

TPTI APPROVED STANDARDS

Working at Height

Part A : Basic Working at Height

Part B : Rescue at Height

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GLOSSARY

ACOP	Approved Code of Practice
DMF	Department of Minerals Fuels
LOLER	Lifting Operations and Lifting Equipment Regulations
PPE	Personal Protective Equipment
PTW	Permit to Work
SMS	Safety Management System
TPTI	Technical Petroleum Training Institute
WAH	Working at Heights

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Working at Heights

INTRODUCTION

This standard was developed by TPTI in conjunction with a workgroup representing the interests of the offshore oil & gas industry in Thailand.

This document introduces and describes the core competence and safety training requirements for personnel involved in Working at Heights for offshore & onshore Oil & Gas industry in Thailand. It explains how competence shall be assessed and certified.

The industry recognises that a major objective is to prevent incidents occurring, and if they do occur, to control them and minimise their effect. It is important therefore to set common standards and to ensure that they are maintained.

Work at heights is defined as working at a place where there is a potential for a person to sustain injury by falling from one surface to another surface that is not at the same level.

The attainment of competency will require personnel to demonstrate both theoretical knowledge and practical skills. Dependent upon the experience of personnel, the following steps in training and assessment must be undertaken:

1. Basic training and knowledge assessment carried out at a **TPTI** approved training establishment.
2. Ongoing development and skills enhancement.

Due to the variety of the equipment used to work at heights within the industry, and the requirement to train on the specific equipment that will be used on location, this standard will address:

- The generic training to be covered when conducted in a **TPTI** approved training centre.

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Part A : Basic Working at Height

A.1 Target Group

This program is designed to meet the initial offsite training and assessment requirements for personnel working at height on Exploration and Production operations in Thailand.

Note: This course is designed to qualify personnel to conduct safe working at height operations. Further qualification and competence to conduct a rescue from height must be attained by completion of Part B of this standard: Rescue at Height.

This WAH Standard contains:

- Learning Outcomes
- Training Program Content
- Statements on:
 - Assessment
 - Further Training / Assessment

This section of the Standard consists of the following modules:

- WAH Hazards
- WAH Activities
- WAH Emergencies

A.2 Delegate Prior Achievement

There are no delegate pre-requisites for attendance on this course.

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Part A : Basic Working at Height

The responsibility for delivering and assessing this program rests with TPTI Approved Training Providers.

A.3 Learning Outcomes

Following a series of explanations, demonstrations and opportunities to practice, delegates will be assessed as a candidate against the following learning outcomes.

Candidates will Demonstrate Knowledge of:-

- a) Relevant legislation under Thai laws and international standards, personal responsibilities, ACOPs, relevant standards and guidelines as examples of good practice
- b) Safe systems of work (permits, procedures, tool box talks)
- c) Risk assessment and control measures
- d) Housekeeping
- e) Planning of operations

Candidates will Demonstrate Awareness of:-

- a) Methods of Working at Height
- b) Different types of equipment
- c) Identification and selection of appropriate equipment
- d) Equipment pre and post use check, including certification of equipment
- e) Safe and correct use of equipment
- f) Conflicting activities
- g) Environmental factors (e.g. weather)
- h) Manual handling

Ability to, as part of a team:-

- a) Work safely at height
- b) Carry out a self rescue

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Part A : Basic Working at Height

A.4 Training Program

In order to make efficient use of the time and ensure effective learning there should, whenever practicable, be an integration of the three phases of explanation, demonstration and practice. The training program outlined below will assist delegates to meet the stated learning outcomes.

Delegates will be expected to complete an assessment of their aptitude to working at height during this course prior to the practical elements. This will consist of climbing to 7 metres a lattice tower type structure with a twin fall arrest lanyard and climbing a ladder with guided type fall arrest device to demonstrate confidence in the safety equipment, without displaying signs of distress.

1. WAH Hazards

Give an overview of:

- a) Accident statistics relevant to WAH operations
- b) Thai legislation related to WAH activities

Give an explanation of:

- a) Hazards associated with activities involving WAH
- b) Hierarchy of hazard control
- c) Safe working procedures for;
 - Working over Water
 - Fall Prevention
 - Scaffolds
 - Fall Arrest Systems
 - Ladders

Delegates to demonstrate and practice:

- a) Hazard Identification of WAH activities (group exercise)
- b) Safe working procedures during practical activities

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Part A : Basic Working at Height

A.4 Training Program (continued)

2. WAH Activities

Give an explanation of:

- a) Work restraint techniques and their application
- b) Work positioning techniques and their application
- c) Fall Arrest techniques and their application
- d) Types of ladders and associated fall protection systems
- e) Principles of operation of fall protection systems and equipment including:
 - Full body harnesses
 - Guided fall arrest devices
 - Connectors
 - Inertia reels
 - Single & twin lanyards with shock absorbers inc. calculation of clearance distance
 - Horizontal lifelines
 - Placement of anchors and suitability of anchor points
- f) The principle and methods of 100% attachment

Give an explanation and demonstration of:

- a) Selection, inspection & use of appropriate PPE to include:
 - Helmet
 - Connectors
 - Lanyards & shock absorbers
 - Mobile fall arrest devices
 - Harness
- b) Correct methods of ascending and descending vertical ladders and use of an in situ guided fall arrest system
- c) Selection, inspection and use of personal fall arrest equipment
- d) Correct use of horizontal safety lines
- e) Correct methods of climbing with twin lanyards
- f) Correct use of single leg lanyards
- g) Correct use of inertia reels

Delegates to practice and demonstrate all elements

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Part A : Basic Working at Height

A.4 Training Program (continued)

3. WAH Emergencies

Give an explanation of:

- a) Types of emergencies
- b) Provision for rescue of a fallen worker
- c) Cause and effects of suspension trauma
- d) Principles of operation of WAH rescue devices (rope & mechanical)
- e) Casualty handling considerations

Give an explanation and demonstration of:

- a) Raising the alarm
- b) Appropriate rescue techniques for recovery of a casualty
 - Conscious & unconscious (explanation only) suspended worker
- c) Appropriate casualty handling techniques during and after casualty recovery

Delegates are not required to practice and demonstrate the above.

A.5 Duration of Training

The optimum 'contact time' for this training and assessment is seen as 10 hours.

It is suggested that a ratio of 20%:80% theory/practical is appropriate.

- The total contact time per day shall not exceed 8 hours.
- The total training day shall not exceed 10 hours

The total training day includes

- contact time
- coffee and meal breaks
- travel time between training sites where applicable

Assessments, both written and practical, will be conducted after the training program has been completed.

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Part A : Basic Working at Height

A.6 Assessment

Assessment of the candidate's performance will be against the stated learning outcomes and will involve both written and practical assessments. The written assessment will be administered by TPTI and the practical assessment will be conducted by TPTI accredited assessors.

Delegates attending this training and assessment program (referred to as candidates during assessment) will be given a series of explanations and demonstrations which will identify what they are expected to know and do. This will be followed by practical exercises which will allow delegates to demonstrate their skills, knowledge and understanding of working at heights.

Assessment of the candidate's performance will be against the stated learning outcomes and will involve both written and practical assessments. Candidates who achieve a score of 70% or higher and pass the practical assessment, will be issued a TPTI renewal certificate.

If the candidates fail to achieve a score of 70% or fail the practical assessment, the candidate must re-take the Working at Height course.

A.7 Further Training / Assessment

It is recommended that the theoretical and practical elements of this training should be assessed at three year intervals.

An Assessment, both written and practical, will be conducted at the TPTI Assessment Center/Accredited Training Center.

Candidates who achieve a score of 70% or higher and pass the practical assessment, will be issued a TPTI renewal certificate.

If the candidates fail to achieve a score of 70% or fail the practical assessment, the candidate must re-take the Basic Working at Height course.

The recommended duration of this training and assessment session should be not less than 6 hours contact time with a ratio of 40%:60% theory/practical.

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Part B : Rescue at Height

B.1 Target Group

This section is designed to meet the initial offsite training and assessment requirements for personnel to provide cover for rescue of a suspended worker (fall arrest equipment) working at height on Exploration and Production operations in Thailand.

This WAH Standard contains:

Learning Outcomes
Training Program Content
Statements on:
 Assessment
 Further Training / Assessment

This section consists of the following modules:

WAH Emergencies
Planning for rescue
Rescue of a suspended, fallen worker

B.2 Delegate Prior Achievement

Delegates shall have successfully completed:

- Part A of this standard - Basic Work at Height training or internationally recognised equivalent and hold valid certification
- TPTI Basic Risk Assessment training or internationally recognised equivalent course
- Have evidence of 1 year prior experience working at height or as part of an emergency response crew

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Part B : Rescue at Height

The responsibility for delivering and assessing this program rests with TPTI Approved Training Providers.

B.3 Learning Outcomes

Following a series of explanations, demonstrations and opportunities to practice, delegates will be assessed as a candidate against the following learning outcomes.

Candidates will Demonstrate Knowledge of:-

- a) Relevant legislation under Thai laws and international standards, personal responsibilities, ACOPs, relevant standards & regulations such as LOLER and guidelines as examples of good practice
- b) Safe systems of work (permits, procedures, tool box talks)
- c) Risk assessment and control measures
- d) Housekeeping
- e) Planning of operations

Candidates will Demonstrate Awareness of:-

- a) Methods of work at height
- b) Different types of equipment.
- c) Selection of appropriate equipment
- d) Equipment pre and post use check, including certification of equipment
- e) Safe and correct use of equipment
- f) Equipment identification and selection
- g) Conflicting activities
- h) Environmental factors (e.g. weather)
- i) Manual handling

Ability to, as part of a team:-

- a) Work safely at height
- b) Carry out a rescue of a suspended fallen worker, using “pole and hook” type dedicated rescue equipment
- c) Complete a suitable risk assessment and rescue plan

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Part B : Rescue at Height

B.4 Training Program

In order to make efficient use of the time and ensure effective learning there should, whenever practicable, be an integration of the three phases of explanation, demonstration and practice. The training program outlined below will assist delegates to meet the stated learning outcomes.

Delegates will be expected to complete an assessment of their aptitude to working at height during this course prior to the practical elements. This will consist of climbing to 7 metres on a lattice tower structure with a twin lanyard to demonstrate confidence in the safety equipment, without displaying signs of distress.

1. WAH Hazards

Give an overview of:

- a) Accident statistics relevant to WAH operations
- b) Legislation related to WAH activities

Give an explanation of:

- a) Hazards associated with rescue activities involving WAH
- b) Conducting a risk assessment
- c) Resource requirements for rescue of a suspended worker:
 - Over water
 - From scaffold
 - From high structures (20m+)
 - From ladders
 - Over plant & equipment
 - From confined spaces

Delegates to demonstrate and practice:

- a) Risk assessment of WAH rescue activities (group exercise)
- b) Planning for rescue
- c) Safe working procedures during practical activities

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Part B : Rescue at Height

B.4 Training Program (continued)

2. WAH Activities

Delegates to practice and demonstrate all elements as defined in TPTI Work at Height Standard Part A : Basic Working at Height as required by the practical elements of this course.

3. WAH Emergencies

Give an explanation of:

- a) Types of emergencies
- b) Cause and effects of suspension trauma
- c) Principles of operation of WAH rescue devices (rope & mechanical)
- d) Casualty handling considerations
- e) Rescue over water
- f) Rescue over plant & equipment

Give an explanation and demonstration of:

- a) Raising the alarm
- b) Selection, inspection and use of rescue devices
- c) Selection of appropriate anchors
- d) Appropriate rescue techniques for recovery of a fallen, suspended worker
 - Conscious (explanation only) & unconscious
 - On a vertical ladder
 - From scaffold or fixed structures with platforms & walkways-
 - From lattice tower type structure
- e) Appropriate casualty handling techniques during and after casualty recovery

Delegates to practice and demonstrate all elements.

Provide exercises to enable delegates to practise and demonstrate:

- a) Selecting and using appropriate equipment and climbing/ descending 7 metres (minimum)
- b) Rescue of a casualty
- c) Assisted rescue
- d) The correct initiation of emergency procedures

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Part B : Rescue at Height

B.5 Duration of Training

The optimum 'contact time' for this training and assessment is seen as 10 hours.

It is suggested that a ratio of 40%:60% theory/practical is appropriate.

- The total contact time per day shall not exceed 8 hours.
- The total training day shall not exceed 10 hours

The total training day includes

- contact time
- coffee and meal breaks
- travel time between training sites where applicable

Assessments, both written and practical, will be conducted after the training program has been completed.

B.6 Assessment

Assessment of the candidate's performance will be against the stated learning outcomes and will involve both written and practical assessments. The written assessment will be administered by TPTI and the practical assessment will be conducted by TPTI accredited assessors.

Delegates attending this training and assessment program (referred to as candidates during assessment) will be given a series of explanations and demonstrations which will identify what they are expected to know and do. This will be followed by practical exercises which will allow delegates to demonstrate their skills, knowledge and understanding of working at heights.

Assessment of the candidate's performance will be against the stated learning outcomes and will involve both written and practical assessments. Candidates who achieve a score of 70% or higher and pass the practical assessment, will be issued a TPTI renewal certificate.

If the candidates fail to achieve a score of 70% or fail the practical assessment, the candidate must re-take the Rescue at Height course.

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Part B : Rescue at Height

B.7 Further Training / Assessment

It is recommended that the theoretical and practical elements of this training should be assessed at three year intervals.

An Assessment, both written and practical, will be conducted at the TPTI Assessment Center/Accredited Training Center.

Candidates who achieve a score of 70% or higher and pass the practical assessment, will be issued a TPTI renewal certificate.

If the candidates fail to achieve a score of 70% or fail the practical assessment, the candidate must re-take the Rescue at Height course.

The recommended duration of this training and assessment session should be not less than 6 hours contact time with a ratio of 40%:60% theory/practical.

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RESOURCES

In order that a competence program may be delivered successfully it is essential that the correct people are present to support the program and that the appropriate facilities and equipment are in place.

C.1 Staff

Instructional staff will be required to carry out training and assessors will be required to judge candidate's competence. It is important that the staff involved have the appropriate qualifications and experience.

- a) Trainers will:
 - Have a minimum of 4 years experience in working and rescue at heights.
 - Have training in working and rescue at heights to an internationally recognized training standard.
 - Be trained and qualified in instructional/lecture techniques and/or have proven instructing/teaching experience.
 - Be included in an ongoing staff training program which enables them to maintain and update skills and knowledge.
 - Be able to clearly communicate in the English language
- b) All Assessors must be:
 - TPTI qualified assessors
 - Discipline experts trained and qualified in assessment techniques
 - Knowledgeable of the areas being assessed
- c) All staff must have the appropriate competences to conduct/assist the element of training being conducted.
- d) All Training staff will be trained in the causes and consequences stress/anxiety, coping skills and how to manage delegates who are suffering from anxiety.

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RESOURCES

C.2 Trainer/Delegate Ratio

- It is recommended that the maximum number of delegates attending this program is 12.
- The following ratios indicate the maximum number of delegates to be supervised by one Instructor at any one time during each activity.

Theory	1:12
Practical	1:6

C.3 Facilities

It is important to make sure that facilities as listed below are available.

Administration arrangements appropriate for enrolment and certification of delegates and all aspects of the delivery of training in accordance with this standard.

Theory training area(s) so designed to enable each delegate to view, hear and participate fully in the subject matter being taught.

Practical training areas so designed to enable each delegate to view, hear and practice individually or as part of a team :

- Climbing and descending an exposed structure to a height of at least 7 metres
- Climbing and descending a ladder with in situ guided fall arrest device
- Use of a horizontal lifeline
- Rescue of a suspended worker exercise using a telescopic pole and hook type rescue kit
- Correctly initiate the emergency procedures

All facilities must be maintained and where appropriate, inspected and tested in accordance with current standards/legislation and manufacturers recommendations.

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RESOURCES

C.4 Equipment

- a) Different types of equipment may be required and it is important to make sure that is both available and fit for purpose and of a type associated with the Oil & Gas industry in Thailand subject to recognized international standards.
- a) Full body harnesses
 - b) Fall arrest equipment
 - c) Single leg lanyards c/w shock absorber
 - d) Twin leg lanyards c/w shock absorber
 - e) Permanent horizontal lifelines
 - f) Telescopic pole and hook type rescue kit
 - g) Suitable manikin (for rescue purposes)
 - h) In situ guided fall arrest device
 - i) Karabiners
 - j) Inertia reel blocks
 - k) Nylon webbing endless loops
- b) Safety Equipment appropriate to training being delivered.
- a) First Aid
 - b) PPE
 - c) All rescue equipment to retrieve a suspended candidate from any location in the facility

All equipment must be maintained, and where appropriate, inspected and tested in accordance with current standards/legislation, guidance and manufacturers recommendations.

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GENERAL GUIDANCE & REQUIREMENTS

C.5 Certification & Recording

A **TPTI** Certificate will be issued to all candidates assessed as meeting the stated outcomes, detailing that they are competent to proceed to the workplace for company specific training where applicable. Delegates' details will also be registered in the **TPTI Central Register**. The issue of a certificate indicates that the delegate has achieved a level of competence to enable him/her to proceed to the workplace for further training and development. Following satisfactory assessment the training provider delivering the training will issue every candidate a certificate.

Each individual attending any TPTI approved program must be registered with the Central Register (CR) operated by TPTI.

Training Establishments are responsible for the following:

- a) The issuing of certificates direct to the delegate completing the program and to the sponsoring company (when required). Each certificate must indicate that the delegate has been assessed against the agreed training outcomes and must contain the following:

Establishment name

Full TPTI course title stating that it is TPTI approved

TPTI course identification code

Delegate's name

Course dates

Expiry date (will be the day before the course completion date)

Unique Certificate Number

Establishment Signatory

- b) Each individual attending any TPTI approved program must be registered with the Central Register (CR) operated by TPTI. Registration must be made by training establishments to TPTI on a daily basis.
- c) All Joining Instructions contain information, which indicate certain aspects of the course are of a physical nature. The responsibility for the individual completing the course without any adverse effects to their present state of health lies with the delegate and/or company sponsoring the delegate

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GENERAL GUIDANCE & REQUIREMENTS

C.5 Certification & Recording (cont'd)

- d) Prior to each course commencing, delegates must sign a declaration indicating they have read and understood a written statement regarding the physical nature of the program and the need for delegates to be in good health. Instructional staff should also read out a statement indicating this at the time.
- e) Where doubt exists regarding the medical fitness of any delegate, the training establishment should ask the delegate or their employer to seek the advice of a medical examiner.
- f) A Medical officer, familiar with the nature and extent of the training is "on call".
- g) Risk assessment of all training areas and provision of all appropriate safety equipment.
- h) Written statements of organisation for all sessions, which clearly define responsibilities and relationships for all staff either directly or indirectly involved.
- i) All training and supporting activities are carried out in accordance with current legislation and safe working practices.

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GENERAL GUIDANCE & REQUIREMENTS

C.6 Medical and Health Requirements

Emergency response training contains physically demanding and stressful elements. All personnel who participate in such training should be medically fit and capable of participating fully.

Training Establishments are required to ensure that prior to participating in practical exercises the delegate either;

- a) Possess a valid, current medical certificate from the hospital, clinic, or clinical agents registered under Thai government, and:
- b) Undergoes an appropriate screening by the trainer or medical officer inside the training establishment area.

It is recommended that this information is given to delegates along with pre-course joining instructions

Guidance and advice on this standard is available by contacting:

Technical Petroleum Training Institute (TPTI)
Energy Complex Building B
555/2, 11th Floor, Vibhavadi-Rangisit,
Chatuchak, Bangkok 10900 Thailand

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