

## ภาคผนวก ข-25

เอกสารด้านความปลอดภัยและสุขภาพในการทำงาน  
(Safety And Health Procedure)



	<b>7th GAS SEPARATION PLANT PROJECT</b>	
PTT PUBLIC COMPANY LIMITED		CPP-CPPB-CPECC JOINT VENTURE

**PTT PUBLIC COMPANY LIMITED**  
**7th GAS SEPARATION PLANT PROJECT**

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## **1 INTRODUCTION**

The scope of this Safety Manual applies to New Gas Separation Plant named 7th Gas Separation Plant (Here in after called GSP7) of PTT Public Company Limited (hereinafter called as "OWNER") and all Construction Contractor employees, sub-contractors, vendors, and other persons under the direction and control of the Construction Contractor, during construction, installation and commissioning of the project.

The provisions of the Safety Manual are mandatory for contractors and subcontractors engaged in any on-site construction activities.

The purpose of this section of the Safety Manual is to establish practices and procedures to GSP7 Project. personnel and others during construction and commissioning on this site.

This Manual is one of the supporting documents to the Project Execution Plan, which provide an overview of the SHE component of Project Management Systems and execution of SHE activities on the project. The Safety Manual applies to all GSP7's employees and subcontractors.

## **2 ABBREVIATIONS AND DEFINITIONS**

### **2.1 Abbreviations**

GSP7	7th Gas Separation Plant Project
OWNER	PTT Public Company Limited (Owner)
Contractor	CPP-CPPB-CPECC Joint Venture (CCC-JV)
EIA	Environmental Impact Assessment
EMP	Environmental Monitoring Plan
ERP	Emergency Response Plan
KPI	Key Performance Indicator
SHE&S	Safety, Health, Environment & Security
JSEA	Job Safety and Environmental Analysis
PTW	Permit to Work





## 2.2 Definitions

The definitions used are as follows.

Hot Work	Use of open flames, other heat sources and/or spark - producing devices where there is a potential for explosion or fire.
Incident	General term of any unexpected events which occurrence that included near miss, human injured, fatal, and property damage, loss to process or environment.
Major Incident	A major incident is defined as serious disruption of life, arising with little or no warning, causing or threatening death or injury to numbers of people in excess of those that can be dealt with by the public services operating under normal condition and which require special mobilization and organization of those services.
Critical Incident	A "Critical Incident" is any actual or alleged event or situation that creates a significant risk of substantial or serious harm to the physical or mental health, safety or well being of a waiver participant.
Near Miss	Is that occurrence in a sequence of events that without any loss. But the potential event may lead to an accident, loss to process or environment.
Hazardous Material	All hazardous chemicals, products, dangerous goods and hazardous wastes. This includes hazardous products such as poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or any other material that can endanger human, plant or animal life or well being or the environment if handled improperly.
Accident	Is that occurrence in a sequence of events that produces unintended injury, death or property damage, and loss to process or environment.
Injury	Is physical harm or damage of the body resulting from an exchange, usually acute, of mechanical, chemical thermal, or other environment energy that exceeds the body tolerance.
Medical Treatment	Medical treatment includes managing and caring for a patient for the purpose of combating disease or disorder.



First-Aid Treatment	The following are generally considered "first-aid" treatment (e.g., one-time treatment and subsequent observation of minor injuries) and need not be recorded if the work-related injury does not involve loss of consciousness, restriction of work or motion, or transfer to another job:
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## 3 SHE POLICY & OBJECTIVES

### 3.1 SHE Policy

Safety is a core value of GSP7's concept. The Project activities shall comply with GSP7's SH&E Policy as shown below:

GSP7 SHE Policy: People-oriented, precaution crucial, full responsibility, continuous improvement.

Project activities also references to the following relevant contract specifications and Thailand government legislation which form the basis for GSP7's SHE policy in this project. The requirements are adhered to:

- EPC Contractor No. PTT.TEC./2/305/64;
- PR-90-01-D1 Project Specification for Safety & Health Management Plan
- PR-91-01-D2 Project Specification for Environment Management Plan
- Project Environmental Impact Assessment Report (EIA).

### 3.2 SHE Objectives

GSP7 and all selected subcontractors are committed to achieve the SHE strategic objective of no accidents, no harm to people and no damage to the environment, in addition, which are comply with OWNER's KPI in the project as following:

- Strive to eliminate occupational injuries and illnesses;
- Promote Safety, Health and Environment objectives as constant value in designing, planning, training, and executing the work;
- Spread ownership for Safety, Health and Environment program effectiveness throughout the project works;
- Enhance employee awareness and involvement in our Safety, Health and Environment program implementation;
- Increase employee's consistent use of safety practices in their daily work activities;
- Optimize the use of continuous improvement practices as the basis for good performance.
- Zero (0) Fatalities.



### 3.3 Key Performance Indicator (KPI):

KPI	Target
Away from Work Case Rate (AWCR)	< 0.08
Total Lost Days Severity Rate (TLDSR)	< 0.50
Vehicle Incident Frequency Rate (VIFR)	< 0.40
Total Recordable Case Rate (TRCR)	< 0.22

#### Away from Work Case Rate (AWCR)

The AWCRT rate is relatively new to industry. This rate is calculated by adding up the number of incidents that had one or more Lost Days, one or more Restricted Days or that resulted in an employee transferring to a different job within the company, and multiplying that number by 200,000, then dividing that number by the number of employee labor hours at the company.

$$\text{AWCR Rate} = \frac{\text{Total Number of AWC incidents} \times 200,000}{\text{Number of Employee Labor Hours Worked}}$$

#### Total Lost Days Severity Rate (TLDSR)

The Total Lost Days Severity Rate is a similar calculation, only it uses the number of cases that contained lost work days. The calculation is made by multiplying the number of incidents that were lost time cases by 200,000 and then dividing that by the employee labor hours at the company

$$\text{TLDSR Rate} = \frac{\text{Total Number of lost work days incidents} \times 200,000}{\text{Number of Employee Labor Hours Worked}}$$

#### Vehicle Incident Frequency Rate (VIFR)

The Vehicle Incident Frequency Rate is a similar calculation, only it uses the number of cases that contained vehicle incident. The calculation is made by multiplying the number of incidents that were vehicle incident cases by 200,000 and then dividing that by the employee labor hours at the company.

$$\text{VIFR Rate} = \frac{\text{Number of vehicle incidents} \times 200,000}{\text{Number of Employee Labor Hours Worked}}$$



#### Total Recordable Case Rate (TRCR)

The Total Recordable Case Rate is calculated by multiplying the number of recordable cases by 200,000, and then dividing that number by the number of labor hours at the company.

$$\text{TRCR Rate} = \frac{\text{Number of recordable cases} \times 200,000}{\text{Number of Employee Labor Hours Worked}}$$

## 4 ORGANIZATION AND RESPONSIBILITIES

### 4.1 SHE Organization

The GSP7-SHE management organization consists of Project Manager, Construction Manager, SHE Director, SHE Manager, Safety and health Officer, Environmental Specialist, Employees, Subcontractor and Construction Foreman.

### 4.2 SHE Organization

#### 4.2.1 Project Manager

The Project Manager shall have, as a minimum, the following responsibilities:

- Make understanding that SHE is line management's responsibility
- Comply fully with the International Standards, Thai National and local Laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements, EIA, PTT Specifications, and GSP7 Specifications and Procedures;
- Be responsible and accountable for the development, implementation and performance of the overall SHE&S program;
- Assure that the design under the control of the Project Engineering Manager and subcontractors has included considerations for SHE&S during final design, fabrication, installation, construction, commissioning, maintenance, and operations;
- Assure that measures are in place to control security and safety at project work sites;
- Provide commitment by ensuring adequate resources, trains that will result in a safe and healthy working environment to be complied with Thai Laws and OWNER/Consultant's requirements.
- Resolving, tracing and escalating critical issues to provide effective control measure in order to eliminate or reduce the consequence of risks;
- Supervise the implementation of SHE&S management system, and random inspect on site;
- Reporting on project SHE&S management and communicated relevant information to interested parties;



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- Conduct other tasks associated with the project.

#### **4.2.2 Project Manager**

The Construction Manager reports to the Project Manager, and has overall responsibility for SHE&S implementation and results at site, including:

- Comply fully with the International Standards, Thai National and local Laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements, EIA, PTT Specifications, and GSP7 Specifications and Procedures;
- Ensuring that all site personnel, visitors, and subcontractors conform to SHE&S requirements;
- Communicate concerns and suggestions regarding the implementation of the SHE&S Management Plan to the Project Manager/Project SHE&S Manager;
- Ensuring effective communication with OWNER/Consultant regarding SHE&S program and issues;
- Ensuring effective safety, health and environmental coordination and cooperation between OWNER/Consultant and sub-contractors;
- Participating in audits and inspections to measure the effectiveness of the SHE&S Management Plan and assure the requirements are being effectively communicated throughout the work force;
- Ensuring that adequate welfare arrangements are in place for site and project visitors and personnel;
- Conduct emergency action by ensuring adequate resources that will result in a safe and healthy working environment;
- Attending and participating in weekly progress meetings and monthly Project and SHE&S meetings.

#### **4.2.3 Project Manager**

The SHE Director, who normally reports to Project Manager, shall have, as a minimum, the following responsibilities:

- Develop CCC-JV'S SSHE management plans and programs based upon PTT's requirements, the laws and regulations of Thailand and the terms and conditions within the Project Environmental Impact Assessment (EIA) and the Office of Natural Resources and Environmental Policy and Planning (ONEP);
- Manage and participate in CCC-JV'S audit and inspection activities;
- Participate in and track project risk assessments, hazard operability studies and any other



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public safety assessments, as required;

- Attend and participate in Pre-Start up and Safety Reviews (PSSR) during pre-commissioning;
- Provide field support to the Project Manager;
- Promote and encourage a high level of SSHE awareness;
- Provide specialist advice to project management to assist in the development and implementation of the improvement plans;
- Ensure audits are conducted at agreed intervals and compliance with project SHE Plan management system;
- Foster and maintain a productive relationship with key Client and subcontractor representatives;
- Create a culture of trust throughout the workforce by factual reporting, recognition and feedback;
- Evaluation of the effectiveness of the SHE programs in consultation with the project management team;
- Ensure SHE programs are integrated into the work systems;
- Coordinate all incident/accident investigations as necessary and ensure corrective actions have been implemented.

#### **4.2.4 SHE Manager**

The SHE Manager, who normally reports to Project Manager/SHE Director, shall have, as a minimum, the following responsibilities:

- Training worker crews.
- Attend and participate in all Public Meeting (Project EIA Compliance Monitoring Committee-PEMC)
- Comply fully with the International Standards, Thai National and local Laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements, PTT Specifications, and GSP7 Specifications and Procedures;
- Evaluate and effectively respond to any Thai Laws, Regulations that may concern with Project's activity;



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- Develop GSP7's SHE&S management plans and procedures based upon PTT's requirements, the laws and regulations of Thailand and the terms and conditions within the Project Environmental Impact Assessment ;
- Supervise GSP7's environmental and safety officers' performance;
- Carry out daily inspection of all work areas to ensure compliance with EIA, PTT's and GSP7's SHE&S program, safe work practices and procedures, health practices and procedures and environmental practices and procedures;
- Manage and participate in GSP7's audit and inspection activities;
- Provide and participate in GSP7's SHE&S training and induction activities;
- Participate in and track project risk assessments, hazard operability studies and any other public safety assessments, as required.
- Attend and participate in GSP7's weekly progress meetings and monthly Project and SHE meetings;
- Coordinate incident/accident investigations as necessary and ensure corrective actions have been implemented;
- Prepare and communicate Project SHE&S Statistical and Management Key Performance Indicator (KPI) reports;
- Coordinate to issue for discussion and acceptance by OWNER/ Consultant for:
  - SHE performance of the Scope of Work;
  - SHE performance Report.
- Monitor report and develop corrective actions concerning CCC-JV's against SHE&S Management Systems and Plans, EIA, PTT's requirements and Thai laws and regulations;
- Conduct other tasks associated with the project.

### 4.2.5 Safety Supervisor

Principal responsibilities encompass the following functions;

- Follow up specification permit to work of PTT, DOH, SDAO & EGAT. And review before sent to PTT for consider and approve.
- Communicate with Department of labor protection and welfare and submitted the report.
- Involving with morning talk.
- Daily check and make sure all tools and equipment are good-condition and corrected inspection sticker.
- Check all workers are good condition of PPE. And proper used for the right job.



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- Advised to construction team and make sure all construction safety sign boards were install and corrected place.
- Advised and make sure that all construction tools and equipment are not obstruction with local traffic.
- Make sure that all tool and equipment are stocking or stacking in good conditions.
- Daily check and make sure that all fire extinguishers on construction site are ready to use and corrected inspection sticker.
- Make sure that construction area housekeeping.
- Check and make sure that construction area enough waste cabin.
- Give advised and make sure all the excavate points are proper hard barrier installation/warning signs.
- Make sure that warning lights are installation when the job closely with public road and critical area / traffic control as equipment.
- Make sure that lifting activities are used safe lifting gear/good condition/tags line/safe ground condition and PPE.
- Inspection heavy equipment

### 4.2.6 Safety Officer

The Safety officers, who reports to the SHE Manager, shall have the following responsibilities:

- Comply fully with the International Standards, Thai National and local Laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements, PTT Specifications, and GSP7 Specifications and Procedures;
- Review the results of daily inspections of the site SHE&S observation reports to identify safety issues and deficiencies and report to SHE Manager of findings
- Conduct SHE daily inspections and Audits of the work and facilities and document items of concern on SHE&S observation reports;
- Participate in Job Safety and Environmental Analysis (JSEA's) reviews;
- Liaise with construction supervisors on SHE&S matters to ensure involvement in all site activities, including work method statements and risk assessments;
- Coordinate all incident/accident investigations as necessary to ensure the basic cause is clearly defined and corrective & preventive actions implemented;
- Attend safety induction and toolbox meeting on a regular basis and ensure that they are being conducted in a professional and capable manner;
- Carry out regular checks of permits to work;



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- Assist in controlling areas where critical tasks are being undertaken;
- Monitor PPE compliance on site;
- Conduct other tasks associated with the project.

**4.2.7 Environmental Specialist**

The Environmental Specialist, who reports to the SHE Manager, shall have the following responsibilities:

- Comply fully with the International Standards, Thai National and local Laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements, PTT Specifications, and GSP7 Specifications and Procedures;
- Provide and submit reports to Thai Government as per Thai Law requirement;
- Promote the environmental orientation according to EIA;
- Support environmental regulatory requirements to SHE Manager such as mitigation and monitoring measures in Approved Project EIA and other relevant legislation;
- Prepare environmental inspection checklist in accordance with Approved Project EIA;
- Participate in environmental orientation and awareness training for workforce;
- Participate in Job Safety and Environmental Analysis (JSEA's) reviews;
- Oversee implementation of environmental impact mitigation measures specified by Project EIA, OWNER/ Consultant or resource-specific plans;
- Daily inspect construction activities against environmental conditions of approval and environmental requirements in PTT Specifications, EIA, EMP, or SH&E procedures/plans (e.g., bentonite dump site, erosion and sedimentation control, spill prevention and response, waste management);
- Review and comment environmental reports;
- Conduct other tasks associated with the project.

**4.2.8 Employee**

The employee, who reports to the line leader of his department/line supervisor, shall have the following responsibilities:

- Take reasonable care for the safety of themselves and other personnel who are at the workplace and who may be affected by any acts or commission on their part;
- Comply with the safe working policies, procedures, practices and EIA adopted by the PTT as part of the safe working system;



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- Co-operate with their employer in ensuring that their workplace is as safe and healthy as is reasonably practical.
- Report to their supervisor any hazard or potential hazard in the workplace or any incident, personal injury, accident or near miss that may have occurred during the course of the work to the supervisory staff immediately;
- All prescribed safety equipment and personal protective equipment must be used and must be maintained in good working condition. It is your personal responsibility to use such equipment. The use of required personal protective equipment is a non-negotiable item. Correctly use, store and maintain personal protective equipment issued for the protection of workers against workplace hazards;
- Follow all verbal or written safe work procedures, practices and directions;
- Observe all warning signs and notices;
- Attend toolbox meetings, training relating the safety and pre start meetings on site;
- Prevent others from performing unsafe acts;
- Request alternative work methods;
- Request Job Safety and Environmental Analysis (JSEA);
- Requisition of appropriate safety equipment;
- Recommend alternative more appropriate safety equipment;
- Isolate energy sources by authorized employee to prevent injury if safe to do so;
- Bring to the attention of others during safety communication sessions any safety concern;
- Always use the right tools and equipment for the job. Use them safely and only when authorized. If you are not familiar with the safe way to use a particular tool or piece of equipment, ask your supervisor. When using your own tools on the job site, make sure all guards, ground pins, etc. , are in place.
- Good housekeeping must always be practiced. Return all tools, equipment, materials, etc., to their proper places when you are finished with them. Keep floors clean and passageways clear. Poor housekeeping wastes time, energy, and material, and often results in injury.
- Ensure work colleagues, sub-contractors and visitors use the appropriate safety equipment and clothing;



#### 4.2.9 Subcontractor

The Subcontractor, who normally reports to Site manager, shall have, as a minimum, the following responsibilities:

- Comply fully with the International Standards, Thai National and local Laws, ordinances, rules, regulations, codes, standards, orders, notices and requirements, EIA, PTT Specifications, and GSP7 Specifications and Procedures;
- Support commitment by ensuring adequate resources, trains that will result in a safe and healthy working environment;
- Provide sufficient resources in the form of an approved SHE Management Plan or procedures that clearly outlines how the subcontractor intends to meet the SHE requirements of the project;
- Provide machine and equipment on site be safe and in good working condition, fitted with any necessary guards and safety devices, and with any necessary certificates displayed and available for checking;
- Guarantee Power tools or electrical equipment must operate at an accepted, safe voltage. All transformers, generators, extension leads, plugs and sockets must be in good condition and constructed and installed to approved standards;
- Any injury sustained or damage caused by Sub-Contractors employees must be reported immediately to GSP7;
- Suitable Welfare facilities and First Aid equipment in accordance with the regulations must be provided;
- Any material or substance brought on site that has Health, Fire or Explosion risks must be used and stored in accordance with regulations and current recommendations, and information must be provided to any other person on site who may need it;
- Ensure that workplaces are kept tidy and all debris, waste materials, etc., cleared away as work proceeds;
- Provide and insist on the use by their employees of all necessary protective equipment required on site;
- Give adequate training and instruction to their operatives to make them aware of hazards
- existing on the site and the correct procedures to deal with these risks;
- Reports SHE issues to GSP7's SHE team;
- Participate and complete designated safety activities and submit weekly and monthly performance reports to GSP7.



#### 4.2.10 Line Responsibilities

Line responsibility refers to the project manager, department managers, foremen, team leaders, etc. Each employee shall be responsible for the SHE responsibility within the scope of his duty and report to his line leader/Supervisor when an emergency associated with SHE occurs.

### 5 ORGANIZATION AND RESPONSIBILITIES

CONTRACTOR shall provide sufficient qualified full-time SHE Management and Safety and Health Officer and/or Specialist(s), exclusively dedicated to safety and health matters, during the entire Work. The manager and specialist(s) shall provide advice and direction to CONTRACTOR's employees. The manager and specialist(s) will report to the most senior person on Site.

**SHE Manager:** The qualified SHE Manager must meet the following minimum requirements:

- M.A. or M.Sc. in an environmental related field with a minimum of 10 years experience and licensed with safety professional level, and
- Minimum 5 years of construction experience in chemical and/or oil and gas pipeline, plant and power project developments. A minimum total of 15 years relevant experience.
- Knowledgeable of, and have exposure to, safety and health management systems in the oil and gas industry;
- Knowledgeable of SHE MS implementation and performance measurement in accordance with ISO Standards, TQM and ISRS ; and,
- Demonstrated ability to conduct technology training and transfer to PTT personnel.

**Safety and Health Officer:** The qualified Safety and Health Officer must meet the following minimum requirements:

- B.Sc. (M.Sc. preferred) in an occupational safety and health and related field with a minimum of 5 years experience, and licensed with safety professional level, and
- Minimum 5 years of construction experience in oil and gas project developments. A minimum total of 5 years relevant experience.
- Qualified and certified under the requirements of the Kingdom of Thailand.



## 6 SECURITY REQUIREMENT

CONTRACTOR/SUB-CONTRACTOR shall be responsible for and bear the liability for, and risk of loss to, personnel or damage to the Work, including materials and equipment in its care and control until completion of the Work.

CONTRACTOR/ SUB-CONTRACTOR shall conduct its operations so as to avoid loss or theft of, or damage by vandalism or sabotage or any other means to any part of the Work, materials or equipment or other property at the site. Prior to the start of the Work, CONTRACTOR shall submit its Security Program to PTT. The Security Program shall, at a minimum, include control of access to the site (including to offices, accommodations and all work and material storage areas), a system of periodic checks of the site, accountability procedures for the requisition and issue of materials and equipment, and a system for prompt reporting of incident loss, theft or vandalism.

## 7 HEALTH AND SAFETY TRAINING AND BRIEFING

(REFER TO SHE TRAINING PROCEDURE; PR.S1-90-2004.01-3700-007)

All CONTRACTOR/SUB-CONTRACTOR employees shall receive a Safety and Health induction on the first day of employment and immediately prior to starting work.

CONTRACTOR shall then provide specific Safety and Health orientation for their employees using their procedure and content as identified in their Safety and Health Program.

The objective of the induction is to provide the employee with the basic safety requirements while employed on the Work.

An effective system of induction and education/awareness of CONTRACTOR/SUB-CONTRACTOR employees in Quality, Health, Safety and Environment is the responsibility of CONTRACTOR.

All employees are suitably trained in the proper work procedures and Safety and Health regulations pertaining to their duties. This training will be conducted at a pre-startup safety meeting, or meetings, with all employees and/or groups of employees prior to their starting work and, as a minimum, will be in accordance with applicable governmental requirements, and good practice. Further training and instruction shall be provided as necessary on an ongoing basis and before the start of any new major segments of the Work.

Detailed SHE training plan/Matrix shall be developed on the basis of SH&E Management Plan.



The SHE Training 3 hrs for Employee Changed New Work will be given by safety professional or Safety manager (Qualification shall comply with Thai law). The topics for safety training shall include, but not limited to the following:

- First Aid Procedures
- Archaeological sites
- Control of substances hazardous to health (COSHH)
- Ecological issues
- Employers and Employees Responsibilities
- Environmental awareness
- Equipment Checks
- Excavations
- Fire Prevention
- Gas detection
- Handling Emergencies
- Hazard Spotting
- Health and Safety Laws, Regulations and Local Requirements
- Housekeeping
- Noise Abatement
- Permit to Work System
- Personal Hygiene
- Personal Protective Equipment (PPE)
- Pre-work and Post-work Safety Briefings
- Radiation hazards
- Road transport and driving safety
- Traffic Management and Traffic Control Equipment.
- Safe Work Practices
- Scaffolding



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- Safety Signs
- Social impacts
- Working with Cranes and Heavy Equipment
- Working on or near water
- Working near or under high-voltage power lines.

**The Safety Training 6 hrs for Employee** will be given by a trained safety Professional, safety Manager (Qualification shall comply with Thai law). The topics for safety training shall include, but not limited to the following;

- 1) Theory of Occupational Health Safety and Environmental (1.30 hrs.)
- 2) Occupational Health and Environmental Act. (1.30 hrs.)
- 3) Occupational Health and Environmental regulations of CCC-JV (3 hrs.)
  - First Aid Procedures
  - Archaeological sites
  - Control of substances hazardous to health (COSHH)
  - Ecological issues
  - Employers and Employees Responsibilities
  - Environmental awareness
  - Equipment Checks
  - Excavations
  - Fire Prevention
  - Gas detection
  - Handling Emergencies
  - Hazard Spotting
  - Health and Safety Laws, Regulations and Local Requirements
  - Housekeeping
  - Noise Abatement



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- Permit to Work System
- Personal Hygiene
- Personal Protective Equipment (PPE)
- Pre-work and Post-work Safety Briefings
- Radiation hazards
- Road transport and driving safety
- Traffic Management and Traffic Control Equipment.
- Safe Work Practices
- Scaffolding
- Safety Signs
- Social impacts
- Working with Cranes and Heavy Equipment
- Working on or near water
- Working near or under high-voltage power lines.

**SHE Training 12 hrs for Supervisor** It is mandatory for supervisor attend the Safety Training 12 hrs for Supervisor before start work. No supervisor will be permitted to work on the RA#6-Ratchaburi Pipeline Project without attending the Safety Training for supervisor. Written record of the attendance of individual shall be kept on the SHE Training Record.

Employee's qualification

- Supervisor
- Pass SSHE Training Examination 80% (score)

Documented requirement

- Copy of Citizen ID card

Schedule to training

- As requested
- 2 days (08.30 am. – 03.30 pm. (12.00 hrs))

The Safety Training 12 hrs for Supervisor will be given by a trained safety professional, safety manager





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(Qualification shall comply with Thai law). The topics safety training for supervisor shall include, but not limited to the following;

- 1) Safety in work place and duties, responsibilities of supervisor (3 hrs.)
  - Basic occupational health safety and environmental
  - Duties/Responsibilities of supervisor
- 2) Safety Health and Environment Law (3 hrs.)
  - Safety Health and Environment Law Management
  - Safety Health and Environment Law implementation in workplace
- 3) Risk surveillance (3 hrs.)
  - Safety audit
  - Risk assessment and analysis
  - Accident investigation
- 4) Risk prevention and control (3 hrs.)
  - Heavy equipment, machine and tool hazard prevention and control
  - Electrical hazard prevention and control
  - prevention and control hazard of move and storage material
  - Fire protection and control in factory
  - Control risk and hazard in construction work
  - Chemical handling
  - Health hazard prevention and control in workplace
  - Ergonomics
  - P.P.E.

**Safety Training 12 hrs for Management :** It is mandatory for management level to attend the Safety Training 12 hrs for management level before start work. No management level will be permitted to work on the RA#6-Ratchaburi Pipeline Project without attending the Safety Training for management. Written record of the attendance of individual shall be kept on the SHE Training Record.



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Employee's qualification

- Management level
- Pass Safety Training Examination 80% (score)

Documented requirement

- Copy of Citizen ID card

Schedule to training

- As requested
- 2 days (08.30 am. – 03.30 pm. (12.00 hrs))

The Safety Training 12 hrs for Management level will be given by a trained safety professional, safety manager (Qualification shall comply with Thai law). The topics safety training for management level shall include, but not limited to the following;

- 1) Safety Health and Environment Management (3 hrs.)
  - Lost control from incident and occupational health
  - Duties/Responsibilities of management
- 2) Safety Health and Environment Law (3 hrs.)
  - Safety Health and Environment Law Management
  - Safety Health and Environment Law implementation in workplace
- 3) Safety Management system (6 hrs.)
  - Safety health and environment management concept
  - Safety management system in workplace
  - Implementation safety system in workplace



## 8 EMERGENCY PROCEDURES

(REFER TO EMERGENCY PREPAREDNESS AND RESPONSE PROCEDURE; PR.S1-90-2004.01-3700-006)

CCC-JV shall prepare a written, comprehensive, Emergency Preparedness and Response Plan for the Site prior to commencement of the Work. The Procedure should include: fire, explosion, work site injuries, blow out, environmental release, etc. The key personnel and equipment needed to carry out the plans are to be identified. These individuals are to have a thorough knowledge of the plans and their responsibilities.

Emergency Preparedness and Response Plans will be based upon a proper and comprehensive assessment of risk considering:

- Project location
- Known or potential threats
- Climatic conditions
- Geology (earthquake, flood, landslide, etc. potential)
- Endemic health risks
- Risks from neighboring facilities
- Construction risks

Construction risks may include, but not be limited to;

- Work at height
- Fire and explosion
- Toxic and flammable gas release
- Working over or adjacent to water
- Working beside or on roads or railways
- Collapse of structures
- Serious site transport incidents
- Major utility outage
- Adverse weather
- Unexploded ordinance



- Environmental emergencies
- Missing persons

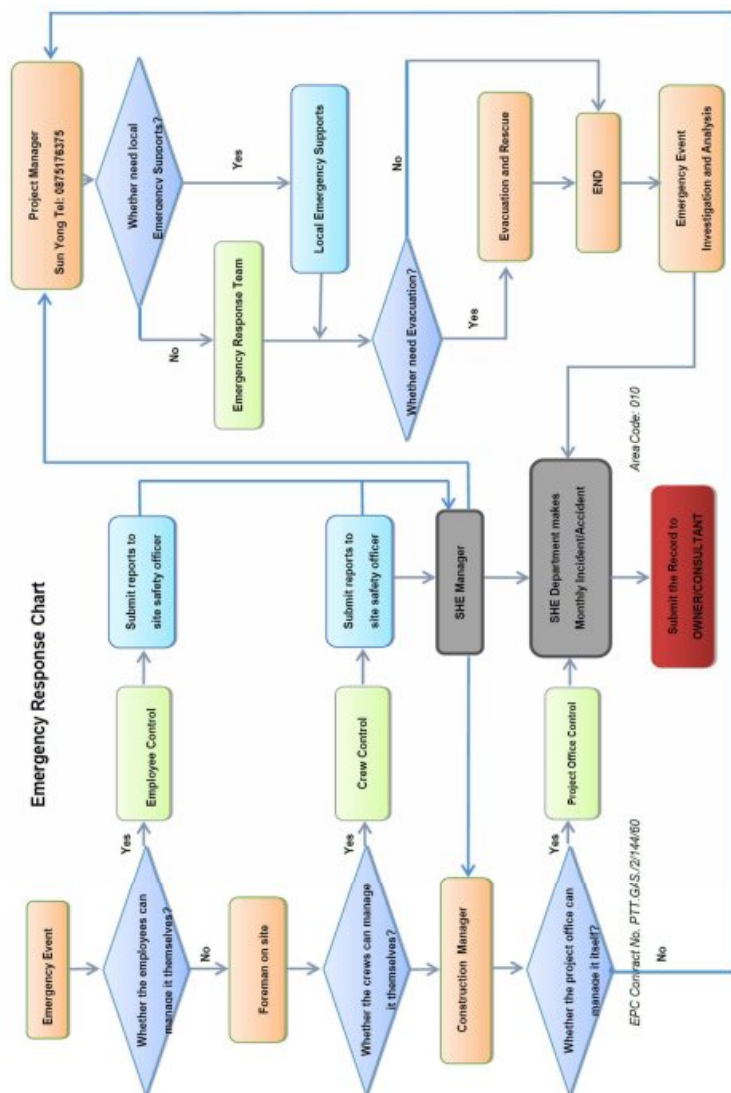
This Emergency Preparedness and Response Plan shall be posted in the workplace and must address the following as a minimum:

- Command and control organization
- Safe shutdown of all Work activities;
- Detailed instructions for notification of the proper authorities (including phone numbers, etc.);
- Gathering points for evacuation;
- 24-hour communication link for emergency purposes;
- Listing of the individuals responsible to organize and control the emergency conditions;
- Communication plan to ensure all the Site personnel are aware of their correct response to an emergency;
- Location of available equipment and support services including local, regional, and national agencies for onshore and offshore emergency situations;
- Emergency Evacuation Plan;
- Spill Response Plan;
- Emergency personnel;
- Client and mutual aid assistance;
- Training requirements and drills;
- Properly equipped ambulances; and,
- Emergency checklist.

All incident shall be informed OWNER/Consultant immediately.

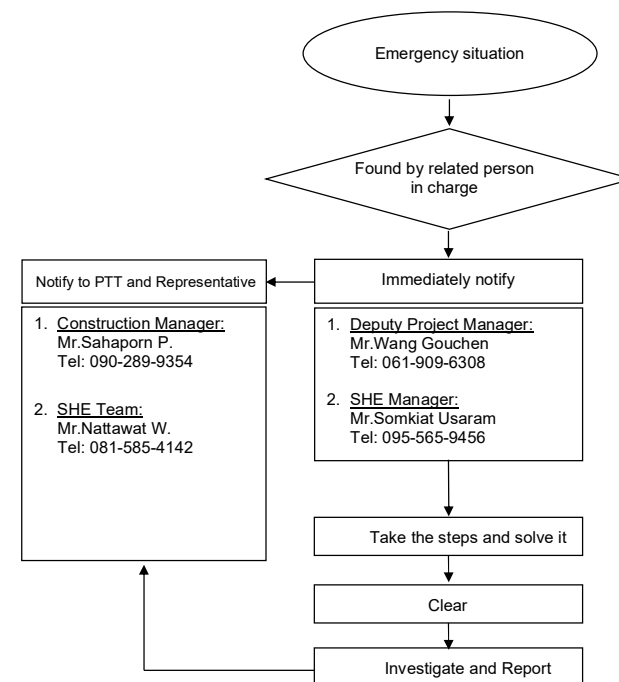


## EMERGENCY RESPONSE PROCESS



## 9 CONTINGENCY PLANS FOR PERSONEL INCIDENTS

This Contingency Plan constitutes part of the Occupational Safety and Health of the Institute, contains guidelines to prepare individuals to react appropriately and rapidly in the face of an accident.





## 10 FIRE FIGHTING EQUIPMENT

Portable fire extinguishers; If fire extinguishers are available for employee use, it is the employer's responsibility to educate employees on the principles and practices of using a fire extinguisher and the hazards associated with fighting small or developing fires. This education must be provided annually and when a new employee is first hired.

Employees who have been designated to use fire extinguishers as part of the emergency action plan, must be trained on how to use the fire extinguishers appropriately in the workplace. This training is a specialized form of education that focuses on developing or improving skills and it must be provided annually and when employees are first assigned these duties.

### 10.1 Using a Fire Extinguisher

The following steps should be followed when responding to incipient stage fire:

- Sound the fire alarm and call the fire department, if appropriate.
- Identify a safe evacuation path before approaching the fire. Do not allow the fire, heat, or smoke to come between you and your evacuation path.
- Select the appropriate [type of fire extinguisher](#).
- Discharge the extinguisher within its effective range using the [P.A.S.S.](#) technique (pull, aim, squeeze, sweep).
- Back away from an extinguished fire in case it flames up again.
- Evacuate immediately if the extinguisher is empty and the fire is not out.
- Evacuate immediately if the fire progresses beyond the [incipient stage](#).

### 10.2 Types of fire extinguisher

#### 1) Water - Air-pressurized Water Extinguishers (APW)

Water is one of the most commonly used extinguishing agents for type A fires. You can recognize an APW by its large silver container. They are filled about two-thirds of the way with ordinary water, then pressurized with air. In some cases, detergents are added to the water to produce a foam. They stand about two to three feet tall and weigh approximately 25 pounds when full.

APWs extinguish fire by cooling the surface of the fuel to remove the "heat" element of the fire triangle.

APWs are designed for Class A (wood, paper, cloth, rubber, and certain plastics) fires only.



#### Important:

- *Never use water to extinguish flammable liquid fires.* Water is extremely ineffective at extinguishing this type of fire and may make matters worse by the spreading the fire.
- *Never use water to extinguish an electrical fire.* Water is a good conductor and may lead to electrocution if used to extinguish an electrical fire. Electrical equipment must be unplugged and/or de-energized before using a water extinguisher on an electrical fire.

#### 2) CO<sub>2</sub> or Dry Chemical - Carbon Dioxide Extinguishers

This type of extinguisher is filled with Carbon Dioxide (CO<sub>2</sub>), a non-flammable gas under extreme pressure. These extinguishers put out fires by displacing oxygen, or taking away the oxygen element of the fire triangle. Because of its high pressure, when you use this extinguisher pieces of dry ice shoot from the horn, which also has a cooling effect on the fire.

You can recognize this type of extinguisher by its hard horn and absent pressure gauge.

CO<sub>2</sub> cylinders are red and range in size from five to 100 pounds or larger.

*CO<sub>2</sub> extinguishers are designed for Class B and C (flammable liquid and electrical) fires only.*



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**Important:**

- CO<sub>2</sub> is not recommended for Class A fires because they may continue to smolder and re-ignite after the CO<sub>2</sub> dissipates.
- Never use CO<sub>2</sub> extinguishers in a confined space while people are present without proper respiratory protection.

3) Multi-purpose - Dry Chemical Extinguishers

Dry chemical extinguishers put out fires by coating the fuel with a thin layer of fire retardant powder, separating the fuel from the oxygen. The powder also works to interrupt the chemical reaction, which makes these extinguishers extremely effective.

Dry chemical extinguishers are usually rated for class B and C fires and may be marked multiple purpose for use in A, B, and C fires. They contain an extinguishing agent and use a compressed, non-flammable gas as a propellant.

ABC fire extinguishers are red in color, and range in size from five pounds to 20 pounds.

Dry Chemical extinguishers will have a label indicating they may be used on class A, B, and/or C fires



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4) Class K - Dry and Wet Chemical Extinguishers for Kitchen Fires

Due to the higher heating rates of vegetable oils in commercial cooking appliances [NFPA 10](#), Portable Fire Extinguishers, now includes a Class K rating for kitchen fires extinguishers which are now required to be installed in all applicable restaurant kitchens. Once a fire starts in a deep fryer, it cannot always be extinguished by traditional range hoods or Class B extinguishers.

Do not attempt to use a Class A extinguisher containing water or CO<sub>2</sub> on a deep fat fryer fire. An explosive type reaction may result.

Place a placard near the Class K fire extinguisher which states: "In case of appliance fire, use this extinguisher only after the fixed fire suppression system has been actuated". Class K fire extinguishers are only intended to be used after the activation of a built-in hood suppression system. If no commercial cooking system hood and fire suppression system exists, Class K extinguishers are not required.

Extinguishing agents in many Class K extinguishers are electrically conductive and should only be used after electrical power to the kitchen appliance has been shut off. Class K extinguishers use a variety of agents. Potassium bicarbonate is used in some Class K dry chemical extinguishers, and there are also Class K wet chemical extinguishers which spray a fine mist.

Travel distance to a Class K extinguisher shall not exceed 30 feet.

Install a 2-A water-type extinguisher or 6L wet chemical fire extinguisher for solid fuel cooking appliances with fire boxes.

Inspect, test and maintain Class K fire extinguishers yearly.



**Locations:**

These extinguishers will be found in commercial cooking operations such as restaurants, cafeterias, and other locations where food would be served.

**10.3 Type of fire**

- 1) **Class A:** Fires in paper, cloth, wood, rubber, and many plastics require a water type extinguisher labeled A.
- 2) **Class B:** Fires in oils, gasoline, some paints, lacquers, grease, solvents, and other flammable liquids require an extinguisher labeled B.
- 3) **Class C:** Fires in wiring, fuse boxes, energized electrical equipment, computers, and other electrical sources require an extinguisher labeled C.
- 4) **Class D:** Fires involving powders, flakes or shavings of combustible metals such as magnesium, titanium, potassium, and sodium require special extinguishers labeled D.
- 5) **Class K:** Fires involving combustible cooking fluids such as oils and fats.



**10.4 P.A.S.S. Technique**

- 1) **PULL...** Pull the pin. This will also break the tamper seal.
- 2) **AIM...** Aim low, pointing the extinguisher nozzle (or its horn or hose) at the base of the fire.

*NOTE:* Do not touch the plastic discharge horn on CO<sub>2</sub> extinguishers, it gets very cold and may damage skin.

- 3) **SQUEEZE...** Squeeze the handle to release the extinguishing agent.
- 4) **SWEEP...** Sweep from side to side at the base of the fire until it appears to be out. Watch the area. If the fire re-ignites, repeat steps 2 - 4.



## 11 EVACUATION DRILLS

CONTRACTOR must have trained personnel available to evacuate injured or ill workers according to a prepared plan. CONTRACTOR/SUB-CONTRACTOR is to provide or make advance arrangements with ambulances and nurse to respond to emergencies. Emergency numbers are to be posted by all telephones. All personnel are to be trained in the proper techniques and routes for evacuating the Site in an emergency including the designated gathering points and head counts to account for all personnel.

CONTRACTOR will conduct both class room and field training on a regular bases for all emergency responder personnel, keeping logs of training subjects, content and attendance. These will be available for review by the Clients representative.

CONTRACTOR must maintain current records of all workers on the Site, including those of Subcontractors. Such records must be available for the inspection of PTT at all times.

The following emergency exercises will be undertaken:

- Desktop Exercise - an informal workshop session discussing the actions to be taken in emergency situations. The session will not be time limited, and will allow participants to practice emergency situation problem solving, plan evaluation, and resolving questions of coordination and assignment of responsibilities. The exercises will involve CCC-JV ERT, OWNER ERT, key management personnel and responders from external organizations as appropriate;
- Simulation Exercise - an activity in which CCC-JV ERT and OWNER ERT participants respond in a coordinated manner to a timed, simulated incident that parallels a real operational event as close as possible. The exercise will further challenge responders by being time dependent; the frequency of injects, role played messages, complexity of decisions and requirements for coordination. It does not involve actual mobilization of assets in the field;
- Full-Scale Exercise - this exercise will evaluate the entire emergency organization or its major parts in an interactive manner over a substantial period of time. It involves actual mobilization of teams and assets, in a coordinated manner to a timed, simulated incident;
- Drills - designed to evaluate a single emergency response function, this will involve actual ERT mobilization on site (e.g. for fire, road accident, etc.). It will focus on a single or relatively limited portion of the overall response system in order to evaluate and improve that function.



Planned exercises and drills are summarized in the table below:

Planned Exercise	Frequency
Desktop Exercise	2 times per year
Simulation Exercise	2 times per year
Full-Scale Exercise	1 time per year
Planned Drill	Frequency
Fire Drill	1 time per year
Traffic accident (on-site and off-site)	1 time per year
Medical emergency	1 time per year
Site evacuation	1 time per year

A report shall be prepared following each emergency exercise and will contain an overview of the exercise and make recommendations for improvements.



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**12 EMERGENCY CONTACT LIST**

CONTRACT NO.			
Company/ Parties	Contact Personnel	Telephone	
		Office	Mobile
<b>PTT</b>	Project Director Mr. Attaphon M.	-	081 9377127
	Construction Manager Mr. Sahaphorn P.	-	090 2899354
	SHE Engineer Mr. Nattawat Wittayakunsathit	-	081 5854142
<b>CCC-JV</b>	Deputy Project Manager Mr. Wang Gouchen	-	061 9096308
	SHE Manager Mr. Somkiat Usaram	-	095 5659456
	Environmental Specialist Mr. Cheewin S.	-	099 2718986
<b>POLICE</b>	Map Ta Phut Police Station	038 607111	-
<b>HOSPITAL</b>	HRH Princess Sirindhorn Hospital- Map Ta Phut	038 684444	-
	Mongkut Rayong Hospital	038 682136	-
	Rayong Hospital	038 611147	-
	ALL Areas Emergency Service	1669	-
<b>FIRE STATION</b>	Disaster Prevention and Mitigation Office- Rayong	038 694134	-
	Map Ta Phut (EIC)	038 017499 061 8450333	-
<b>Map Ta Phut Industrial Port</b>	Emergency Call Center of Map Ta Phut Industrial Port	038 010728	-
<b>IEAT</b>	Emergency Call Center of Map Ta Phut IEAT	081 7323485	-
<b>Local Authority</b>	Muang Rayong District Office	038 623055	-
	Map Ta Phut Town Municipality	038 685562	-



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CONTRACT NO.			
Company/ Parties	Contact Personnel	Telephone	
		Office	Mobile
<b>Local Community</b>	Community Leader of Takuan-Ao Pradu Community Mr. Amphon Phuetphan	-	098 8657599
	Community Leader of Ta Kuan- Ao Pradu Fishery Group Mr. Anuchit Sawaengha	-	087 1270764

**13 INCIDENT / ACCIDENT REPORT PROCEDURE**

(REFER TO INCIDENT AND ACCIDENT REPORT PROCEDURE; PR.S1-90-2004.01-3700-014)

**13.1 Incident / Accident Reporting**

The CCC-JV shall ensure that all injuries and incidents are immediately reported verbally by the CCC-JV Construction Manager to OWNER. All injury persons must be transferred to a CCC-JV First aid room only.

All accidents and incidents will be reported and details entered in the CCC-JV standard form. Subcontractors are to ensure all their employees report all accidents/incidents and issued to CCC-JV stating remedial action to prevent re-occurrence.

**13.1.1 Preliminary Incident / Accident Report**

In the event of an accident/incident on the project, the injured employee's supervisor complete "Preliminary accident/incident report" and submit to CCC-JV SHE manager within 1 hour of accident/incident occurrence. The supervisor will complete this report also for all other Incidents/Accidents/Near misses and submit the report to the SHE Manager in same basis.

The CCC-JV SHE manager shall forward preliminary accident/incident report to OWNER promptly after review within 24 hours.





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SAFETY AND HEALTH PROCEDURE



PRELIMINARY ACCIDENT/INCIDENT REPORT FORM

Accident/Incident or Nearmiss Report	
รายงานการเกิดอุบัติเหตุ/อุบัติเหตุหรือเหตุการณ์เกือบเกิดอุบัติเหตุ	
Form No.: P-HSE-010/01	Job No.:
Rev.:	Date:
Project Name:	
Report No.:	
1. บริษัท/Company <input type="checkbox"/> Main Contractor <input type="checkbox"/> ผู้รับเหมา/Sub-Contractor	
2. สถานที่เกิดเหตุ Incident Location	3. ฝ่าย / หนก Department / Section
4. วันที่เกิดเหตุ/Date of Incident	5. เวลาเกิดเหตุ/Time of Incident
6. <input type="checkbox"/> ทรัพย์สินสูญหาย/Property Damage	7. <input type="checkbox"/> ทรัพย์สินเสียหาย/Property Damage
6.1 ชื่อผู้ประสบอุบัติเหตุ Injured person name	7.1 ประเภททรัพย์สินที่เสียหาย Type of Property Damage
6.2 เพศ <input type="checkbox"/> ชาย Male <input type="checkbox"/> หญิง Female	6.3 อายุ Age
6.4 ตำแหน่ง Position	7.2 ลักษณะความเสียหาย Description of property damage
6.5 ระยะเวลา Period of Work	6.6 จำนวนวันที่ทำงาน Lost Day Time
6.7 ส่วนของร่างกายที่บาดเจ็บ Body part injured	7.3 ค่าความเสียหาย - บาท (โดยประมาณ) Estimate cost of property damage - Bath
6.8 ลักษณะการบาดเจ็บ Injured type <input type="checkbox"/> เดิน / พลัด Slip/Fall <input type="checkbox"/> ตกจากที่สูง High level falling <input type="checkbox"/> วัตถุเข้าตา Object into eyes <input type="checkbox"/> หนีบ Caught between	8.1 รายละเอียดของเหตุการณ์ Nearmiss Description
<input type="checkbox"/> กระแทก / ชน Bump/Hit <input type="checkbox"/> ตัด / โดน Cut / Tear <input type="checkbox"/> วัตถุตก/หล่น Struck by falling object <input type="checkbox"/> อื่นๆ Others	8.2 ค่าความเสียหายหากเกิดอุบัติเหตุ (โดยประมาณ) Estimate cost if incident occurred
9. รายละเอียดของเหตุการณ์ Description how the incident occurred	10. ภาพประกอบ Photograph แนบเอกสารแนบ
11. การดำเนินการแก้ไขเบื้องต้น / Immediately Corrective Action	
12. ผู้รายงาน Reported by	13. หัวหน้างาน Supervisor
Date	Date
14. ความจำเป็นในการสอบสวน / Investigation requirement <input type="checkbox"/> จำเป็น / Necessary <input type="checkbox"/> ไม่จำเป็น / No Necessary	



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13.1.2 Full Incident / Accident Report

CCC-JV shall comply fully with the reporting of accidents/incidents and investigation

For overall report and investigate sequence use Systematic Cause Analysis Technique

The fully completed investigation report shall be reviewed and accepted by CCC-JV Construction Manager, CCC-JV SHE Manager and submit to OWNER within 3-4 or at the maximum of 7 days.

The full investigation report shall include;

- General information
- Details of injury/illness
- Witness or witness statement
- Property damage
- Incident description
- Why did the incident happen?
- How can future incident be prevented?
- Corrective/preventive action tracking
- Attachment list
- Investigation team and prepared/completed report
- Review and comment



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FULL INCIDENT / ACCIDENT INVESTIGATION REPORT FORM

		INCIDENT / ACCIDENT INVESTIGATION REPORT			
Project: 7 <sup>th</sup> GAS Separation Plant (GSP7)					
1. General Information					
Date of Incident		Time of Incident		Date of Report	
Location of Incident		Company/Activity			
Type of Incident	<input type="checkbox"/> Fatality <input type="checkbox"/> Lost Workday <input type="checkbox"/> Medical Treatment <input type="checkbox"/> Near Miss <input type="checkbox"/> Property Damage	<input type="checkbox"/> Motor Vehicle Incident <input type="checkbox"/> Fire Incident <input type="checkbox"/> First Aid <input type="checkbox"/> Environmental Incident <input type="checkbox"/> Other: _____			
2. Details of Injury/Illness					
(If personnel Injury involved in incident, complete this information also and attach personnel Accident/Serious Illness Report.)					
Employer	CCC-JV	<input type="checkbox"/> Fatality <input type="checkbox"/> Medical Treatment <input type="checkbox"/> First Aid	<input type="checkbox"/> Lost Time <input type="checkbox"/> Restricted Work		
Duration of Employment	Years: _____	Months: _____	Age		
Name of injured.			Nationality		
Personal ID/Passport No.					
Address					
3. Witness or Witness Statement					
Name		Company		Occupation/Position	
Witness statement attached? <input type="checkbox"/> Yes <input type="checkbox"/> No					
4. Property Damage					
List of Property/Materials Damage (use control number if available)		Nature of Damage			
Object/substance inflicting damage		Damage cost (approximately)			

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5. Incident Description	
(Describe, step-by-step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.)	
6. Why did the incident happen?	
Unsafe workplace conditions: (Check all that apply) <input type="checkbox"/> Inadequate guard <input type="checkbox"/> Unguarded hazard <input type="checkbox"/> Safety device is defective <input type="checkbox"/> Tool or equipment defective <input type="checkbox"/> Workstation layout is hazardous <input type="checkbox"/> Unsafe lighting <input type="checkbox"/> Unsafe ventilation <input type="checkbox"/> Lack of needed personal protective equipment <input type="checkbox"/> Lack of appropriate equipment / tools <input type="checkbox"/> Unsafe clothing <input type="checkbox"/> No training or insufficient training <input type="checkbox"/> Other: _____	Unsafe acts by people: (Check all that apply) <input type="checkbox"/> Operating without permission <input type="checkbox"/> Operating at unsafe speed <input type="checkbox"/> Servicing equipment that has power to it <input type="checkbox"/> Making a safety device inoperative <input type="checkbox"/> Using defective equipment <input type="checkbox"/> Using equipment in an unapproved way <input type="checkbox"/> Unsafe lifting <input type="checkbox"/> Taking an unsafe position or posture <input type="checkbox"/> Distraction, teasing, horseplay <input type="checkbox"/> Failure to wear personal protective equipment <input type="checkbox"/> Failure to use the available equipment / tools <input type="checkbox"/> Other: _____
Why did the unsafe conditions exist?	
Why did the unsafe acts occur?	
Were the unsafe acts or conditions reported prior to the incident? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Have there been similar incidents or near misses prior to this one? <input type="checkbox"/> Yes <input type="checkbox"/> No	
7. How can future incidents be prevented?	
What changes do you suggest to prevent this incident/near miss from happening again?	
<input type="checkbox"/> Stop this activity <input type="checkbox"/> Guard the hazard <input type="checkbox"/> Train the employee(s) <input type="checkbox"/> Train the supervisor(s) <input type="checkbox"/> Redesign task steps <input type="checkbox"/> Redesign work station <input type="checkbox"/> Write a new policy/rule <input type="checkbox"/> Enforce existing policy <input type="checkbox"/> Routinely inspect for the hazard <input type="checkbox"/> Personal Protective Equipment <input type="checkbox"/> Other: _____	
What should be (or has been) done to carry out the suggestion(s) checked above?	
Description continued on attached sheets: <input type="checkbox"/> Yes <input type="checkbox"/> No	

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8. Corrective/Preventive Action Tracking (All blocks must be filled in and information verifiable)				
List action(s) that have or will be taken to prevent a recurrence.	Assigned To Whom	Scheduled Completion Date	Actual Completion Date	Follow-up Date

9. Attachment List	

10. Investigation Team and Prepared/Completed Report	
Prepared by:	Position:
Department:	
Names of investigation team members:	

11. Review and Comment			
<u>HSE Manager</u>	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree	<input type="checkbox"/> Comments (see below detail)
Name : MR.SOMKIAT USARAM	Signature :	Date :	
<u>Construction Manager</u>	<input type="checkbox"/> Agree	<input type="checkbox"/> Disagree	<input type="checkbox"/> Comments (see below detail)
Name :	Signature :	Date :	



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### 13.1.3 Near miss Report

Near miss reporting should include the following information at a minimum:

- Location/elevation
- Employee(s) involved
- Date/time occurred and reported
- Description of incident
- Unsafe act or condition contributing to this event (immediate cause)
- Underlying or root causes
- Actions to be taken to prevent reoccurrences and completion dates
- Investigator and reviewer
- Resolution

### 13.2 Conducting the Investigation

- When possible, discuss the accident with the injured employee
- Discuss the accident with other employees, witness who may have seen the accident.
- Take the photos of incident, evidences.
- Carefully consider the following points:
  - a) Where happen? Name of injured? Which company? What was the injured employee doing prior to, and at the time of, the accident? Was this in pursuit of his/her regular duties?
  - b) Was the employee properly instructed as to the manner in which to perform his/her duties? Did he/she do the work in accordance with instructions?
  - c) Did any other employee or contractor contribute to this accident?
  - d) Was the equipment or machinery, which the injured employee was using, in good condition? Was it properly guarded? Was it suited for the purpose for which it was being used?
  - e) Was ample and sufficiently lighted workspace provided?
  - f) Were proper housekeeping conditions maintained?
  - g) How is the same type of work done by other employees?
  - h) Is there a safer way in which this work could be done?
  - i) Was the injured in good health when reporting for work on the day of the accident?



## 14 DRUG AND ALCOHOL POLICY

### 14.1 Policy Statement

Any employee caught possessing or using drugs or coming to work under the influence of drugs will be discharged with prejudice or severely disciplined.

Any employee who uses drugs on the job or works under the influence of drugs endangers himself/herself and other workers. This company will not tolerate drug use on the job.

Drug use is the direct cause of thousands of deaths every year. Drug use causes permanent brain damage and birth defects and usually leads to addiction. Intravenous drug use transmits AIDS, which is incurable and invariably fatal, as well as other serious diseases.

Possession of drugs, no matter how small an amount, is a crime, punishable by incarceration. Sale of drugs or possession of a significant quantity of drugs is a felony.

### 14.2 Drugs and Alcohol

GSP7 and his subcontractors or visitors must be free from the effects of medication, drugs, alcohol, natural stimulants, natural sedatives or other similar intoxicating substances, other than for bona fide medical reasons during work period, mid-day breaks and while travelling to and from worksites. Any discovery/incident involving illicit drugs or controlled substances and alcohol shall be brought to the attention of the appropriate law enforcement agencies and the person shall be immediately removed from the work site.

Employee or visitor must notify their supervisor or the safety of a prescription drugs being use under the direction of a physician. It can then be determined if that employee can drive or carry on work-related duties safely during such time as he/she is required to take the prescribed medication.

## 15 SMOKING POLICY

Smoking is allowed only in designated smoking areas at both office and construction sites. The smoking areas shall be equipped with smoking area signs, fire extinguisher and tray (sand/water) for cigarette butts. Good housekeeping at smoking areas shall be performed.

GSP7 and subcontractors shall note that smoking will not be permitted:

- In the proximity of hydrocarbon handling areas;
- Areas exposed to any flammable liquid or gas releases; and
- Designated 'No Smoking areas.



## 16 MEDICAL AID PROCEDURES

### 16.1 General

GSP7 and his subcontractors shall ensure that medical fitness of the personnel employed on the project are assessed prior to arrival on sites and passed as fit to perform their tasks.

### 16.2 Medical Facilities

CONTRACTOR will ensure that medical assistance is immediately available in all areas of the Project and in camps whenever personnel are present. CONTRACTOR will ensure that each camp is equipped with a clinic and a currently certified medical provider who can:

- Legally assess patient condition;
- Provide CPR;
- Control bleeding;
- Treat for shock;
- Manage handling of unconscious patients;
- Arrange safe transport of sick and injured personnel;
- Treat burns;
- Identify hazardous materials used on the project and treat for exposure involving them;
- Remove foreign bodies from eyes;
- Administer all types of injections, including intravenously, in life-threatening situations; and
- Maintain medical records.

All medical facilities will be of adequate size and have finished interiors, covered floors, toilet facilities, hot and cold running water, refrigeration, air conditioning, and adequate illumination. The facility should enable medical personnel to function professionally and should be centrally located and easily accessible to employees and emergency transportation.

CONTRACTOR will ensure that clinics are equipped at all times with sufficient supplies to support the requirements of the medical program.

CONTRACTOR will ensure that a reliable van/ambulance, fully equipped with medical supplies (based on best medical practices) is immediately available at main onshore Work locations when personnel are present. All offshore work locations will have access to emergency medical evacuations.



Health education program (i.e., personal hygiene, lifestyle, HIV awareness and etc.) will be introduced as an element of the new employee orientation program at the outset of the job, and continued through toolbox talks, SHE briefings, bulletins, posters, leaflets, and other ongoing SHE promotional initiatives over the life of the project.

### 16.3 Medical Program

GSP7 and his subcontractors shall develop a medical program and provide first aid, and occupational health facilities for personnel working at pipeline construction sites.

GSP7 shall provide rapid first aid and trauma response at the casualty location followed by transportation of the casualty to well-equipped dedicated medical facilities for specialist medical care.

To achieve this objective, the Contractor following medical items shall be provided:

- Provisions for addressing all health risks identification
- Specification;
- Basic onsite medical treatment;
- Protocols for treating immediate emergencies and life-threatening emergencies;
- Transportation of injured personnel to suitable medical facilities;
- Management of tropical diseases and epidemics.
- Provide basic first-aid training to all appropriate employees;
- Provide specific first aid training for part of personnel to achieve a certain proportion of first aiders;
- Set the office location near the hospital and sign contract with the hospital for medical treatment;
- Organize and conduct regular emergency response drills;
- Set vehicle for the use of an emergency;
- Manage tropical diseases and epidemics.



### 17 DRIVING PROCEDURES

CONTRACTOR/SUBCONTRACTOR shall maintain and enhance the awareness of safe driving among its employees and Subcontractor's employees and for providing vehicles in good operating condition. Where applicable, CONTRACTOR must ensure that its employees, and the employees of Subcontractors, receive adequate driving instruction and that visible steps are taken to maintain a safe standard of defensive driving.

- Vehicles shall be fit for the purpose, regularly inspected and well maintained in accordance with good driving practices.
- All seats of all vehicles must be equipped with seat belts, preferably of the three fixed-point type.
- Vehicles with roofs, which cannot withstand a rollover, should be fitted with roll bars.

Vehicles used for isolated areas shall be equipped with survival kits comprising a two-way radio, drinking water, first aid kit, etc.

No unauthorized usage of transport shall be tolerated by CONTRACTOR or SUBCONTRACTOR staff. The nominated Work Safety and Health Officer(s) should ensure that all forms of transport are correctly fitted with the appropriate safety equipment.

CONTRACTOR shall undertake to ensure that all drivers comply with the following basic rules:

- Possess a valid drivers license;
- Always wear a seat belt;
- Always observe traffic rules, especially speed limits;
- Never drive after consuming alcoholic drinks or certain medicines/drugs;
- Never drive when very tired;
- Take regular stops when driving long distances;
- Be sure that the vehicle is properly maintained and in good condition for the planned journey;
- Never overload the vehicle; and,
- Drive defensively.

The speed limit on all work sites should be determined by existing conditions and posted.



## 18 PERSONAL PROTECTIVE EQUIPMENT

(REFER TO PERSONAL PROTECTIVE EQUIPMENT PROCEDURE; PR.S1-90-2004.01-3700-009)

All personnel working on, visiting or inspecting any part of the work shall be provided with and be required to wear appropriate PPE. CCC-JV and his subcontractors shall provide essential PPE including working clothes, safety helmets and safety shoes. Other PPE shall be provided depending on the work risk requirements. Contractor shall provide PPE for OWNER/Consultant.

CCC-JV and his subcontractors shall ensure that all necessary training about the use of PPE will be provided to all new employees before they enter the work site.

The minimum PPE will be Hardhat, Safety Shoes and High Visibility Cloth or Vest. CONTRACTOR's personnel will base the selection of PPE on the potential hazards anticipated as determined by Job Safety and Environmental Analysis.

All PPE shall meet the requirements by ANSI (American National Standards Institute), BS (British Standard), TIS (Thailand Industrial Standards)

- Head Protection.
- Eye and Face Protection.
- Hearing Protection.
- Hand Protection.
- Foot Protection.
- Fall Protection.

### 18.1 Head Protection

- Safety helmet must meet TIS standard, ANZI Standard Z89.1, or equivalent for protection from falling or flying objects. When protection from possible electrical shock is required, the safety helmet shall must meet ANZI Standard Z89.2. the color of safety helmet, White for management/Engineer/supervisor/foreman, Green for Safety, Yellow for workers and Red for fire watchman
- Approved safety hardhat must be worn at all times in the work site. The hard hat must be a plastic non-conductive material. Metal hard hats are not allowed.
- The safety hard hat should be inspected regularly for sign of dents, cracks or damage to the shell or other parts, which could reduce the effectiveness. If damaged it should be replaced on vendor recommendation. Safety hard hats are not required to be worn:-

➤ Where specific sign says, "Hard hats are not required".



- In passenger vehicles and buses.
- Field offices

- All hard hats must be provided with chin-straps (not ratchet type) and must be worn when climbing, working at heights or performing tasks which require the head to face downwards.
- Chinstrap is not necessary if safety hard hat has a ratchet type head harness.
- Do not alter the safety hard hat with metal tags, drilling holes or by painting.

### 18.2 Head Protection

Approved safety glasses with side shields are mandatory at all times when entering or within the RA#6-Ratchaburi Pipeline Project Site work area with the exception of office area, equipment with fully enclosed cab, or when the job tasks such require more stringent eye protection on the Permit to Work. (Safety glasses should be in compliance with ANSI Z 87.1, BS 2092:2 and EN 166 1F)

Face protection, Face shields shall be worn when flying particles are generated from job tasks such as grinding, chipping cleaning with air hose, or when the potential for splashing liquid into the eye is possible.

Employees will be furnished with non-prescription approved safety glasses.

Dark lens glasses are not allowed when working inside buildings or on night shift.

Employees working with or assisting in work handling molten metal or reactive chemicals will wear full-face shield. Safety glasses and face shield will be worn for all grinding and buffing operations.

Additional eye protection will be worn when specified on permits or as conditions warrant.

### 18.3 Hearing Protection

Where hearing protection areas or zone have been defined signs shall be posted and anyone entering the area shall wear hearing protection.

Areas with sound levels between 85 dB(A) and 95 dB(A) require ear plugs or ear muffs. Area with sound levels above 95 dB(A) requires BOTH ear plugs and ear muffs.

Some areas of site will have a Blue Sign signifying a mandatory requirement for hearing protection.

Hearing Protection will be worn when noise exceeds 85 dB(A).

(Compliance BS 6344, ANSI ZS3.19, AS 1270)

### 18.4 Hearing Protection

- Harmful Chemicals, Solvents:

Protective gloves must be worn during any operation where there is probability of contact with harmful chemicals, solvents.

- Heat:



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When handling hot materials for long periods or when exposed to excessive heat, a heat resistant glove will give protection.

- Welder's Leather Gloves:

To prevent burns from flying sparks, welders should wear welder gloves, sleeves and jackets when necessary. Welder's gauntlets shall be to TIS, BS, DIN, ANSI or equivalent standard.

- General work Gloves:

- Shall be to TIS, BS, DIN, ANSI or equivalent standard. They shall have canvas backs and leather hide palms.
- Personnel working on high voltage electrical equipment must wear electrical gloves.
- Rubbers, vinyl or nitric coated gloves issued to Contractor Employees using hazardous substances shall meet TIS, BS, DIN, ANSI or equivalent standard. The type of glove, appropriate to the substance being handled shall be detailed exactly in the work method statement.

#### 18.5 Foot Protection

Safety footwear is mandatory on site and must be worn at all times. The only recognized footwear allowed on site is made for steel toe cap, anti-slip, oil resistant.

(Safety shoes should be in compliance with ANSI Z41, BS 1870, EN 345)

#### 18.6 Fall Protection

The Competent Person will ensure that all equipment meets required specifications for the intended application. He also will ensure that all personnel required to use fall protection equipment have been medically qualified and trained in the proper use of the equipment.

Supervisors will ensure that fall protection systems are used where required. The supervisor will inspect fall protection equipment on a weekly basis. Employees will use fall protection equipment as instructed. Equipment will be inspected before each use.

Employees who are required to wear fall protection equipment will be medically qualified. The medical review will consist of an interview with the employee regarding information about his medical history that would affect his ability to wear fall protection equipment.

Double land yard shall be required for all elevated work, including pipe erection and installation, insulation, and civil work. However, only one lanyard is required to be attached at one time, but 100 % tie-off shall be maintained at all times.



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The second lanyard is to allow the worker to move from one location to another and maintain 100 % tie-off when one of the lanyards needs to be disconnected to move around an obstacle.

Full Body Harness; Harnesses include shoulder straps and leg straps, a sub-pelvic assembly, adjustable buckles or fasteners, and one or more D-rings to connect to a lanyard.

The dorsal D-ring (between the worker's shoulder blades) is used with a fall arrest system. D-rings in other positions are sometimes included for use with ladder safety devices. For this reason, some harnesses come with D-rings on the front, sides, and lower back.

A safe and effective harness will fit (i.e., be the correct size) and is adjusted so that all straps are snug (see in steps to fitting a full body harness). Dangling leg straps or arm straps are signs that the harness is not being worn correctly. The sub-pelvic assembly transfers the forces during a fall or suspension to the worker's sub-pelvic region.

Although adjustable, some models come in different sizes and may be gender specific. Simple steps to fitting a full body harness

				
Inspect	Position back D-ring between shoulder blades	Buckle up legs	Buckle up front	Adjust so the harness fits snugly and D-ring remains in the correct position

Lifeline: Lifelines function as an extension of an anchorage system, allowing an employee to move up and down (vertical lifeline) or back and forth (horizontal lifeline) across a work area. A sliding fitting (rope grab or shuttle) connects to the line and a lanyard connects the worker's harness to that sliding fitting.

Vertical lifelines require active participation by the worker, who must often reposition the rope grab when moving to a new position.



## 19 GENERAL SAFETY AND HEALTH REQUIREMENT FOR SITE PERSONEL

### 19.1 Housekeeping

Access and egress to all exits, fire and safety equipment, and work areas must be kept clear of obstructions at all times. Special attention must be given to maintaining clear walkways, removal of trash, removal of slipping and tripping hazards, and proper storage of materials. Oily or chemical soaked rags must be regularly disposed of in an approved manger.

### 19.2 Visual Management

Visual management is the process of displaying critical information to normalize the safety management on the site. GSP7 and his subcontractors shall carry out the visual management on site, which includes Personnel Visual Management, Equipment, Facilities and Tools Visual Management and Construction Site Visual Management.

#### 19.2.1 Personnel Visual Management

Personnel visual management shall include but not limited to the following:

- PPE (Safety Helmet, Safety Shoes, Working Clothes, Safety Glasses, etc.);
- Employee ID Card with valid date;
- Visitor Card.

#### 19.2.2 Equipment, Facilities and Tools Visual Management

Equipment, facilities and tools visual management shall include but not limited to the following:

- All tools and equipment being used in PTT ROW shall be inspected by PTT as per required.
- Equipment, Facilities and Tools Inspection Sticker.
- Facilities and Tools Usage Condition Sticker.
- Safety Barrier for Area Separation.
- Safety Barrier for Transformer Box.
- Warning Signs for Area Separation.
- Electric Poles Protection.

#### 19.2.3 Construction Site Visual Management

Construction site visual management shall include but not limited to the following:

- Site Signboard.
- Parking Area.



- Mobile Toilet for Construction Site.
- Waste Segregation and Collection on Construction Site.
- Hazardous Materials Handling.
- Traffic Sign and traffic management system for Construction near the Road.
- Muster Point.
- Designed smoking area.
- Lighting system at the night time.

### 19.3 Transportation, Vehicle and Heavy Equipment Management

GSP7 shall develop and implement management systems and procedures to provide highest level of control over the risks that both on and off-road vehicle transportation will present. The management system can manage and minimize potential health and safety risks posed by traffic to contractor's employee, its subcontract and other persons while construction or activity is occurring on, or adjacent to, roads.

The procedure applies all parts of the activities identifies the control and operation of traffic and driving management for all construction sites and public roads associated with the project.

Detailed Traffic Control Management Plan shall be developed on the basis of SHE Management Plan.

#### 19.3.1 Vehicles

While driving on the ROW, vehicle headlights will be on at all times to ensure visibility to workers and other vehicles.

All CONTRACTOR/SUB-CONTRACTOR vehicles on any worksite must have proper insurance, be in a safe operating condition and meet all regulatory requirements.

All vehicles (and applicable equipment) must be operated by a competent, properly licensed operator in a safe manner and at a speed suited to the terrain and weather conditions. All cranes, stringing trucks, heavy and tracked equipment and welding rigs shall be fitted with back up alarms.

Speed limit scheme will be setup by CONTRACTOR.

#### 19.3.2 Equipment and Tools

Equipment and tools inspection refer to *PR.S1-90-2004.01-3700-010 Inspection of Equipment and Machine Procedure*





### 19.3.3 Heavy Equipment and Machinery

GSP7 and his subcontractors shall be responsible for ensuring that all heavy equipment and machinery used for the work is in a good and safe operating condition. GSP7 and his subcontractors shall document inspections of the equipment in compliance with relevant Thai legislations. All equipment and machinery must be transported in a safe manner and at a minimum must utilize an approved system of flag persons and pilot vehicles. All of the Heavy Equipment and Machineries shall be as per manufacture requirement or checked in accordance with the laws. Any break or malfunction must be fixed immediately and not be allowed to work until the reparation finished.

EIA, PTT's requirements and Thai laws and regulations; shall be followed and the inspection result shall be documented.

CONTRACTOR is responsible for ensuring that all heavy equipment and machinery used for the Work is in a good and safe operating condition. CONTRACTOR shall document inspections of the equipment. All equipment and machinery must be transported in a safe manner and at a minimum must utilize an approved system of flag persons and pilot vehicles.

### 19.3.4 Inspection and Operation of Lifting Equipment

Contractor and his subcontractors shall be responsible for ensuring that only a competent, qualified worker operates any lifting device and that a signaler is designated to signal the operator, as necessary, to properly place and control the loads. All lifting equipment will be load tested and documented prior to use on the project. All rigging equipment shall be inspected by a competent person at least once a quarter and daily by operator with identify/color code or any inspected sign.



### Color coding system shall be applied in the GSP7 Project as following pattern

- All Power tools / Equipment were inspected completely before JAN each calendar year and;
- Inspection tag or Sticker will be issued in accordance to Color coding system;
- for the period of JANUARY up to MARCH, issued with **RED** background

- All Power tools / Equipment were inspected completely before APR each calendar year and;
- Inspection tag or Sticker will be issued in accordance to Color coding system;
- for the period of APR up to JUN, issued with **GREEN** background

- All Power tools / Equipment were inspected completely before JUL each calendar year and;
- Inspection tag or Sticker will be issued in accordance to Color coding system;
- for the period of JUL up to SEP, issued with **BLUE** background

- All Power tools / Equipment were inspected completely before OCT each calendar year and;
- Inspection tag or Sticker will be issued in accordance to Color coding system;
- for the period of OCT up to DEC, issued with **YELLOW** background



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#### Lifting Devices

CONTRACTOR is responsible for ensuring that any lifting device is operated only by a competent, authorized worker and that a signaler is designated to signal the operator, as necessary, to properly place and control the loads.

Before any critical lift is attempted, a pre-job meeting will be held and the following critical lift checklist will be completed to determine:

- category of lift;
- potential hazards;
- location of load/crane;
- use of spreader bars/vacuum life;
- ground conditions;
- load and rigging weight; and,
- sketch (drawing of engineered/critical lift).

Where the use of a man-basket is required, the following requirements must be met and established prior to the lift and addressed at the pre-job meeting with all personnel:

- certification and inspection of man-baskets supplied;
- rigging, tag lines, ground personnel established;
- safety line in place;
- number of personnel in basket;
- use of safety harness.
- Damaged nylon slings shall be discarded immediately.
- Only chains that have been tested and approved for lifting applications may be used.

During winch or tow cable use, all personnel must be clear of the "whip area" of the cable while it is under tension.

#### Manual Lifting

Whenever possible, mechanical lifting devices are to be used to assist in the handling of material in excess of 20 kg (44 lbs.). CONTRACTOR shall ensure that all workers required to perform manual lifting tasks receive proper instruction in back care and lifting methods.



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Suitable gloves shall be worn by workers handling material where contact may be made with sharp edges, abrasive surfaces, slivers, caustics, acids, etc.

#### Tools and Equipment

The safe design capacity of any tool must not be exceeded. Tools and equipment must not be modified in any manner that reduces the original safety factor or capacity.

Any tool should be checked periodically. Any mistake or destroy should be reported.

Protective guards shall be in place at all times on all power tools. Cords must be in good condition. All damaged cords, plugs or switches must be and repaired immediately by a qualified electrician or removed from the Site.

Hose, connectors and adapters must be used only for the type of service intended. In order to ensure positive locking at all times, connectors shall be in good condition and not abused. Sandblast hose connection shall be the safety lock type, which prevents accidental disengagement.

Tools will be **daily inspected by user before start work**, if any damaged, broken, deformed condition was found, the SHE personnel will instructed to the user to take them out of point of operation in order to repair or replace.

#### Cranes and Hoisting Equipment

CONTRACTOR shall verify weights and heights of loads to be lifted. No load shall be lifted which exceeds the manufacturer's stated capacity of the crane. CONTRACTOR shall submit, in writing, a lifting plan when the load exceeds 90% of the rated load chart for the crane. An engineered lift study, complete with drawings and procedures, plus a safety procedure to be followed may be requested on any lift.

#### 19.4 Storage and Transport of Volatile or Dangerous Materials

CONTRACTOR/SUB-CONTRACTOR must:

- retain Material Safety Data Sheets (MSDS) for all chemicals they bring to the Site;
  - maintain an up-to-date inventory list of all controlled products on the Site;
- 1) provide suitable training for all workers required to work with or in the vicinity of all jobs involving hazardous chemicals including:
- use of Material Safety Data Sheets (MSDS);
  - specific training on chemicals used;



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- review of procedures for handling, use, disposition, personal protection equipment, etc.; and,
- transportation of hazardous materials, dangerous goods and chemicals requirements.

CONTRACTOR/SUB-CONTRACTOR is also required to have:

- procedures and equipment for storage and use of all chemicals needed for the Work;
- written procedures and all necessary equipment for proper storage and disposal of hazardous chemical waste; and,
- written emergency procedures to handle all types of emergencies regarding the chemicals used or stored on site.

### LIQUID SOLVENT

Organic solvents are often the most hazardous chemicals in the work place. Solvents such as ether, alcohols, and toluene, for example, are highly volatile and flammable. Perchlorinated solvents, such as carbon tetrachloride (CCl<sub>4</sub>), are non-flammable. But most hydrogen-containing chlorinated solvents, such as chloroform, are flammable. When exposed to heat or flame, chlorinated solvents may produce carbon monoxide, chlorine, phosgene, or other highly toxic gases.

Always use volatile and flammable solvents in an area with good ventilation or preferably in a fume hood. Never use ether or other highly flammable solvents in a room with open flames or other ignition sources present, including non-intrinsically safe fixtures

### SOLVENT EXPOSURE HAZARD

Health hazards associated with solvents include exposure by the following routes:

- Inhalation of a solvent may cause bronchial irritation, dizziness, central nervous system depression, nausea, headache, coma, or death. Prolonged exposure to excessive concentrations of solvent vapors may cause liver or kidney damage. The consumption of alcoholic beverages can enhance these effects.
- Skin contact with solvents may lead to defeating, drying, and skin irritation.
- Ingestion of a solvent may cause severe toxicological effects. Seek medical attention immediately

The odor threshold for the following chemicals exceeds acceptable exposure limits. Therefore, if you can smell it, you may be overexposed — increase ventilation immediately! Examples of such solvents are:



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- Chloroform
- Benzene
- Carbon tetrachloride
- Methylene chloride

### REDUCING SOLVENT EXPOSURE

To decrease the effects of solvent exposure, substitute hazardous solvents with less toxic or hazardous solvents whenever possible. For example, use hexane instead of diethyl ether, benzene or a chlorinated solvent.

### **19.5 Procedures for Handling Radioactive Materials/Sources**

Prior to commencement of the Work, a radiographic safe-work procedure will be submitted to PTT. The minimum requirements to be included in these procedures are as follows:

- no single-person units are permitted to work on Site;
- radiographic inspections trucks are to be equipped with 360 degree amber rotating lights on top of the unit clearly visible to all personnel. Lights will be turned off when radiography is not in progress; and,
- x-ray signage on the ROW indicating presence of this type of work, and a rope string across the work area.

### **Radiation**

Any construction activities relating to radiation, Contractor and his subcontractors shall strictly follow relevant legal requirements as follow:

- Only qualified personnel are employed to use radiographic equipment;
- Supply a copy of their current, valid license and have it on their person during work;
- Adequate signage, protective equipment and restrictive barriers to prevent other workers from entering the areas where a hazard exists shall be provided and used at the Site.
- Only the minimum required amount of material should be on-site.
- Radioactive meters will be available on site at all times.

Contractor shall ensure that all radioactive materials will be adequately labeled and isolated from people, livestock and wildlife, and from materials that could transport radioactivity to people and natural habitats. Audible and visible warnings shall be used during the use of radioactive materials. 100% of mainline welds shall be radio graphed using an internal X-ray, the use of gamma ray shall be not permitted, unless approved by OWER/Consultant.

Radioactive materials will not be disposed of on the construction site but will be removed in protective



containers and disposed at government approved storage and disposal locations.

GSP7 must be vigilant for evidence of unsafe use, exposure, or injury from X-rays.

#### 19.6 Work in Confined Space

(Refer to Confined Space Procedure; PR.S1-90-2004.01-3700-008)

GSP7 shall develop and implement a procedure for confined space entry in accordance with national and local laws, ordinances, standards, codes and specifications

Pipeline entry shall be strictly prohibited by GSP7's regulation, and is grounds for dismissal.

Before issuing a Permit to Work to carry out any work within a confined space, hazards evaluations well as appropriated control measures shall be taken.

All GSP7's and subcontractor's employees are required to follow the entry procedure and work practices established by the work. Only qualified personnel will enter a confined space to conduct work.

##### 19.6.1 Procedure

Work involving entry to a confined space must be planned. An assessment of likely hazards should be made prior to commencing the work. Precautions must be taken to avoid exposure to harmful substances or oxygen deficient atmospheres. Some thought should also be given to handling possible emergencies

##### 19.6.2 Entry Into Permit-Required Confined Spaces

Prior to entry into any permit-required confined space, the employee's supervisor will issue a permit that specifies the location, type, and duration of the work to be done, and the date. The permit will certify that all existing hazards have been evaluated by the supervisor and that necessary protective measures have been taken for the safety of workers. It will provide documentation of the atmospheric testing that has been done. It will assign entry and attendant duties to specific persons.

Before issuing an entry permit, the employee's supervisor will be responsible for the following:

- Identify all hazards and potential hazards associated with the confined space, such as the danger of explosion, asphyxiation, toxic gases/fumes, engulfment or entrapment, electrical or mechanical hazards, etc.
- Isolate the space from potential hazards, if possible, to provide for safe entry.
- Purge, inert, flush, ventilate to eliminate atmospheric hazards.
- Provide external barriers and warning signs.



- Perform pre-entry oxygen, flammable gas and toxicity air tests. All test results are to be recorded on the entry permit. If potential hazards cannot be isolated, continuous monitoring is required. If potential hazards can be isolated, periodic monitoring is required.
- Provide at least one trained attendant outside of each confined space that will be entered.
- Ensure that rescue and emergency services and equipment are in place as noted in this policy.
- Ensure that all required equipment is provided, maintained and properly used. This includes air monitoring equipment, forced air ventilation equipment, communications equipment, personal protective equipment (PPE), lighting, external barriers and warning signs, ladders, and rescue equipment.

If hazardous conditions are detected during entry, employees will immediately leave the space and the supervisor will determine the cause of the hazardous atmosphere and take corrective actions before allowing re-entry.

##### 19.6.3 Rescue and Emergency Services

If proper protective measures are taken to eliminate and control any possible hazards in the confined space (i.e., ventilation, purging, monitoring, lock out/tag out, etc.), rescue operations should not be necessary. Nonetheless, the Company will be prepared for the worst-case scenario.

An attendant for the confined space will have access to a telephone and know the proper procedure for alerting the proper personnel in the event of an emergency, including the fire department, paramedics, police, and others as necessary.

Provisions will be made and equipment provided to ensure timely extraction of an unconscious or injured worker from the confined space. This will include a body harness with a lifeline attached to a tripod and rescue winch. Under no circumstances is the attendant to enter the space to effect rescue; rescue operations must be left to trained personnel.

##### 19.6.4 Training

Employees involved with permit-required confined space work will be trained according to legal requirement (Announcement of The Department of Labour Protection and Welfare on Criteria, Procedures and Training Curriculum on Occupational Safety in Confined Space B.E.2564) to assure the knowledge, understanding, and skills necessary for the safe performance of their duties. Foremen will be trained in the identification and evaluation of confined space hazards and in the proper precautions to be taken to assure safe entry and work in confined spaces. Employees entering confined spaces will be trained in the hazards and potential hazards involved and how to protect themselves from those hazards. They will be trained to never enter a confined space until a permit



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is issued and they have been authorized to enter by the foreman. Attendants will be trained in their duties and responsibilities and the actions to be taken in the event of an emergency.

Employees will receive a written certification following their training to document that they have been properly trained in their respective duties and the hazards and safety precautions involved in confined space entry.

**19.7 Work on or near Water**

GSP7 and his subcontractors shall conduct risk assessment and prepare work method statements in advance of any work over water, to ensure that all associated risks are identified and appropriate control measures determined.

Soil erosion and stock soil near water shall be avoided.

All hydraulic, lubrication, and fuel hoses will be held in dip tray, free from abrasion and unions tight and free from leaks.

Maintenance procedures for all vessels and pipe laying equipment will address refueling, hydraulic oil, and lubricating oil change and provide methods to prevent marine pollution.

**19.8 Work in Hot Weather**

When working in hot weather, GSP7 and his subcontractors shall conduct the following measures:

- Provide more frequent rest breaks and introduce shading to rest areas;
- Provide free access to cool drinking water and ice;
- Introduce shading in areas where individuals are working;
- Encourage the removal of personal protective equipment when resting to help encourage heat loss in safety area;
- Educate worker training in the hazards, health effects and prevention of heat related illness.
- Always provide first aid kit on site



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**19.9 Lockout & Tagout**

(Refer to Lockout Tagout Procedure: PR.S1-90-2004.01-3700-017)

Lock out and tag out procedure is a means of energy isolation technical/electrical to ensure safety of persons who are in the site of electric and physical equipment. The employee shall provide training to ensure that the purpose and function of the energy control program are understood by employees.

The training shall include the following:

- Each authorized employee shall receive training in the recognition of applicable hazardous energy spaces, the type of energy available in the workplace, and the methods and means necessary for energy isolation and control;
- Each authorized employee shall be interacted in the purpose and use of the energy control procedure;
- Tag are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock when a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person for it, and it is never to be bypassed, ignored, or otherwise defeated.

Detailed Lockout Tagout Procedure shall be developed on the basis of SHE Management Plan.

**19.10 Fall Protection**

The Competent Person will ensure that all equipment meets required specifications for the intended application. He also will ensure that all personnel required to use fall protection equipment have been medically qualified and trained in the proper use of the equipment.

Supervisors will ensure that fall protection systems are used where required. The supervisor will inspect fall protection equipment on a weekly basis. Employees will use fall protection equipment as instructed. Equipment will be inspected before each use.

Employees who are required to wear fall protection equipment will be medically qualified. The medical review will consist of an interview with the employee regarding information about his medical history that would affect his ability to wear fall protection equipment.

**19.10.1 Installation and Use of Equipment**

All equipment will be installed and used in accordance with OSHA standards and the manufacturer instructions. The installation and use of equipment will be inspected and approved by a competent person. All equipment will be used only for the application for which it was designed.



#### 19.10.2 Guardrail Systems

Shall provide for the prompt installation of guardrails, covers, gates, bars, platforms, nets and enclosures as required by OSHA regulations and or local codes and ordinances at the following locations

- 1) Perimeters of open floors.
- 2) Elevator and mechanical shafts.
- 3) Stairwells and stairways
- 4) Floor holes and openings.
- 5) Wall openings.
- 6) Hoist and elevators.
- 7) Excavation and trench openings.

##### Installation and Maintenance:

- 1) The Competent Person shall plan ahead for the prompt installation and maintenance of guarding as required in these regulations.
- 2) The Competent Person shall assign responsibilities for the installation and maintenance of guarding to the appropriate parties and enforce their compliance with these regulations.
- 3) The Competent Person shall provide for daily inspection of all areas where guarding is in place or may be required. He shall place particular emphasis on areas of high activity or rapidly changing conditions where the need for installation and maintenance may be most critical, and issue instructions for prompt corrections to guarding deficiencies found.
- 4) The Competent Person shall see that the design and installation of guarding is readily adaptable to the type of work to be performed in the guarded areas. The guarding shall facilitate removal and replacement where required, be readily maintainable, and provide maximum protection for employees engaged in the work.
- 5) Where guarding must be removed to facilitate the work in progress, the guarding shall be replaced in original condition upon completion of the work and the unguarded area shall not be left unattended until the guarding is replaced. The Competent Person shall enforce this requirement with the responsible parties.

##### Guarding Requirements:

- 1) Every open sided floor, balcony, mezzanine, platform or work surface 6 feet or more above adjacent floor or ground level shall be guarded by a standard guardrail.
- 2) Every floor opening measuring more than 1 inch in its least dimension in any floor, roof or platform shall be guarded by a cover or a standard guardrail.



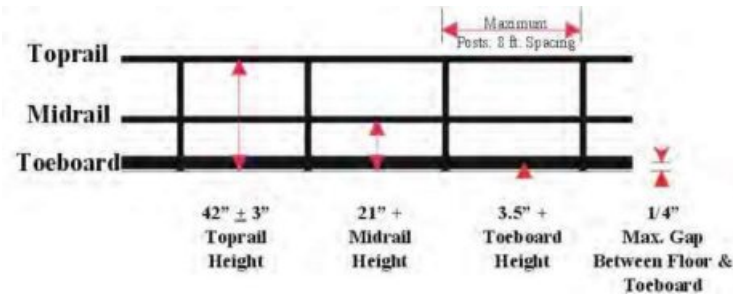
- 3) Every stairway opening, ladder way opening or ladder way platform shall be guarded on all exposed sides by a standard guardrail.
- 4) Every opening for manholes, pits, hatches, trapdoors, chutes, and skylights shall be guarded by a cover or standard guardrail.
- 5) Every wall opening from which there is a drop of more than 4 feet, and the bottom of the opening is less than 3 feet above the floor shall be guarded by a standard guard rail. Where the bottom of the opening is less than 4 inches above the floor, a toe board is required.
- 6) Every extension platform outside an open floor or wall opening shall be guarded on all open sides by a standard guardrail.
- 7) Every ramp or runway 4 feet or more above the floor or ground level shall be guarded on all open sides by a standard guardrail.
- 8) The above guarding requirements are applicable to the completed sides and openings of decks and concrete formwork of all types. Perimeter guarding of formwork shall be installed as completed sides of the formwork are developed.
- 9) On temporary planked floors or temporary metal-decked floors, the periphery of the floor shall be guarded by a single safety railing of 1/2-inch wire rope cable or equivalent, installed approximately 42 inches above the floor. Perimeter cable shall be installed as completed sides of the floor are developed.
- 10) Temporary planked or temporary metal decked floors shall be covered over the entire surface. All unused openings shall be covered with plank or metal deck secured against accidental displacement.
- 11) The uncompleted or leading edge of any temporary floor whether of planking, metal deck or concrete formwork shall not be left unguarded or unattended for extended periods of time due to delay or interruption of the completed installation. In such cases, access to the open end of the floor shall be closed to employees by wire rope cable or barricading off the floor at least 10 feet back from the open end of the floor.
- 12) Where subcontractors install guarding on floors under their control, such guarding may be left in place to service the long-term needs for guarding of the project, providing that it meets all of the requirements of this Section of the Manual.



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**Guardrail Specifications:**



- 1) A standard guardrail shall consist of a top rail approximately 42 inches high, intermediate rail halfway between the floor and top rail, toe board, and posts.
- 2) For wood railings, the posts shall be of at least 2 inch by 4-inch stock spaced not to exceed 8 feet; the top rail shall be of at least 2 inch by 4-inch stock; the intermediate rail shall be of at least 1-inch stock.
- 3) A standard toe board shall be 4 inches minimum height, and shall be securely fastened in place with not more than 1/4-inch clearance above floor level. It may be of any substantial material, either solid or with openings not more than over 1 inch in greatest dimension.
- 4) For pipe railings, posts, top and intermediate railings shall be at least 1 1/4 inches in diameter with posts spaced not more than 8 feet on center.
- 5) For structural steel railings, posts, top and intermediate railings shall be of 2 inch by 2 inch by 3/8 inch angles or other metal shapes of equivalent bending strength, with posts spaced not more than 8 feet on center.
- 6) For wire rope cable railing, top and intermediate railings shall be of 1/2-inch cable or equivalent. Posts are not required providing that both rails do not sag more than 3 inches between attachment points and are capable of withstanding a load of 200 pounds applied in any direction at any point on the rails, with a minimum of deflection.
- 7) A stair railing and handrail shall be constructed similar to a guardrail but the vertical height shall be not more than 34 inches or less than 30 inches from the top of the riser.
- 8) The anchoring of posts, framing, and attachments for members of railings of all types shall be of such construction that the completed structures shall be capable of withstanding a load of 200 pounds applied in any direction at any point on the top rail, with a minimum of deflection.
- 9) The use of fiber or synthetic rope for guardrails is prohibited.



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- 10) Covers for floor holes and openings shall be capable of supporting the maximum intended load and so installed as to prevent accidental displacement.
- 11) Covers shall be of 3/4-inch plywood, 2 inch planking or equivalent. Covers may be secured by nailing to the floor or by installation of cleats to prevent accidental displacement.



**Personal Fall Arrest Systems:**

- 1) Lifelines, safety harnesses and lanyards shall be used only for employees' safeguarding. When any of these are actually subject to in service loading (as distinguished from static load testing). They shall be immediately removed from service and shall not be used again for employee safeguarding.
- 2) Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,000 pounds.
- 3) Lifelines used in areas where the lifeline may be subjected to cutting or abrasion shall be of 7/8" wire core manila rope or equivalent. For all other lifeline applications, a minimum of 3/4 manila or equivalent with a minimum breaking strength 5,000 pounds shall be used.
- 4) Safety lanyards shall be a minimum of 1/2" nylon or equivalent man made material with maximum length for a fall of no greater than 6' . The lanyard shall have a breaking strength of 5,000 pounds.
- 5) All safety harness and lanyard hardware shall be drop forged or pressed steel. Surfaces shall be smooth and free of sharp edges.
- 6) All safety harnesses and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 5,000 pounds without cracking, breaking or taking a permanent deformation.
- 7) All lifelines. Harnesses, Lanyards and associated hardware shall be inspected after each use for wear and possible damage due to use. Additionally, periodic inspection of lifelines, Harnesses, lanyards and associated hardware kept in storage shall be done to ensure that they have not been subject to damage, deterioration due to storage conditions and other factors that

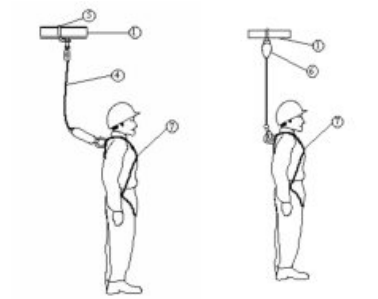




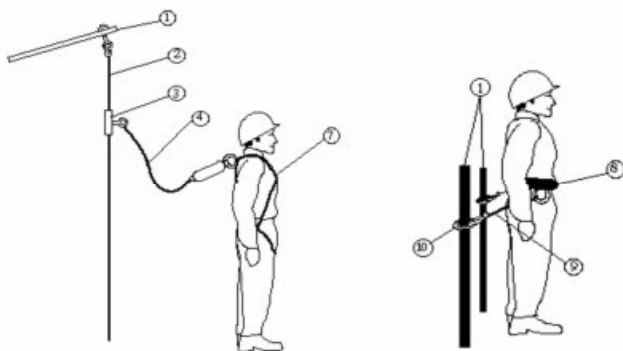
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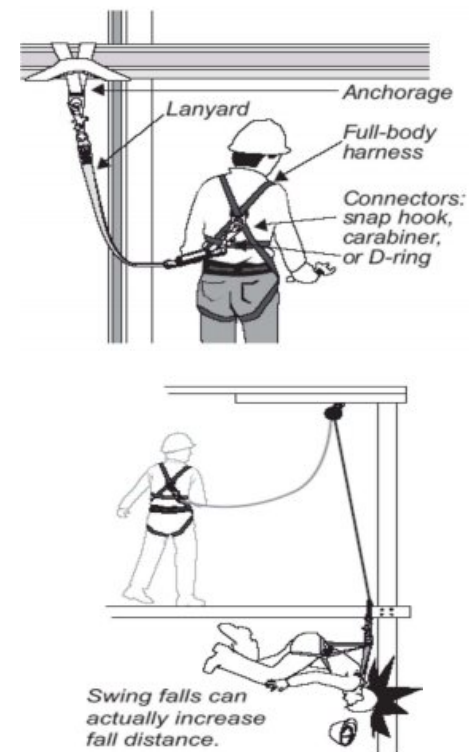
may reduce their strength characteristics. An inspection report form shall be maintained on all safety lifelines, Harnesses and, lanyards and show the date inspected, the condition of the equipment, the serial number for each piece and the date the equipment was purchased plus the date that the equipment was initially put into service.



- |                            |                         |
|----------------------------|-------------------------|
| 1) Tie-off Point           | 6) Retractable Lifeline |
| 2) Lifeline                | 7) Full Body Harness    |
| 3) Rope Grab               | 8) Restraining Belt     |
| 4) Shock-Absorbing Lanyard | 9) Restraining Lanyard  |
| 5) Cross-Arm Strap         | 10) Carabiner           |



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### 19.10.3 Safety Nets

- 1) Safety nets shall be installed as close as practical under the walking/working surface but in no case more than 30 ft. below such level where the use of guard rails, ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical to guard against fall hazards.
- 2) Shall extend outward from the outermost projection of the work surface as follows: When the vertical distance from working surface is less than 5 feet the minimum required horizontal distance of outer edge of the net surface shall be 8 Feet. When the vertical distance from working surface is more than 5 feet and less than 10 feet the minimum required horizontal





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distance of outer edge of the net surface shall be 10 Feet. When the vertical distance from working surface is more than 10 feet the minimum required horizontal distance of outer edge of the net surface shall be 13 Feet.

- 3) Safety nets shall be installed with sufficient clearance to prevent contact with surface or structures below Safety net and installations shall be capable of absorbing impact force equal to 400 lbs. bag of sand
- 4) A drop test shall be performed at the Initial installation and before being used as fall protection system, wherever relocated, after major repair and at 6-month intervals when left in place. The drop test shall consist of a 400 lbs. bag of sand dropped from the highest walking/working surface, but not less than 42 inches above that level.
- 5) Safety nets shall be inspected at least once a week for wear, damage and deterioration or after any occurrence that could affect the nets integrity. Defective components shall be removed from service.
- 6) Material, scrap, pieces, equipment and tools, which have fallen into net, shall be removed as soon as possible at least before the next work shift.
- 7) Safety net mesh opening shall not exceed 36 square inches not to be longer than 6" on any side, and the opening, measured center-to-center of mesh ropes or webbing, shall not be longer than 6 inches. All mesh crossings shall be secured to prevent enlargement of the mesh opening.
- 8) Each Safety net shall have border rope for webbing with a minimum breaking strength of 5,000 lbs.
- 9) Connections between safety net panels shall be as strong as integral components and shall be spaced not more than 6" apart.

#### **19.11 Scaffolds**

(Refer to Scaffolding Procedure : PR.S1-90-2004.01-3700-013)

A scaffold is defined as any temporary elevated platform constructed of wood, metal, or a combination and its supporting structure used in construction or maintenance as an employee work platform and/or staging area for materials.

##### **19.11.1 General Requirements**

- Designed to support at least 4 times the anticipated weight of workers and materials.
- Suspension scaffolds designed for a working load of 500 pounds should utilize no more than 2 workers at a time. Suspension scaffolds designed for a working load of 700 pounds should have no more than 3 workers at a time.



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- Safe and convenient means of access to the working platform level must be provided. This may be a portable or fixed ladder, a ramp or runway, or a stairway.
- Footings or anchorage must be level, sound, rigid, and capable of carrying the maximum intended load without settling or displacement.
- Brace poles, legs or uprights prevent swaying and displacement.
- Unstable objects such as barrels, boxes, loose bricks, or concrete blocks are not to be used to support scaffolds or planks.
- No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent personnel.
- The use of shore or lean-to scaffold is prohibited.
- When work is being done below a scaffold, overhead protection must be provided no more than 9 feet above the working platform. It must be made of planking or other strong material.
- Any scaffold or component of a scaffold that is weakened or damaged must be replaced or repaired immediately.
- Slippery conditions on scaffolds must be eliminated as soon as they occur.
- All load carrying timber member of scaffolds shall be a minimum of 1500 fiber (stress-grade) construction grade lumber.
- Wire, synthetic, or fiber rope should be capable of supporting at least 6 times the rated load and should be inspected before each use.

##### **19.11.2 Training Requirements**

All employees who perform work on a scaffold will be trained by a person qualified (Competent Person) in the subject matter to recognize the hazards associated with the type of scaffolding being used. Training will also cover procedures to control or minimize those hazards. Training shall also include the seriousness of scaffold hazards such as;

- Falls
- Unsafe Access
- Falling Objects
- Electrocutation
- Structure Collapse



#### 19.11.3 Competent Person

Scaffolds will be erected, moved, dismantled, or altered only under the supervision and direction of a qualified competent person. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.

Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees and who has the authorization to take corrective measures to eliminate them.

#### 19.11.4 Inspection

All scaffolds will be inspected by a Competent Person prior and during their erection. Daily inspections will be made by the Competent Person, prior to any employee accessing the scaffold to perform work. Weekly (Special) inspections will be made by the Competent Person, when circumstances warrant such as

- High Winds
- Freeze/Thaw Conditions
- Heavy Rains
- Snow/Sleet
- Structure Modifications

#### 19.11.5 Falling Object Protection

To protect employees from falling hand tools, debris, and other small objects, install toeboards, screens, guardrail systems, debris nets, catch platforms, canopy structures, or barricades. In addition, employees must wear hats.

#### 19.12 Aerial Lifts

Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to job sites above the ground: extensible boom platforms, aerial ladders, articulating boom platforms, and vertical towers.

It is the company's policy that all aerial lifts will be considered scaffolds and must comply with general company policy with regards to scaffolds and specific OSHA and/or legal requirement requirements for each type of aerial lift as well as any recommendations of the manufacturer of the device.



#### 19.13 Trenching and Excavation Safety

All excavation and trenching work practices must conform to the applicable government requirements. Excavations greater than 1.5 meters in depth must be properly supported or sloped and have the necessary access ladders prior to entry by personnel.

The location and cover of any pipeline or other buried fittings, lines, cables, conduit or other structures shall be established, with the location adequately marked prior to starting the excavation work. All buried components must be hand exposed by a competent worker before any stripping or excavating work is done within one meter of the marked location. All hazards that could result in worker injuries are to be removed or controlled.

Trenching operations shall be done in strict accordance with the regulations, with frequent consulting with their site engineer, relative to ground stability, sloping and shoring requirements. These regulations shall be strictly enforced by CONTRACTOR.

Excavation slopes or shoring must be inspected daily or more frequently if required and must be determined to be sound.

The sides of an excavation must be trimmed or scaled to remove any loose material that could endanger workers.

A level area extending 1 meter back from the edge of the trench must be maintained free of materials and equipment.

##### 19.13.1 General Program Requirement

- Employees who work in or around excavations must be provided training according to their work.
- The excavation or trench must either be sloped or supported as required to comply with OSHA and/or legal requirements.
- Traffic around the site must be controlled, and barricades, signs, and/or flag persons used as needed to control both vehicular and pedestrian traffic.
- Utilities on the site must be protected and suitable precautions taken if any utility will be disturbed by the work.
- Employees must use required personal protective equipment (PPE).
- Each job site covered by this program must appoint one or more competent person(s) to ensure compliance with this program.

Excavation work may involve safety hazards not addressed by this program including:



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- Work conducted on or around electrical utility systems;
- Work that may impact existing utilities that may need to be locked and tagged out using procedures from the Lockout/Tagout Program;
- Work conducted in areas where hazardous atmospheres or gases could accumulate (e.g. landfills, manure pits, gas distribution lines, or hazardous materials storage locations) covered under the Confined Space Program;
- Work associated with electric power generation, transmission and distribution systems;
- Fall hazards covered under the Fall Protection Program.

**19.13.2 Excavation Permit procedures**

Project site's Permit that was approved should be clearly displayed and available in each location for inspection whilst work is being undertaken by contractor and/or subcontractor.

**19.13.3 Hazards**

**Surface Encumbrances**

All equipment, materials, supplies, permanent installations (e.g. buildings, roadways), trees, brush, boulders, and other objects at the surface that could present a hazard to employees working in the excavation must be removed or supported, as necessary, to protect employees.

**Under Ground Installations**

The location of sewer, telephone, fuel, electric, and water lines as well as any other underground installations that may be encountered during excavation work must be located and marked prior to opening the excavation. The Competent Person must make arrangements as necessary with the appropriate utility agency for the protection, removal, shutdown, or relocation of underground installations.

If it is not possible to establish the exact location of underground installations, the work may proceed with caution provided detection equipment or other safe and acceptable means (e.g. using hand tools) are used to locate the utility as the excavation is opened and each underground installation is approached.

Excavation work will be conducted in a manner that does not endanger underground installations or employees engaged in the work. Utilities left in place must be protected by barricades, shoring, suspension, or other means as necessary to protect employees.



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**Access and Egress**

Stairs, ladders, or ramps must be provided where employees are required to enter trench excavations four feet or more in depth. Stairs, ladders, and ramps, where used, will be in accordance with the Stairways and Ladders Program. The maximum distance of travel in an excavation to a means of egress will not exceed 25 feet.

**Vehicular Traffic**

Employees exposed to vehicular traffic must be provided with, and will wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material. Warning vests worn by flagmen must be red or orange and be of reflectorized material if worn during night work.

**Falling Loads**

No employee will be permitted underneath loads handled by lifting or digging equipment. Employees will be required to stand away from any vehicle being loaded or unloaded. Vehicle operators may remain in the cabs of vehicles being loaded or unloaded when the vehicle provides adequate protection for the operator during loading and unloading operations.

**Mobile Equipment**

When mobile equipment is operated adjacent to the edge of an excavation, a warning system will be used when the operator does not have a clear and direct view of the edge of the excavation. The warning system must consist of barricades, hand or mechanical signals, or stop logs. If possible, the surface grade will slope away from the excavation.

**Water Accumulation**

Employees will not work in excavations that contain or are accumulating water unless precautions have been taken to protect employees from hazards posed by water accumulation. The precautions taken could include, for example, special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines.

If water is controlled or prevented from accumulating by the use of water removal equipment, a person trained in the use of the equipment must monitor the water removal equipment and operation.

If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means will be used to prevent surface water from entering the excavation. Precautions will also be taken to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains must be reinspected by the Project Manager to determine if additional precautions should be taken.



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**Adjacent Structures**

Support systems (such as shoring, bracing, or underpinning) will be used to assure the stability of structures and the protection of employees where excavation operations could affect the stability of adjoining buildings, walls, or other structures.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees will not be permitted except when:

- A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or
- The excavation is in stable rock; or
- A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
- A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

Sidewalks, pavements and appurtenant structures will not be undermined unless a support system or other method of protection is provided to protect employees from the possible collapse of such structures.

Where review or approval of a support system by a registered professional engineer is required, review and approval in writing before the work is begun.

**Loose Rock or Soil**

Adequate protection must be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection will consist of:

- Scaling to remove loose material;
- Installation of protective barricades, such as wire mesh or timber, at appropriate intervals on the face of the slope to stop and contain falling material; or
- Benching sufficient to contain falling material.

Excavation personnel will not be permitted to work above one another where the danger of falling rock or earth exists.

Employees must be protected from excavated materials, equipment or other materials that could pose a hazard by falling or rolling into excavations.

- Protection will be provided by keeping such materials or equipment at least 2 feet from the edge of excavations, by the use of restraining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.



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- Materials and equipment may, as determined by the competent person, need to be stored further than 2 feet from the edge of the excavation if a hazardous loading condition is created on the face of the excavation.
- Materials piled, grouped or stacked near the edge of an excavation must be stable and self-supporting.

**Fall Protection**

Barricades, walkways, lighting and posting must be provided as necessary prior to the start of excavation operations.

Guardrails, fences, or barricades must be provided on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Warning lights or other illumination must be maintained as necessary for the safety of the public and employees from sunset to sunrise.

Wells, holes, pits, shafts, and all similar excavations must be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type will be backfilled as soon as possible.

Walkways or bridges protected by standard guardrails must be provided where employees and the general public are permitted to cross over excavations. Where workers in the excavation may pass under these walkways or bridges, a standard guardrail and toe board must be used.

**19.13.4 Inspections**

The competent person will conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection will be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections will also be made after each hazard changing event (e.g. rainstorm). These inspections are required when the excavation will be or is occupied by employees.

Where the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees will be removed from the hazardous area until precautions have been taken to assure their safety.

The competent person will maintain a written log of all inspections conducted. This log will include the date, work site location, results of the inspection, and a summary of any action taken to correct existing hazards.



#### 19.13.5 Protection

Each employee in an excavation will be protected from cave-ins by using either an adequate sloping and benching system or an adequate support or protective system.

Exceptions to this are limited to:

- Excavations made in stable rock; or
- Excavations less than four feet in depth where examination of the ground by a Competent Person provides no indication of a potential cave-in.

Protective systems will be capable of resisting all loads that could reasonably be expected to be applied to the system.

### 20 FIRE FIGHTING EQUIPMENT

#### 20.1 Preparing for Hot Work Permit Activities

- 1) When Hot Work must be performed outside of a Non-Permit Required Hot Work Zone, the employee must notify the CCC-JV Supervisor that a Hot Work Permit is needed.
- 2) The employee and CCC-JV Supervisor are responsible for completing the Hot Work Permit
- 3) The employee and the CCC-JV Supervisor must inspect the Hot Work Zone to evaluate whether the Hot Work activity can be safely conducted.
- 4) The CCC-JV Supervisor or designee will perform a combustible gas test before issuing a Hot Work Permit where flammable gases may be present.
- 5) The CCC-JV Supervisor or designee in charge of the work shall check to see that;
  - There are not other work in the area can cause an unexpected release of flammable or hazardous materials.
  - The equipment and 5-meter radius the working place have no flammable fuels prevailing which can spread out extensively.
  - Where equipment has contained flammable liquids or vapors, or other hazardous materials, measure of protection must be taken (i.e., blinding, cleaning, venting, and disconnection) to ensure that no flammable liquids or vapors or hazardous materials enter the Hot Work area.
  - Oil sump, oil containers are firmly closed.
  - The quantity of hydrocarbons (gas) was check and measure lower than 0% LEL.
  - The equipment and tools for use in working are in the state of safety and are appropriate



- Fire extinguishing equipment and materials are sufficient in number and amount, ready for use.
- 6) At least two 20 pound (9 kilograms) fully charged ABC portable fire extinguisher (or other appropriate fire extinguishing equipment) shall be in the vicinity for immediate use. An employee shall be designated as "fire watch" during the Hot Work activity and for 30 minutes after work is completed. Fire extinguishers must be returned to their proper location when the work is completed or at the end of the day.
  - 7) Where welding or cutting is performed overhead and hot material may fall to the ground, precautions should be taken to ensure that molten metal, sparks, and slag do not fall to floors below. The area below should be barricaded or roped off to prevent people from walking underneath.
  - 8) Gas cylinders shall be secured upright, and kept away from molten metal and slag, while in use, with cylinder caps in place when cylinders are not in use. When used for welding, the main valves of these gases must be shut off when not in use.
  - 9) Where precautions are required, the hot work permit shall include details of specific action, test and work methods required ensuring the safety of the persons performing the work and the integrity of the system.
  - 10) The CCC-JV Supervisor or designee is responsible for issuing and approving a Hot Work Permit. The Hot Work Permit shall not be signed until all appropriate preparations, as identified above, are made.
  - 11) A Hot Work permit is only valid for one shift and one job. If the permitted activity carries over onto another shift or another individual, another permit shall be issued with the same degree of inspection and control as the preceding shift.
  - 12) The CCC-JV Supervisor or designee is responsible for assigning a Fire Watch.

#### 20.2 Performing Hot Work

- Personnel performing the work are responsible for checking a Hot Work Permit to see if it is current, valid, and properly signed. Work shall not begin if any signatures are missing, or the permit is incomplete.
- The permit shall remain accessible or posted within the job area and can be clearly seen until all work is completed.
- The Fire Watch will monitor for fires in the Hot Work zone during the whole time the Hot Work activity is conducted and for 30-minutes following completion of the Hot Work.
- The Fire Watch will have a fire extinguisher immediately accessible while Hot Work is being conducted. Dedicated extinguishers should be used for fire watch only.
- If the Fire Watch observes a potential fire hazard or conditions change, he will notify the personnel conducting the Hot Work activity to stop working. The Fire Watch will notify the CCC-



7th GAS SEPARATION PLANT PROJECT  
SAFETY AND HEALTH PROCEDURE



JV Supervisor or designee of the potential hazard. The Fire Watch will respond to a fire within the limits of his emergency response training and the capacity of the equipment available. If the Fire Watch does not have adequate training or equipment to respond to a fire, he will sound the fire alarm and notify the emergency response team of the fire.

- The fire watch will report all fires and use of the fire extinguisher to the CCC-JV Supervisor or designee as soon as possible.

### 20.3 Completion of Hot Work

- Work area and all adjacent areas where sparks might have spread shall be inspected for at least 30 minutes after the work is completed by the Fire Watch to ensure no fire hazards exist.
- Once the 30-minute watch is complete, the Fire Watch will sign the Hot Work Permit and return it to the CCC-JV Supervisor or designee.
- If a Fire Watch was not applicable, the CCC-JV Supervisor or designee upon completion of the work shall sign the Hot Work Permit.

### 20.4 Work permit will be immediately invalid when.

- Not start working within two hours from the indicate in permit or stop doing the job continuously more than two hours.
- The situation or the actions may cause severe or major danger.
- There have an emergency alarm, site emergency.

### 21 SHE TOOLBOX MEETING

GSP7 and his subcontractors shall conduct a minimum 10 minute daily toolbox meetings with their crew prior to the beginning of each shift. Meeting agenda shall include but not limited to :

- Discuss safety items from the previous day;
- Pre-plan for safety for the commencement of the present shift;
- Action to be taken according to position in case of Emergency;
- discussion of disciplinary procedures for failure to comply with safety policies
- Discuss housekeeping;
- Check for defective tools;
- Check ladders and scaffolds, etc.

A log of Tool Box Talks must be kept in accordance with the form that follows. One copy should be kept by jobsite management and the other kept on the file in the home office by jobsite location.



7th GAS SEPARATION PLANT PROJECT  
SAFETY AND HEALTH PROCEDURE



## 22 HAZARD COMMUNICATIONS

The Hazard Communication is responsible to insure the Companies Hazard Communication Program complies with the OSHA Hazard Communication Standard 29 CFR 1926.59 (1910.1200) including but not necessarily limited to the following:

- Maintenance of the company's written hazard communication policies
- Insuring the proper labeling of all hazardous substances
- Preparing a chemical inventory for the Company office and each specific job site
- Acquiring and maintaining the Material Safety Data Sheets (MSDS) including the Company's master copy of all worksite copies
- Prior to the start of work at a specific job site, insuring the specific MSDS sheets are available for each hazardous substance
- Notifying all subcontractor's of their requirements to comply with the OSHA Hazard Communication Standard and supplying the material safety data sheets (MSDS).
- Insuring each CCC-JV's employee receives the appropriate Hazard Communication training
- Insuring employees receive prompt replies to their requests for information of chemical hazards they may be exposed to within the workplace









## 23 GOLDEN RULES

	Work with a valid work permit when required.
	Protect yourself against a fall when working at height.
	Do not work until all power is secure. Follow prescribed Lockout/Tagout Procedure.
	Seat belt must be worn.
	Personal protective equipment must be worn on site.
	Certified operator needed on site for special equipment.
	High Visibility Cloth or Vest must be worn on site.
	Do not smoke outside designated areas.
	No alcohol or drugs while working or driving.



**7th GAS SEPARATION PLANT PROJECT**  
**SAFETY AND HEALTH PROCEDURE**



	While driving, do not use your phone and do not exceed speed limits.
	Do not enter a confined space without authorization.
	Do not violate rules, regulations and procedures.
	Do not work in the ditch without authorization and appropriate safety protection.
	Do meet the requirement of OWNER/Consultant and relevant organization and appropriate safety protection while working near overhead line.
	First Aid trains and facilities must be provided.
	In case of an emergency, please contact your linear responsibility person.
	Do not cook on site

## ภาคผนวก ข-26

นโยบายด้านความปลอดภัย อาชีวอนามัย และ  
สิ่งแวดล้อมของผู้รับเหมาหลัก







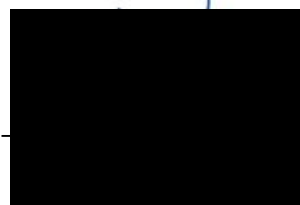
## **SHE PROMISE & POLICY**

SHE is always a matter of highest priority and concern of 7th Gas Separation Plant Project (GSP7). The project shall be implemented in accordance with the requirements of SHE Management Plan and Safety and Health Procedure to protect employees, subcontractor personnel, facilities and other relevant personnel. GSP7 project management team promises that GSP7 shall:

- Obey the Laws and Regulations of Thai government. Ensure that every GSP7 employee and subcontractor's employee understands the SHE intentions and aspirations of continuously improving performance. The work shall be performed in accordance with the standards demanded by Thai Laws and Regulations;
- Clarify the SHE responsibilities of each level of the project organization;
- Provide necessary resources to achieve the effective implementation of SHE management. Establish SHE organization and ensure that the project shall be under the effective supervision and control at all times;
- Protect the cultural relic and respect the local custom and culture;
- Focus on SHE education and trainings to form an awareness of Safety, Health and Environment.

All the staff, employees and GSP7's subcontractors shall perform the responsibility to ensure that the promise on the Safety, Health and Environment be strictly implemented.

Signature of Project Manager



## ภาคผนวก ข-27

เอกสารตัวอย่างข้อกำหนดด้านความปลอดภัยของ  
สัญญาจ้างผู้รับเหมา





**PTT PUBLIC COMPANY LIMITED**

**7<sup>th</sup> GAS SEPARATION PLANT PROJECT**

**ITB**

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**PART C PROJECT REQUIREMENTS**

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Appendix B	Topographical Survey Report
Appendix C	Transportation Study Report
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Representative and is in compliance with Thailand's Laws, approved EIA report and local authorities. CONTRACTOR is responsible to PTT for the implementation and enforcement of this EMP. The most stringent guideline, codes or standards shall be applied.

The station, pipelines, structures, piping, safety protection systems, environmental/pollution control systems, storage vessels and appurtenances shall be designed, constructed and tested in accordance with all SHE related applicable government and local laws, regulations, standards and guidelines. From all guidelines and standards, the most stringent should be applied.

The Safety, Health and Environment (SHE) requirements illustrated below are the minimum requirements that PTT absolutely expect CONTRACTOR and SUBCONTRACTOR to fulfill their SHE performance entire the project.

Some PTT documents or engineering standards have been referred below. In these PTT documents or standards, some Thai Legislations or Regulation numbers have been given as examples. CONTRACTOR shall identify in his SHE plans or procedures all the Thai Legislations or Regulations he need to comply with in order to execute this project, and ensure to use the latest releases and data of these legislations or regulations. The latest one will supersede.

## 9.1 Project SHE Plan Requirements

### 9.1.1 SHE Plans

CONTRACTOR shall issue Project SHE Management Plans to PTT/CONSULTANT/ for approval within one month following AWARD OF CONTRACT. These plans shall include but not limited to:

- Project Description and Engineering Information
- Project Description and Engineering Information
- Design safety plan
- SHE management system manual (SHEM)
- Environmental Management Plan (EMP) including monitoring
- Safety and Health Management Plan (SHMP)
- Safety Health and Environmental Execution Plan
- Project Regulatory Management Plan
- SHE Management Organization (SHE Management Resumes)
- Risk Management Plan

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- Emergency Preparedness, Response and Contingency Plan
- Project Community Affairs Plan
- Worksite SHE plan
- SHE Engineering and Project Management Specification Compliance Statement
- SHE Evaluation, Audit and Review (Format and contents)
- Safety, Health and Environmental (SHE) Performance Report (Format and contents)
- Waste Management Plan

The Plans shall detail the implementation of all SHE aspects and shall be in accordance with Thai Legislation, EIA Requirements, the Project requirements and PTT Specifications including:

- PH-90-02: SHE Prequalification Expectation
- PH-90-01: Worksite HSS Requirement
- PH-91-01: Worksite Environment Requirement

Management Plan.

- PR-91-01: Environment Management Plan

Part C, PROJECT REQUIREMENTS, Section II, Project Execution and General Requirements, Appendix F, Environmental Impact Assessment – Mitigation Requirements

Part C, PROJECT REQUIREMENTS, Section II, Project Execution and General Requirements, Appendix G, SHE Instruction for CONTRACTOR

The CONTRACTOR's Environmental Plan shall take account of mitigation measures during Construction required in the EIA report and the EXISTING Gas Separation Plant being ISO 14001 approved with respect to its Environmental Management System.

#### 9.1.2 SHE Resources

CONTRACTOR shall provide a qualified full-time SHE Manager, an Environmental Specialist, and sufficient Safety Officer(s) as specified in PH-90-01 and PH-91-01, exclusively dedicated to safety, security health and environment matters, during the entire Work. CONTRACTOR shall nominate a competent and experienced Design SHE Engineer to coordinate and monitor the required design SHE activities. CONTRACTOR shall submit all CVs of such manager, specialist and officer(s) to PTT and CONSULTANT for approval at least 30 days prior commencing the works. The manager, officer and specialist shall provide advice and direction to CONTRACTOR's employees. The manager, officer and specialist will report to the most senior person on Site.

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9.1.3 Monthly Report

A monthly report shall be issued by the CONTRACTOR no later than the 7<sup>th</sup> day of each month. It shall cover all SHE issues and its performance including reporting on progress, reviews, action close out, areas of concern and incidents, mitigation measure implementation and monitoring records required in the EIA report. The CONTRACTORS performance shall be assessed against Project SHE Key Performance Indicators (KPI's)

9.2 Design SHE

9.2.1 General

CONTRACTOR shall be responsible for ensuring that the facilities designed by himself and SUBCONTRACTORS, comply with the approved standards codes and specifications and are engineered in accordance with the concepts and design principles intended by the process designers, and shall take every step to make certain that it understands these concepts and principles. If there is any area of doubt about what is intended, CONTRACTOR shall raise the matter with PTT/CONSULTANT.

CONTRACTOR shall notify PTT/CONSULTANT of any aspect of the process design, which it considers unsafe. CONTRACTOR shall be responsible for ensuring that all the systems within his scope are safe and are constructed, commissioned and ready for INITIAL ACCEPTANCE in accordance with PTT/CONSULTANT documents and drawings provided.

CONTRACTOR shall be responsible for ensuring that all PTT/CONSULTANT's comments made on drawings, documents and during the SHE reviews are incorporated and are in accordance with the PROJECT REQUIREMENTS and all applicable government and local authority regulations. Any modifications required, because of the SHE reviews shall be carried out immediately by CONTRACTOR and shall not constitute a CHANGE IN THE WORK.

PTT requires the PLANT and all systems forming part of it is engineered, constructed, commissioned with safety, health and environment as a prime consideration. The safety of all personnel, whether constructors, operators, maintenance workers or others, shall be considered at all stages of the design, and action shall be taken to ensure the safety of all personnel during construction, commissioning, operation and maintenance of the PLANT. The PLANT shall be engineered to minimize any damage or loss, which might occur following a loss of containment, or any other operating upset.

A project Design Safety Plan shall be submitted within one month after the contract awarded. All comments from PTT/CONSULTANT, if any, shall be incorporated in and the Design Safety Plan shall be re-issued.



**9.2.2 Health, Safety and Security Specification**

CONTRACTOR shall comply with the Safety, Health and Security Management and Engineering Specification - Document No: PH-90-01: Worksite HSS Requirement, ES-90.06: Health Safety and Security Specification and ES-91.04: HSE Legislation. The Specification includes (but is not limited to):

- Philosophy and specification of the various Fire & Gas, Shutdown and Safety Systems
- Personnel Protection
- Ergonomics
- Noise levels
- Security

One (1) month prior to the start of Construction Work, CONTRACTOR shall submit relevant Safety and Health procedures to PTT for reviews and approval.

The following SHE Design Safety Reviews as a minimum shall be carried out by CONTRACTOR:

- HAZOP (Hazard and Operability) Studies
- Safety Integrity Level (SIL) Determination
- Plot Plan Review
- Constructability Review
- QRA (Quantitative Risk Assessments) Review
- Fire Protection Review (Process, utility and building area)
- 1/3rd and 2/3rd 3D Model Review
- Hazardous Area Classification Review
- Final Design Safety Review
- Pre-Start up Safety Review

**9.2.2.1 Preliminary Safety Reviews conducted at FEED stage**

A number of preliminary safety reviews, e.g. Preliminary Plot Plan Review, Preliminary Constructability Review were conducted by PTT/CONSULTANT at the FEED stage. Some actions raised from these reviews have been closed out by PTT/CONSULTANT. CONTRACTOR shall close out all the outstanding actions satisfactorily during detailed engineering design. CONTRACTOR shall update and re-issue these preliminary safety review reports with information of actions closeout before start of the relevant detailed engineering safety reviews at EPC stage.

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## ภาคผนวก ข-28

เอกสารขึ้นทะเบียนเจ้าหน้าที่ความปลอดภัย





## รหัสประจำตัวเจ้าหน้าที่ความปลอดภัยในการทำงาน

วันที่ 4 เมษายน 2565

สำนักงานสวัสดิการและคุ้มครองแรงงานจังหวัดระยอง ได้รับแจ้งขึ้นทะเบียนเจ้าหน้าที่ความปลอดภัย

บริษัท กิจการร่วมค้า ซีพีพี-ซีพีพี-ซีพีอีซีซี

(รับเหมางานในบริษัท ปตท. จำกัด มหาชน โครงการโรงแยกก๊าซธรรมชาติ หน่วยที่ 7)

โดยแจ้งขึ้นทะเบียนเจ้าหน้าที่ความปลอดภัยในการทำงาน ระดับ วิชาชีพ

จำนวน 1 คน

ลำดับที่	ชื่อ-สกุล	เลขรหัส จป.
1	นายสุเทพ โตอัจฉริยะวงศ์	กสร.จป.ว 221-005007

**หมายเหตุ** ให้นายจ้างแจ้งรหัสประจำตัวหรือถ่ายสำเนาให้ จป.ให้ทราบเลขรหัส กรณีมีการเปลี่ยนแปลงให้ดำเนินการ ดังนี้ :-

1. กรณีจป.เปลี่ยนสถานที่ปฏิบัติงานหรือเปลี่ยนระดับ ให้บริษัทฯ แจ้งออกหรือจป.แจ้ง ระบุวันที่ออก ณ สำนักงานฯ ภายใน 15 วัน
2. ถ้ามี จป. คนใหม่ให้ดำเนินการแจ้งขึ้นทะเบียน ภายใน 15 วัน นับแต่วันที่แต่งตั้ง (ถ้าจป.เคยแจ้งขึ้นทะเบียนมาก่อนแจ้งด้วย)

**กลุ่มงานสวัสดิการและคุ้มครองแรงงานจังหวัดระยอง พื้นที่ 1 (ภารกิจด้านความปลอดภัยในการทำงาน)**

โทรศัพท์ 038-694117-9 ต่อ 115

โทรสาร 038-694117-9 ต่อ 601-602





Certificate Number :55.CA03 -1.1-11

## บริษัท ฮอนเนอร์ เทรนนิ่ง จำกัด

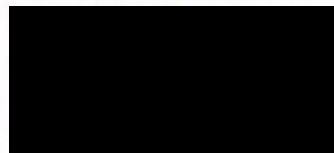
ได้รับการขึ้นทะเบียนจากกรมสวัสดิการและคุ้มครองแรงงานเลขทะเบียนที่จป. ๕๔-๐๒๒  
มอบบัตรนี้ไว้เพื่อแสดงว่า

**นางสาวสมหญิง บุญทอง**

ผ่านการฝึกอบรมหลักสูตร เจ้าหน้าที่ความปลอดภัยในการทำงาน ระดับ เทคนิค  
ตามกฎหมายกำหนดมาตรฐานในการบริหารและการจัดการด้านความปลอดภัยอาชีวอนามัยและสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๕๙

ระหว่างวันที่ ๒๑ - ๒๓ เดือน มีนาคม พุทธศักราช ๒๕๕๕

ให้ไว้ ณ วันที่ ๒๓ เดือน มีนาคม พุทธศักราช ๒๕๕๕



กรรมการผู้จัดการ

Honer Training Co.,Ltd.

222/147 Moo 6, Tambon Pala, Amphur Ban Chang, Rayong 21130 Tel: 038-631001-2 Fax: 038-631003

## ภาคผนวก ข-29

ตัวอย่างเอกสารการวิเคราะห์ความเสี่ยงในที่ทำงาน  
(Risk Assessment and Job Safety Analysis)



Date May 12, 2022

Total items

[illegible]



Risk Description and Controls				Initial Risk				Risk Treatment Plan and Residual Risk						Review and Monitor (Ongoing Risk Management)			
Risk No.	Works Activity	Hazard	Existing controls	Consequence	Likelihood	Initial Risk	Opp/ Threat	Risk treatment plan	Consequence	Likelihood	Residual Risk	Action Party	Due date	Risk status	Risk (Current)	Days to Due Date	Comments
3.5	Install PVD	Worker injure during install PVD	Assign the work to competence worker and rig operator	Moderate	Possible	Medium			-	-	Low	-		-		-	
			Operator to always concentrate on the work														
3.6	Install PHD and drainage system	Worker injure from hand tool	Assign the work to competence worker and always reminding	Insignificant	Possible	Low			-	-	Low	-		-		-	
			Ensure safety sling to be provided for high pressure hose														
3.7	Install Geotextile & Geomembrane	Worker injure from heating welding machine	Wearing glove at all times.	Insignificant	Possible	Low			-	-	Low	-		-		-	
		Electrical shock from cable damage of sewing machine	Daily visual check of cable condition by safety officer.	Major	Possible	High		Strictly monitor and confirm all existing controls in place			Low						
			To ensure ELCB at MDB panel														
3.8	Install air suction and water hose	No major hazard	Apply gernerall mitigation	Insignificant	Possible	Low			-	-	Low	-		-		-	
3.9	Electrical cable wiring and connection	Electric shock hazard	Ensure cable type and connector water proof, ELCB, connection point away from water	Major	Possible	Medium			-	-	Low	-		-		-	
3.10	Vacuum pumping and monitoring	Fire at pump system	High temperature sensor, alarm and shutdown system	Insignificant	Likely	Low			-	-	Low	-		-		-	
4	Admin Building			-	-	-			-	-	-	-		-	-	-	
4.1	Equipment mobilization and installation	Damage to overhead cable	Ensure maximum height of equipment during transportation not over 4.50 m.	Insignificant	Unlikly	Low		Remind vendor about vertical limit height (4.50 m.) at site entrances	-	-	Low	-		-		-	
		Lifting hazard during installation	Provide lifting supervisor, signalman, rigger and operator according to law requirement and full time safety officer monitoring, lifting equipment & gears to be inspected before use	Minor	Unlikly	Low					Low						
		Pilling rig failure	Inspect and testing by qualified mechanical engineer and certificate prior to use	Minor	Unlikly	Low					Low						
		Pile transportation impact to public safety	Route transport to be planned and notified to concerned authorities	Insignificant	Possible	Low					Low						
4.2	Pile Driving	Man injure from Pile falling	Provide crane to assist pile lifting and taling	Major	Likely	Very High		Strictly monitor and confirm all existing controls in place	-	-	Low	-		-		-	
		Man injure from form piling rig movement	Provide warning light and sound while the rig movement	Major	Likely	Very High		Strictly monitor and confirm all existing controls in place			Low						
			Provide warning barricade and signs														
		Noise impact to operator and workers	Provide ear muffs or ear plugs including warning signs	Insignificant	Almost certain	Medium					Low						
4.3	Excavation and pile head cutting	Man injure from excavator movement	Provide watchman or spotter, excavator to be installed warning light	Major	Likely	Very High		Strictly monitor and confirm all existing controls in place	-	-	Low	-		-		-	
		Slipping hazard	Safe accessses with handrail and secured	Insignificant	Almost certain	Medium					Low						
		Man injure during pile head cutting	Proper PPE (safety glasses, face shield, ear plugs)	Minor	Likely	Medium					Low						
			Cutting machine with guard protection and inspection before use														
			Use excavator to hold cutting section during pile head cut														
		Noise impact to workers	Proper PPE for hearing protection	Insignificant	Likely	Low					Low						
		Dust impact	Cutting by wet process, provide PPE for workers	Insignificant	Likely	Low					Low						
		Man injure from protuding re-bar	Install rubber material to cover the re-bar	Minor	Possible	Medium					Low						
		Flooding in excavated area	Provide temporary sump pit and pumping	Insignificant	Possible	Low					Low						
4.4	Form work, re-bar work for footing	Man injure from hand tool	Do not horseplay when working, provide proper PPE for the work	Insignificant	Likely	Low			-	-	Low	-		-		-	
		Man injure from re-bar cutting or bending machine	Provide machine guarding and operating machine by experience person only, emergency shut off switch may be required	Moderate	Likely	High		Strictly monitor and confirm all existing controls in place			Low						
		Man injure from protuding re-bar	Install rubber material to cover the re-bar	Insignificant	Likely	Low					Low						
4.6	Concrete pouring for footing	Concrete truck turn-over	Provide bankman or flagman for concrete truck stopping point, superviosr to check ground condition do not close to edge of excavation	Minor	Likely	Medium			-	-	Low	-		-		-	
		Concrete waste and scrap	Provide specific concrete truck cleaning area including concrete waste storage, and periodically clean-up, provide barricade and warning signs	Insignificant	Likely	Low			-	-	Low	-		-		-	



# JSA-FORM

JSA No. \_\_\_\_\_

## การวิเคราะห์การปฏิบัติงานเพื่อความปลอดภัย (JOB SAFETY ANALYSIS RECORD SHEET)

เขียนวันที่/Filling Date: 7/4/2565 เวลา/Time 13.00น.  
พื้นที่ขออนุญาตทำงาน/ Permit Area: \_\_\_\_\_

### สถานที่ปฏิบัติงานและรายละเอียดงาน/Location and scope of work:

สถานที่ปฏิบัติงาน/Location of work: PTT GSP 7

รายละเอียดงาน/Scope of work: ดอกเส้าเข็มด้วยปั้นจั่น PD

#	ขั้นตอนการทำงาน Major Step of Work	อันตรายที่อาจเกิดขึ้นได้ Potential Hazards	ข้อแนะนำเพื่อการปฏิบัติ Safety Mitigation
1.	ก่อนเริ่มปฏิบัติงาน	1.1 ความไม่เข้าใจกฎระเบียบความปลอดภัยในการทำงาน	- ต้องผ่านการอบรมก่อนเริ่มทำงาน - ก่อนเริ่มงานหัวหน้างานต้องอธิบายชี้แจงรายละเอียดของงานให้ผู้ปฏิบัติงานทราบทุกเข้าก่อนเริ่มงาน (pre-start meeting)
2.	ขนย้ายเครื่องจักรเข้าพื้นที่	2.1 ปันจั่นอาจล้ม หัก เฉี่ยว ขน 2.2 Mobile crane อาจล้ม หัก เฉี่ยว ขน	- ปิดกั้นพื้นที่ ห้ามผู้ไม่เกี่ยวข้องเข้าพื้นที่การปฏิบัติงาน พร้อมติดป้ายเตือน - ขณะเคลื่อนย้ายปั้นจั่น จัดให้ผู้ให้สัญญาณ ตลอดระยะเวลาการเคลื่อนที่ - ตรวจสอบมุมชาร์จของปั้นจั่นรถเสียบ ก่อนทำการยก และจัดทำแผนการยกเส้า (Lifting plan)
3.	ตั้งมุม ล็อคขาค้ำยัน ประกอบเส้า	3.1 มุมอาจล้ม ตก หัก ผู้ปฏิบัติงาน 3.2 ขาค้ำยันอาจหนีบ มือ ผู้ปฏิบัติงาน 3.3 สลักอาจหนีบ กระแทกมือ ผู้ปฏิบัติงาน 3.4 Mobile crane อาจล้ม หัก เฉี่ยว ขน	- ตรวจสอบสภาพ ระบบการทำงาน การรั่วไหล ของไฮดรอลิคยกมุมก่อนเริ่มทำการยกมุมตั้ง / ตรวจสอบขาข้างติดตั้งแผนรองขาให้เรียบร้อย - จัดให้มีการสวมใส่ PPE ให้เหมาะสมกับความเสี่ยง เช่น หมวกนิรภัย รองเท้านิรภัย แวนดา ถุงมือ เสื้อสะท้อนแสง - ตรวจสอบมุมชาร์จของปั้นจั่นรถเสียบ ก่อนทำการยก และจัดทำแผนการยกเส้า (Lifting plan)
4.	วิศวกร ตรวจสอบ พร้อมออกเอกสารรับรอง (ปจ.2)	4.1 อาจตก ล่วงหล่น จากที่สูง (ขึ้นตรวจบนปั้นจั่น) 4.2 สลิงอาจ หนีบ บาด ทิ่มแทง	- จัดให้มีการสวมใส่ PPE ให้เหมาะสมกับความเสี่ยง เช่น หมวกนิรภัย รองเท้านิรภัย แวนดา ถุงมือ เสื้อสะท้อนแสง - ให้มีการสวมใส่ Safety harness ตลอดระยะเวลาการปฏิบัติงานบนที่สูง
5.	ดึงเส้าเข็มเข้าหาปั้นจั่น 5.1 รองกระสอบหัวเข็ม ใส่หมวก พร้อมตั้งและดันเส้าเข็มตั้งตรง 5.2 กดเส้าลงดินเล็กน้อย ทำการเข้ดดึงเส้าเข็มโดยใช้ระดับน้ำ	5.1 สลิงอาจขาด เส้าเข็ม หมวก ล่วงตก หัก ผู้ปฏิบัติงาน 5.2 เส้าเข็มอาจ กระแทก หนีบ ขณะผู้ปฏิบัติงานดันเข็มเข้าจุด 5.3 เส้าเข็มที่กดลงดิน อาจล้ม หัก ผู้ปฏิบัติงานได้รับบาดเจ็บ 5.4 ตุ่มอาจหลุดจากสลิง หรือสลิงขาด ทำให้ตุ้มตก หล่น หักผู้ปฏิบัติงาน	- ตรวจเช็คสภาพสลิงก่อนเริ่มทำการยก ย้ายเส้า จัดให้มีการสวมใส่ PPE ให้เหมาะสมกับความเสี่ยง เช่น หมวกนิรภัย รองเท้านิรภัย แวนดา ถุงมือ เสื้อสะท้อนแสงเครื่องมือต่างๆ - ขณะเคลื่อนย้ายปั้นจั่นเข้าจุดตอก จัดให้ผู้ให้สัญญาณ และห้ามผู้ปฏิบัติงานเข้าใกล้เครื่องจักรในรัศมีการเคลื่อนที่ - ตรวจดูการกดลงดินให้อยู่ในส่วนที่พยางเส้าเข็มได้ใช้ปั้นจั่นช่วยล็อคเส้าเข็มกันล้ม - ตรวจเช็คสภาพสลิง อุปกรณ์ยึดจับสลิง ก่อนการใช้งาน ว่ามีความปลอดภัย พร้อมใช้งาน
6.	การตอกเส้าเข็ม 6.1 เริ่มทำการดึง-ปล่อยตุ้ม ใส่หัวเส้าเข็ม	6.1 สลิงอาจขาดขณะทำการยก-ปล่อยตุ้ม ทำให้สลิงขาด บาดผู้ปฏิบัติงาน 6.2 ตุ่มหลุด ตก หล่น หัก ผู้ปฏิบัติงาน	- ตรวจเช็คสภาพสลิง อุปกรณ์ยึดจับสลิง ก่อนการใช้งาน ว่ามีความปลอดภัย พร้อมใช้งาน - จัดให้มีการสวมใส่ PPE ให้เหมาะสมกับความเสี่ยง เช่น หมวกนิรภัย รองเท้านิรภัย แวนดา ถุงมือ เสื้อสะท้อนแสง อุปกรณ์ป้องกันเสียงดัง



**ภาคผนวก ข-30**

**เอกสารอบรมการปฐมพยาบาลเบื้องต้น**





## 7th GAS SEPARATION PLANT PROJECT



## Basic First Aid Tips



## อาการเจ็บป่วยฉุกเฉิน คืออะไร?

การเจ็บป่วยฉุกเฉิน หมายถึง การได้รับบาดเจ็บหรือมีอาการเจ็บป่วยกะทันหัน ที่มีผลต่อชีวิตหรือการทำงานของอวัยวะสำคัญ จำเป็นต้องได้รับการตรวจและรักษาอย่างทันท่วงที เพื่อป้องกันการเสียชีวิตหรืออาการเจ็บป่วย บาดเจ็บรุนแรงขึ้น

### ลักษณะอาการฉุกเฉินที่ควรโทรแจ้ง 1669

- 1 หหมดสติ ช็อค  
สับสน ลมหายใจไม่รู้สึกตัว
- 2 เจ็บหน้าอก  
หายใจเหนื่อย
- 3 สิ่งแปลกปลอม  
อุดต้นทางเดินหายใจ
- 4 ปากเหมียว  
อ่อนแรงจับพัสัน
- 5 ชักเกร็ง  
ชักกระตุก
- 6 ปวดท้องรุนแรง
- 7 ตกเลือด  
เลือดออก  
ทางช่องคลอด
- 8 เจ็บท้องคลอด  
คลอดฉุกเฉิน
- 9 บาดเจ็บจากอุบัติเหตุ  
เช่น รถชน จมน้ำ  
ไฟฟ้าช็อต ไฟไหม้  
สัตว์มีพิษกัดต่อย

### ขั้นตอนการแจ้งเหตุ 1669





## ขั้นตอนการแจ้งเหตุ 1669 📞



สวัสดีค่ะ คุณรับแจ้งเหตุและสั่งการจังหวัด...  
ดิฉัน.....รับสาย ยินดีให้บริการค่ะ

### กรณี ป่วยฉุกเฉิน

แจ้งเหตุอาการของผู้ป่วย สถานที่เกิดเหตุ

### กรณี บาดเจ็บ อุบัติเหตุ

แจ้งเหตุจำนวนผู้บาดเจ็บ อาการการบาดเจ็บ  
และอันตรายที่เกิดเหตุ



สอบถามข้อมูลเพิ่มเติม (ผู้ป่วยรู้สึกตัวหรือไม่  
อาการ ยาประจำตัว หมายเลขโทรศัพท์ติดต่อกลับ  
และให้คำแนะนำเบื้องต้น ตามความเหมาะสม)

แจ้งอาการเพิ่มเติม ช่วยเหลือเบื้องต้นตาม  
คำแนะนำและรอชุดปฏิบัติการฉุกเฉินมารับผู้ป่วย



สั่งการชุดปฏิบัติการฉุกเฉินตามอาการผู้ป่วย  
และแจ้งว่าได้ส่งชุดปฏิบัติการ  
ออกให้การช่วยเหลือแล้ว



## 5 ขั้นตอน การทำ CPR



เรียกคนช่วย  
และรับแจ้ง 1669



เริ่มการทำ  
CPR ในทันที



กระตุ้นไฟฟ้าหัวใจ  
โดยเร็วเมื่อจำเป็น



ปฏิบัติการช่วยชีวิต  
จากหน่วยกู้ชีพ  
ชั้นสูง



หลังจาก CPR  
ดูแลอย่างใกล้ชิด  
ในโรงพยาบาล

สพด. ทำสำงรณรงคให้ภาาครรัฐและเอกชนเห็นความสำคัญ  
และจัดหาเครื่อง AED ไปติดตั้งยังหน่วยงานหรือสถานที่สาธารณะต่างๆ

## การช่วยฟื้นคืนชีพขั้นพื้นฐาน CPR

1



ประเมินผู้ป่วย ปลอดภัย  
โดยใช้นิ้วกดบนบริเวณไหปลาร้า

2



การขอความช่วยเหลือ  
โทรเรียก 1669 หรือ  
โรงพยาบาลใกล้บ้าน

3



30 ครั้ง  
ด้วยอัตราเร็วอย่างน้อย  
100 - 120 ครั้ง/นาที

การกดหน้าอก สลับการช่วยหายใจ

โดยเป่าลมเข้าปอด  
ให้เห็นพองทรวงอก  
ขยับขึ้น 2 ครั้ง



4

ประเมินซ้ำทุก 2 นาที  
หรือ 5 รอบ



ใช้เครื่องช็อกไฟฟ้าหัวใจอัตโนมัติ  
ทันทีที่พร้อมใช้

ประเมินซ้ำทุก 2 นาที  
หรือ 5 รอบ



1. เปิดเครื่อง



2. เป่าแฟน ▶ วิเคราะห์



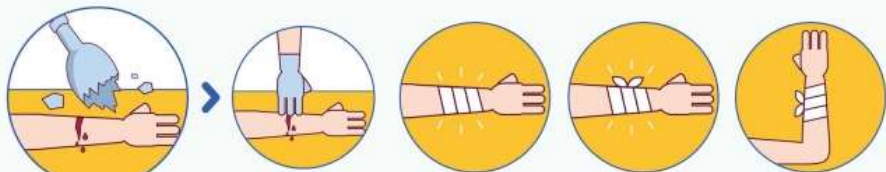
3. ช็อกหัวใจ

## การปฐมพยาบาลเบื้องต้น

### 1. กรณีมีบาดแผล

**?** เป็นการช่วยเหลือเบื้องต้นเท่านั้นที่จะทำได้ ระหว่างรอความช่วยเหลือจาก 1669  
ก่อนจะส่งต่อไปยังสถานพยาบาล

#### แผลฉีกขาด

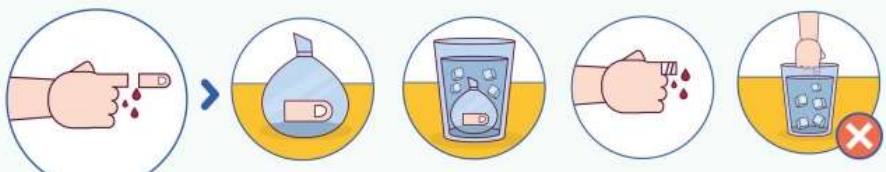


**หลีกเลี่ยงการสัมผัส**  
เลือดของผู้ป่วย  
โดยตรงเพื่อป้องกันการ  
ติดเชื้อ

ทำการห้ามเลือด  
โดยใช้ผ้าสะอาดหรือ  
ผ้าก๊อชปิดบาดแผลไว้  
ไม่หยุดให้ใช้ผ้ายึดพัน  
กับอีกรอบ

กรณีเป็นแผลที่แขน ขา  
และไม่มีกระดูกหัก  
ให้ยกส่วนนั้นให้สูง

#### แผลอวัยวะถูกตัดขาด



เก็บอวัยวะที่ขาดใส่ถุง-  
พลาสติก รัดปาก  
ให้แน่น

แช่ในภาชนะที่  
มีน้ำผสมน้ำแข็ง  
อีกชั้น

ห้ามเลือดบริเวณปลาย  
อวัยวะส่วนที่  
ถูกตัดขาด

ห้ามแช่ลงไปในน้ำแข็งโดยตรง

#### แผลไฟไหม้ น้ำร้อนลวก



ถอดเสื้อผ้าและเครื่องประดับที่ถูก  
เผาไหม้ ออก ถ้าไหม้ติดกับผิวหนัง  
เมื่อถอดอาจมีการดึงรั้ง  
ควรตัดเสื้อผ้าในส่วนนั้นออก

ใช้น้ำสะอาดล้างแผล  
เพื่อทำความสะอาด  
ลดอาการแสบร้อน

ห้ามใช้โลชั่น ยาสีย้อม  
หรือยาปฏิชีวนะ  
ทาบนแผลเพราะปิดกั้น  
การระบายและ  
ห้ามจะดูบวม

## การปฐมพยาบาลเบื้องต้น

### บาดเจ็บที่ศีรษะ



ทำการห้ามเลือด  
ด้วยวิธีปิดแผลโดยตรง

ถ้าเลือดออกมานาน  
ใช้ผ้ายึด พันรัด

คอยสังเกตอาการเปลี่ยนแปลงทางสมอง  
เช่น ซึมลง ระดับความรู้สึกตัวลดลง สับสน  
ปวดศีรษะมาก อาเจียนพุ่ง เป็นต้น

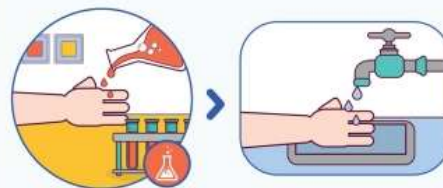
### แผลจากวัตถุหักคา



ห้ามดึงวัตถุที่หักคาออก  
ยึดวัตถุที่หักคาให้อยู่นิ่ง

ห้ามเลือดโดยใช้ผ้าแห้งสะอาด  
ปิดแผลหนาๆ บริเวณรอบวัตถุ

### แผลไหม้จากสารเคมี



ใช้น้ำสะอาดชำระล้าง  
โดยให้น้ำไหลผ่าน เพื่อลดความเข้มข้น  
ของสารเคมีให้ได้มากที่สุด



## การปฐมพยาบาลเบื้องต้น

### แผลกระดูกหัก



กรณีไม่มีบาดแผล ประคบด้วยน้ำแข็งบริเวณที่ปวดบวมผิดรูป เพื่อลดอาการตามกระดูกยึดตรงส่วนที่หักให้อยู่นิ่งมากที่สุด



กรณีกระดูกหักและมีแผลเปิด มีกระดูกโผล่ ห้ามดันกระดูกกลับเข้าที่เด็ดขาด ห้ามเลือดตามขั้นตอนเหมือนแผลจากวัตถุทิ่มแทง

### ภาวะช็อก



ภาวะช็อกอาจเกิดจากการเสียเลือดจำนวนมาก มีอาการเช่น ชีพ ชิด เหงื่อออก ตัวเย็น ชีพจรเบา หายใจเร็ว คลื่นไส้ อาเจียน กระหายน้ำ



จัดทำให้อบอุ่น ยกขาสูง ห่มผ้าให้อุ่น คลายเสื้อผ้าให้หลวม ห้ามให้อาหารหรือน้ำจนกว่าทีมช่วยเหลือจะมาถึง

### กรณีเกิดอุบัติเหตุรุนแรง หรือ ตกจากที่สูง



อาจมีการหักของกระดูกสันหลังได้



ไม่ควรยก หรือเคลื่อนย้ายผู้บาดเจ็บ

## การปฐมพยาบาลเบื้องต้น

### 2. กรณีเจ็บป่วยฉุกเฉิน

### ผู้ป่วยหอบหืด



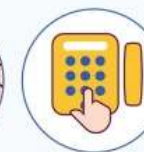
ให้ผู้ป่วยนั่งในท่าที่สบาย คลายเสื้อผ้าให้หลวม



พาไปยังที่อากาศถ่ายเทสะดวก



ถ้าผู้ป่วยมียาพ่นให้พ่นยาที่มืออยู่



หากอาการไม่ดีขึ้น โทรแจ้ง 1669

### ภาวะกล้ามเนื้อหัวใจตายเฉียบพลัน



มีอาการเจ็บแน่นหน้าอก เหมือนมืออะไรกับหรือ บีบรัดนานกว่า 20 นาที



อาจร้าวไปที่ใบหน้า ปวดกราม ร้าวมาถึงสะดือ ปวดจุดแน่น สิ้นเปลืองไปก็แขน ไหล่ จนถึงปลายนิ้ว



อาจมีอาการของระบบประสาท เช่น หายใจเหนื่อย นอนราบไม่ได้ เหงื่อออก ใจสั่น คลื่นไส้ อาเจียน หน้ามืด หมออสติ



เบื้องต้นให้นอนพัก ลดการเคลื่อนไหวโดยไม่จำเป็น และโทรแจ้ง 1669



สังเกตอาการอย่างใกล้ชิด ถ้าพบว่าหมดสติ หยุดหายใจให้กดนวดหัวใจตามวิธีการช่วยฟื้นคืนชีพขั้นพื้นฐาน และโทรแจ้ง 1669 ซ้ำอีกครั้ง



## การปฐมพยาบาลเบื้องต้น

### ผู้ป่วยหมดสติในสมองแตก/ตีบ/ตัน



มีอาการอ่อนแรง ชาบริเวณใบหน้า แขน ขาอ่อนแรง  
หรือชาครึ่งซีกของร่างกาย การพูดผิดปกติ  
เช่น ลิ้นคิปาก ฟุดไม่ชัด อาการมักเกิดขึ้น  
ทันทีทันใด รับโทรแจ้ง 1669 โดยด่วน

เรียกว่ารู้สึกรู้สิด หรือ  
มีการตอบสนองหรือไม่



ถ้าระดับความรู้สึกตัวลดลง หรือไม่รู้สึกตัว นำส่งโรงพยาบาล  
ให้ทันตะแคง ป้องกันการสำลัก ที่ใกล้ที่สุด ภายใน 4 ชั่วโมง

### ผู้ป่วยชัก



วางผู้ป่วยนอนบนพื้น  
ป้องกันอันตราย  
กับสิ่งรอบข้าง



ห้ามกดลิ้น จัดปาก  
หรือยึดตรึงผู้ป่วยขณะชัก  
อาจทำให้เกิดอาการบาดเจ็บ



หลังหยุดชัก  
ดูเส้นทางเดินหายใจ  
จัดให้นอนตะแคงกึ่งคว่ำ