (24) hours in the event of:

a) Any loss of or damage to material or equipment supplied by either the COMPANY or Sinopec Huadong oilfield service corporation.

b) Any personal injury to any COMPANY or Sinopec Huadong oilfield service corporation'S Personnel, its agents or subSinopec Huadong oilfield service corporations.

c) Any injury to any third party.

d) A near miss incident.

6 Medical Welfare

6.1 Sinopec Huadong oilfield service corporation shall ensure that all its personnel and/or other personnel assigned by the Sinopec Huadong oilfield service corporation for the performance of the WORK are medically fit and healthy. Any medical disabilities including such disabilities which Sinopec Huadong oilfield service corporation may consider will not adversely influence the person's ability to perform his role in the WORK should be reported to COMPANY prior to the start of the WORK. Sinopec Huadong oilfield service corporation, if requested by COMPANY, shall provide medical certificates for Sinopec Huadong oilfield service corporation and Sub Sinopec Huadong oilfield service corporation personnel. Sinopec Huadong oilfield service corporation shall subject its key personnel and its Sub Sinopec Huadong oilfield service corporation personnel to regular medical examination at their cost. Records of such examination shall be made available to COMPANY on request.

6.2 Sinopec Huadong oilfield service corporation shall at no cost to COMPANY be responsible for the medical welfare of its own and Sub Sinopec Huadong oilfield service corporation personnel and shall take care of arrangements for medical attendance treatment or hospitalization if and when necessary and will arrange suitable insurance coverage for such contingencies. In cases of emergency,



COMPANY may make or provide for, the necessary emergency arrangements, the costs of which shall be reimbursed to COMPANY by Sinopec Huadong oilfield service corporation.

6.3 Sinopec Huadong oilfield service corporation shall make first aid arrangements for all of its personnel and ensure that all personnel are informed of such arrangements.

6.4 Where applicable, Sinopec Huadong oilfield service corporation shall provide a suitably equipped and staffed first aid room if the Work Site presents a high risk from hazards.

7 Safety Tools and Equipment

The use of correct, properly designed and serviceable tools and safety equipment is required. All working personnel should be taught the proper and correct way of using safety tools and equipment.

7.1 Fire-Fighting Equipment

a) Fire-Fighting systems are to be checked and tested periodically.

b) All fire extinguishers are to be checked and certified semi-annually.

c) Fire extinguishers and fire hose stations are to be prominently marked.

d) Fire water pump to be inspected, serviced regularly and maintained in operational mode at all times.

e) Fire axes are to be strategically located.

7.2 First Aid and Survival Equipment

a) Adequate number of first-aid boxes and resuscitation units are to be placed at strategic points.

b) First aid boxes are to be inspected regularly and stocks replenished.

c) Prescription drugs are to be certified by druggist and kept under lock. Drugs can only be administered with the consent of the Party Chief or the Safety Officer.

7.3 Protective Equipment

a) All protective equipment is to be of types manufactured to standards and approved by COMPANY.

b) Safety shoes must be worn by all personnel at operation areas.

c) Hard hats are to be provided for personnel working nearby operation areas.

8 Housekeeping

8.1 Good housekeeping and cleanliness in the accommodation and work site is required.

8.2 Washrooms and toilets shall be serviced regularly.



9 Emergency Response Procedure

9.1 Procedures In Case of Fire

9.1.1. Anyone who spots fire must give the alarm at once and attack the focal point of the fire with the closest extinguisher. The safety man and the Company Supervisor should be notified by a crew member.

9.1.2. The safety man, as soon as he is alerted, sends as reinforcements to the spot all personnel who are not strictly necessary to the safe performance of work in progress.

9.1.3. The Company Supervisor, assisted by the drilling engineer and necessary crew members, are to secure the well.

9.1.4. The safety man after having appraised the situation and given the necessary orders to the personnel, alerts (or if necessary has someone alert) without delay the off-site fire fighting forces, and in any case, alerts his supervisor. He then organizes the fight against the fire and remains in command of it until he has been formally relieved.

9.1.5. As a general rule, the electric current over the whole drilling site must be cut as soon as possible

9.1.6. If the fire spreads (and until such time as the outside reinforcements arrive), the one in charge of fighting the fire, after his own means run out, shall strive to employ his personnel at tasks having some practical value and avoid exposing the men uselessly.

9.1.7. As soon as the outside reinforcements arrive, the one in charge on the site shall give all useful information to the one in charge of the outside detachment, and shall decide with him upon use and coordination of means to continue the fight. It is very useful to have that coordination pre-planned.

9.1.8. In case of need, priority shall be given to detaching necessary personnel from fire fighting to bring first aid to injured personnel and organize their evacuation.

9.2 Procedures In Case of H2S

Hydrogen Sulfide (H2S) or "sour gas" is a poisonous, flammable gas which is frequently encountered in petroleum drilling. Its presence, in relatively low concentrations; can quickly cause unconsciousness and death. It is essential that all personnel are aware of its hazards and are instructed in the proper safety procedures in order to avoid its effects. The best line of defense against H2S is adherence to good drilling practices and good well control procedures.

Following are facts concerning H2S that all employees should know:

9.2.1 H2S is generally recognized by its characteristic foul odor, resembling rotten eggs. However, a high concentration of the gas instantly paralyses the sense of smell and prolonged exposure to low concentrations has the same effect. Therefore, the sense of smell is an unreliable way of detecting and monitoring the presence of H2S.

9.2.2. Hydrogen sulfide is heavier than air. This makes it especially dangerous, as this property



causes the gas to accumulate in low or enclosed areas.

9.2.3. H2S forms an explosive mixture in air or oxygen within the range of 4.3 to 46 percent by volume; thus, the gas presents both a toxic and fire hazard to the rig at the same time.

9.2.4. H2S is water-soluble, and has an ignition temperature of 500 degrees F.

9.2.5. H2S irritates the eyes and respiratory system. When high concentrations are present, death caused by lung paralysis can occur in a very short time.

9.3 Emergency in the event of evacuation of the well site

In the event of an emergency situation (Such as well kick out of control, see Fig.S5-9) calling for an evacuation of the well site, the Tool pusher will coordinate the evacuation. The following points are guidelines for safe, efficient evacuation.

- When possible, a safe briefing/muster site a safe distance upwind of the well bore will be designated for each well site. This information will be posted in the lease area information notice in the Toolpusher's office. In any case, the muster point for evacuation should be upwind a safe distance for the prevailing emergency and weather conditions.
- Each supervisor will be responsible for accounting for his workers and reporting the status to the Toolpusher at the muster site. In the event a supervisor is missing, the Toolpusher will account for those supervisors' workers in the head count. The Toolpusher is responsible for ensuring that all personnel who were present on the well site are accounted for in an evacuation.
- After accounting for all personnel the Toolpusher will assess the emergency situation which necessitated the evacuation and the personnel requirements for dealing with the emergency. Personnel will be divided into three groups with corresponding actions as follows:

- 1) Unnecessary Personnel: Removed to camp or other remote muster point to stand by.
 - 2) Back-up Team: Consisting of personnel necessary to maintain communication, coordination, and back-up of emergency contingency actions. These personnel will be stationed at the muster point/safe briefing area or other designated staging area a safe distance upwind of the well bore.
 - 3) Emergency Response Team: Consisting of minimum personnel necessary to respond to the emergency at the well site.
- The drilling crew, according to the division of work and assigned mission, obey the command and participate corresponding emergency actions.
 - After assessing the situation and categorizing the personnel, the Toolpusher will complete the Emergency Questionnaire.



- If local populations are endangered, the Toolpusher will ensure that they are warned and provisions made to evacuate them to a safe haven.

9.4 Emergency Equipment

Sinopec Huadong oilfield Service Corporation shall where applicable at its own expense provide adequate first aid, firefighting, lifesaving and other safety equipment and shall maintain this equipment in a professional manner and where appropriate re-certify as dictated by legal and industry standards. Sinopec Huadong oilfield Service Corporation shall keep up-to-date records of all said equipment, including equipment location plans.

9.5 The Responsibility of Key Personnel in case of Emergency

The Sinopec Huadong oilfield service corporation drilling crew chief will:

- Take immediate action to ensure the safety of all personnel.
- Coordinate medical emergency actions for any injuries.
- Take all possible action to minimize damage to the drilling equipment and environment.
- Coordinate initial firefighting efforts and notify the fire Brigade.
- Make initial report and periodic updates to Sinopec Huadong oilfield service corporation Superintendent using the Emergency Questionnaire.

The Sinopec Huadong oilfield service corporation drilling manager will:

- Assess the situation and coordinate movement of any required additional resources and equipment.
- Notify OPERATOR and Sinopec Huadong oilfield service corporation Staff duty person and give periodic updates to same.
- Complete required incident report forms and forward to Sinopec Huadong oilfield Service Corporation and OPERATOR.

The Sinopec Huadong oilfield service corporation Duty Person will:

- Alert the rest of Sinopec Huadong oilfield service corporation staff.
 - Notify Sinopec Huadong oilfield service corporation office in office and give periodic updates to same.
- Coordinate with OPERATOR - Country of operation any customs and immigration efforts required for additional resources or equipment.
- Coordinate with OPERATOR - Country of operation any media releases.
 - Coordinate with OPERATOR - Country of operation any interaction required with Country of operation Governmental agencies.



10 Accident Reporting and Investigation

10.1 Accident is defined as any unintentional or unplanned event or condition which has or could have resulted in injury to a person and loss or damage to equipment, plant or property.

10.2 It is COMPANY requirement that all accident, no matter how trivial, must be reported to COMPANY'S representative. Sinopec Huadong oilfield Service Corporation shall ensure that its employees are aware of this mandatory requirement. Sinopec Huadong oilfield Service Corporation shall be responsible to investigate, in a professional manner, all accidents that occur during the performance of the WORK and the investigation report shall be made available to COMPANY when requested. Sinopec Huadong oilfield Service Corporation shall also be responsible to assist COMPANY in accident investigation if so required. COMPANY may call for a joint investigation with Sinopec Huadong oilfield Service Corporation if necessary.

10.3 Sinopec Huadong oilfield Service Corporation shall where applicable have, prior to commencement of CONTRACT, accident reporting and investigation procedures and shall maintain accident statistics which shall be compatible with COMPANY'S representative. Otherwise, Sinopec Huadong oilfield Service Corporation shall adopt the current COMPANY representative.

10.4 Sinopec Huadong oilfield Service Corporation shall submit the basic safety information to the appropriate COMPANY'S representative not later than the first day of the month following the month under review, by telex or fax.

11 Alcohol/Drug Policy

11.1 Sinopec Huadong oilfield Service Corporation warrants that its personnel and agents shall not perform any WORK for COMPANY while under the influence of alcohol or any controlled substance Sinopec Huadong oilfield Service Corporation. Sinopec Huadong oilfield service corporation personnel and agents shall not misuse legitimate drugs or possess, use, distribute, or sell illicit or unprescribed controlled substances or drug on COMPANY business or premises. Sinopec Huadong oilfield Service Corporation shall adopt and enforce work rules and policies in order to assure compliance with these obligations.

11.2 Sinopec Huadong oilfield Service Corporation is to conduct alcohol and/or drug tests on Sinopec Huadong oilfield service corporation personnel, agents while on premises owned or controlled by COMPANY where reasonable cause exists. COMPANY also reserves the right to conduct searches on possession of drug and/or alcohol to the person, vehicles, and other property of Sinopec Huadong oilfield Service Corporation, its personnel, agents while on premises owned or controlled by COMPANY. Any person who refuses to cooperate with any such search shall be removed from the premises and not permitted to return.

11.3 Sinopec Huadong oilfield Service Corporation shall require its personnel and agents to submit to medical evaluation on alcohol or drug testing where cause exists to suspect alcohol or drug use.

11.4 Sinopec Huadong oilfield service corporation warrants that any of its personnel, agent who either(a) refuses to participate in medical evaluation or alcohol or drug tests, or (b) tests positive for



alcohol or controlled substance, shall be removed from the premises and not be permitted to perform any work with COMPANY.

11.5 Sinopec Huadong oilfield Service Corporation shall maintain strict discipline and good order among its personnel and agents, and shall not permit any of them to engage in activities which COMPANY deems contrary or detrimental to COMPANY interests. If COMPANY should request that any personnel of Sinopec Huadong oilfield Service Corporation be removed from COMPANY property or Work site pursuant to this CONTRACT for any reason Sinopec Huadong oilfield Service Corporation shall accede to such request and shall provide a replacement acceptable to COMPANY at no additional cost to COMPANY.

11.6 In the event Sinopec Huadong oilfield Service Corporation is unable to comply with these obligations, COMPANY shall have the right to terminate this CONTRACT.

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ECO ORIENT ENERGY (THAILAND) LTD
ECO ORIENT RESOURCES (THAILAND) LTD

Health Safety Environment
MANAGEMENT
SYSTEM

REVISION STATUS				
Rev	Date	Description	Originator	Approved
0	25 July 2013	First Working Version	HSE Manager	General Manager

	Document / Rev No:	ECO-HSE-001-Rev 0
Health Safety and Environment	Revision Date:	25 July 2013
MANAGEMENT SYSTEM		

Document Issue Record

Position	Location	Copy No	Issue Date
Paper Copies			
Corporate HSE Towngas	Hong Kong	01	
ECO HSE	Hong Kong	02	
All BKK Staff	Bangkok Server	03	
All WB Staff	Wichian Buri Server	04	

	Document / Rev No:	ECO-HSE-001-Rev 0
Health Safety and Environment	Revision Date:	25 July 2013
MANAGEMENT SYSTEM		

FOREWORD

ECO Orient Energy (Thailand) Limited and ECO Orient Resources (Thailand) Limited ("The Company") recognises that effective health, safety and environment management contributes significantly to its long-term business success.

This document sets out The Company's social and environmental management system. It emphasises the systematic approach to the way we manage our business activities and our belief that our performance can always be improved over time. The integration of social responsibility and environmental protection into our day-to-day activities is the key to successful management.

The successful and success of this system requires the participation and commitment of management, employees and contractors at all levels.

This policy and management system has the Board's full support but we require your commitment through a personal understanding of this document and full participation in the effective implementation of the system.

It is imperative that everyone involved in the business of The Company familiarise themselves with their roles and responsibilities in this document. Only by total commitment by everyone can we ensure the best possible protection of our personnel, contractors, the public, our assets and the environment.

Signee:



General Manager

Date: 25 July 2013

Area of Application

The policies and associated Safety Management System (SMS) apply to the activities of ECO Businesses in Thailand.


	Document / Rev No:	ECO-HSE-001-Rev 0
Health Safety and Environment	Revision Date:	25 July 2013
MANAGEMENT SYSTEM		

Safety Management System

ECO ORIENT Energy (Thailand) Ltd
ECO ORIENT Resources (Thailand) Ltd

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MANAGEMENT SYSTEM		

Section 1: Introduction

The management of health and safety and the protection of the environment, by industry in Thailand, has evolved along with technological and management change. This Health Safety and Environment Management System (SMS) provides a **structured** approach to the way we manage safety and environmental issues. It identifies individual responsibilities in respect of who does what, when and how against policy, objectives and business activities to ensure the creation, implementation and maintenance of safe systems of work in a safe working environment.

1.1 This Document

The SMS represents the Company's corporate management standards for health, safety and environmental management performance. It includes the underpinning standards and instructions referred to in the document and listed in the Document Management System in Appendix 1. The structure of The Company's SMS documentation is illustrated in Appendix 2.

Implementation of the SMS will result in the health safety and environmental risks arising from the Company's activities, being effectively managed, to ensure that they are reduced to **as low as reasonably practicable (ALARP)**. This will also ensure **compliance** with all the relevant statutory requirements applying to the Company.

The SMS is a controlled document and the custodian is the **General Manager**. It will be reviewed periodically with the assistance of HSE Manager.

1.2 Background to Health, Safety and Environment Management

The Company will strive for world class HSE performance at its operations in Thailand. The company's Management Team and Board of Directors all bring with them experience from larger international Operating companies. This experience will be employed at its operations in the creation and maintenance of a fit-for-purpose HSE Management System.

1.3 The HSE Management Model

The Health Safety and Environmental management model, based on HSG 65, is illustrated in Figure 1. The aim is not only to provide effective policies and procedures but also to incorporate the necessary management control systems to ensure that they are being applied correctly. Improving performance is achieved by management monitoring and feedback. The **Risk Assessment** process (See Section 4.2) compliments the overall HSE policy.

1.4 The HSE Management Principles

Policy and Objectives:


The Company's Health, Safety and Environmental Policy (see Section 2.0) sets out the overall statement of policy along with its objectives for health and safety management.

Organizing:

The effective implementation of the management system requires a clear company organizational structure, with staff at all levels committed to the implementation and having an understanding of all the following requirements to achieve success:

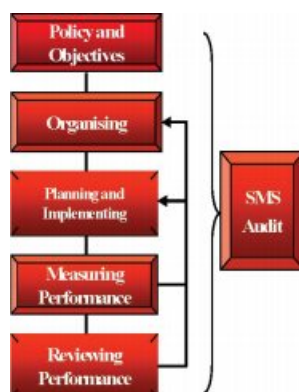
- an explicit organizational structure
- identification of safety critical activities & resultant tasks

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- ensuring personnel are competent to carry out assigned tasks
- clearly defined roles, responsibilities and accountabilities
- distinct lines of communication
- effective management and integration of contractors.


Figure 1: The POPMAR Management Model



Planning and Implementing:

Planning for safety and environmental protection involves the identification of The Company's business activities and identifying the associated hazards, risks and control measures required. For the major safety critical activities, the hazards and risks associated with the activity are identified, controls defined, performance standards set and roles, responsibilities and competency standards defined.

Implementation takes the results of the planning phase and puts in place the systems, controls, procedures and performance measures to eliminate or control identified hazards and risks. As required by health and safety legislation, wherever possible, risks are eliminated by the use of engineering controls through selection and design of facilities and equipment and through physical control measures. Where risks cannot be eliminated in this ways, then safe systems of work, selection, training and competence of individuals and occupational health measures, including personal protective equipment, are used.

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Measuring and Reviewing Performance

HSE performance measurement is based on the comparison of actual performance against the standards for each key activity. Performance is also assessed by the analysis of SMS audits, planned inspections and incident statistics. Performance is fed back to management and used as part of the performance review process.


Management of Health Safety and Environment is the day-to-day responsibility of managers and supervisors. Their own HSE commitment and performance will be the **major influence on the success in achieving the Company's objectives**. This involves **them monitoring the standards of performance of hardware, systems and personnel**.

The objective of monitoring is not only to identify sub-standard performance but also to determine the underlying causes and implications. This allows for action plans to be developed and through their implementation, the improvement in safety performance.

Audit

Auditing is a structured and formal process for the evaluation of the implementation and effectiveness of the overall SMS against the laid down objectives, goals and performance standards.


Audit is an independent review of the SMS, including each of the key elements. The auditor assesses how the system complies with The Company's requirements, and compares the SMS with accepted industry standards.

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Section 2: HSE Policy & Objectives



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Section 3: Organization and Responsibilities:

3.1 Management Structure and Organization Chart

The effective implementation of the HSE Management System requires a clear company organizational structure, with staff at all levels understanding their respective roles and lines of communication together with their commitment to its implementation.

The continuing success of the Company and its subsequent growth has called for reorganization, as shown in Figure 2.

The major changes have been applied to the field operations which is organized to bring greater focus on meeting the Company's production volume targets, as well as driving ownership down into the organization.

3.2 Personnel Responsibilities

Each employee within the Company has a role to play with regards to health, safety and environment. Personnel at all levels are required to understand their respective roles and responsibilities within the HSE Management System and be committed to implementation of this system as specified in this document.

3.2.1. Senior Management

General Manager

The General Manager has ultimate responsibility for the performance of the Company and is in charge of developing the organization and controls to achieve the corporate objectives to ensure that all activities under his control are conducted in compliance with the relevant statutory provisions. The General Manager is also responsible for providing direction and guidance for all business activities and for safeguarding and communicating Company's principles and policy on HSE ensuring that the necessary resources are provided and that appropriate actions are taken to effectively implement and maintain the requirements of the HSE Management System.

Production Manager

The Production Manager oversees the Field Management Team and reports to the General Manager. He is responsible for upholding the implementation of the HSE procedures and delegating responsibility to Production Team Leaders and Senior engineers ensuring they are competent and capable of carrying out their work to the required standard. The Production Manager's primary role is to:

- Account for production, sales and the proper disposal of all waste fluids streams (gas and water), as required by local regulations.
- Motivate staff, promote their growth and fully participate in the career planning and competence development process including HSE training;

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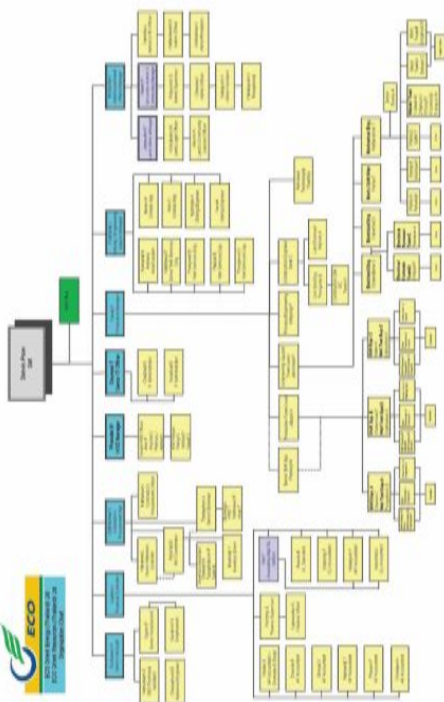

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Figure 2: Organization Chart June 2013



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- Ensure appropriate management controls and processes for operations activities (including HSE) are established and deployed in an effective and efficient manner and regularly appraised in order to achieve objectives and reach targets.
- Develop and implement HAZOPs plans;
- Comply with Thai Regulations and other relevant industry standards.

Drilling Manager

Drilling operations are controlled by the Drilling Manager. The site location will determine which Asset this comes under. The Drilling Manager is directly responsible to ensure all industry standards specified in the Company's HSE procedures are being applied and HSE policy and procedures cascaded down to subordinates and contractors. Other HSE responsibilities include:


- In coordination with the HSE Manager and Asset HSE Officer, performing frequent site checks on processes, equipment, rig working conditions and HSE standards.
- The supervision of contractors in applying the required procedures for safe operations with regards to all drilling activities especially blowout prevention; handling and storage of hazardous substances such as chemicals, radio-active sources and disposal of hazardous waste.
- Perform regular safety drills to ensure emergency preparedness.
- Responsibility in case of an emergency and initiate all required actions in accordance to the emergency response procedures.

HSE Manager

The HSE Manager assisted by the Asset HSE Officers is accountable for establishing a good environment, safe and healthy workplace by monitoring the standards, communications, training, processes and systems to ensure the HSE Management System is effectively implemented and that performance levels are aligned with the Company's HSE targets and objectives. The key enabling functions to achieve this are:

- Provision and promotion of suitable information concerning HSE policies and practices;
- Establishing HSE objectives and targets and monitoring performance;
- Ensuring all activities are performed in accordance with the HSE Management System meeting all the goals, standards and as required by law;
- Preparation and consultation with personnel on improving HSE standards, standing instructions and safe operating procedures;
- Prevention, precautions and adequate control against exposure to hazardous substances and danger from flammable, explosive, electrical, noise, radiation and equipment handling risks;
- Provision and supervision of emergency exercises, first-aid facilities, safety signs, relevant protective clothing and equipment, and incident reporting to the relevant authorities;
- Liaison and consultation with organizations and relevant authorities for assistance and cooperation in HSE issues;
- Participation and development of HAZOPs / corrective action plans and ensuring follow up and close out.

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3.2.2 Field Management Team

Production Team Leader and Engineering Support Team Leader

Both Team Leaders has total responsibility for all HSE issues and coordinating with the Support Team to supply their respective services to all Company's Assets and is responsible for supervising all activities which may pose a risk to health, safety and environment to ensure they are completed in a safe manner without damage to the environment by:

- Ensuring all subordinates follow HSE procedures at all time;
- Act as the focal point of liaison between Asset HSE officers to ensure all operational requirements are met and carried out in accordance to the SMS;
- Ensuring the safety and welfare of field staff employees, contractors and all visitors to the Company's Assets;
- Meeting HSE targets and objectives, as specified by HSE Manager;
- Creation & implementation of field policies and procedures;
- Creation and development of safe working procedures;
- Assuming on-site responsibility in case of an emergency and initiate all required actions.
- Reporting all incidents, accident or spills immediately to Production Manager.

Senior Engineer

Senior Engineer's roles with regards to HSE include to:


- Integrate health, safety and environment in the design and specifications of construction and production sites by adopting and adhering to the relevant industry standards, as specified in the appendices of this document and environmental impact assessment (EIA) report;
- Approve the quality of design and engineering prior to construction and installation;
- Perform regular inspections during construction and installation to ensure approved designs are adhered to;
- Perform pre-start-up safety review and inspection of all equipment prior to commissioning;
- Administer preventative maintenance;
- Reporting all incidents, accident or spills immediately to both Team Leaders and Asset HSE Officer.

Senior Shift Supervisor

The Senior Shift Supervisor is responsible for supervising the field operators and contractors to ensure they are completed in a safe manner and adhered to the Company's HSE policy and procedures without damage to the environment by:

- Cascade the HSE policy and procedures down to subordinates and contractors to improve HSE awareness among staff and contractors;
- Ensuring all subordinates and contractors follow HSE procedures at all time;
- Supervising all subordinates and contractors in meeting HSE targets as specified by HSE Manager;
- Ensuring all possible precautions are taken to prevent incidents from happening or escalating and scheduling activities in such a way that no conflicting or potentially hazardous situations arise;

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- In coordination with the Asset HSE Officer, performing frequent site checks on processes, equipment, plant working conditions and safety standards.
- Act as emergency team leaders;
- Reporting all incidents, accident or spills immediately to both Team Leaders and Asset HSE Officer.

Shift Supervisor

The Shift Supervisor is the delegated person to check and control the on-site Permits to Work system and ensure that safe job executions. He reports to the Senior Production Shift Supervisor and shares the same HSE responsibilities.

Shift Foreman

The Shift Foreman is a member of the emergency response team (ERT) / on scene commander in case of an emergency. His roles also include:

- Monitoring of chemical injection operations and performance. Ensuring relevant safety precautions are taken with regard to chemical handling, storage and disposal.
- Maintaining an awareness of HSE issues at all times and immediately reporting any unsafe or unhealthy acts or conditions to his supervisor, if it is not possible to take action himself.

Production Operators

Each Production Operator is responsible for the maintenance of their designated sites by:

- Maintaining cleanliness and housekeeping at all times;
- Reporting all incident/accident/spills immediately to his field foreman or shift supervisor.

Refinery Supervisor


The Refinery Supervisor acts as a company representative, supervising crude oil loading at the refinery. He is responsible for ensuring all activities are carried out safely and in an environmentally acceptable way and that the Company's HSE policy is cascaded down to contractors. He is also tasked with:

- Ensuring competent staff operates the facilities and develops skills where necessary. Acting as mentor and "on the job" trainer for staff under control. Assisting in developing staff competency level.
- Improving safety awareness among staff;
- Assuming on-site responsibility in case of an emergency and initiate all required actions.

Refinery Operator

- Follow up on crude oil loading & HSE procedures at the refinery and ensure HSE regulations are adhered to;
- Maintain an awareness of safety with the road tanker drivers and immediately report any unsafe act or conditions to his supervisor, if it is not possible to take action himself;
- Reporting all incident/accident/spills immediately to his supervisor.

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Crude Loading and Tanker Coordinator

- Report spills immediately to his supervisor;
- Maintain safety awareness with the tanker truck drivers and take action and immediately report any unsafe acts to his supervisor.
- Carry out & minute of HSE meetings for tanker trucks on a monthly basis

Asset HSE Officers

Asset HSE officers assist in managing the overall HSE assessment process and provide specialist HSE services including to:

- Perform regular onsite audit inspections all operational phases (site construction, drilling, testing and production) to monitor compliance and report results to the Production Team Leader;
- Arrangement and coordination of site inspection and audits and timely assessment of risks to HSE and implementation of measures identified prevent or reduce further occurrences;
- Participate and conduct HAZOP, root cause analysis (RCA) studies / corrective action plans and execute as required, ensuring all non-compliance issues are addressed and closed out;
- Perform regular inspections of contractor's equipment;
- Educate and train staff within the Assets, using toolbox talks etc;
- Investigation of all reported incidents;
- Conduct the dust control and road cleaning program;
- Support road show and community relation activities;
- Reporting and documentation of all HSE matters.
- Be a part of the emergency response team (ERT).


3.2.3 Field Support Team

Upcountry Administration & Community Manager

The Administration Manager assisted by the Upcountry Administration & Community Manager and Land Administration Manager are accountable for the site procurement and community relation. In coordination with the Land & Legal Officer and Land & Community Liaison Officer, their health and safety responsibilities include:

- Ensuring all subordinates follow HSE procedures at all time;
- Ensuring all emergency contact numbers of the emergency response team and local emergency services are updated and available to all staff;
- Coordinating with Asset HSE Officers to distribute health, safety and environment information to staff;
- Coordinating with Asset HSE Officers with regards to health, safety and environment in the office, staff accommodation and for the Company's vehicles;
- Coordinating with Asset HSE Officers for PPE equipment;
- Providing specific health and safety training to personnel so that they are competent and capable of carrying out their work to the required standard and as required by regulations;
- Provision and supervision of all security issues;

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- Reporting all incidents, accident or spills immediately to Production Team Leader and Asset HSE Officers.
- Conducting the road show activity for the villagers in the areas of sensitive receptors;
- Recording all complaints in the log sheet and coordinating with relevant parties for clarification and reducing any conflicts between the company and nearby communities.

All Employees

All employees are encouraged to actively engage and participate with line management and supervisors in the implementation of and compliance to the requirements of the HSE Management System.

3.3 Employee Recruitment, Selection and Induction

Recruitment and Selection

The Company has procedures in place to ensure that all approved vacancies are filled by individuals with the appropriate qualifications and experience to fulfill the requirements of the position. All recruitment and selection is undertaken in accordance with the relevant legislation.

The management goals for recruitment and selection are to:

- conduct recruitment and selection in line with good practice and legislation;
- identify the best candidate for the position using job description, competence profile, and structured interview.

Induction

The company recognizes that communication and dissemination of information, rules and regulations is essential for any new employee. This is a staged process, as follows:

- initial induction with personnel which includes HSE awareness, fire, first aid and evacuation procedures as well as day-to-day personnel issues; This will be oriented by Asset HSE Officer.
- departmental induction by line management which includes pre-job discussions.


The management goals for induction are to:

- provide sufficient information specific to the job so that the individual is competent to perform the work in a safe and efficient manner;
- provide every new employee with general information on the Company;
- provide every employee with all necessary health and safety information including a general awareness of the Safety Management System.

Management performance standards for recruitment and selection:

- objective evidence that recruitment and selection processes and procedures have been successful;
- record of the induction, endorsed by the employee;
- personnel are fully aware of the information provided during inductions.

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Management responsibility for meeting performance standards:

- General Manager/ Managers

3.4 Employee Training and Development

The company recognizes the importance of the training and development of its entire staff in order to maintain and improve standards of performance and to maximize individual employee development.

Management goals for training and development:

- to train and develop employees, as necessary, against the requirements identified by performance appraisal and competence assessment and maximize their contribution to the Company;
- to ensure that employees maintain up-to-date knowledge of their specialist discipline and are aware of technological changes/advancements in their particular area.

Specific Health Safety and Environmental Training

Specific HSE training is conducted as necessary and is specifically targeted to the requirements of the employee and his job. Specific HSE training includes, but is not limited to:

- specialized fire and first-aid training;
- health, safety and environmental legislative training;
- training in the specific elements of the Safety Management System
- Instructors of training courses will be both recognized private organization and government officers.
- Training requirement for concerned will be provided per HSE-PM-013.

Management performance standards for HSE training:

- identification of competence development requirements for all employees and the relevant training to address these requirements;
- evidence that training and development has been completed by individuals;
- maintenance of records for training & development.


Management responsibility for HSE Training:

- The Asset HSE Officers are responsible for finding the interesting courses together with the effective trainers to provide the training for all personnel in the oilfield to keep filling the gap of improvements on safety awareness.

3.5 Employee Performance Appraisal

The Company has a formal performance appraisal process which is conducted on an annual basis. The immediate supervisor reviews the past performance of the employee against previously set objectives and determines the objectives for the forthcoming year. Individual career development and direction is discussed, as is training and development needs. From this, an individual training and development plan is developed, which is also linked to any competence development needs identified during the performance appraisal review.

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Management goals for performance appraisal:

- to give a constructive overview of achievement over past year;
- to evaluate effectiveness of the individual's performance against their set objectives;
- to review training undertaken over past year and its effectiveness;
- to identify future training and development needs;
- to set objectives for the forthcoming year;
- to discuss individual's future career development and aspirations;
- to record performance and outcome of performance appraisal.

Management performance standard for performance appraisal:

- completion of annual performance assessments for all employees.

Management responsibility for performance appraisal:

- General Manager /Managers

3.6 Employee Competence Assurance

The effective management of health, safety and environmental risk relies on the competence of all the personnel engaged in operations. Competence is defined by an employee or a contractor having suitable skills, experience and training in order for them to carry out their responsibilities safely and effectively. This requires not only professional, technical and personal skills but also the necessary HS&E awareness to ensure that the role is carried out without endangering the individual, others, property or the environment.


Competence assurance is an ongoing process and begins prior to recruitment and selection and continues throughout an individual's employment with the Company. It comprises of a number of elements:

- the individual's job description which defines the activities to be carried out;
- the individual's competence profile, i.e. competence levels required to conduct those activities and responsibilities against the performance standards required by the Company;
- the individual's competence assessment, i.e. validation of skills, on-the-job assessment, performance appraisal, signed off by the line manager;
- the development and maintenance of an individual's competence, i.e. training, re-validation, updating.

Management goals for competency for employees and contractors

- the clear understanding by all employees of the work to be carried out using their job descriptions, which include accountability to others, responsibility to others, main tasks, HSE responsibilities, qualifications and experience, and personal attributes;
- developing levels of competence against each task and responsibility within the job description;
- conducting competence assessment on a regular basis, using on-the-job assessment, satisfactory completion of training, performance appraisal;
- ensuring that each employee is involved throughout the competence assurance process and understands and resolves any areas of competence shortfall;
- developing an individual training and development plan linked to competence development

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needs, including on-the-job training, professional training schemes, training using the procedures and equipment supplier training;

- maintaining the required competence level by re-validation, updating skills to take account of advancing technologies, refresher training and exercises/drills, as appropriate;
- maintaining a record of the competence assurance process for each individual and documenting all findings.

Management performance standards for competence:

- implementation of job descriptions and required competence levels;
- documentation confirming competence level achievement;
- documentation up to date and signed off by line management.

Management responsibility for competency for employees:

- General Manager / Managers

For The Company's employees, the respective line manager is accountable for their development and training to ensure that they are competent before assigning them responsibilities.

3.7 Management of Contractors

The Company utilizes specialist contractors and materials suppliers to carry out certain operations and for the supply of equipment. The processes of hiring and managing contractors to ensure that The Company's HSE policy is complied with will depend on the tasks to be performed and the hazards posed. Safety critical tasks and equipment will be targeted as being crucial for management to address. The Company's contract procedures will be followed for contract placement.

The relevant manager responsible for hiring the contractor will assess whether the tasks, or equipment, being tendered for, are safety critical. If they are assessed as such, then the tender document will insist on the following management goals being achieved:


The management goals for contractor management are to:

- assess whether the contractor has a Health Safety and Environment Management System that complies with The Management of HSE Regulations and is capable of being interfaced with The Company's SMS;
- assess the contractor's HSE Management System for standards that are commensurate with the level of risk to be imported;
- assess the level of contractor compliance with their own procedures;
- assess the commitment of the contractor management to The Company HSE's requirements;
- approve / qualify contractors meeting the required standards;
- determine the on-going performance of the contractor;
- provide a database of information on contracting companies for future use.

3.8 Procurement of Equipment and Services from Contractors and Suppliers

As part of the SMS policy and procedures on procurement, The Company only purchases approved equipment from qualified suppliers. The requisitioning manager is responsible for the relevant technical specifications and information, safety and quality assurance requirements, delivery programme and vendor pre-qualification.

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The management goals for the procurement of equipment and materials are to:

- ensure that The Company safety procedures Contractor Safety (HSE-PM-014) are complied with throughout the procurement process;
- purchase only approved equipment from qualified suppliers against specification and performance standards.

Management performance standards for the management of contractors and procurement of equipment:

- standards and procedures for selecting and monitoring contractors are in place and that they are being utilized effectively;
- effective and suitable arrangements are used for controlling purchasing of equipment and materials.

Management responsibility for the management of contractors and procurement of equipment:

- General Manager/ Procurement Manager

3.9 Workforce Involvement and Communication

(See Section 4.3 for detail on managing HSE communication.)

Involvement in Procedures and Work Instructions

Involving the workforce in the development of procedures and work instructions is crucial to their relevance and utilization. Wherever possible, line managers, including supervisors will consult with their colleagues and the HSE Manager, during the preparation of procedures and work instructions.

Involvement in Incident Reporting and Investigation

In line with the Company policy and objectives, employees at all levels may be required to be involved in the investigation of incidents per Accident investigation report procedure (HSE-PM-002). The level of involvement is defined in the investigation procedure but in all cases maximum use will be made of specialist employee knowledge when identifying direct and indirect causes of incidents and determining the actions to prevent recurrence.

Involvement in Management Safety Meetings

See section 4.3 for The Company policy and performance standards for safety meetings.


Involvement in Pre-Job Discussions

The objective of these meetings is to ensure that all members of a work team understand the hazards, controls (PTW etc.) procedures, work instructions, are familiar with the work environment, have the correct tools and equipment and are competent to carry out the work.

Involvement in SMS Inspections and Audits

The inspections and audits required by the SMS (see Section 5) require the participation of the workforce to demonstrate their understanding of the system. The quality of audit reports relies on accurate feedback from the workforce. It should be recognized as a positive exercise, as the results of these audits provide the basis for performance improvement.

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3.10 Document Control, Review and Update

Maintenance of SMS Documentation

In order to ensure that the content of the SMS is maintained current with regard to legislation, industry standards and company requirements, the SMS documentation is controlled. The Company SMS document structure is shown in Appendix 2 and the master SMS document listing is contained in Appendix 3. The custodian for the SMS overall is, on behalf of the Chief Executive Officer, the General Manager, HSE Manager.


Management Goals

- SMS documentation is maintained in accordance with HSE document control procedures;
- revisions are originated, reviewed and approved at the appropriate level;
- documentation is issued in a controlled manner;
- the SMS documentation complies with current legislation.

Review and Update

- Requests to amend the SMS should be addressed to HSE Manager and will be approved by the Chief Executive Officer and/or General Manager during the annual review of the SMS.

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- manage well performance;
- manage tanker operations;
- plan and execute inspection and maintenance;
- procure and control materials, equipment and services;
- modify facilities;
- provide health, welfare and emergency services;
- environmental and waste management;
- manage office and warehouse facilities;
- abandonment and decommissioning.

Managing Production Well Intervention Operations

- well programme design, planning and execution.

Within each of these business processes there are numerous activities that generate hazard potential and the requirement to manage the risks. These are managed by the introduction of written controls, either generic standards or project-specific procedures. All of the controls are controlled documents under the SMS (see Appendix 3 for the master listing). The general principles of the risk management process are described in Section 4.2.

4.2 Hazard and Risk Management

The Company requires that risk assessments be undertaken to ensure that it complies with any relevant statutory provisions and thereby reduce the risks so far as reasonably practicable.

The Risk Management Process

Risk management consists of the following activities:

Hazard Identification, Risk Assessment, Control and Mitigation

Identifying the Hazards

A hazard is defined as something with the potential to cause harm. The techniques used to identify hazards depend on the nature and complexity of the operation or activity. They could range from observation and recording to the use of specialist techniques such as HAZOP/HAZID.

Assessing the Risk

- Risk is defined as the likelihood that the harm from a particular hazard may occur. The level of risk is dependent on the frequency of exposure to the hazard, the potential severity and the probability that the hazard will be realised.


Managing Risk

Eliminating the risk is the preferred option. If risk cannot be eliminated, then reducing the risk to an acceptable level will be achieved through the identification and implementation of control measures.

Mitigation Measures

In the event of failure to manage risk then contingency plans are developed to minimize loss.

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Section 4: Planning and Implementation

Planning and implementation of the Safety Management System is integrated into the management of the normal business activities of the Company. The listing of the main risk generating activities, typical of any upstream oil operating company, are summarized below. These activities will be managed by utilizing the controls and standards referred to in the Business Processes Listings contained in Appendix 1. The controls and standards listed there represent the Company's corporate policy for managing the activities and thereby for reducing the risks to as low as reasonably practicable.

A number of specific management activities that relate to health, safety and environmental issues are included below the business processes in this section.

4.1 ECO Orient Energy Business Processes

Managing Seismic Operations

The following summarizes the activities that would be undertaken by the Company in connection with seismic operations:

- prepare for seismic operations;
- execute seismic operations.

Managing Exploration, Appraisal and Development Well Operations

The following summarizes the activities that are undertaken by the Company in connection with exploration and appraisal drilling operations:

- well design and planning;
- prepare drilling facilities and worksite;
- well construction and handover (or abandonment);
- management of well equipment and materials;
- selection and management of contractors;
- logistics management;
- environmental and waste management;

Managing Facilities Design and Installation

The following summarizes the activities that are undertaken by the Company in connection with the development of existing or new field(s):


- prepare field development plan and a basis for design;
- prepare a field development specification and implementation plan;
- preparation of detailed design;
- procure and control material, equipment and services;
- construct and commission facilities.

Managing Production Operations

The following summarizes the activities that are undertaken by The Company in connection with production operations:

- plan and execute field activities;

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The management goals for risk management are:

- to carry out hazard identification and risk assessments at work sites; by area supervisors/manager with advising from HS department.
- to ensure hazard identification and risk assessment is carried out by personnel with appropriate training and experience;
- to establish acceptable levels of risk;
- to prioritize the identified hazards by the risks presented;
- to develop achievable action plans for the reduction of risk;
- to measure progress against the action plans;
- to review the assessments when conditions significantly change;
- to develop contingency plans to deal with emergency events.

The management performance standards for risk management:

- completion of hazard identification, risk assessment and development of controls for business processes and specific projects/assets;
- evidence of an effective approach to and implementation of controls;
- evidence of hazard identification and risk assessment in the design of new facilities or equipment;
- effective contingency plans.

Management responsibility for risk management:

- General Manager/ Production Assets Managers/ HSE Manager

4.3 HSE Communication

Efficient communication, both up and down the organization, is essential for the SMS and other management systems to function effectively. The communication structure is designed not only for the passage of information but to motivate people through their involvement and understanding. It is recognized that well motivated employees will contribute more towards the overall success of the Company.

4.3.1 Safety Consultation

The management goals for safety consultation are:

- to arrange a consultation;
- to provide the information required under regulations.


The performance standards for safety meetings are:

- HSE Committee meeting procedure HSE-PM-015 in place and functioning effectively;
- information required under regulations is provided to the workforce.

4.3.2 Management Safety Meetings

Safety meetings are essential for assessing HSE performance, for involving the workforce and as a means of expressing management commitment to the safety culture. The following formal meetings will be held. The purposes of the meetings are to review health, safety and environmental performance and to seek improvements.

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Site Management Safety Meetings

The site management meetings will be held monthly at Wichian Buri, and will follow a structured process chaired by the chairman of HSE Committee. The meetings will be minuted and the actions arising will be recorded, with responsibilities for the actions identified. The secretary of HSE Committee will collate the actions and assigned responsibilities register.

Corporate Safety Meetings

Corporate safety management meetings will be held annually and will be chaired by the **General Manager**. The meeting minutes will be taken and the actions arising will be recorded with responsibilities for the actions identified. The HSE Manager will collate the actions and assigned responsibilities on an action register.

The management goals for safety meetings are:

- to review safety performance and assess results;
- to produce and maintain an SMS improvement plan;
- to provide the necessary resources to implement the improvement plan;
- to maintain effective communication with all employees and contractor staff.

The performance standards for safety meetings are:

- agenda produced and circulated prior to each meeting;
- minutes produced and circulated within 5 working days;
- action list produced by HSE Manager and updated before next meeting.

Management responsibility for safety meeting:

- General Managers/ HSE Manager/Production Manager/ Drilling Manager/Relevant Managers

4.3.3 Worksite Pre-Job Discussions

Effective communication on the worksite involving the entire workforce is a major component of incident prevention. Pre-job discussions should address the work to be undertaken, the identified hazards, precautions and controls. Significant topics or identified problem areas may be the subjects of further discussion especially if there is an impact on company standards or procedures.


The management goals for worksite discussion are:

- to ensure a satisfactory level of understanding of the work to be undertaken;
- to ensure that all hazards have been identified and that adequate controls and follow up are in place;
- to ensure that PPE and the equipment are fit for purpose for the work;
- to ensure that the permit to work system is being complied with;
- to ensure that the Emergency duty roster are updated.

The performance standards for work site discussions:

- full understanding of the work to be undertaken;
- all hazards have been identified and that adequate controls and follow up are in place;
- PPE and the equipment are fit for purpose for the work;

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- the permit to work system is being complied with;
- Emergency duty roster are updated.

Management responsibility for worksite discussion:

- General Manager/ HSE Manager / Area Managers / Team Leaders / Senior Engineers

4.3.4 Hazard Reporting by the Workforce

Any hazard perceived by any employee can be raised to the area supervisor/ Manager and HSE Manager. This system provides the workforce with an effective mechanism for communicating to management any hazards or occurrences that are perceived. The HSE Manager will ensure that matters are addressed by the appropriate manager. Valid feedback will always be given to the originator.

The management goals for hazard reporting are:

- to provide a credible hazard reporting and communication system;
- to ensure a rapid response to all hazard information.

Responsibility for hazard reporting: All Employees

Responsibility for hazard report collation and dissemination: HSE Manager

4.3.5 Safety Alerts and Safety Information

The company communicates important HSE information through the issue of Safety Alerts and by maintaining an up to date library with relevant safety information at its main sites. Safety Alerts are issued by the Asset HSE Officer from information supplied by personnel from any of The Company's locations or from government or trade associations. If applicable, the information may be incorporated into processes, procedures or working instructions, safety board.

The management goals for safety alerts and safety information are:


- to communicate critical health and safety information to all relevant personnel and locations;
- to amend company processes and procedures based on the alerts;
- to make available up to date health, safety and environmental information.

Management performance standard for safety alerts

- the timely issue and distribution of safety alerts;
- the timely update of safety and environmental information.

Management responsibility for Safety alerts and Safety Information: HSE Manager

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4.4 Occupational Health Standards

4.4.1 Employee Occupational Health Standards

All employees are subject to health surveillance by the Company. The process begins at the employment stage and periodic examinations are carried out at appropriate intervals.

Program of Health Checkup per HSE-PM-005

- Pre-employment Health Checkup
- Annual Health Check up
- Comply by local laws

The management goals for health surveillance are to:

- comply with company and legislative standards;
- maintain a programme of periodic medical examinations;
- ensure professional medical attention is available to all company location.
- maintain First Aid Station with qualify personal and medicine by laws

The management performance standards for health surveillance are:

- employees health is monitored and appropriate assistance provided throughout their employment;
- appropriate medical records and results of health monitoring are maintained.

Management responsibility for Occupational Health standards:

- HSE Managers

4.4.2 Substance Abuse

The potential of substance abuse is recognized by the Company. Management will place the emphasis on initially identifying that a problem exists and then working with the employee to resolve the problem. Continued abuse in the workplace however, will be handled under the disciplinary procedure.

The management goals for substance abuse are to:

- actively discourage substance abuse in the workplace;
- proactively identify potential abuse and provide counseling.

The management performance standards for substance abuse are:

- the elimination of substance abuse at the workplace.

Management responsibility for substance abuse:


- Production Assets Manager/ HSE Manager/ Up-country Admin Manager

4.4.3 Control of Substances Hazardous to Health

The company is committed to eliminating, or controlling, the risks arising from the use of any substance that presents a health risk to employees. To do this all such substances in use will be identified and the risks arising will be evaluated. Controls will then be put in place to reduce that risk to an acceptable level.

Although The Company provides suitable personal protective equipment per Personal Protective Equipment HSE-PM-004 for use by employees this is not considered to be the primary control

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measure. Elimination or substitution with a less harmful substance is the preferred management option.

The Production Assets Manager, or project manager, is responsible for implementing all the necessary precautions and controls and for ensuring that the product has been assessed and any hazards/risks evaluated.

The management goals are:

- to carry out assessments at all company sites;
- to produce data sheets for all the identified substances;
- to implement controls to reduce the risk to an acceptable level (in order of preference), by:
 - substitution of safer products;
 - personal protective equipment;
 - instructions and pre job briefings prior to use of hazardous substances;
 - hazard identification, risk assessment and implementation of control measures;
- to monitor the effectiveness of the control procedures;
- to provide health hazard, risk and control measures information to employees.

Management performance standards

- assessments carried out at all company sites;
- data sheets available for all the identified substances;
- controls are implemented to reduce the risk to an acceptable level;
- employees are aware of the health hazard, risk and control measures.

Management responsibility for Control of Substances Hazardous to Health:

- Production Manager

4.5 Standards and Procedures

Clear, concise, well understood procedures, guidelines and controls are essential to reduce injury to people, damage to plant and equipment and the environment.


For standards and procedures to be effective they must follow a standard format, be developed and updated by the personnel who will eventually use them. They must always be easily accessible and up to date.

The Company's management standards and procedures are covered in section 4.1. Document management is covered by Section 3.10

4.6 Equipment Examination

The Company will ensure that examination of certain equipment and operations is carried out by competent persons, as required. The examinations can be carried out by competent persons employed by the Company or by a nominated contractor. The well examiner must be independent of the line management. A separate written scheme for these examinations will be in place for each site and will comply with the relevant regulatory guidance.

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The management goals for examination are to:

- set up an examination scheme for the equipment or operation;
- ensure that all the appropriate equipment is identified and subject to examination;
- maintain records of examination;
- ensure any reported defects are acted upon.

Management performance standards for examination

- examination schemes in place;
- all the equipment has been identified and is subject to examination;
- records of examination are maintained;
- all defects have been acted upon.

Management responsibility for Equipment Examination:

- Asset Leader/ Production Assets Manager

4.7 Maintenance System

The Company will ensure that all equipment which presents a risk to employees, other facilities or to the environment is in a safe and efficient condition. The company operates a maintenance system that identifies the level of maintenance that is required, including the frequency and maintains records of all maintenance carried out.

The management maintenance goals are to:

- identify which equipment is subject to planned maintenance;
- provide defined maintenance routines for the equipment;
- maintain such equipment in a safe and efficient condition;
- maintain records of all maintenance carried out.

Maintenance management performance standards

- all safety critical equipment in a safe and efficient condition;
- up to date records of all equipment requiring maintenance are maintained;
- up to date maintenance routines, including frequencies are available;
- up to date maintenance records are available.

Management responsibility for Maintenance Systems:

- • Production Assets Manager /Asset Leader


4.8 Permit To Work System

The Company's Permit to Work system must be utilized for risk operations. It provides for a written instruction from the person in charge of the area to the person carrying out the work. The permit to work records where, when and how the work is to be executed, identifies hazards, any additional precautions and the control measures and requires that the site and plant/equipment status be recorded on close out of the work.

The management goals for the permit to work system are to:

- provide a level of control for high risk operations;

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- ensure all personnel who may be affected by the work are aware and involved;
- monitor compliance with the permit to work system through audit.
- Comply with Work Permit Procedure (HSE-PM-003).

4.9 Managing Working Time

All the Company's sites will ensure that the requirements of the Working Time Regulations are complied with by ensuring that staff does not work excessive hours without their agreement.

The management goals for managing working time are to:

- To comply with the Working Time Regulations.

Performance standards for working time management

- Regulatory compliance achieved.

4.10 Managing First Aid

All company locations will have suitable first aid equipment and facilities available in compliance with the First Aid at Work Regulations.

The management first aid goals are to:

- identify and provide sufficient, trained, first-aiders; by comply per HSE Training requirement procedure HSE-PM-013 as a minimum.
- identify the appropriate first aid equipment and facilities required;
- provide the equipment and facilities;
- maintain first aid equipment and facilities in a safe and efficient condition.

First aid provision performance standards

- sufficient, trained, first-aiders provided;
- appropriate first aid equipment and facilities provided;
- equipment and facilities provided;
- first aid equipment and facilities maintained in a safe and efficient condition.

Management responsibility for Managing First Aid:

- HSE Manager


4.11 Managing Incident Reporting and Investigation

Incident reporting and investigation positively contribute to the process of accident prevention. The Company's management will be involved in the process of investigation, dependent upon the severity or potential severity of the incident, in order to identify the underlying causes and to implement actions to prevent recurrence.

Reporting and Investigation Procedure

Employees are required to report all accidents and incidents in which they are involved to their line manager/ supervisor. These include injury to personnel, damage to plant and equipment, harm to the

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environment and near misses. Accurate and timely reporting is essential to ensure effective follow-up.

Following the initial report, the formal company incident reporting and investigation procedures HSE-PM-002 are followed.

Significant accidents and incidents are reviewed at the Management Safety Meetings.

The management goals for accident reporting and investigation are to:

- to encourage the reporting of all accidents, incidents and near misses;
- to investigate all reported accidents and incidents at a level commensurate with their potential;
- to develop realistic, achievable recommendations to prevent recurrence;
- to communicate the findings of investigations to all interested parties to prevent recurrence;
- to provide a database of information for performance measurement.

The management performance standards for accident reporting and investigation are:

- the timely provision of data on incident occurrence and incident reports;
- the full completion of investigations, determining root causes;
- high quality investigation report;
- follow up recommendations prevent any recurrence.

Management responsibility for accident reporting and investigation:

- Area Managers/ HSE Manager

4.12 Contingency Planning and Emergency Response

The Company recognizes that even with the implementation of an effective management system there is always the potential for incidents to occur. At all sites, management will identify high-risk scenarios, develop emergency response plans and train employees to provide an effective response should it be required. Emergency procedures HSE-PM-001 and contingency plans will be regularly updated and exercises carried out in order to maximize their effectiveness.

Separate emergency plans will be prepared for major operations, such as well operations, that involve a significant change to normal site operations.

A corporate emergency response procedure will also be in place to ensure that emergency communications can be established with senior management.


The management emergency response goals are to:

- identify potential emergency scenarios associated with all company's operations;
- provide easily understood procedures to be followed by personnel at all sites;
- ensure sufficient trained personnel and resources are available to support the control of an incident.

Emergency Response Training

Emergency response information is provided to employees during induction. Specific training per HSE-PM-013 HSE Training Requirement will be given relating to the site where an employee is likely

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to work and emergency response training given when new plans are issued or if plans are amended.

The emergency response training management goals are to:

- provide a competent response to emergencies;
- to evaluate the effectiveness of response to an emergency.

Emergency response management performance standards:

- availability of clear and concise contingency plans and emergency procedures at all sites;
- sufficient training carried out for identified personnel;
- exercises are planned and carried out regularly;
- documented debriefing and feedback leads to improvements in plans and procedures.

Management responsibility for Emergency Response Plan:

- General Manager/ Production Asset Manager/ HSE Manager

4.13 Managing Engineering Design and Construction Change

A design review process will be in place at all company sites which will ensure compliance with all regulatory requirements, codes and standards. Design reviews, held during the various stages of a project, may generate changes to the original design; these are managed using the plant modification procedures.

The management goals for design change control are:

- to ensure all potential hazards connected with a project or design change have been identified;
- to control changes and obtain the necessary approvals before the change is implemented;
- to check the design and consider whether any of the conditions which may occur from either a malfunction or operation, have the potential to cause a hazard to people working on the location or to the installation/equipment;
- to check the precautions incorporated in the design are sufficient;
- to ensure the safety engineering of the design meets the requirements of legislation and any inspection scheme;
- to ensure that the original design has not been compromised by changes at design stage;
- to ensure any operating manual addresses all the safety aspects required by changes.


Performance Standards:

- roles, responsibilities and reporting lines are clearly identified for managing changes;
- design reviews identify the hazards and changes required to mitigate risk;
- design changes are undertaken in accord with the plant modification procedure.

Management Responsibility for Managing Engineering Design and Construction Change

- General Manager/ Production Assets Manager/ Asset Leaders

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Section 5: Performance Measurement

Measurement is essential for improving health safety and environment performance. Measurement of performance is achieved by pro-active and reactive monitoring to provide information for feedback and correction.

5.1 Active Safety Monitoring

Planned Inspections

Planned inspections will be carried out at each site in accordance with a pre-arranged schedule and an inspection checklist. These will be carried out by the line manager responsible for the site. The condition of plant and equipment is measured against pre-determined standards. In this way sequential inspections become comparable and the results can be utilized as a performance indicator. Non-compliance with standards generates nonconformance reports, which are prioritized for action.

The management goals for planned inspections are:

- to establish the condition standards for plant and equipment;
- to measure the level of compliance to the standards;
- to involve employees in the development of standards and in measuring compliance;
- to record and collate inspection records;
- to provide a valid indicator in respect of safety management performance.
- to comply on facility Safety Inspection Procedure (HSE-PM-008).

Safety Meetings Follow Up

Safety meetings and pre-job discussions provide a performance indication of the effectiveness of the SMS.

The management goals for active monitoring are:

- to measure the level of compliance to standards;
- to record and analyze the outputs from monitoring;
- to ensure that follow-up action is taken.


5.2 Reactive Monitoring

Statistical Reports

The HSE Manager and Area Manager record and analyses the statistics on all accidents, damage to plant and equipment, harm to the environment and near misses. Following each accident or incident report the causes of incidents are reviewed to provide an incident as to where increased emphasis or effort needs to be placed.

Incidents are assessed by the HSE Manager and Area Manager for their potential severity to identify the level of risk associated with the incident potential.

Incident frequency rate statistics are compiled using conventional frequency rate calculations.

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The management goals for reactive monitoring are:


- to provide company performance indicators for safety management against incident and potential incident occurrence;
- to identify the root causes of accidents and incidents;
- to identify areas where resources should be directed to prevent recurrence;
- to identify procedural deficiencies that can be addressed to prevent recurrence.

Management performance standards for active and reactive monitoring:

- confirmation that the programme of inspections is being met and reports issued;
- confirmation that the schedule of safety meetings is being met;
- quality of safety meeting minutes and defined actions;
- compilation of on-going incident statistics and identification of trends;
- issue of annual report on monitoring;
- completion of corrective actions following inspection, audit and incident investigation.

Management responsibility for active and reactive monitoring:

- Area Managers/ HSE Manager.

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Section 6: Reviewing Health and Safety Performance

Review and audit of the SMS provides the feedback loop as identified on the management model in Section 1.3.

6.1 Management Performance Review


The overall company health and safety performance is reviewed by collecting evidence from various sources:

- results of audits
- assessment of active and reactive monitoring activities
- feedback from employees
- new legislation.

The evidence is used to feedback into the SMS any changes required to improve performance.

The goals for management review are to:

- review all HS performance indicators and other relevant information;
- identify areas requiring additional resource or redirection of emphasis;
- review Company HSE objectives and amend these as necessary.

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Section 7: SMS Audits

Auditing is a structured process of collecting independent information on the efficiency, effectiveness and reliability of the total HSE management system and drawing up plans for corrective action. Auditing is not a substitution for the other essential parts of the SMS.

Auditing seeks to establish:

- that the appropriate management arrangements are in place;
- adequate risk control systems exist and are implemented;
- appropriate workplace precautions are in place.

Authority and Responsibility

The HSE Manager and relevant Managers are responsible for the development of audit program with advising by General Manager.

Audit Frequency

The scope and frequency of internal (and external) audits will be determined according to specific needs and risk rated priorities.

The management goals for auditing the SMS are to:

- determine and report the level of compliance to the SMS standards and procedures;
- determine the level of understanding by employees of the contents of the SMS;
- provide the performance indicators as to achievement in the implementation of the SMS which will contribute towards the improvement process;
- recommend the remedial action(s) where necessary.

7.1 SMS Improvement Plans


SMS improvement plans are generated during HSE management review meetings. These provide the detailed actions to be implemented to improve The Company's HSE performance. The implementation of the plans is the responsibility of the **General Manager** who reports to the Board of Directors. They are monitored on his behalf by the HSE Manager.

The management goals for improvement plans are to:

- provide an action plan for the improvement of the SMS;
 - what is to be achieved
 - who will do it
 - when will it be completed by
- provide a single reference point for the improvement of the SMS.

The management performance standards for improvement plans are:

- development of an SMS audit plan;
- completion of the annual SMS audit plan,;
- completion of the SMS management review;
- generation of management improvement plans with clear objectives, tasks and timescales.

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Appendix 1: ECO Orient Business Activity Listings

Managing seismic operations
 Managing exploration, appraisal and development well operations
 Managing facilities design and installation
 Managing production operations
 Managing production well intervention operations
 Managing emergency response
 Managing accident and incident reporting and investigation

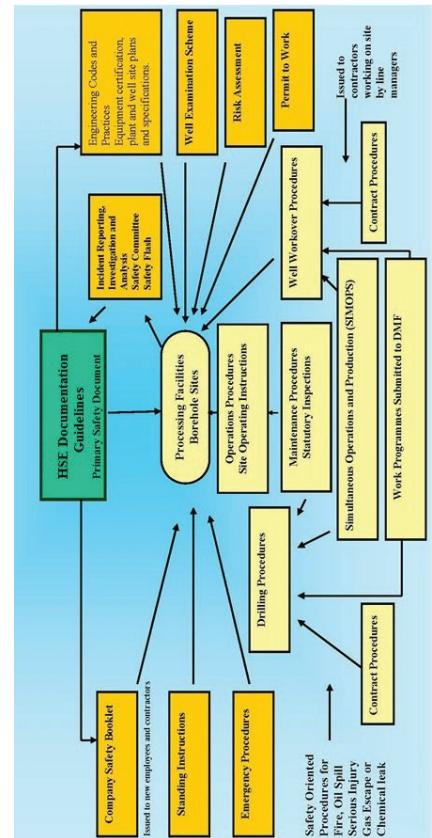
Management Standards


Business Activity Listings	Management Standard
Managing seismic operations	None required
Managing exploration, appraisal, and development well operations	None required
Managing facilities design and installation	Change procedures Risk Assessment procedures Crane & Lifting gears inspection procedure First aid facility and personnel PTW system
Managing production operations	Site standing instructions Site operating procedures Safe Works Instructions PTW system Contract procedures Simultaneous Operations procedure Risk Assessment Procedure First aid facility and personnel
Managing production well intervention operations	Drilling procedures Well workover procedures Well examination scheme Risk Assessment procedure Crane & Lifting gears inspection procedure Simultaneous Operations procedure First aid facility and personnel
Managing emergency response	Emergency Response Plan

The detailed documented standards listing is combined in Appendix 3.

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Appendix 2: Documentation Structure



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Appendix 3: List of HSE Documents

SMS Documentation	
Level 1	HSE Management System
	ECO-HSE-001 Health Safety and Environment Management System
	ECO-HSE-002 Environmental Management System
Level 2	HSE Procedures
	HSE-PM-001 Emergency Response Manual
	HSE-PM-002 Incident and Accident Investigation report
	HSE-PM-003 Work Permit System
	HSE-PM-004 Personnel Protective Equipment
	HSE-PM-005 Health Check up
	HSE-PM-006 Crane and Lifting Gear Inspection
	HSE-PM-007 Safe Forklift Operating and Maintenance
	HSE-PM-008 Wellsite Inspection
	HSE-PM-009 Safe Explosive Movement
	HSE-PM-010 HSE Award Program
	HSE-PM-011 Defensive Driving
	HSE-PM-012 HSE Orientation
	HSE-PM-013 HSE Training
	HSE-PM-014 Contractor Safety
	HSE-PM-015 HSE Committee and Safety Officers Appointment
	HSE-PM-016 Food Hygiene
	HSE-PM-017 Waste Management Plan

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Hazard and Operability Study (HAZOP Study)





ECO ORIENT ENERGY (THAILAND) LIMITED
ECO ORIENT RESOURCES (THAILAND) LIMITED

ENGINEERING DOCUMENT

HAZARD AND OPERABILITY STUDY
(HAZOP STUDY)
(ED-ECOR-HES-14102-01)

Original By Name : [REDACTED]
Position : Engineering Team Lead
Signature : Date : 09-Oct-2014

Approved By Name : [REDACTED]
Position : Engineering Team Lead
Signature : Date : 09-Oct-2014

Endorsed By Name : [REDACTED]
Position : Production Manager
Signature : Date : 09-Oct-2014

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ED-ECOR-HES-13-001 HAZOP Study Rev.0

ECO ORIENT RESOURCES (THAILAND) LTD

HAZOP STUDY REPORT



Area	WB, L33 and L44	Department	PRODUCTION
Project	HAZOP	Section	ENGINEERING
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1.0 INTRODUCTION**1.1 General**

ECO Orient Resources (Thailand) Ltd and ECO Orient Energy (Thailand) Ltd (ECOR & ECOE) produces crude oil in the WB Concession area, L33 area and L44 area. As a characteristic of Well production. There are the difference well production in both lower and higher water cut that are produced in this area. In order to reduce gross liquid production, new dehydration and injection facilities shall be provided at this area.

These process design parameters will form part of the Basis of Design for the facility to be installed at field operation area. The information presented in this document have been extracted from various classification requested.

1.2 Objective of Document

The objectives of the HAZOP study are to identify and evaluate safety hazards and to identify operability problems which, although not hazardous, could compromise the process's ability to achieve design intent and productivity. In particular, the objectives of the study are to:

- Identify safety related hazards and operability problems related to the design and operation of the systems;
- Determine the seriousness of the consequences for the identified problems;
- Identify engineering design and procedural safeguards that will reduce the consequences related to the hazards;
- Evaluate the adequacy of engineering design and procedural safeguards; and
- Recommend additional safeguards and improvements, where necessary.

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2.0 HAZOP BASIS AND DOCUMENTATION**2.1 Basis**

The basis for the HAZOP study is the P&IDs issued for design, marked-up with additional information. The HAZOP P&IDs with indicating the Nodes are presented in Attachment - 2.

2.2 Documentation

The following documentation is also made available during the HAZOP study and used as reference during meetings:

- Process flow diagrams
- Piping and instrument diagrams
- Material balance
- Plot plan
- Escape and Evacuation Layouts
- Major equipment data sheets (as required)

3.0 HAZOP METHODOLOGY**3.1 Node of Study**

The process is broken down into manageable sections (nodes) based on the plant design and its complexity. Attachment -1 includes a list of nodes and their description. The design conditions, the identification numbers of equipment involved in the node and the reference drawing numbers are also included in the node listing. The Nodes are marked on the Master P&IDs, presented in Attachment -2

Some systems which are operated in side kick mode and/or operated intermittently are considered as a single node. Applicable guide words and deviations, which may differ from the generic list, are considered for analysis and recording.

3.2 Guidewords / Parameters

Each node is considered in detail to identify any potential problems in safety or operations that may arise due to deviations in the process parameters. The Causes and

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Consequences of each deviation were identified and the HAZOP team then evaluated the adequacy of existing safeguards, and where necessary, additional safeguards recommended as Actions.

Table 3.1: HAZOP Guidewords/Parameters and Related Deviations

Deviations	Guide Word	Parameter	Comment
No/Low Flow	No/Low	Flow	
More/High/Flow	More/High	Flow	
Reverse/Misdirected Flow	Reverse	Flow	
More/High Pressure	More/High	Pressure	
Low Pressure	Low	Pressure	Includes vacuum
More/High Temperature	More/High	Temperature	
Low Temperature	Low	Temperature	
High Level	High	Level	Includes interface high level
Low Level	Low	Level	Includes loss of level, interface low level and loss of interface level
Contamination	As well as	Composition	
Start-up/Commissioning	Others		
Shutdown/Maintenance	Others		Isolation, drain, purge
Utility Failure	Others		Includes air, power, and nitrogen
Others	Others		Other process and utility interconnections

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Location	WICHIANBURI, PHETCHABUN, THAILAND	Doc.No.	ED-ECOR-HES-14102-01
		Rev.	0

3.3 Worksheets

The session proceedings are recorded using spreadsheet. The records are projected on a screen for comment and agreement by the team members during the sessions.

Although there are many formats for recording, such as recording by exception (where an entry is recorded only when the team makes a recommendation or the issue is considered significant), a full recording approach was adopted for all guidewords/deviations listed in

Attachment-3 whereby every deviation considered by team was recorded even when no significant causes or consequences were found. For guidewords/ deviations listed in Table 3.1, recording by exception was adopted.

3.4 Recommendations

A number of recommendations for changes to equipment, control systems, alarms and trips and procedures were identified during the HAZOP study, which, in the team's opinion, will improve the safety or the operability of the facility. A list of recommendations for the Generic is included in Attachment - 3. The completed HAZOP Review Action Sheets for each recommendation raised have been issued as a separate report, upon resolution of the actions raised.

3.5 Assumptions

Several assumptions were made regarding the basis of the design and these were generally agreed by the HAZOP study team. The main item is listed below:

In case of multiple equipments (with duty and standby/spare equipment) inside a unit, the study was conducted for one set of equipment. Similarly, in case of similar equipments in series, such as (Oil Storage Tank and Heater Treater) in series, the study was conducted on one Oil Storage Tank or Heater Treater only. The recommendations from this study will therefore apply for such similar systems as well. The study has however, considered the impact of simultaneous operation of systems in parallel or series including the control requirements and the effect of trip of one system on the other.

Power Generation Systems were not studied It is assumed that sufficient safeguards will be in place to ensure adequate and reliable supply

HAZOP STUDY REPORT



Area	WB, L33 and L44		Department	PRODUCTION	
Project	HAZOP	Project No.: J1002	Section	ENGINEERING	
Location	WICHIANBURI, PHETCHABUN, THAILAND		Doc.No.	ED-ECOR-HES-14102-01	Rev. 0

4.0 HAZOP SESSIONS**4.1 Study Periods**

The HAZOP Study for the Surface Production Facilities System will be planned on October 10, 2014 at ECO Orient Energy at Wichianburi Office 10:00 AM. A total of 1 day is spent on the HAZOP of this project.

4.2 Study Team

The HAZOP team comprised of a multidisciplinary team of personnel involved with the Project and having adequate experience of design, instrumentation, operations, maintenance, safety and loss prevention. Representatives from Engineering team (Process, Mechanical, Electrical, Instrument and Operation team, HSE team that participated in the HAZOP session. The details (names and discipline) of the HAZOP team members who attended the HAZOP sessions are presented in Attachment -1.

4.3 Follow Up

Proper follow-up and dose-out of all recommendations have been monitored through the HAZOP Review Action Sheet.

5.0 APPENDICES

Attachment -1 – Attendance List

Attachment -2 – Node List

Attachment -3 – HAZOP Worksheets

HAZOP STUDY REPORT



Area	WB, L33 and L44		Department	PRODUCTION	
Project	HAZOP	Project No.: J1002	Section	ENGINEERING	
Location	WICHIANBURI, PHETCHABUN, THAILAND		Doc.No.	ED-ECOR-HES-14102-01	Rev. 0

Attachment -1 –Attendance List*Study Team Attendance*

Name	Company	Role	Date
		Chairman	10/07/14
		Scribe	
		Operation Leader	
		Sr. Supervisor	
		Supervisor – Well Test	
		Supervisor – Well Test	
		Supervisor – Well Test	
		Supervisor – Shift Operation	
		Supervisor – Shift Operation	
		Foreman - Shift Operation	
		Foreman - Shift Operation	
		Foreman - Shift Operation	
		Foreman - Shift Operation	
		Sr. Mechanical Engineer	
		Mechanical Draftman	
		Foreman - Piping & Installation	
		Foreman - Piping & Installation	
		Lead - Mechanical	
		Lead - Mechanical	
		Electrical & Instrument Engineer	
		Supervisor – Electrical & Instrument	

Name	Company	Role	Date
		Foreman - Electrical & Instrument	10/10/14
		Asset HSE	
		Asset HSE	
		Petroleum Technologist	
		Petroleum Technologist	
Part-time Participation			

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HAZOP STUDY REPORT

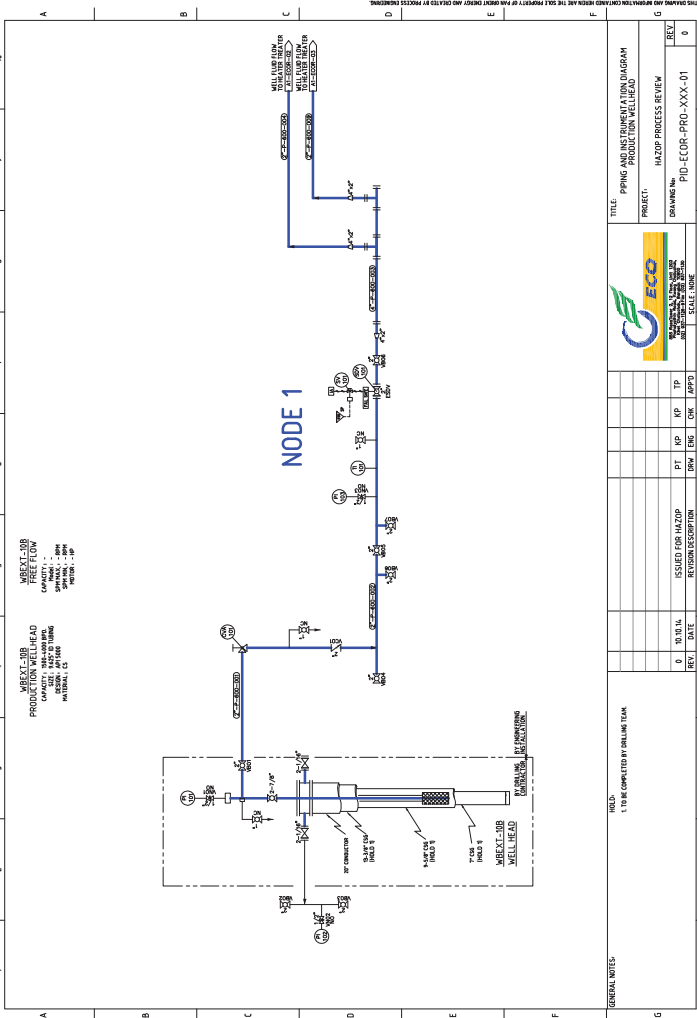


Area	WB, L33 and L44		Department	PRODUCTION	
Project	HAZOP	Project No.: J1002	Section	ENGINEERING	
Location	WICHIANBURI, PHETCHABUN, THAILAND		Doc.No.	ED-ECOR-HES-14102-01	Rev. 0

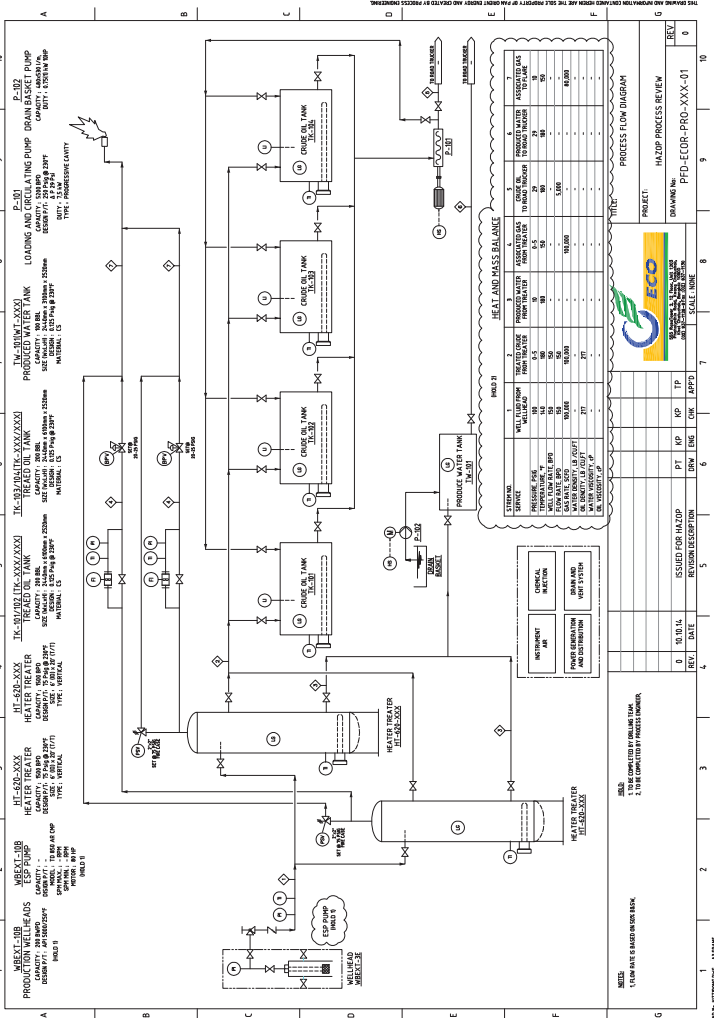
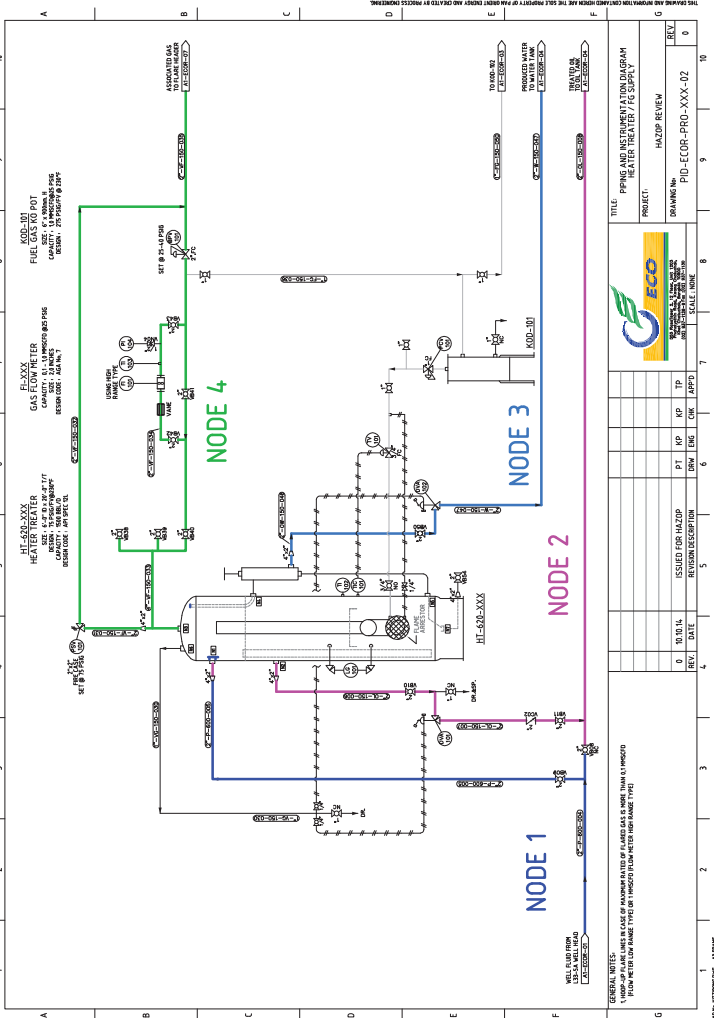
Attachment -2 –Node List

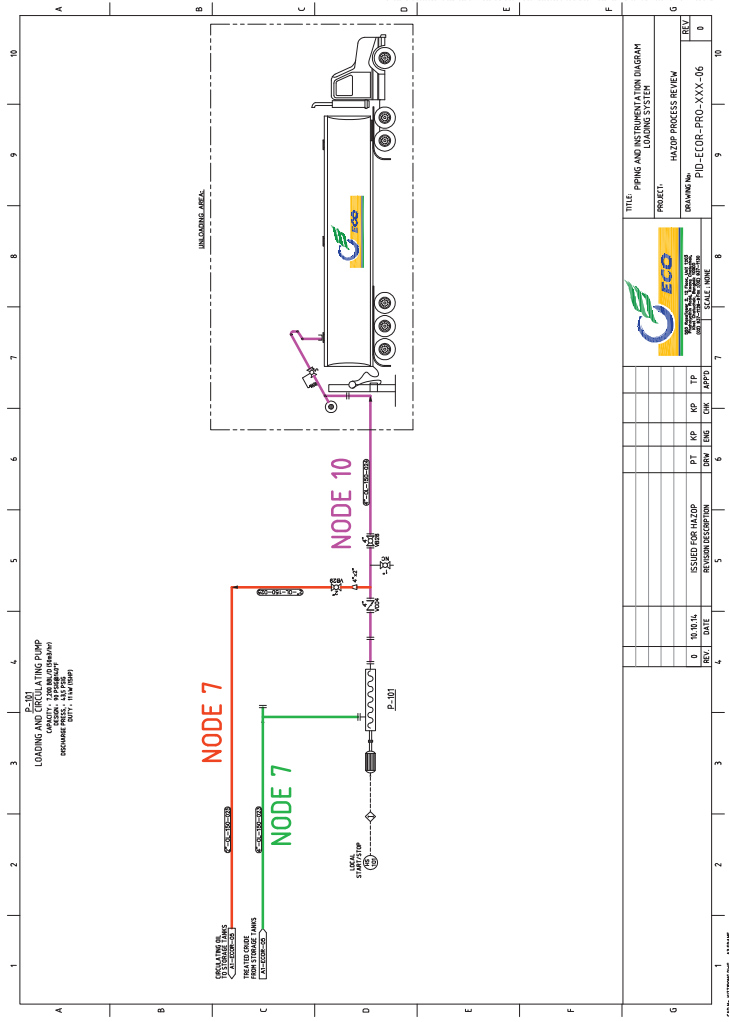
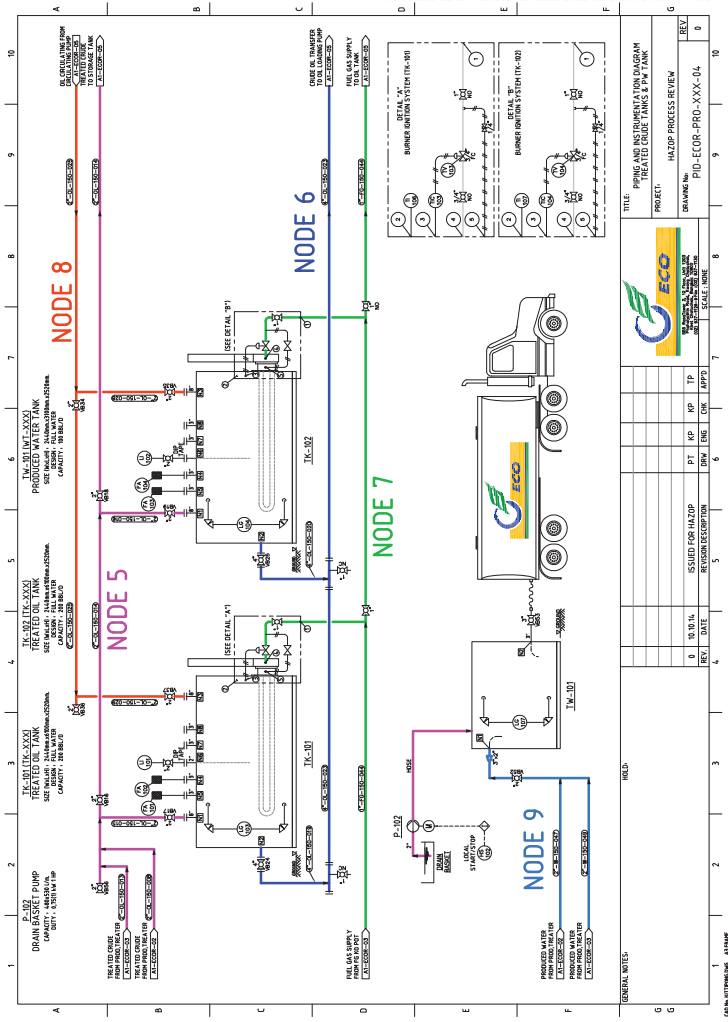
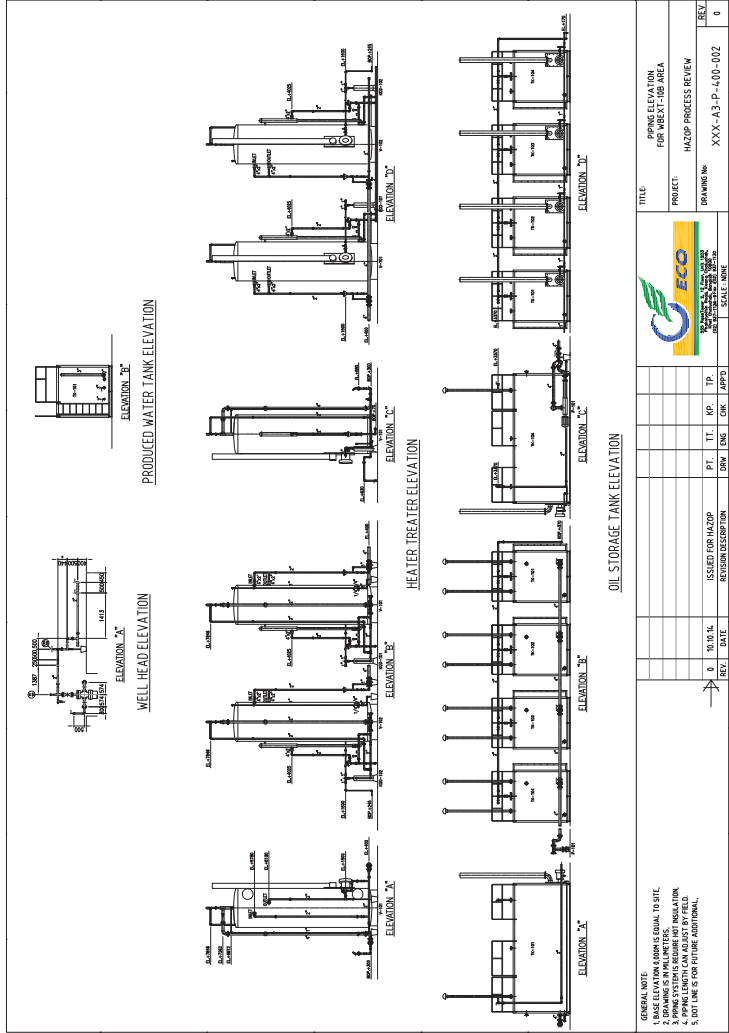
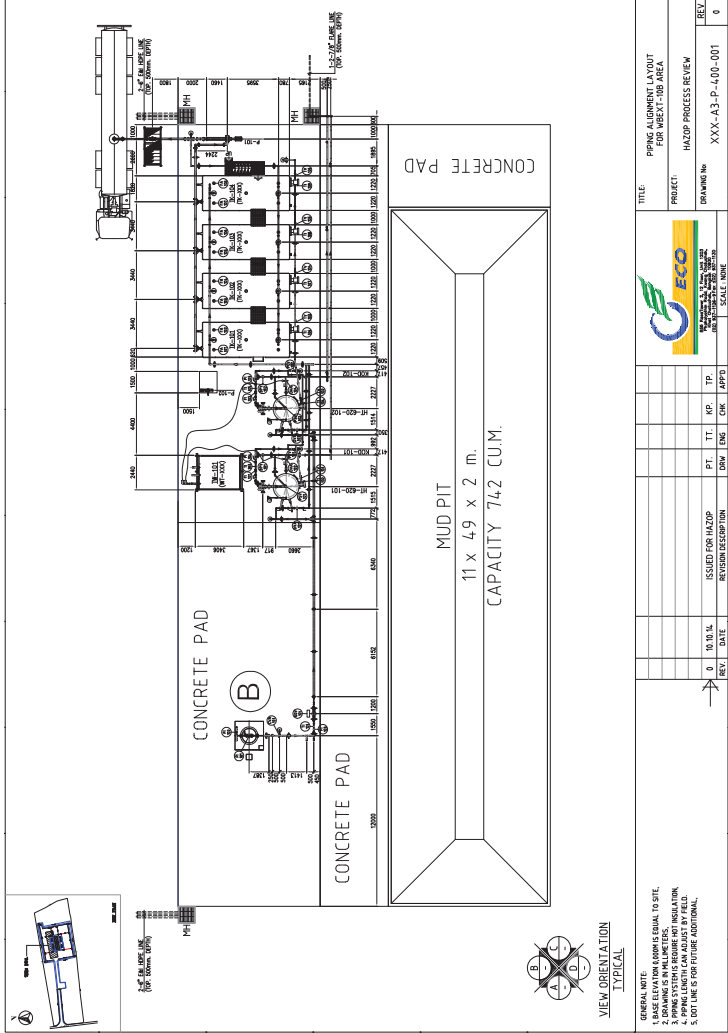
Attachment -2 –Node List

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Area	WB-EXT Concessionaire		Department	Production	
Project	PWT AND INJECTION SYSTEM	Project No.: J0113	Section	Engineering	
Location	WICHIANBURI, PHETCHABUN, THAILAND		Doc.No.	ED-ECOR-HES-13-001	Rev. 0

Attachment -3 –HAZOP Worksheets

No.	Guide Words	Causes/ Concerns	Consequences	Safeguards	Comments/ Recommendations	Action Party	Cat.	Act. No.
	More Temperature							
	Contamination							
	Corrosion							
	Contaminant Emission							
	Instrumentation/ Sampling							
	Relief							
	Occupational Safety							
	External Factors							
	Operators							
	Maintenance							
	Dewatering							

[illegible]