



GLOBAL WIND
ORGANISATION

Basic Safety Training Refresher Standard (BSTR)

V10.1

Publication date: October 1, 2019





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1 LIST OF ABBREVIATIONS

AED	Automatic External Defibrillator
ANSI	American National Standards Institute
AS/NZS	Australia and New Zealand Standard
BST	Basic Safety Training
BSTR	Basic Safety Training Refresher
BWH	Basic Working at Height
CO ₂	Carbon Dioxide
CPR	Cardiopulmonary Resuscitation
CSA	Canadian Standards Association
EN	European Standards
EPIRB	Emergency Position Indicating Radio Beacon
ERC	European Resuscitation Council
GWO	Global Wind Organisation
GMDSS	Global Maritime Distress and Safety System
H.E.L.P.	Heat Escape Lessening Posture
ILCOR	International Liaison Committee on Resuscitation
LSA	Life Saving Appliances
PLB	Personal Locating Beacon
MES	Marine Evacuation Systems
MOB	Man Over Board
PPE	Personal Protective Equipment
PTSD	Post-Traumatic Stress Disorder
SAR	Search and Rescue
SART	Search and Rescue Transponder
SRL	Self-Retractable Lifeline
T.I.L.E.	Task Individual Load Environment
MAC	Manual handling Assessment Chart
WTG	Wind Turbine Generator



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2 TERMS AND DEFINITIONS

Term	Definition
Shall	Verbal form used to indicate requirements strictly to be followed in order to conform to this training standard and from which no deviation is permitted
Must	For clarity where the word must is used in this standard it shall have the same meaning as shall
Should	Verbal form used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required
Fall arrest	Preventing the user of a personal fall protection system from colliding with the ground, structure or any other obstacle during a free fall.
Fall prevention	Preventing the user of a personal fall protection system from going into a free fall
Personal fall protection system	Assembly of components intended to protect the user against falls from height, including a body holding device and an attachment system, which can be connected to a reliable anchorage point
Restraint system	Personal fall protection system which prevents the user from reaching zones where the risk of a fall from height exists
Work positioning system	Personal fall protection system which enables the user to work in tension or suspension in such a way that free fall is prevented
Fall arrest system	Personal fall protection system which limits the impact force on the body of the user during fall arrest
Rescue system	Personal fall protection system by which a person can rescue themselves or others, in such a way that a free fall is prevented



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3 CHANGE LOG – REVISION 10.1

Amendment Date	Oct. 2020	Approved by & date	
Version	10.1	Description of changes	
<ul style="list-style-type: none"> - GWO Standard updated to match the Corporate Visual identity of GWO (CVI) - Each module now contains a cover page and the module name listed in the header as reference. - New ISO Code added to standard - All previous versions of the Change log have now been moved to Annex 4. The current change log remains at the start of the standard. - Duplicate information removed from Section 4. Scope <p>The following sections have been removed due to this information now included in the new Requirements for Training Providers and Requirements for Certification Bodies (released May 2020)</p> <p>Section 5</p> <ul style="list-style-type: none"> - 5.4 Conformity with other training – section removed - 5.5 Legal Requirements – Section Removed - 5.9 Training Equipment section added <p>Section 6</p> <ul style="list-style-type: none"> - 6.1 Staff – section removed - 6.2 Facilities and Equipment – section removed / Equipment now moved to section 5.9 - 6.3 Theory training facilities – section removed - 6.4 Practical training facilities – section removed - 6.5 Training Equipment – section removed <p>Section 8</p> <ul style="list-style-type: none"> - 8.1 Administrative arrangements – section removed - 8.2 Delegate performance assessment – section removed - 8.3 Requirement to upload training record in WINDA – section removed (course Codes have now been moved to section 5.6) - 8.4 Training Providers own Records and Certificates issue – section removed - 8.5 Delegate performance assessment form – section removed <p>Annex 1</p> <ul style="list-style-type: none"> - Delegate Performance Assessment Form – Section removed 			



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Annex 2

- Medical Assessment Form – Section removed

All section reference numbers have now been updated



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4 SCOPE

This Standard describes the requirements for **Basic Safety Training Refresher** courses that are recommended by the members of GWO. The full standard covers 6 modules:

- 1) First Aid
- 2) Manual Handling
- 3) Fire Awareness
- 4) Working at Height
- 5) Working at Height & Manual handling combined
- 6) Sea Survival

The members of the Global Wind Organisation (GWO) recognize trained persons as competent within Basic Safety in the wind industry and accept the trained person as possessing the required knowledge to stop an unsafe work situation where they as duty-holders are accountable for safety.



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5 GENERAL REQUIREMENTS FOR GWO BST REFRESHER

Upon completion of the Global Wind Organisation (GWO) Basic Safety Training (BST) Delegates will possess an awareness of the hazards encountered when working within the wind industry and how to control and mitigate these hazards. The BST will also equip participants with the knowledge, skills and confidence to appropriately respond in the event of an emergency and to increase their safety through proper use of Personal Protective Equipment (PPE), emergency equipment and procedures.

The approved GWO Basic Safety Training Refresher (BSTR) refreshes, reviews and builds on Delegates existing skills and tools obtained during BST courses, which include Fire Awareness, First Aid, Working at Heights and Manual Handling. To enable Delegates to work in the offshore environment, an additional GWO Sea Survival training shall be completed.

5.1 Overview

The GWO Basic Safety Training Refresher is divided into the following six Modules:

- 1) First Aid Refresher
- 2) Manual Handling Refresher
- 3) Fire Awareness Refresher
- 4) Working at Heights Refresher
- 5) Working at Heights and manual handling combined refresher
- 6) Sea Survival Refresher

Note: Module 5 working at heights & Manual handling combined refresher is a combined module comprising the lessons and elements from both the working at height module and the manual handling module and is intended to be delivered in 1 day. The combined working at height & manual handling module can be delivered instead of the two standalone modules. Where the combined module is delivered then the delegate shall receive two training records one for working at height and one for manual handling.

5.2 Target group

Personnel who will be working in the wind industry or related fields and will have their duties in a wind turbine environment, usually in physical contact with a wind turbine or an offshore wind structure.

Personnel that performs job functions that has been risk assessed by their employer or their workplace duty holder as a function, where training according to one or more modules of the BST standard may mitigate of the identified risks.



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5.3 Aims and objectives

The aim of BSTR is to review and build on previously gained knowledge and skills from BST through theoretical and practical training.

This BSTR Training shall enable Delegates to support and care for themselves and others working in the industry by possessing the knowledge and skills of First Aid, Working at Heights, Manual Handling, Fire Awareness, Sea Survival and in case of an emergency, to be able to evacuate, rescue and provide appropriate First Aid to casualties.

5.4 Duration of BSTR Modules

The total contact time for completing the modules in this basic safety training standard is estimated to be **27 hours and 40 minutes**. This is based on the time estimates given in the module timetables and summarised in table 5-6 below.

The training provider must not exceed the times per day given in table 5-7 below.

The training provider must ensure that sufficient time is allowed for delegates with prior experience to share their experiences related to the modules of the basic training standard in a way that is constructive for the entire class.

Modules	Duration
First Aid Refresher	7 hours 00 minutes
Manual Handling Refresher	3 hours 35 minutes
Fire Awareness Refresher	3 hours 20 minutes
Working at Heights Refresher	8 hours 00 minutes
Working at Heights & Manual handling Refresher	8 hours 00 minutes
Sea Survival Refresher	6 hours 40 minutes

Table 5-4.1- GWO BSTR Module durations

	Maximum duration per day
Contact time	8 hours
Total training day	10 hours

Table 5-4.2 - Maximum durations for training days

Note: Contact time includes delivery of course lesson contents, practical exercises and activities directly related to these.

The total training day includes contact time, meals and breaks and travel between training sites (where applicable).



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Within the module timetables, approximate duration of each of the lessons are given. The training provider may choose to deliver elements of the training according to other timetables, as long as the total duration is not reduced, and practical elements are not reduced in length. Theoretical elements may be delivered during the practical exercises when feasible.

5.5 Validity period

The Basic Safety Training Refresher Modules are valid for the period stated in the table below. Certificates and training records shall be renewed before the end of a given validity period. A certificate or training record can be renewed up to two months prior to expiry and maintain the original certification date by uploading the previous certificate's valid until date in WINDA.

If a certificate or training record is renewed outside of two months of expiry, it must carry the new date of certification.

A Delegate is only allowed to attend a refresher course in the specific Training Module prior to the date of expiry on the current certificate or training records.

If a certificate or training record is expired, the Delegate must attend the full Basic Safety Training Module(s) to obtain a new training record.

The validity period is automatically calculated in WINDA by entering the course completion date.

Modules	Certificate Validity Period
First Aid Refresher	24 months
Manual Handling Refresher	24 months
Fire Awareness Refresher	24 months
Working at Heights Refresher	24 months
Working at Heights & Manual handling Refresher	24 months
Sea Survival Refresher	24 months

Table 5-5 - GWO BSTR modules certificate validity periods

5.6 Course codes:

Module	Course code
First Aid Refresher	FAR
Manual Handling	MHR
Fire Awareness	FAWR
Working at Heights	WAHR
Sea Survival	SSR



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Table 5-6 - GWO BSTR module course codes

5.7 Delegate prerequisites for the BSTR

All personnel participating in Refresher Training shall be medically fit and capable of fully participating.

Training providers shall have a procedure that requires Delegates to sign a statement (see Requirements for Training Providers Annex 1 & 2, Suggestion for Medical Statement from GWO) stating that they are medically fit to participate in the safety training and that they do not suffer from any medical illness or are under influence of any narcotic substance or alcohol.

Delegates' signatures shall be collected prior to the start of the safety training course.

Furthermore, Delegates shall possess valid BST/ BSTR certificates or training records in WINDA for the relevant Modules prior to attending BSTR training. The Delegates shall also have a personal Delegate profile in WINDA and provide their own WINDA ID prior to completing the BST training.

5.8 Physical demands

BSTR Modules may potentially be physically demanding.

If there is any doubt regarding the medical fitness of any Delegate, the Training Provider shall stop training the Delegate and seek a physician's advice.

Note: Practical exercises shall be designed and delivered solely to meet this Standard and shall not place any physical or mental demands on the Delegates other than those required to meet this Standard.

5.9 Training equipment

The equipment required for the delivery of the BSTR modules is shown in Annex 1.



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6 UNDERSTANDING GWO LEARNING OBJECTIVES

The described learning objectives (expected learning outcome) are the foundation of the course contents and what the delegate performance assessment must be based upon.

Traditionally learning objectives are prepared within three different domains of learning – knowledge, skills and attitude. A learning objective describes the expected learning outcome on completion of a module or a course, within one or more learning domains.

If a learning objective is related to more than one domain of learning, e.g. to knowledge and skills, one learning objective per learning domain is often prepared – to enable a better understanding of the learning objective.

The GWO Training Provider may apply teaching methods (didactics) that are appropriate to the course participants prior training, education and cultural backgrounds, but should always aim to provide course participants ample possibility to perform hands-on demonstrations and learning reflection.

6.1 Taxonomy

To formulate a measurable learning objective, taxonomy is used to describe the *level* of expected learning outcome within a learning domain.

As an example, belonging to the learning domain of knowledge, to have a delegate *name* or **recognize** something, as oppose to have him **explain** it in his own words, or even *apply* or **demonstrate** what he has learned – describes different performance levels, i.e. different taxonomy levels.

Different taxonomies are associated with different learning domains, for instance:

Knowledge: such as Bloom's "cognitive taxonomy"

- Intellectual knowledge, mental skills and procedures

Skills: such as Simpson's "psychomotor taxonomy"

- Physical skills, cognitive controlled and observable

Attitude: such as Krathwohl's "affective taxonomy"

- Attitude and feelings to the learning

Selecting a suitable taxonomy level, an **action verb** expresses the expected behaviour of the delegate, thus describing the taxonomy level of a learning objective.

Learning objectives in this standard are followed by an indication of the taxonomy level and domain in brackets e.g. (L3 – Skill)



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	Knowledge	Skills	Attitude
3	<p><u>Application / Applying</u> To use in a new situation. Solving problems by applying acquired knowledge, facts, techniques and rules in a different way. Applying a procedure to a familiar or unfamiliar task. Using a manual to calculate and operate.</p> <p>Action verbs: Apply, Change, Choose, Compute, Demonstrate, Modify, Operate, Practice, Prepare, Schedule, Solve, Write.</p>	<p><u>Guided response</u> Follows instructions to build a model. Using a tool after observing an expert demonstrate how to use it. Be able to demonstrate an activity to other learners. Can complete the steps involved in the procedure as directed.</p> <p>Action verbs: Accomplish, Achieve, Calibrate, Complete, Control, Demonstrate, Perform, Refine, Show.</p>	<p><u>Value</u> Demonstrates belief in the company described process. Shows the ability to solve problems. Informs management on matters that one feels strongly about. Decide worth and relevance of ideas and tasks.</p> <p>Action verbs: Argue, Challenge, Confront, Complete, Debate, Criticize, Justify, Join, Propose.</p>
2	<p><u>Comprehension / Understanding</u> Construct a meaning from instructional messages, including oral, written and graphic communication. Demonstrating basic understanding of facts and ideas. Explain in your own words the steps of performing a complex task.</p> <p>Action verbs: Classify, Distinguish, Estimate, Explain, Express, Give, Illustrate, Indicate, Locate, Predict, Summarize, Translate.</p>	<p><u>Set</u> Awareness or knowledge of the ability needed to use the skill. Carry out tasks from verbal or written instructions. Showing eagerness to assemble components to complete a task. Knows and acts upon a sequence of steps in a process.</p> <p>Action verbs: Access, Build, Complete, Conduct, Execute, Implement, Operate, Perform, Recreate.</p>	<p><u>Respond</u> Completing work assignments with highly respect to the agreement. Participating in team problem solving activities. Questions new ideas and concepts in order to fully understand them. Participate actively and respectful in discussions. Showing enthusiasm.</p> <p>Action verbs: Assist, Contribute, Discuss, Present, Question, Report, Respond, Tell, Write.</p>
1	<p><u>Knowledge / Remembering</u> Memory of facts, terminology, rules, sequences, procedures, etc. Locating knowledge in long-term memory and retrieving relevant knowledge from long-term memory.</p> <p>Action verbs:</p>	<p><u>Perception</u> Watch instructor and repeat action, process or activity. Recognizing sounds or pictures that indicate certain functionalities. Estimate the event of a certain function and be prepared for it.</p> <p>Action verbs:</p>	<p><u>Receive</u> Listening to discussions of controversial issues with an open mind. Respecting the rights of others. Listen to others and remember their opinions. Be positive and creative to what is being taught.</p> <p>Action verbs:</p>



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	Arrange, Define, Describe, Find, Identify, List, Name, Outline, Recognize, Relate, Recall, Retrieve.	Attempt, Copy, Duplicate, Follow, Organize, Repeat, Sketch, Replicate, Reproduce.	Ask, Be open to, Concentrate, Discuss, Focus, Follow, Listen, Reply, Take part.
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Table 6-1 - Taxonomy used by GWO

Note: Higher taxonomy levels exist.



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First Aid Refresher Module (FAR)



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7 MODULE 1 – FIRST AID REFRESHER

7.1 Aims and objectives of the BSTR First Aid Module

The aim of this BSTR First Aid Module is to review and build on previously gained knowledge and skills from BST First Aid through theoretical and practical training so that Delegates can administer safe and effective First Aid, perform cardiopulmonary resuscitation (CPR) and use an automated external defibrillator (AED) in the wind industry / WTG environment.

This BSTR First Aid Module shall ensure that:

- 1) Delegates are able to demonstrate understanding of the importance of safely and correctly carrying out First Aid in accordance with the legislative requirements of their geographic location and according to the International Liaison Committee on Resuscitation (ILCOR) e.g. European Resuscitation Council (ERC) and American Heart Association (AHA) guidelines (L2 – Knowledge)
- 2) Delegates are able to identify and explain normal function, normal signs and symptoms of injuries and illness related to the human body (L1) -Skills & knowledge)
- 3) Delegates are able to demonstrate understanding and correct order of management in emergency situations in a wind turbine work environment (L3 – Skills & knowledge)
- 4) Delegates are able to demonstrate correct use of lifesaving First Aid using the Primary and Secondary Survey ("C"-A-B-C-D-E) (L3 – Skills)
- 5) Delegates are able to demonstrate correct use of an Automatic External Defibrillator (AED) (L3 – Skills)
- 6) Delegates are able to demonstrate correct use of First Aid equipment in First Aid scenarios (L3 – Skills)

7.2 Duration of the BSTR First Aid Module

The total contact time for completing this first aid refresher module is estimated to be 7 hours. This is based on the time estimate given in the module timetable.

The training provider must not exceed the times per day given in table 9-2 below.

The training provider must ensure that sufficient time is allowed for delegates with prior experience to share their experiences related to first aid in a way that is constructive for the entire class.



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	Maximum duration per day
Contact time	8 hours
Total training day	10 hours

Table 7-2 - Maximum durations for training days

Note: Contact time includes delivery of course lesson contents, practical exercises and activities directly related to these.

The total training day includes contact time, meals and breaks and travel between training sites (where applicable).

7.3 First Aid Instructor to Delegate Ratio

The ratio shown for theory sessions indicates the maximum number of Delegates that can attend the course.

The ratio shown for practical sessions indicates the maximum number of Delegates to be supervised by one instructor during each activity.

Module	Session	Instructor to Delegate Ratio
BSTR First Aid	Theory	1:12
	Practical	1:6

Table 7-3 - GWO First Aid Refresher module instructor to delegate ratio

7.4 Equipment

The equipment required for training as listed in Annex 1 must be available and must fulfil national legal requirements as listed in table A1-1 in annex 1 where applicable.

7.5 First Aid Module timetable

The order in which the elements of this BSTR training Module are delivered may vary.

Within the module timetables, approximate duration of each of the lessons are given. The training provider may choose to deliver elements of the training according to other timetables, as long as the total duration is not reduced, and practical elements are not reduced in length. Theoretical elements may be delivered during the practical exercises when feasible.



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Lesson		Element		Approx. Duration
1	Introduction	1.1	Safety instructions and emergency procedures	
		1.2	Facilities	
		1.3	Introduction	
		1.4	Scope and main objectives	
		1.5	On-going assessments (Control Measures)	
		1.6	Motivation	
TOTAL				15 min.
2	Legislation/Risks/ Hazards	2.1	Risks and hazards	
		2.2	National legislation	
		2.3	First Aid guidelines	
		2.4	Global legislation	
TOTAL				15 min.
3	Anatomy	3.1	The human body's life conditions, structure, function and signs	
		3.2	Use of anatomy and First Aid in emergency situations	
TOTAL				60 min.
4	Life-saving First Aid using Primary and Secondary Survey	4.1	Primary Survey ("C"-A - B - C)	
		4.2	Unresponsive	
		4.3	Unresponsive, not breathing	
		4.4	CPR, including AED	
		4.5	Obstruction of airways	
		4.6	Bleeding, internal and external	
		4.7	Shock	
		4.8	Secondary survey A-B-C-D-E	
TOTAL				75 min.
5	Themes		Choose one of the following 5 themes for instruction:	
		5.1	Theme 1: <ul style="list-style-type: none">• Psychological effects of First Aid	
		5.2	Theme 2: <ul style="list-style-type: none">• Sudden sickness and environmental factors	
		5.3	Theme 3: <ul style="list-style-type: none">• Types of trauma	



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		5.4	Theme 4: • Incident management and situational awareness	
		5.5	Theme 5: • Complex incidents with several (2-5) casualties	
TOTAL				120 min.
6	Scenario-based training	6.1	Practice First Aid techniques	
TOTAL				120 min.
7	Evaluation	7.1	Summary	
		7.2	Evaluation	
		7.3	Training records	
TOTAL				15 min.
GRAND TOTAL				420 min.

Table 7-5 - GWO First Aid Refresher module timetable

7.6 Detailed description of the First Aid module

The learning outcomes specified for the First Aid Module are:

Note: The administrative part of the registration shall be completed before the course commences.

Lesson 1 - INTRODUCTION

15 min.

The aim of this lesson is to give the Delegates the needed awareness of the Refresher Course content and the facilities involved in order to ensure that all Delegates are aware of what to expect and what is expected of them during the course.

To successfully complete this BSTR First Aid Module, Delegates shall be aware of:

- 1) Safety instructions and emergency procedures
- 2) Facilities
- 3) Who the instructor and other Delegates are
- 4) Aims and main learning objectives
- 5) On-going assessment according to GWO Control Measures
- 6) Motivation for the course



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ELEMENT 1.1 - SAFETY INSTRUCTIONS AND EMERGENCY PROCEDURES

Training Staff shall:

- 1.1.1 Explain safety instructions according to internal procedures
- 1.1.2 Explain the emergency procedures and emergency exits for the areas the Delegates will be located during the course



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ELEMENT 1.2 - FACILITIES

Training Staff shall:

- 1.2.1 Give a general description of the facilities at the training location (Administration, dining area, restrooms, toilets, etc.)

ELEMENT 1.3 - INTRODUCTION

Training Staff shall give:

- 1.3.1 Give a short introduction, including their backgrounds as instructors

Delegates shall give:

- 1.3.2 Give a short introduction, including job function and expected primary geographic work location

Training Staff shall:

- 1.3.3 Explain the programme of the BSTR Module, including breaks and meal times

ELEMENT 1.4 - SCOPE AND MAIN OBJECTIVES

Training Staff shall:

- 1.4.1 Explain the scope and main objectives of this BSTR Module

ELEMENT 1.5 - ON-GOING ASSESSMENTS

Training Staff shall:

- 1.5.1 Explain the reasons for the on-going assessment
- 1.5.2 Explain the GWO Control Measures and their use

ELEMENT 1.6 - MOTIVATION

Training Staff shall:

- 1.6.1 Explain the importance of personal involvement in the course
- 1.6.2 Explain the definition and need for correct First Aid
- 1.6.3 Explain the chain of survival
- 1.6.4 Explain the importance of refreshing and building on previously acquired understanding, knowledge and skills in First Aid



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Lesson 2 - LEGISLATION/RISKS/HAZARDS

15 min.

The aim of this lesson is to refresh and increase Delegates' previously acquired knowledge of the relevant legislation/risks/hazards and demands of First Aid in order to improve their awareness of the roles, responsibilities and rules that apply to First Aid.

To successfully complete this lesson of the BST Module, Delegates shall be able to:

- 1) Explain risks and hazards relating to First Aid in a WTG environment (L2 – Knowledge)
- 2) Summarize national legislation relevant to First Aid (L2 – Knowledge)
- 3) Explain different First Aid guidelines – ILCOR e.g. ERC and AHA (L2 – Knowledge)
- 4) Recognise global legislation relevant to First Aid (L2 – Knowledge)

ELEMENT 2.1 - RISK AND HAZARDS

Training Staff shall:

- 2.1.1 Lead a discussion about the risks and hazards involved in an incident relevant for job functions within the wind industry, based on participants' practical experiences since the previous GWO BST First Aid Training, covering the following topics
 - a. Onshore
 - b. Offshore
 - c. Group discussions

ELEMENT 2.2 - FIRST AID GUIDELINES

Training Staff shall:

- 2.2.1 Explain recent changes/updates to guidelines from ILCOR e.g. ERC and AHA*

* If ERC and/or AHA guidelines have changed, these changes shall be discussed during this BSTR First Aid Module

ELEMENT 2.3 - NATIONAL LEGISLATION

Training Staff shall:

- 2.3.1 Explain recent changes/updates to national legislation
- 2.3.2 Explain recent changes/updates to national legal requirements
- 2.3.3 Explain recent changes/updates to national legal responsibilities



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2.3.4 Explain recent changes/updates to the role of First Aid in the wind industry

ELEMENT 2.4 - GLOBAL LEGISLATION

Training Staff shall:

- 2.4.1 Lead a discussion to refresh site organisation and types of units on a site and using of the Delegates' personal practical experiences
- 2.4.2 Explain recent changes/updates to global legislation (Differences in national regulations between countries)
- 2.4.3 Explain recent changes/updates to global legal responsibilities

Lesson 3 - ANATOMY

75 min.

The aim of this lesson is to refresh and increase Delegates' previously acquired knowledge and skills regarding the human body. Delegates will be able to identify and explain normal bodily function, signs, symptoms and functions of injuries and illnesses related to the human body.

To successfully complete this BSTR Module, Delegates shall be able to demonstrate:

- 1) Understanding of the human body's life conditions, structures, functions and signs (L2 – Knowledge)
- 2) Knowledge and skills for detecting abnormal signs, symptoms and functions of injuries (L2 – Knowledge)
- 3) Knowledge and skills for detecting abnormal signs, symptoms and functions of illness related to the human body (L2 – Skills & knowledge)
- 4) Understanding of anatomy and First Aid in emergency situations (L2 – Knowledge & attitude)

ELEMENT 3.1 - THE HUMAN BODY'S LIFE CONDITIONS, STRUCTURES, FUNCTIONS AND SIGNS

Delegates shall **explain** and **demonstrate**:

- 3.1.1 Normal life conditions for the human body
 - a. Human cells and life conditions
 - b. Cells and oxygen (O₂)
 - c. Cells and carbon dioxide (CO₂)
 - d. Vital organs and their needs



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3.1.2 Vital systems of the human body



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Nervous system

- a. Anatomy of the nervous system
- b. Structure, functions and normal signs
- c. Threats to the nervous system (signs and symptoms of injuries and illnesses)

Respiratory system

- a. Anatomy of the respiratory system
- b. Structure, functions and normal signs
- c. Threats to the respiratory system (signs and symptoms of injuries and illnesses)

Circulatory system

- a. Anatomy of the circulatory system
- b. Structure, functions and normal signs
- c. Threats to the circulatory system (signs and symptoms of injuries and illnesses)

Blood filled organs

- a. Placement of kidneys, liver and spleen
- b. Effects of injury of the organs

Training Staff shall:

- 3.1.3 If Delegates do not cover all points during their review, Training Staff shall *ensure* that following topics are covered
 - a. Life conditions, structure, function and signs of the human body
 - b. Injuries - signs, symptoms and function
 - c. Illnesses - signs symptoms and function
 - d. Use of anatomy and First Aid in emergency situations

ELEMENT 3.2 - USE OF ANATOMY AND FIRST AID IN EMERGENCY SITUATIONS

Training Staff shall:

- 3.2.1 Explain and demonstrate how to assess a casualty:
 - a. Personal Protective Equipment against infections; protection and use of barriers in emergency situations
 - b. From structure, function and symptoms to correct First Aid treatment of a casualty



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Lesson 4 - LIFESAVING FIRST AID USING PRIMARY AND SECONDARY SURVEY

60 min.

The aim of this lesson is to refresh and enhance Delegates' previously acquired knowledge of and skills for following a systematic sequence for establishing techniques so that each life threatening condition can be identified in a priority order and dealt with on a "find and treat" basis in emergency situations.

To successfully complete this BSTR Module, Delegates shall be able to **demonstrate**:

- 1) Immediate First Aid actions using the Primary Survey ("C"-A - B - C) (L3 – Skills & knowledge)
- 2) Correct First Aid to an incident related to critical bleeding (L3 – Skills)
- 3) Correct First Aid to an unresponsive and *breathing* casualty (L3 – Skills)
- 4) Correct First Aid to an unresponsive and *not breathing* casualty (L3 – Skills)
- 5) Knowledge and skills regarding Cardiopulmonary Resuscitation (CPR) (L3 – Skills & knowledge)
- 6) Correct First Aid for obstruction of airways (L2 – Skills & knowledge)
- 7) Correct First Aid for bleeding - externally and internally (L2 – Skills & knowledge)
- 8) Correct First Aid for shock (L2 – Skills, Knowledge & attitude)
- 9) Correct use of Secondary Survey (L3 – Skills)

ELEMENT 4.1 - PRIMARY SURVEY ("C" - A - B - C)

Delegates shall:

- 4.1.1 Explain and demonstrate how to use the Primary Survey ("C" - A - B - C) in an incident
 - a. C – Critical Bleeding
 - b. A - Airway
 - c. B - Breathing
 - d. C - Circulation

ELEMENT 4.2 - UNRESPONSIVE

Training Staff shall:

- 4.2.1 Explain First Aid for an unresponsive casualty
 - a. Reasons for unresponsiveness
 - b. Threats



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- c. Primary Survey ("C"-A - B - C)
- d. Recovery position - Single First Aider
- e. Recovery position - Two First Aiders
- f. First Aid equipment

Delegates shall:

- 4.2.2 Practice and demonstrate the ability to perform First Aid for an unresponsive casualty
 - a. Threats
 - b. Primary Survey ("C"-A - B - C)
 - c. Recovery position - Single First Aider
 - d. Recovery position - Two First Aiders
 - e. Use of First Aid equipment

ELEMENT 4.3 - UNRESPONSIVE, NOT BREATHING

Training Staff shall:

- 4.3.1 Explain First Aid for unresponsive, not breathing casualty
 - a. Reasons for unresponsiveness and not breathing
 - b. Threats
 - c. Primary Survey ("C"-A - B - C)
 - d. Performing CPR on adults - Single First Aider
 - e. Performing CPR on adults - Two First Aiders
 - f. Use of First Aid equipment, including AED

ELEMENT 4.4 - CPR

Delegates shall:

- 4.4.1 Practice and demonstrate the ability to perform First Aid for unresponsive, not breathing casualty
 - a. Primary Survey ("C"-A - B - C)
 - b. Performing correct and efficient CPR on adults
 - c. Use of First Aid equipment, including AED

ELEMENT 4.5 - OBSTRUCTION OF AIRWAYS



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Training Staff shall:

- 4.5.1 Explain obstruction of airways
 - a. Reasons for obstruction of airways
 - b. Threats
 - c. Primary Survey ("C"-A - B - C)
 - d. Adults

Delegates shall:

- 4.5.2 Practice and demonstrate the ability to perform First Aid in case of obstruction of airways
 - a. Primary Survey ("C"-A - B - C)
 - b. Adults

ELEMENT 4.6 - BLEEDING, INTERNAL AND EXTERNAL

Training Staff shall:

- 4.6.1 Explain external bleeding
 - a. Reasons for external bleeding
 - b. Threats
 - c. Primary Survey ("C"-A - B - C)
 - d. Use of First Aid equipment
 - e. Use of other equipment

Delegates shall:

- 4.6.2 Practice and demonstrate the ability to perform First Aid where a casualty is bleeding externally
 - a. Primary Survey ("C"-A - B - C)
 - b. Use of First Aid equipment
 - c. Use of other equipment



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Training Staff shall:

- 4.6.3 Explain internal bleeding
 - a. Reasons for internal bleeding
 - b. Threats
 - c. Primary Survey ("C"-A - B - C)
 - d. Use of First Aid equipment

Delegates shall:

- 4.6.4 Practice and demonstrate the ability to perform First Aid when a casualty is internally bleeding
 - a. Primary Survey ("C"-A - B - C)
 - b. Use of First Aid equipment

ELEMENT 4.7 - SHOCK

Training Staff shall:

- 4.7.1 Explain shock
 - a. Reasons for shock
 - b. Types of shock
 - c. Threats
 - d. Primary Survey ("C"-A - B - C)
 - e. Use of First Aid equipment
 - f. Psychological First Aid

Delegates shall:

- 4.7.2 Practice and demonstrate the ability to perform First Aid for Shock
 - a. Primary Survey ("C"-A - B - C)
 - b. Use of First Aid equipment
 - c. Psychological First Aid

ELEMENT 4.8 - SECONDARY SURVEY

Training Staff shall:

- 4.8.1 Explain how to perform a secondary survey correctly



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4.8.2 Explain the general conditions of secondary survey using the A-B-C-D-E - principle

4.8.3 Explain the A - B - C - D - E principle in the context of the secondary survey:

D: Disability/Neurologic assessment

E: Exposure and environmental control

Training Staff shall:

4.8.4 Explain and demonstrate the differences between/indications for sitting, lying and shock position (conscious/unconscious) and the importance of keeping up body temperature

Lesson 5 - THEMES

120 min.

This lesson presents **5 themes** (situations or factors) that may significantly affect the response and management of First Aid incidents in Wind Turbine environments.

The aim of this lesson is to give the Delegates the knowledge, skills and understanding presented in one of the **5 themes**.

The course Instructor shall **select one of the 5 themes** to teach during the Refresher First Aid Training.

THEME 1: PSYCHOLOGICAL EFFECTS OF FIRST AID

To successfully complete this BSTR First Aid Module Theme 1, Delegates shall be able to demonstrate:

- 1) Knowledge of how administering First Aid during an incident psychologically affects the First Aider (L2 – Knowledge)
- 2) Knowledge of how to give psychological First Aid to the First Aider (Person administering First Aid) (L2 – Knowledge)
 - a. Immediately after an incident (short-term impacts on the First Aider)
 - b. After an incident (long-term impacts on the First Aider)
- 3) Knowledge of tools a First Aider can use to evaluate whether they can give psychological First Aid or if they need to contact professional help (L2 – Knowledge)
- 4) Knowledge of where First Aiders can receive psychological help (company-specific internal and external psychological help) (L2 – Knowledge)



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THEME 2: SUDDEN SICKNESS AND ENVIRONMENTAL FACTORS

To successfully complete this BSTR First Aid Module Theme 2, Delegates shall be able to demonstrate:

- 1) Knowledge of and skills for responding to sudden sickness and environmental factors, that affect the central nervous system (L3 – Skills & knowledge)
- 2) Knowledge of and skills for responding to sudden sickness and environmental factors that affect the respiratory system (L3 – Skills & Knowledge)
- 3) Knowledge of and skills for responding to sudden sickness and environmental factors that affect the circulatory system (L3 – Skills & Knowledge)

THEME 3: TYPES OF TRAUMA

To successfully complete this BSTR First Aid Module Theme 3, Delegates shall be able to demonstrate:

- 1) Knowledge of and skills for managing and responding to trauma incidents that affect the central nervous system (L3 – Skills & knowledge)
- 2) Knowledge of and skills for managing and responding to trauma incidents that affect the respiratory system (L3 – Skills & knowledge)
- 3) Knowledge of and skills for managing and responding to trauma incidents that affect the circulatory system (L3 – Skills & knowledge)

THEME 4: INCIDENT MANAGEMENT AND SITUATIONAL AWARENESS

To successfully complete this BSTR First Aid Module Theme 4, Delegates shall be able to demonstrate:

- 1) Knowledge, skills for and understanding of incident management and situational awareness in a wind turbine environment, *onshore* (L3 – Skills & knowledge)
- 2) Knowledge, skills for and understanding of incident management and situational awareness in a wind turbine environment, *offshore* (L3 – Skills & knowledge)

THEME 5: COMPLEX INCIDENTS WITH SEVERAL (2-5) CASUALTIES

To successfully complete this BSTR First Aid Module Theme 5, Delegates shall be able to demonstrate:

- 1) Knowledge of and understanding for managing and effectively carrying out First Aid during complex incidents with several (2 - 5) casualties in a wind turbine work environment (L2 – Knowledge)



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- 2) Knowledge of and understanding of situational awareness and psychological effects of managing and administering First Aid during complex incidents with several (2 - 5) casualties in a wind turbine work environment (L2 – Knowledge)

ELEMENT 5.1 - THEME 1: PSYCHOLOGICAL EFFECTS OF FIRST AID

Training Staff shall:

- 5.1.1 Explain and demonstrate the psychological effects of administering First Aid for First Aider (person administering First Aid)
 - a. Psychological consequences of administering First Aid
 - b. Post-Traumatic Stress Disorder (PTSD) after administering First Aid
 - c. Tools First Aiders can use to minimise psychological impacts of administering First Aid
 - d. Where First Aiders can receive help for coping with psychological effects (including PTSD) of administering First Aid
 - e. How First Aiders can evaluate whether they can administer psychological First Aid or if they need to contact professional help

Delegates shall:

- 5.1.2 Explain the psychological effects of administering First Aid for First Aider
 - a. Psychological consequences of administering First Aid
 - b. PTSD after administering First Aid
 - c. Tools First Aiders can use to minimise psychological impacts of administering First Aid
 - d. Where First Aiders can receive help for coping with psychological effects (including PTSD) of administering First Aid
 - e. How First Aiders can evaluate whether they can administer psychological First Aid or if they need to contact professional help

Training Staff shall:

- 5.1.3 Facilitate a debriefing about the psychological effects of administering First Aid for First Aider
 - a. Review positive actions observed during exercise
 - b. Suggest points for improvement

ELEMENT 5.2 - THEME 2: SUDDEN SICKNESS AND ENVIRONMENTAL FACTORS

Training Staff shall:



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- 5.2.1 Explain and demonstrate First Aid for sudden sickness and environmental factors (e.g. chemical, air quality, dust, pollen, gases, poisonous animals, etc.)
- a. Most common First Aid conditions *caused* by local environmental factors found at the specific geographic work locations and workplace related hazards
 - b. Most common First Aid conditions *worsened* by local environmental factors found at the specific geographic work locations
 - c. Effects of alcohol and other medication/narcotics on physical and psychological performance

Delegates shall:

- 5.2.2 Explain and demonstrate the ability to perform First Aid for sudden sickness and environmental factors (e.g. chemical, air quality, dust, pollen, gases, poisonous animals, etc.)
- a. How to respond to sudden sickness *caused* and *worsened* by environmental factors that affect the *central nervous system*
 - b. How to respond to sudden sickness *caused* and *worsened* by environmental factors that affect the *respiratory system*
 - c. How to respond to sudden sickness *caused* and *worsened* by environmental factors that affect the *circulatory system*

Training Staff shall:

- 5.2.3 Facilitate a debriefing about sudden sickness and environmental factors (e.g. chemical, air quality, dust, pollen, gases, poisonous animals, etc.)
- a. Review positive actions observed during exercise
 - b. Suggest points for improvement

ELEMENT 5.3 - THEME 3: TYPES OF TRAUMA

Training Staff shall:

- 5.3.1 Explain and demonstrate First Aid for trauma
- a. Most common trauma conditions caused by accidents at *construction sites* onshore and offshore
 - b. Most common trauma conditions caused by accidents at *service sites during operation and maintenance* onshore and offshore

Delegates shall:

- 5.3.2 Explain and demonstrate the ability to perform First Aid for trauma



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- a. How to respond to trauma incidents that affect the *central nervous system*
- b. How to respond to trauma incidents that affect the *respiratory system*
- c. How to respond to trauma incidents that affect the *circulatory system*



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Training Staff shall:

- 5.3.3 Facilitate a debriefing about trauma
 - a. Review positive actions observed during exercise
 - b. Suggest points for improvement

ELEMENT 5.4 - THEME 4: INCIDENT MANAGEMENT AND SITUATIONAL AWARENESS

Training Staff shall:

- 5.4.1 Explain and demonstrate incident management and situational awareness
 - a. How lacking situational awareness can worsen First Aid incidents and cause further harm
 - b. How to manage First Aid incidents and preserve situational awareness *offshore* and *onshore*

Delegates shall:

- 5.4.2 Explain and demonstrate incident management and situational awareness
 - a. How lacking situational awareness can worsen First Aid incidents and cause further harm
 - b. How to manage First Aid incidents and preserve situational awareness *offshore* and *onshore*

Training Staff shall:

- 5.4.3 Facilitate a debriefing about incident management and situational awareness
 - a. Review positive actions observed during exercise
 - b. Suggest points for improvement

ELEMENT 5.5 - THEME 5: COMPLEX INCIDENTS WITH SEVERAL (2-5) CASUALTIES

This theme allows Delegates to gain knowledge, skills and practical experience with managing and administering First Aid during complex incidents with several (2-5) casualties. For this theme the Course Instructor shall divide their Delegates into three (3) different groups with roles shown in the table below:

During this exercise the following shall occur:



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- 1) The Observational, First Aid and Casualty Groups give each other feedback on the incident management, First Aid performance and situational awareness during this exercise
- 2) The instructor leads and supports the group discussion and gives personal feedback on the incident management, First Aid performance and situational awareness during this exercise
- 3) The exercise is repeated, switching the participants of each group. Each Delegate shall participate at least once as a member of the Observational, First Aid and Casualty groups

Training Staff shall:

- 5.5.1 Explain and demonstrate how to manage complex incidents with several (2-5) casualties in wind turbine working environments
 - a. Difficulties and challenges of managing and administering First Aid during complex incidents with several (2-5) casualties
 - b. Situational awareness and psychological effects of managing and administering First Aid during complex incidents with several (2-5) casualties
 - c. Systematically and effectively managing complex First Aid scenarios during complex incidents with several (2-5) casualties
- 5.5.2 Lead a discussion about complex incidents with several (2-5) casualties in wind turbine working environments
 - a. Positive observations and constructive criticism for Delegates' performance during this exercise with several (2-5) casualties
 - b. How Delegates can manage and administer First Aid more effectively and efficiently during complex incidents with several (2-5) casualties

Delegates shall:

- 5.5.3 Explain and demonstrate the ability to manage complex incidents with several (2-5) casualties in wind turbine working environments
 - a. How to manage and administer First Aid during complex incidents with several (2-5) casualties
 - b. Situational awareness, knowledge and understanding of psychological effects of managing and administering First Aid during complex incidents with several (2-5) casualties
 - c. How to systematically and effectively manage complex First Aid scenarios during complex incidents with several (2-5) casualties

Delegates shall:



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- 5.5.4 Explain and discuss complex incidents with several (2-5) casualties in wind turbine working environments
- Positive and negative points of the Observational, First Aid and Casualty Groups' performance and incident management during these complex incident exercises with several (2-5) casualties
 - How to improve the First Aid Groups' performance with regards to administering First Aid, situational awareness and incident management for complex incidents with several (2-5) casualties using their background knowledge of First Aid.

Training Staff shall:

- 5.5.5 Facilitate a debriefing about complex incidents with several (2-5) casualties in wind turbine working environments
- Review positive actions observed during exercise
 - Suggest points for improvement

Lesson 6 - SCENARIO-BASED TRAINING

120 min.

The aim of this lesson is to refresh and build on Delegates' previously acquired knowledge and skills to be able to assess, assist and provide correct First Aid during an incident.

To successfully complete this BSTR Module, Delegates shall, through different scenarios, be able to demonstrate:

- 1) Managing incidents - approaching and assessing incidents (L3 – Skills)
- 2) Providing the necessary lifesaving First Aid in an incident (L3 – Skills)
- 3) Correct use of First Aid equipment (L3 – Skills)
- 4) Knowledge and skills for AED safety procedures (L3 – Skills & knowledge)
- 5) Correct use of an AED (L3 – Skills)

ELEMENT 6.1 - PRACTICE FIRST AID TECHNIQUES

Training Staff shall:

- 6.1.1 Explain the safety procedures in the training area

Delegates shall:



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- 6.1.2 Practice and demonstrate the ability to perform safe, life - saving First Aid techniques through relevant scenarios according to the delegate performance assessment form

Training Staff shall:

- 6.1.3 Ensure that the following topics are covered during scenario-based training:
- a. Managing incidents
 - b. Providing necessary lifesaving First Aid
 - c. Correct use of First Aid equipment
 - d. Knowledge of and skills for AED safety procedures
 - e. Correct use of an AED

This scenario-based training shall be conducted as group work with one or more Delegates as First Aiders, while the other Delegates act as casualty/casualties or observer/s. Each Delegate shall, as a minimum, act as First Aider at least one time. Relevant First Aid equipment shall be available and used at all times during scenario-based training.

To ensure all of the above-mentioned points are covered during scenario-based training, Training Providers shall combine several of the following First Aid situations mentioned below.

At least one scenario must be based on an electrical incident.

6.1.4 First Aid situations

- a. Dropped object - serious head injury, unresponsive, breathing
- b. Fall from heights - external bleeding, unresponsive, breathing
- c. Serious internal bleeding
- d. Serious external bleeding
- e. Unresponsive with normal breathing
- f. Unresponsive, not breathing
- g. CPR using an AED
- h. Seizures (e.g. epileptic seizure)
- i. Asthma
- j. Stroke (circulatory, respiratory, central nervous system)
- k. Serious burns (Chemical, electrical, thermal and sun)
- l. Hypothermia
- m. Heat related illness (heat stroke, heat exhaustion, hyperthermia, cramps etc.)
- n. Crush injury



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- o. Eye injury
- p. Electrical accidents minor/serious
- q. Amputation
- r. Minor incident escalating to a serious incident
- s. Traffic related accidents

Training Staff shall:

- 6.1.4 Facilitate a debriefing about First Aid situations
 - a. Review positive actions observed during exercise
 - b. Suggest points for improvement
- 6.1.5 Facilitate a debriefing about Complex incidents with several (2-5) casualties in wind turbine working environments
 - a. Review positive actions observed during exercise
 - b. Suggest points for improvement

Lesson 7 - EVALUATION

15 min.

The aim of this lesson is to summarise the BSTR Module and give the Delegates the opportunity to conduct an open-minded review of the training and the instructor.

To successfully complete this BSTR Module, Delegates shall be able to demonstrate:

- 1) Active participation in the evaluation

ELEMENT 7.1 - SUMMARY

Training Staff shall:

- 7.1.1 Summarise the BSTR Module and give the Delegates final feedback

ELEMENT 7.2 - EVALUATION

Delegates shall:

- 7.2.1 Conduct a written evaluation

Training Staff shall:

- 7.2.2 Give necessary feedback on the written evaluations



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ELEMENT 7.3 - TRAINING RECORDS

Training Staff shall:

- 7.3.1 Ensure that all Delegates are registered with a personal Delegate profile in WINDA and have provided their WINDA ID to the Training Provider prior to completing the training course.

7.7 Delegate performance assessment

Assessment of learning outcomes:

Delegates will be assessed according to the learning outcomes stated in Section 1.6 by means of direct observation and supplementary oral questions, where appropriate.

The assessment shall be conducted during practical scenarios based on the wind turbine work environment.

Each Delegate shall demonstrate the ability to deal with a casualty that is:

- 1) Unconscious
- 2) Requires CPR
- 3) A scenario as detailed in Lesson 6

The formal evaluation of knowledge of above scenarios shall be in accordance with the Practical Assessment Measures in Section - 3 (Measures).

Training Providers shall have a documented procedure in place for dealing with Delegates not meeting the stated learning outcomes.



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ORGANISATION

Manual Handling Refresher (MHR)



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8 MODULE 2 – MANUAL HANDLING REFRESHER

Delivery of the Manual Handling Refresher module covers same content, duration, learning objectives as described in BST Manual Handling.

The Manual Handling training can consist of first time Delegates and refresher Delegates in the same classroom. The training is designed to allow the more experienced Delegates to contribute more actively and share their knowledge with the refresher Delegates.

Note: If training is conducted with first time Delegates and refresher Delegates in the same classroom then first time Delegates shall receive a MH record in WINDA and refresher Delegates shall receive a MHR record in WINDA.



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Fire Awareness Refresher (FAWR)



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9 MODULE 3 – FIRE AWARENESS REFRESHER

Delivery of the Fire Awareness Refresher module covers same content, duration, learning objectives as described in BST Fire Awareness.

The Fire Awareness training can consist of first time Delegates and refresher Delegates in the same classroom. The training is designed to allow the more experienced Delegates to contribute more actively and share their knowledge with the refresher Delegates.

Note: If training is conducted with first time Delegates and refresher Delegates in the same classroom then first time Delegates shall receive a FAW record in WINDA and refresher Delegates shall receive a FAWR record in WINDA.



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Working at Heights Refresher (WAHR)



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10MODULE 4 – WORKING AT HEIGHTS REFRESHER

10.1 Aims and objectives of the BSTR Working at Heights Module

The aim of this BSTR Working at Heights Module is to review and build on previously gained knowledge and skills through theoretical and practical training so that Delegates can use basic personal protective equipment and perform safe work at heights and safe and comprehensive basic rescue from heights in the wind turbine industry/ WTG environment.

This BSTR Working at Heights Module shall ensure that:

- 1) Delegates are able to demonstrate knowledge of hazards and risks associated with working at heights in a WTG. (L2 – Knowledge)
- 2) Delegates are able to demonstrate correct identification of PPE, including identification of European/ Global Standard markings on harness, hard hats, lanyards and other PPE. (L2 – Knowledge)
- 3) Delegates are able to demonstrate the knowledge of and skills to correctly pre-use inspect, service, store and correct fitting of harnesses, fall arrest lanyards, work positioning lanyards and other PPE. (L3 – Skills)
- 4) Delegates are able to demonstrate correct use of the relevant PPE, e.g. harnesses, fall arrest lanyards, guided type fall arresters and work positioning lanyards. These include correct identification of anchor points and correct ladder conduct. (L3 – Skills)
- 5) Delegates are able to demonstrate correct use of evacuation devices. (L3 – Skills)
- 6) Delegates are able to demonstrate how to approach rescue situations in WTGs and use rescue equipment efficiently. (L3 Skills & attitude)

Note: The BSTR Module Working at Heights does not test a Delegate's fear of heights.

10.2 Duration of the BSTR Working at Heights Module

The total contact time for completing this Working at height refresher module is estimated to be 8 hours. This is based on the time estimate given in the module timetable.

The training provider must not exceed the times per day given in table 13-2 below.

The training provider must ensure that sufficient time is allowed for delegates with prior experience to share their experiences related to Working at height in a way that is constructive for the entire class.



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	Maximum duration per day
Contact time	8 hours
Total training day	10 hours

Table 10-2 - Maximum durations for training days

Note: Contact time includes delivery of course lesson contents, practical exercises and activities directly related to these.

The total training day includes contact time, meals and breaks and travel between training sites (where applicable).

10.3 Working at Heights Instructor to Delegate Ratio

The ratio shown for theory sessions indicates the maximum number of Delegates attending the course.

Other ratios indicate the maximum number of Delegates to be supervised by an instructor during each activity.

Module	Session	Instructor to Delegate Ratio
BSTR Working at Heights	Theory	1:12
	Practical	1:6
	Session (Onsite)	Instructor to Delegate Ratio
	Theory	1:12
	Practical	1:4

Table 10-3 - GWO BSTR Working at height module instructor to delegate ratio

10.4 Equipment for Working at Heights Module

The equipment required for training as listed in Annex 1 must be available and must fulfil national legal requirements as listed in table A1-4 in annex 1 where applicable.

A generic approach to teaching safety equipment is applied to this Module aiming to avoid potential product specific additional training on completion of this Module, which may be required by the Delegate's organisation e.g. prior to site or work.

The generic approach is achieved by teaching a variety of safety equipment products within each safety equipment category (e.g. guided type fall arresters), enabling the Delegate to conduct pre-use inspection and to use other safety equipment products compared to those taught during this Module – based on the manufacturer's user manual but without additional formal training.



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Where reasonably practicable the training provider shall eliminate the risk of a fall from height. Where it is not possible to eliminate the risk of a fall then the fall factor experienced by any person shall be kept as low as is reasonably practicable.

GWO recommends a maximum fall factor of 0.5. To calculate this the following formula has been used,

$$\text{Fall Factor (FF)} = \frac{\text{Distance Fallen}}{\text{Length of lanyard'}}$$

using the maximum allowed lanyard of length 2.00 m and a fall of 1.00 m,

$$\text{Factor (FF)} = \frac{1.00 \text{ m}}{2.00 \text{ m'}}$$

$$\text{Factor (FF)} = 0.5.$$

During the evacuation exercises in this module the anchor points used for the attachment of fixed length fall arrest lanyards must be high enough above the ground, or structure below them, so that in the event that a person experiences a fall the shock absorber in their fall arrest lanyard can fully deploy and prevent them from contacting the ground (or structure directly below the anchor point).

During the evacuation exercise the delegates must be able to experience a minimum amount of descent using an evacuation or rescue device to ensure that they gain the experience of the speed of descent using these devices. This can be achieved by having the delegate descend from a minimum height using a rescue or evacuation device.

To ensure that for all fall protection equipment that may be used that there will be enough clearance below the anchor point, and to ensure that the delegates can experience a descent of sufficient duration for meaningful learning transfer, the GWO recommends that the anchor point is a minimum of 6.75 m (22.15') above the ground or structure directly below the anchor point. The recommended 6.75 m (22.15') clearance under the anchor point is explained in detail in annex 1.

If a training provider deviates from the recommended anchor point height of 6.75 m (22.15') to a lower height, then the following additional control measures must be in place,

- a. The training provider shall document a risk assessment for the lower height, this shall include calculations based on the harness and fall arrest lanyards which will be used during the evacuation exercises the calculation shall;
 - i. use the value for maximum shock absorber elongation supplied by the equipment manufacturer, and,
 - ii. demonstrate that the equipment to be used will prevent the delegates and instructors from coming into contact with the ground in the event of a fall, and,



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- iii. use formulas stated in national legislation or the equipment manufacturer guidelines or where no formula exists use the formula in annex 1, and,
- b. The potential fall factor shall not exceed 0.5, and,
- c. Delegates must experience a descent from a platform that is a minimum of 4.5 m (14.76') above the ground.

10.5 BSTR Working at Heights Module time table

The order in which the elements of this BSTR training Module are delivered may vary.

Within the module timetables, approximate duration of each of the lessons are given. The training provider may choose to deliver elements of the training according to other timetables, as long as the total duration is not reduced, and practical elements are not reduced in length. Theoretical elements may be delivered during the practical exercises when feasible.

Lesson		Element		Approx. Duration
1	Introduction	1.1	Safety instructions and emergency procedures	
		1.2	Facilities	
		1.3	Introduction	
		1.4	Scope and main objectives	
		1.5	On-going assessment (Control Measures)	
		1.6	Motivation	
			TOTAL	15 min.
2	Knowledge review	2.1	Knowledge of inspection of PPE, rescue and evacuation device	
		2.2	Knowledge of PPE	
		2.3	Knowledge of fall arrest systems and work positioning	
		2.4	Knowledge of rescue and evacuation device	
			TOTAL	30 min.
3	PPE Review exercises	3.1	Pre-use inspection	
		3.2	Proper use	
			TOTAL	30 min.
4	Theory	4.1	Use of a SRL for exercises	
		4.2	Safe and competent work and rescue at heights	
		4.3	Correct fitting of a harness	
		4.4	Attachment points	
		4.5	Anchor points	



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		4.6	Load and angles	
		4.7	Falls	
		4.8	Double versus twin fall arrest lanyard	
		4.9	Rescue Kit	
			TOTAL	50 min.
5	Measures to prevent injury during training	5.1	Control measures and warm up	
			TOTAL	20 min
6	Individual practical review exercises	6.1	How to attach a guided type fall arrester	
		6.2	Fall restraint and fall arrest lanyards	
		6.3	Work positioning lanyards	
		6.4	Certified and suitable anchor points	
		6.5	Safe and correct use of a Self-Retractable Lifeline (SRL) for exercises	
		6.6	Safe practices when working at heights	
			TOTAL	60 min.
7	Practical exercises, group	7.1	Safe and correct use of personal fall protection equipment	
		7.2	Accessing suitable anchor points	
		7.3	Pre-use inspection of the rescue and evacuation equipment	
		7.4	Safe and correct use of rescue/ evacuation equipment from ladder	
		7.5	Safe and correct rescue and evacuation methods from an evacuation hatch	
		7.6	Safe practises while working at heights	
			TOTAL	200 min.
8	Evaluation	8.1	Summary	
		8.2	Evaluation	
		8.3	Training records	
			TOTAL	15 min.
GRAND TOTAL				420 min.

Table 10-5 - GWO BSTR Working at height module timetable



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10.6 Detailed description of the BSTR Working at Heights Module

The learning outcomes specified for this BSTR Working at Heights Module are:

Lesson 1 - INTRODUCTION

15 min.

The aim of this lesson is to give the Delegates the needed awareness of the Refresher Course content and the facilities involved in order to ensure that all Delegates are aware of what to expect and what is expected of them during the course.

To successfully complete this BSTR Working at Heights Module, Delegates shall be aware of:

- 1) Safety instructions and emergency procedures
- 2) Facilities
- 3) Who the instructor and other Delegates are
- 4) Aims and primary learning objectives
- 5) On-going assessment according to GWO Control Measures
- 6) Motivation for this BSTR course

ELEMENT 1.1 - SAFETY INSTRUCTIONS AND EMERGENCY PROCEDURES

Training Staff shall **explain**:

- 1.1.1 Safety instructions according to internal procedures
- 1.1.2 Emergency procedures and emergency exits in the areas where the Delegates can be expected to be located during the course

ELEMENT 1.2 - FACILITIES

Training Staff shall **explain**:

- 1.2.1 General description of the on-site facilities
(Administration, dining area, restrooms, toilets, etc.)

ELEMENT 1.3 - INTRODUCTION

Training Staff shall **give**:

- 1.3.1 A short introduction, including backgrounds as instructors



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Delegates shall **give**:

- 1.3.2 A short introduction including job function and expected primary geographic work location

Training Staff shall **explain**:

- 1.3.3 The programme of the BSTR Module, including time for breaks and meals

ELEMENT 1.4 - SCOPE AND MAIN OBJECTIVES

Training Staff shall **explain**:

- 1.4.1 Scope and main objectives of this BSTR Module

ELEMENT 1.5 - ON-GOING ASSESSMENTS

Training Staff shall **explain**:

- 1.5.1 The reasons for the on-going assessment
- 1.5.2 GWO Control Measures and their use

ELEMENT 1.6 - MOTIVATION

Training Staff shall **explain**:

- 1.6.1 The importance of personal involvement in the course
- 1.6.2 The definition and need for correct working at heights

Lesson 2 - KNOWLEDGE REVIEW

30 min.

The aim of this lesson is to reduce the risk of short-term and long-term injury when working at height in a wind turbine, and to provide areas for the training staff to focus on, by reviewing the delegates knowledge of working at height

To successfully complete this BSTR Module, Delegates shall be able to demonstrate:

- 1) Correct pre-use inspection and inspection of PPE, rescue and evacuation devices (L3 – Skills)
- 2) Explain when PPE is required for working at height and their legal responsibilities towards inspection of PPE for working at height (L2 – Knowledge)



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- 3) Explain when Fall Arrest Systems and work positioning devices are required and their legal responsibilities towards those (L2 – Knowledge)
- 4) Explain when various rescue and evacuation equipment is required and the legal inspection requirements of those (L2 – Knowledge)

ELEMENT 2.1 - KNOWLEDGE OF INSPECTION OF PPE, RESCUE AND EVACUATION DEVICE

Delegates shall:

- 2.1.1 Demonstrate the ability to perform a pre-use inspection of PPE used for working at height
- 2.1.2 Explain the requirements for certification of PPE used for working at height

ELEMENT 2.2 - KNOWLEDGE OF PPE

Delegates shall:

- 2.2.1 Explain when to use PPE for working at height
- 2.2.2 Explain the legislative requirements for PPE used for working at height
- 2.2.3 Describe their own legal responsibilities towards PPE used for working at height

ELEMENT 2.3 - KNOWLEDGE OF FALL ARREST SYSTEMS AND WORK POSITIONING

Delegates shall:

- 2.3.1 Explain when to use Fall Arrest systems
- 2.3.2 Explain the legislative requirements, inspection
- 2.3.3 Explain the compliance of rail/ wire systems
- 2.3.4 Demonstrate how to achieve a good work position during practical exercises

ELEMENT 2.4 - KNOWLEDGE OF RESCUE AND EVACUATION DEVICES

Delegates shall:

- 2.4.1 Explain when to use rescue and evacuation devices
- 2.4.2 Describe the legislative requirements for rescue and evacuation devices
- 2.4.3 Explain the requirements for inspection/ certification (vacuum packed/ not vacuum packed)



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Lesson 3 - PPE REVIEW EXERCISES

30 Min.

This lesson shall refresh the Delegates' knowledge, skills and competencies in Basic Height Rescue PPE and personal fall protection use, identification, inspection, and certification

To successfully complete this BSTR Module, Delegates shall be able to:

- 1) Demonstrate the ability to correctly perform a pre-use inspection of PPE used for working at height by a generic approach (L3 – Skills)
- 1) Demonstrate the ability the correctly use, manage, and control PPE used for working at height from a generic approach (L3 – Skills)

ELEMENT 3.1 - PRE-USE INSPECTION

Training Staff shall:

- 3.1.1 Explain and demonstrate Pre-use Inspection of harnesses, fall arrest systems, fall restraint systems, and self-retractable lines with a focus on a generic approach to pre-use inspection of the equipment

ELEMENT 3.2 - PROPER USE

Training Staff shall:

- 3.2.1 Explain and demonstrate: Proper use, management, and control of harnesses, fall arrest systems, fall restraint systems, and self-retractable lines with a focus on a generic approach to using the equipment.

Note: For a detailed description of the elements of the pre-use inspection for each of the items of equipment in this lesson refer to the GWO BST standard Lessons 3 to 6.

Lesson 4 - THEORY

50 min.

The aim of this lesson is to reduce the risk of short-term and long-term injury when working at height in a wind turbine and during the practical elements of this course by refreshing the delegates knowledge of working at height and manual handling theory.

Note: The training provider shall, where reasonably practicable and safe to do so, deliver the theoretical training in conjunction with practical elements of this module.

To successfully complete this BSTR Module, Delegates shall be able to:

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- 1) Explain the use of backup systems for exercises (L2 – Knowledge)
- 2) Explain safe and competent work and rescue at height (L2 – Knowledge)
- 3) Explain the correct fitting of a harness (L2 – Knowledge)
- 4) Explain the use of attachment points (L2 – Knowledge)
- 5) Explain the use of anchor points (L2 – Knowledge)
- 6) Explain how loads and angles can influence the strength of e.g. a sling (L2 – Knowledge)
- 7) Give examples of common fall indicators on equipment (L2 – Knowledge)
- 8) Explain the risk of suspension trauma (L2 – Knowledge)
- 9) Explain how to use a double and twin fall arrest lanyard (L2 – Knowledge)
- 10) Explain how to perform a pre-use inspection of rescue and evacuation kits (L2 – Knowledge)

ELEMENT 4.1 - USE OF A SRL FOR EXERCISES

Training Staff shall:

- 4.1.1 Explain and demonstrate how to perform a generic pre-use inspection of an SRL.
- 4.1.2 Explain and demonstrate the how to use a SRL as a backup during practical exercises

ELEMENT 4.2 - SAFE AND COMPETENT WORK AND RESCUE AT HEIGHTS

Training Staff shall:

- 4.2.1 Explain and demonstrate how to keep oneself and others safe during work and rescue situations

ELEMENT 4.3 - CORRECT FITTING OF A HARNESS

Training Staff shall:

- 4.3.1 Explain and demonstrate how to adjust a full body harness so that it fits correctly

ELEMENT 4.4 - ATTACHMENT POINTS

Training Staff shall:

- 4.4.1 Explain and demonstrate how to correctly use attachment points
- 4.4.2 Explain the difference between an anchor point and attachment point (approved/ non- approved)



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ELEMENT 4.5 - ANCHOR POINTS

Training Staff shall:

- 4.5.1 Explain and demonstrate how to recognise anchor points
- 4.5.2 Explain the requirements for anchor points

ELEMENT 4.6 - LOADS AND ANGLES

Training Staff shall:

- 4.6.1 Explain the difference between a static and dynamic load
- 4.6.2 Explain how angles can influence the strength of e.g. a sling

ELEMENT 4.7 - FALLS

Training Staff shall:

- 4.7.1 Show examples of and explain fall indicators on equipment
- 4.7.2 Explain how different situations can influence the approach to the rescue, injuries / no injuries
- 4.7.3 Explain the risk of Suspension Trauma

ELEMENT 4.8 - DOUBLE VERSUS TWIN FALL ARREST LANYARD

Training Staff shall:

- 4.8.1 Show examples of and explain the difference between a double and twin fall arrest lanyard
- 4.8.2 Explain and demonstrate how to use double fall arrest lanyard
- 4.8.3 Explain and demonstrate how to use twin fall arrest lanyard
- 4.8.4 Demonstrate the correct way of using twin and single fall arrest lanyards, including double hook climbing on ladder and required and recommended distance between twin fall arrest lanyard anchor point attachment points climbing ladders

ELEMENT 4.9 - RESCUE KIT

Training Staff shall:

- 4.9.1 Show examples of and explain the content of rescue and evacuation kits
- 4.9.2 Demonstrate how to perform a pre-use inspection of rescue and evacuation kits



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Lesson 5 - MEASURES TO PREVENT INJURY DURING TRAINING

20 Min.

The aim of this lesson is to reduce the risk of injury during training by ensuring that the delegates are briefed in the control measures employed in the training area and to warm up prior to performing rescue exercises.

ELEMENT 5.1 - CONTROL MEASURES AND WARM UP

The instructor shall:

- 5.1.1 Explain further control measures for the specific training facilities and training to avoid injury during the training
- 5.1.2 Verify that the delegates can explain the principles of operation of the PPE and equipment to be used during practical training sessions
- 5.1.3 Ensure that any hazardous energy sources which may affect the delegates during the practical training sessions are isolated and locked out and that the status of the isolations has been communicated to the delegates
- 5.1.4 Lead a warm-up session of the major muscle groups of the body and the ankles, wrists and back. See suggested exercises in annex 4.
- 5.1.5 Verify that each delegate who is working at height (either as a casualty or a rescuer) during the following practical exercises is always attached to a backup line prior to and at all times whilst working at height. GWO recommends that a SRL is used as a backup line.

Delegates shall:

- 5.1.6 Take part in the warm-up session of the major muscle groups and ankles, wrists and back
- 5.1.7 Perform a pre-use inspection of their personal fall protection equipment
- 5.1.8 Perform a 'buddy check' of another delegates personal fall protection equipment

Lesson 6 - INDIVIDUAL PRACTICAL REVIEW EXERCISES

60 Min.

The aim of this lesson is to reduce the risk of injury through incorrect basic rescue techniques by assessing and refreshing the delegates' knowledge, skills and competencies in basic rescue from height, reinforcing and emphasize the importance of being able to carry out a rescue at any time during training, as well as when working in wind turbines on a daily basis.

To successfully complete this BSTR Module, Delegates shall be able to:



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- 1) Demonstrate the ability to safely and correctly attach a guided type fall arrester to the fall arrest system (L3 – Skills)
- 2) Demonstrate the ability to safely and correctly attach a fall restraint and fall arrest lanyard to a vertical ladder system (L3 – Skills)
- 3) Demonstrate the ability to use a work positioning lanyard in order to leave hands free for work (L3 – Skills)
- 4) Explain the requirement for certified and suitable anchor points (L2 – Knowledge)
- 5) Demonstrate the ability to safely and correctly use a Self-Retractable Lifeline (SRL) for exercises: (L3 – Skills)
 - a. Different types of SRL systems that exist and how they are used, what length they come in, and difference between wire - straps
 - b. Different maximum angles that are allowed
 - c. How to apply an SRL correctly to the harness, either to the attachment point (A - point) on the back or to the attachment point (A - point) in the front
 - d. Different places an SRL can be secured
 - e. Importance of using an SRL
 - f. How to conduct a pre-use inspection and see if an SRL is approved, possesses documentation and authorisation date

ELEMENT 6.1 - HOW TO ATTACH A GUIDED TYPE FALL ARRESTER

Delegates shall:

- 6.1.1 Practice and demonstrate the ability to choose the correct slider / glider for a guided type vertical fall arrest system
- 6.1.2 Practice and demonstrate the ability to safely and correctly attach the slider / glider to the rail or wire
- 6.1.3 Practice and demonstrate the ability to safely and correctly attach the slider / glider to the harness

ELEMENT 6.2 - FALL RESTRAINT AND FALL ARREST LANYARDS

Delegates shall:

- 6.2.1 Practice and demonstrate the ability to safely and correctly attach the fall restraint and fall arrest lanyard to a vertical ladder system
- 6.2.2 Practice and demonstrate the ability to safely and correctly attach fall restraint and fall arrest lanyards to the harness
- 6.2.3 Demonstrate the ability to correctly use twin and single fall arrest lanyards whilst double hook climbing maintaining the correct distance between the anchor points



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ELEMENT 6.3 - WORK POSITIONING LANYARDS

Delegates shall:

- 6.3.1 Practice and demonstrate the ability to safely and correctly use a work positioning lanyard
- 6.3.2 Demonstrate the ability to work safely with free hands, being secured by a work positioning lanyard

ELEMENT 6.4 - CERTIFIED AND SUITABLE ANCHOR POINTS

Delegates shall:

- 6.4.1 Practice and demonstrate the ability to recognise and use certified anchor points
- 6.4.2 Practice and demonstrate the ability to recognise and use suitable anchor points

ELEMENT 6.5 - SAFE AND CORRECT USE OF A SRL FOR EXERCISES

Delegates shall:

- 6.5.1 Demonstrate the ability to safely and correctly use an SRL

ELEMENT 6.6 - SAFE PRACTICES WHILE WORKING AT HEIGHT

Delegates shall:

- 6.6.1 Demonstrate safe conduct and attitude while working at height by always being secured with fall protection PPE during practical exercises
- 6.6.2 Demonstrate the ability to reduce the risk of dropped objects while working at height by ensuring that equipment is always attached either to the delegates harness or a suitable anchor point.

Lesson 7 - PRACTICAL EXERCISES - GROUP

200 min.

The aim of the lesson is to refresh the Delegates' knowledge and skills to be able to use the appropriate methods to control and reduce the risk of injuries when working and rescuing from heights.

To successfully complete this BSTR Module, Delegates must be able to:

- 1) Demonstrate the ability to safely and correctly use PPE for working at height (L3 – Skills)



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- 2) Demonstrate the ability to access certified and suitable anchor points (L3 – Skills)
- 3) Demonstrate the ability to perform a pre-use inspection of the rescue and evacuation equipment applying generic principals (L3 – Skills)
- 4) Demonstrate the ability to safely and correctly use rescue / evacuation equipment to perform a rescue from a vertical ladder (L3 – Skills)
- 5) Demonstrate Safe and correct rescue and evacuation methods (L3 – Skills)
- 6) Demonstrate safe practices while Working at Heights (L3 – Skills)

ELEMENT 7.1 - SAFE AND CORRECT USE OF THE PERSONAL FALL PROTECTION EQUIPMENT

Delegates shall:

- 7.1.1 Demonstrate the ability to safely and correctly use personal fall protection equipment, including an SRL in a wind turbine like environment

ELEMENT 7.2 - ACCESSING CERTIFIED AND SUITABLE ANCHOR POINTS

Delegates shall:

- 7.2.1 Demonstrate the ability to recognise and safely and correctly use both certified and suitable anchor points

ELEMENT 7.3 - USER INSPECTIONS OF THE RESCUE AND EVACUATION EQUIPMENT

Delegates shall:

- 7.3.1 Demonstrate the ability to perform a pre-use inspection of rescue and evacuation devices applying generic principals

ELEMENT 7.4 - SAFE AND CORRECT USE OF RESCUE AND EVACUATION EQUIPMENT FROM LADDER

Delegates shall:

- 7.4.1 Demonstrate the ability to safely and correctly perform a basic rescue and evacuation from a vertical ladder

ELEMENT 7.5 - SAFE AND CORRECT RESCUE AND EVACUATION METHODS FROM AN EVACUATION HATCH

Delegates shall:

- 7.5.1 Demonstrate the ability to safely and correctly perform a basic rescue and evacuation from an evacuation hatch



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- 7.5.2 Demonstrate the ability to perform a passive mode setup self-rescue from an evacuation hatch
- 7.5.3 Demonstrate the ability to perform an active mode setup double evacuation from an evacuation hatch, applying a deflection/friction carabiner on the rescue device and using a fall restraint lanyard kept as short as possible as a connecting element between the rescue / evacuation device and the harness

ELEMENT 7.6 - SAFE PRACTICES WHILE WORKING AT HEIGHTS

Delegates shall:

- 7.6.1 Demonstrate safe conduct and attitude while Working at Heights
- 7.6.2 Demonstrate the ability to use techniques like attaching equipment to their harness to reduce the risk of dropped objects

Lesson 7 Notes:

- 1) An Instructor shall be at the height chosen to descend from
- 2) Instructor(s) and Delegates shall be secured to an anchor point while waiting to descend. This can be achieved by correct use of the fall arrest lanyard
- 3) When Delegates are demonstrating the evacuation, a safety line that is connected to the Delegate's harness shall be used. This will be set up and controlled by the Instructor and be secured to a different anchor point than the evacuation device
- 4) Although not a requirement of the Standard, Delegates may repeat the evacuation exercises should sufficient time be available



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Lesson 8 - EVALUATION

15 min.

The aim of the lesson is to summarise the BSTR Module and give the Delegates the opportunity to conduct an open-minded review of the training and the instructor.

To successfully complete this BSTR Module, Delegates must be able to demonstrate:

- 1) Active participation in the evaluation

ELEMENT 8.1 - SUMMARY

Training Staff shall:

- 8.1.1 Summarise the BSTR Module and give the Delegates final feedback

ELEMENT 8.2 - EVALUATION

Delegates shall:

- 8.2.1 Conduct a written evaluation

Training Staff shall:

- 8.2.2 Give necessary feedback on the written evaluations

ELEMENT 8.3 - TRAINING RECORDS

Training Staff shall:

- 8.3.1 Ensure that all Delegates are registered with a personal Delegate profile in WINDA and have provided their WINDA ID prior to completing the training course.



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10.7 Delegate performance assessment

Assessment of learning outcomes:

Delegates will be assessed according to the learning outcomes stated in Section 11.6 by means of direct observation and supplementary oral questions, where appropriate.

The assessment shall be conducted by practical scenarios based on the WTG environment.

Each Delegate shall participate and demonstrate:

Correct use of the evacuation/rescue device, including:

- 1) User inspection and test
- 2) Use of correct anchor points
- 3) Correct behaviour on ladder with PPE
- 4) Correct self evacuation using an evacuation / rescue device

Correct rescue methods, including:

- 1) Rescue of a **conscious** Casualty hanging by a guided type vertical fall arrester, secured by their work positioning lanyard (inside of the ladder) with the rescue equipment in a passive setup, preferably utilizing a rope clamp for rescue
- 2) Rescue of an **unconscious** Casualty hanging by a fall arrest lanyard (inside of the ladder) with the rescue equipment in an active setup
- 3) Rescue of a **conscious** casualty secured by their work positioning lanyard (from the outside of the ladder, with hip diversion, i.e. rescue line is diverted using the side D-ring located at the hip of the rescuer's harness. This creates greater space between the casualty and the ladder)

The formal evaluation of knowledge of above scenarios shall be in accordance with the Delegate assessment Form (template provided in the Requirements for Training Providers). The Trainer keeps the delegate assessment Forms until the completion/ evaluation of the BSTR Module.

Training Providers shall have a documented procedure in place for dealing with Delegates not meeting the stated learning outcomes. If a Delegate fails to meet the demands, they shall attend a new BST Working at Height Module.



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11 MODULE 5 – WORKING AT HEIGHTS WITH MANUAL HANDLING REFRESHER

11.1 Aims and objectives of the BSTR Working at Heights with Manual Handling Module

The aim of this module is to review and build on previously gained knowledge and skills through theoretical and practical training so that delegates can use basic personal protective equipment and perform safe work at heights and safe and comprehensive basic rescue from heights. Furthermore, to encourage positive manual handling and ergonomic behaviour, encourage delegates to consider alternatives to manual handling through planning and to train delegates ability to perform Manual Handling tasks in a safe manner in the wind turbine industry/environment.

This BSTR Working at Heights with Manual Handling Module shall ensure that:

- 1) Delegates are able to demonstrate knowledge of hazards and risks associated with Working at Heights in a WTG. (L2 – Knowledge)
- 5) Delegates are able to demonstrate correct identification of PPE, including identification of European / Global Standard markings on harness, hard hats, lanyards and other PPE. (L2 – Knowledge)
- 6) Delegates are able to demonstrate the knowledge of and skills to correctly pre-use inspect, service, store and correct fitting of harnesses, fall arrest lanyards, work positioning lanyards and other PPE. (L2 – Knowledge & L3 – Skill)
- 7) Delegates are able to demonstrate correct use of the relevant PPE, e.g. harnesses, fall arrest lanyards, guided type fall arresters and work positioning lanyards. These include correct identification of anchor points and correct ladder conduct. (L3 – Skill)
- 8) Delegates are able to demonstrate correct use of evacuation devices. (L3 – Skill)
- 9) Delegates are able to demonstrate how to approach rescue situations in WTGs and use rescue equipment efficiently (L3 – Skill)
- 10) The Delegates are able to demonstrate understanding of the importance of carrying out work duties in a safe and sound manner in accordance with the legislative requirements of their geographic work location (L2 – Knowledge)
- 11) Delegates are able to identify aspects of their job tasks that could increase their risk of developing muscular/ skeletal injuries (L2 Knowledge & Attitude)
- 12) The Delegates are able to demonstrate understanding of safe practices of Manual Handling, including the correct handling of equipment (L2 – Knowledge)



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- 13) The Delegates are able to identify signs and symptoms of injuries related to poor Manual Handling techniques and have knowledge of reporting methods (L2 – Knowledge)
- 14) The Delegates are able to demonstrate a problem-solving approach to Manual Handling in a wind turbine environment (L3 – Skill & Attitude)
- 15) The Delegates are able to demonstrate Manual Handling risk reduction techniques (L3 – Skill)

Note: The BSTR Module Working at Heights with Manual Handling is not intended to test a Delegate's fear of heights.

11.2 Duration of the BSTR Working at Heights with Manual Handling Module

The total contact time for completing this Working at height & manual handling combined refresher module is estimated to be 8 hours. This is based on the time estimate given in the module timetable.

The training provider must not exceed the times per day given in table 11-2 below.

The training provider must ensure that sufficient time is allowed for delegates with prior experience to share their experiences related to Working at height and manual handling in a way that is constructive for the entire class.

	Maximum duration per day
Contact time	8 hours
Total training day	10 hours

Table 11-2 - Maximum durations for training days

Note: Contact time includes delivery of course lesson contents, practical exercises and activities directly related to these.

The total training day includes contact time, meals and breaks and travel between training sites (where applicable).

11.3 Working at Heights with Manual Handling Trainer/Delegate Ratio

The ratio shown for theory sessions indicates the maximum number of Delegates attending the course.

Other ratios indicate the maximum number of Delegates to be supervised by an instructor during each activity.



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Module	Session	Trainer - Delegate Ratio
BSTR Working at Heights with Manual Handling	Theory	1:12
	Practical	1:6
	Session (Onsite)	Trainer - Delegate Ratio
	Theory	1:12
	Practical	1:4

Table 11-3 - Instructor to Delegate ratios for Working at Height & Manual Handling

11.4 Equipment for BSTR Working at Heights with Manual Handling Module

The equipment required for training as listed in Annex 1 must be available and must fulfil national legal requirements as listed in table A1-1 in annex 1 where applicable.

A generic approach to teaching safety equipment is applied to this Module aiming to avoid potential product specific additional training on completion of this Module, which may be required by the Delegate's organisation e.g. prior to site or work.

The generic approach is achieved by teaching a variety of safety equipment products within each safety equipment category (e.g. guided type fall arresters), enabling the Delegate to conduct pre-use inspection and to use other safety equipment products compared to those taught during this Module – based on the manufacturer's user manual but without additional formal training.

Where reasonably practicable the training provider shall eliminate the risk of a fall from height. Where it is not possible to eliminate the risk of a fall then the fall factor experienced by any person shall be kept as low as is reasonably practicable.

GWO recommends a maximum fall factor of 0.5. To calculate this the following formula has been used,

$$\text{Fall Factor (FF)} = \frac{\text{Distance Fallen}}{\text{Length of lanyard'}}$$

using the maximum allowed lanyard of length 2.00 m and a fall of 1.00 m,

$$\text{Factor (FF)} = \frac{1.00 \text{ m}}{2.00 \text{ m'}}$$

$$\text{Factor (FF)} = 0.5.$$

During the evacuation exercises in this module the anchor points used for the attachment of fixed length fall arrest lanyards must be high enough above the ground, or structure below them, so that in the event that a person experiences a fall the shock absorber in their fall arrest lanyard can fully deploy and prevent them from contacting the ground (or structure directly below the anchor point).



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During the evacuation exercise the delegates must be able to experience a minimum amount of descent using an evacuation or rescue device to ensure that they gain the experience of the speed of descent using these devices. This can be achieved by having the delegate descend from a minimum height using a rescue or evacuation device.

To ensure that for all fall protection equipment that may be used that there will be enough clearance below the anchor point, and to ensure that the delegates can experience a descent of sufficient duration for meaningful learning transfer, the GWO recommends that the anchor point is a minimum of 6.75 m (22.15') above the ground or structure directly below the anchor point. The recommended 6.75 m (22.15') clearance under the anchor point is explained in detail in annex 1.

If a training provider deviates from the recommended anchor point height of 6.75 m (22.15') to a lower height, then the following additional control measures must be in place,

- a. The training provider shall document a risk assessment for the lower height, this shall include calculations based on the harness and fall arrest lanyards which will be used during the evacuation exercises the calculation shall;
 - i. use the value for maximum shock absorber elongation supplied by the equipment manufacturer, and,
 - ii. demonstrate that the equipment to be used will prevent the delegates and instructors from coming into contact with the ground in the event of a fall, and,
 - iii. use formulas stated in national legislation or the equipment manufacturer guidelines or where no formula exists use the formula in annex 1, and,
- b. The potential fall factor shall not exceed 0.5, and,
- c. Delegates must experience a descent from a platform that is a minimum of 4.5 m (14.76') above the ground.

11.5 BSTR Working at Heights with Manual Handling Module timetable

The order in which the elements of this BSTR training Module are delivered may vary.

Within the module timetables, approximate duration of each of the lessons are given. The training provider may choose to deliver elements of the training according to other timetables. The timetables given are based on a maximum instructor to student ratio and may be reduced when smaller student to instructor ratios occur. Theoretical elements may be delivered during the practical exercises when feasible.

Lesson	Element	Approx.
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				Duration
1	Introduction	1.1	Safety instructions and emergency procedures	
		1.2	Facilities	
		1.3	Introduction	
		1.4	Scope and main objectives	
		1.5	On-going assessment	
		1.6	Motivation	
TOTAL				15 min.
2	Knowledge Review	2.1	Knowledge of inspection of PPE, rescue and evacuation device	
		2.2	Knowledge of PPE	
		2.3	Knowledge of fall arrest systems and work positioning	
		2.4	Knowledge of rescue and evacuation device	
		2.5	Knowledge of manual handling	
TOTAL				30 min.
3	PPE review exercises	3.1	User inspection of all PPE	
		3.2	Correct fitting of Harness	
TOTAL				30 min.
4	Theory	4.1	Use of an SRL	
		4.2	Safe and competent work and rescue at heights	
		4.3	Correct fitting of a harness	
		4.4	Attachment points	
		4.5	Anchor points	
		4.6	Load and angles	
		4.7	Falls	
		4.8	Double versus twin fall arrest lanyard	
		4.9	Rescue Kit	
		4.10	Manual Handling	
TOTAL				50 min.
5	Measures to prevent injury during training	5.1	Control Measures and warm-up	
				20 min.
6	Individual practical review	6.1	How to attach a guided type fall arrester	
		6.2	How to attach the fall arrest lanyard correctly	



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	exercises		to the ladder system	
		6.3	How to use a work positioning lanyard in order to leave the hands free for work	
		6.4	Knowledge of certified and suitable anchor points	
		6.5	Safe and correct use of a Self- Retractable Lifeline (SRL)	
		6.6	Safe practices when Working at Height	
		6.7	Safe and correct Manual Handling	
TOTAL				110 min.
7	Practical exercises, group	7.1	Safe and correct use of personal fall protection equipment	
		7.2	Accessing suitable anchor points	
		7.3	Pre-use inspections of the rescue and evacuation equipment	
		7.4	Safe and correct use of rescue/ evacuation equipment from ladder	
		7.5	Safe and correct rescue and evacuation methods from an evacuation hatch	
		7.6	Safe practices while Working at Heights with Manual Handling	
TOTAL				210 min.
8	Evaluation	8.1	Summary	
		8.2	Evaluation	
		8.3	Training records	
TOTAL				15 min.
GRAND TOTAL				480 min.

Table 11-5 - Working at Height & Manual handling timetable

11.6 Detailed description of the BSTR Working at Heights with Manual Handling Module

The learning outcomes specified for this BSTR Working at Heights with Manual Handling Module are:



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Lesson 1 - INTRODUCTION

15 min.

The aim of this lesson is to give the Delegates the needed awareness of the Refresher Course content and the facilities involved in order to ensure that all Delegates are aware of what to expect and what is expected of them during the course.

To successfully complete this BSTR Working at Heights with Manual Handling Module, Delegates shall be aware of:

- 1) Safety instructions and emergency procedures
- 2) Facilities
- 3) Who the instructor and other Delegates are
- 4) Aims and primary learning objectives
- 5) On-going assessment according to GWO Control Measures
- 6) Motivation for this BSTR course

ELEMENT 1.1 - SAFETY INSTRUCTIONS AND EMERGENCY PROCEDURES

Training Staff shall:

- 1.1.1 Explain the safety instructions according to internal procedures
- 1.1.2 Explain the emergency procedures and emergency exits in the areas where the Delegates can be expected to be located during the course

ELEMENT 1.2 - FACILITIES

Training Staff shall:

- 1.2.1 Describe the locations of the on-site facilities (Administration, dining area, restrooms, toilets, etc.)

ELEMENT 1.3 - INTRODUCTION

Training Staff shall:

- 1.3.1 Give a short introduction, including backgrounds as instructors

Delegates shall:

- 1.3.2 Give a short introduction including job function and expected primary geographic work location



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Training Staff shall:

- 1.3.3 Explain the programme of the BSTR Module, including time for breaks and meals

ELEMENT 1.4 - SCOPE AND MAIN OBJECTIVES

Training Staff shall:

- 1.4.1 Explain the scope and main objectives of this BSTR Module

ELEMENT 1.5 - ON-GOING ASSESSMENTS

Training Staff shall:

- 1.5.1 Explain the reasons for the on-going assessment
- 1.5.2 Explain the GWO Control Measures and their use

ELEMENT 1.6 - MOTIVATION

Training Staff shall:

- 1.6.1 Explain the importance of personal involvement in the course
- 1.6.2 Define and explain the need for correct Working at Heights with Manual Handling

Lesson 2 - KNOWLEDGE REVIEW

30 min.

The aim of this lesson is to reduce the risk of short-term and long-term injury when working at height in a wind turbine, and to provide areas for the training staff to focus on, by reviewing the delegates knowledge of working at height and manual handling.

To successfully complete this BSTR Module, Delegates shall be able to:

- 1) Demonstrate the ability to correctly perform pre-use inspections of PPE, rescue and evacuation devices (L3 – Skills)
- 2) Explain when PPE is required for working at height and their legal responsibilities towards inspection of PPE for working at height (L2 – Knowledge)
- 3) Explain when Fall Arrest Systems and work positioning devices are required and their legal responsibilities towards those (L2 – Knowledge)
- 4) Explain when various rescue and evacuation equipment is required and the legal inspection requirements of those (L2 – Knowledge)



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- 5) Describe the legal requirements, and explain the risks posed by manual handling in a wind turbine (L1 – Knowledge)

ELEMENT 2.1 - KNOWLEDGE OF INSPECTION OF PPE, RESCUE AND EVACUATION DEVICE

Delegates shall:

- 2.1.1 Demonstrate the ability to perform a pre-use inspection of PPE used for working at height
- 2.1.2 Explain the requirements for certification of PPE used for working at height

ELEMENT 2.2 - KNOWLEDGE OF PPE

Delegates shall:

- 2.2.1 Explain when to use PPE for working at height
- 2.2.2 Explain the legislative requirements for PPE used for working at height
- 2.2.3 Describe their own legal responsibilities towards PPE used for working at height

ELEMENT 2.3 - KNOWLEDGE OF FALL ARREST SYSTEMS AND WORK POSITIONING

Delegates shall:

- 2.3.1 Explain when to use Fall Arrest systems
- 2.3.2 Explain the legislative requirements, inspection
- 2.3.3 Explain the compliance of rail/ wire systems
- 2.3.4 Demonstrate how to achieve a good work position during practical exercises

ELEMENT 2.4 - KNOWLEDGE OF RESCUE AND EVACUATION DEVICES

Delegates shall:

- 2.4.1 Explain when to use rescue and evacuation devices
- 2.4.2 Describe the legislative requirements for rescue and evacuation devices
- 2.4.3 Explain the requirements for inspection/ certification (vacuum packed/ not vacuum packed)

ELEMENT 2.5 - KNOWLEDGE OF MANUAL HANDLING

Delegates shall:

- 2.5.1 Describe applicable local and global legislation and legislative requirements for manual handling



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2.5.2 Explain the consequences of incorrect manual handling

Training staff shall:

2.5.3 Lead a discussion about the risks and hazards posed by manual handling in the wind industry

2.5.4 Lead a discussion about how to avoid the risks of manual handling in a wind turbine focusing on avoiding manual handling, using suitable handling aids, and planning of manual handling tasks using the T.I.L.E principal and a MAC tool.

Lesson 3 - PPE REVIEW EXERCISES

30 Min.

This lesson shall refresh the Delegates' knowledge, skills and competencies in Basic Height Rescue PPE and personal fall protection use, identification, inspection, and certification

To successfully complete this BSTR Module, Delegates shall be able to:

- 2) Demonstrate the ability to correctly perform a pre-use inspection of PPE used for working at height by a generic approach (L3 – Skills)
- 3) Demonstrate the ability the correctly use, manage, and control PPE used for working at height from a generic approach (L3 – Skills)

ELEMENT 3.1 - PRE-USE INSPECTION

Training Staff shall:

3.1.1 Explain and demonstrate Pre-use Inspection of harnesses, fall arrest systems, fall restraint systems, and self-retractable lines with a focus on a generic approach to pre-use inspection of the equipment

ELEMENT 3.2 - PROPER USE

Training Staff shall:

3.2.1 Explain and demonstrate: Proper use, management, and control of harnesses, fall arrest systems, fall restraint systems, and self-retractable lines with a focus on a generic approach to using the equipment.

Note: For a detailed description of the elements of the pre-use inspection for each of the items of equipment in this lesson refer to the GWO BST standard Lessons 3 to 6.



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Lesson 4 - THEORY

50 min.

The aim of this lesson is to reduce the risk of short-term and long-term injury when working at height in a wind turbine and during the practical elements of this course by refreshing the delegates knowledge of working at height and manual handling theory.

Note: The training provider shall, where reasonably practicable and safe to do so, deliver the theoretical training in conjunction with practical elements of this module.

To successfully complete this BSTR Module, Delegates shall be able to:

- 1) Explain the use of backup systems for exercises (L2 – Knowledge)
- 2) Explain safe and competent work and rescue at height (L2 – Knowledge)
- 3) Explain correct fitting of a harness (L2 – Knowledge)
- 4) Explain the use of attachment points (L2 – Knowledge)
- 5) Explain the use of anchor points (L2 – Knowledge)
- 6) Explain how angles can influence the strength of e.g. a sling (L2 – Knowledge)
- 7) Give examples of common fall indicators on equipment (L2 – Knowledge)
- 8) Explain the risk of suspension trauma (L2 – Knowledge)
- 9) Explain how to use double and twin fall arrest lanyard (L2 – Knowledge)
- 10) Explain how to perform a pre-use inspection of rescue and evacuation kits (L2 – Knowledge)
- 11) Explain the principals and focal areas to plan and perform manual handling (L2 – Knowledge)

ELEMENT 4.1 - USE OF A SRL FOR EXERCISES

Training Staff shall:

- 4.1.1 Explain and demonstrate how to perform a generic pre-use inspection of an SRL.
- 4.1.2 Explain and demonstrate the how to use a SRL as a backup during practical exercises

ELEMENT 4.2 - SAFE AND COMPETENT WORK AND RESCUE AT HEIGHTS

Training Staff shall:

- 4.2.1 Explain and demonstrate how to keep oneself and others safe during work and rescue situations



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ELEMENT 4.3 - CORRECT FITTING OF A HARNESS

Training Staff shall:

- 4.3.1 Explain and demonstrate how to adjust a full body harness so that it fits correctly

ELEMENT 4.4 - ATTACHMENT POINTS

Training Staff shall:

- 4.4.1 Explain and demonstrate how to correctly use attachment points
- 4.4.2 Explain the difference between an anchor point and attachment point (approved/non- approved)

ELEMENT 4.5 - ANCHOR POINTS

Training Staff shall:

- 4.5.1 Explain and demonstrate how to recognise anchor points
- 4.5.2 Explain the requirements for anchor points

ELEMENT 4.6 - LOADS AND ANGLES

Training Staff shall:

- 4.6.1 Explain the difference between a static and dynamic load
- 4.6.2 Explain how angles can influence the strength of e.g. a sling

ELEMENT 4.7 - FALLS

Training Staff shall:

- 4.7.1 Show examples of and explain fall indicators on equipment
- 4.7.2 Explain how different situations can influence the approach to the rescue, injuries / no injuries
- 4.7.3 Explain the risk of Suspension Trauma

ELEMENT 4.8 - DOUBLE VERSUS TWIN FALL ARREST LANYARD

Training Staff shall:

- 4.8.1 Show examples of and explain the difference between a double and twin fall arrest lanyard
- 4.8.2 Explain and demonstrate how to use double fall arrest lanyard



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- 4.8.3 Explain and demonstrate how to use twin fall arrest lanyard
- 4.8.4 Demonstrate the correct way of using twin and single fall arrest lanyards, including double hook climbing on ladder and required and recommended distance between twin fall arrest lanyard anchor point attachment points climbing ladders

ELEMENT 4.9 - RESCUE KIT

Training Staff shall:

- 4.9.1 Show examples of and explain the content of rescue and evacuation kits
- 4.9.2 Demonstrate how to perform a pre-use inspection of rescue and evacuation kits

ELEMENT 4.10 - MANUAL HANDLING

Training Staff shall:

- 4.10.1 Lead a discussion about manual handling symptom awareness and typical reporting methods for injuries
- 4.10.2 Explain spinal anatomy and posture
- 4.10.3 Explain and demonstrate how to plan manual handling tasks using the T.I.L.E Principal and a MAC tool (Manual handling Assessment Chart tool) - considering the load weight, maximum reaching distance and aggravating factors
- 4.10.4 Explain and demonstrate risk Controls and manual handling Techniques with a focus on avoiding manual handling and using suitable handling aids
- 4.10.5 Inform the delegates that they will be observed and evaluated on applying manual handling theory and practical skills during the remaining part of the module

Lesson 5 - MEASURES TO PREVENT INJURY DURING TRAINING

20 Min.

The aim of this lesson is to reduce the risk of injury during training by ensuring that the delegates are briefed in the control measures employed in the training area and to warm up prior to performing rescue exercises.

ELEMENT 5.1 - CONTROL MEASURES AND WARM UP

The instructor shall:

- 5.1.1 Explain further control measures for the specific training facilities and training to avoid injury during the training



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- 5.1.2 Verify that the delegates can explain the principles of operation of the PPE and equipment to be used during practical training sessions
- 5.1.3 Ensure that any hazardous energy sources which may affect the delegates during the practical training sessions are isolated and locked out and that the status of the isolations has been communicated to the delegates
- 5.1.4 Lead a warm-up session of the major muscle groups of the body and the ankles, wrists and back. See suggested exercises in annex 4.
- 5.1.5 Verify that each delegate who is working at height (either as a casualty or a rescuer) during the following practical exercises is always attached to a backup line prior to and at all times whilst working at height. GWO recommends that a SRL is used as a backup line.

Delegates shall:

- 5.1.6 Take part in the warm-up session of the major muscle groups and ankles, wrists and back
- 5.1.7 Perform a pre-use inspection of their personal fall protection equipment
- 5.1.8 Perform a 'buddy check' of another delegates personal fall protection equipment

Lesson 6 - INDIVIDUAL PRACTICAL REVIEW EXERCISES

110 Min.

The aim of this lesson is to reduce the risk of injury through incorrect basic rescue techniques by assessing and refreshing the delegates' knowledge, skills and competencies in basic rescue from height, reinforcing and emphasize the importance of being able to carry out a rescue at any time during training, as well as when working in wind turbines on a daily basis.

To successfully complete this BSTR Module, Delegates shall be able to:

- 1) Demonstrate the ability to safely and correctly attach a guided type fall arrester to the fall arrest system (L3 – Skill)
- 2) Demonstrate the ability to safely and correctly attach a fall restraint and fall arrest lanyard to a vertical ladder system (L3 – Skill)
- 3) Demonstrate the ability to use a work positioning lanyard in order to leave hands free for work (L3 – Skill)
- 4) Explain the requirement for certified and suitable anchor points (L3 – Skill)
- 5) Demonstrate the ability to safely and correctly use a Self-Retractable Lifeline (SRL) for exercises: (L3 – Skill)
 - a. Different types of SRL systems that exist and how they are used, what length they come in, and difference between wire - straps



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- b. Different maximum angles that are allowed
 - c. How to apply an SRL correctly to the harness, either to the attachment point (A - point) on the back or to the attachment point (A - point) in the front
 - d. Different places an SRL can be secured
 - e. Importance of using an SRL
 - f. How to conduct a pre-use inspection and see if an SRL is approved, possesses documentation and authorisation date
- 4) Safely and correctly move objects utilizing correct manual handling techniques (L3 – Skill)

ELEMENT 6.1 - HOW TO ATTACH A GUIDED TYPE FALL ARRESTER

Delegates shall:

- 6.1.1 Practice and demonstrate the ability to choose the correct slider / glider for a guided type vertical fall arrest system
- 6.1.2 Practice and demonstrate the ability to safely and correctly attach the slider / glider to the rail or wire
- 6.1.3 Practice and demonstrate the ability to safely and correctly attach the slider / glider to the harness

ELEMENT 6.2 - FALL RESTRAINT AND FALL ARREST LANYARDS

Delegates shall:

- 6.2.1 Practice and demonstrate the ability to safely and correctly attach the fall restraint and fall arrest lanyard to a vertical ladder system
- 6.2.2 Practice and demonstrate the ability to safely and correctly attach fall restraint and fall arrest lanyards to the harness
- 6.2.3 Demonstrate the ability to correctly use twin and single fall arrest lanyards whilst double hook climbing maintaining the correct distance between the anchor points

ELEMENT 6.3 - WORK POSITIONING LANYARDS

Delegates shall:

- 6.3.1 Practice and demonstrate the ability to safely and correctly use a work positioning lanyard
- 6.3.2 Demonstrate the ability to work safely with free hands, being secured by a work positioning lanyard



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ELEMENT 6.4 - CERTIFIED AND SUITABLE ANCHOR POINTS

Delegates shall:

- 6.4.1 Practice and demonstrate the ability to recognise and use certified anchor points
- 6.4.2 Practice and demonstrate the ability to recognise and use suitable anchor points

ELEMENT 6.5 - SAFE AND CORRECT USE OF AN SRL FOR EXERCISES

Delegates shall:

- 6.5.1 Demonstrate the ability to safely and correctly use an SRL

ELEMENT 6.6 - SAFE PRACTICES WHILE WORKING AT HEIGHT

Delegates shall:

- 6.6.1 Demonstrate safe conduct and attitude while working at height by always being secured with fall protection PPE during practical exercises
- 6.6.2 Demonstrate the ability to reduce the risk of dropped objects while working at height by ensuring that equipment is always attached either to the delegates harness or a suitable anchor point.
- 6.6.3 Demonstrate safe and correct manual handling techniques during practical exercises through the following:
 - a. Planning of manual handling using the T.I.L.E. Principle and MAC tool - considering the load weight, maximum reaching distance and aggravating factors
 - b. Eliminating the need for manual handling using the rescue device where possible
- 6.6.4 Demonstrate the ability to apply further control measures where applicable:
 - a. PPE correct fit (e.g. correct sizes, boot laces tied)
 - b. Breaking up loads
 - c. Protecting pre-existing injuries
 - d. Adequate lighting
 - e. Good housekeeping

Lesson 7 - PRACTICAL EXERCISES - GROUP

210 min.



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The aim of the lesson is to refresh the Delegates' knowledge and skills to be able to use the appropriate methods to control and reduce the risk of injuries when working and rescuing from heights.

To successfully complete this BSTR Module, Delegates must be able to:

- 1) Demonstrate the ability to safely and correctly use PPE for working at height (L3 – Skill)
- 2) Demonstrate the ability to access certified and suitable anchor points (L3 – Skill)
- 3) Demonstrate the ability to perform a pre-use inspection of the rescue and evacuation equipment applying generic principals (L3 – Skill)
- 4) Demonstrate the ability to safely and correctly use rescue / evacuation equipment to perform a rescue from a vertical ladder (L3 – Skill)
- 5) Demonstrate Safe and correct rescue and evacuation methods (L3 – Skill)
- 6) Demonstrate safe practices while Working at Heights with Manual Handling (L3 – Skill)

ELEMENT 7.1 - SAFE AND CORRECT USE OF THE PERSONAL FALL PROTECTION EQUIPMENT

Delegates shall:

- 7.1.1 Demonstrate the ability to safely and correctly use personal fall protection equipment, including an SRL in a wind turbine like environment

ELEMENT 7.2 - ACCESSING CERTIFIED AND SUITABLE ANCHOR POINTS

Delegates shall:

- 7.2.1 Demonstrate the ability to recognise and safely and correctly use both certified and suitable anchor points

ELEMENT 7.3 - PRE-USE INSPECTIONS OF THE RESCUE AND EVACUATION EQUIPMENT

Delegates shall:

- 7.3.1 Demonstrate the ability to perform a pre-use inspection of rescue and evacuation devices applying generic principals

ELEMENT 7.4 - SAFE AND CORRECT USE OF RESCUE AND EVACUATION EQUIPMENT FROM LADDER

Delegates shall:

- 7.4.1 Demonstrate the ability to safely and correctly perform a basic rescue and evacuation from a vertical ladder



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ELEMENT 7.5 - SAFE AND CORRECT RESCUE AND EVACUATION METHODS FROM AN EVACUATION HATCH

Delegates shall:

- 7.5.1 Demonstrate the ability to safely and correctly perform a basic rescue and evacuation from an evacuation hatch
- 7.5.2 Demonstrate the ability to perform a passive mode setup self-rescue from an evacuation hatch
- 7.5.3 Demonstrate the ability to perform an active mode setup double evacuation from an evacuation hatch, applying a deflection/friction carabiner on the rescue device and using a fall restraint lanyard kept as short as possible as a connecting element between the rescue / evacuation device and the harness

ELEMENT 7.6 - SAFE PRACTICES WHILE WORKING AT HEIGHTS WITH PROPER MANUAL HANDLING

Delegates shall:

- 7.6.1 Demonstrate safe conduct and attitude while Working at Heights with Manual Handling
- 7.6.2 Demonstrate the ability to use techniques like attaching equipment to their harness to reduce the risk of dropped objects

Lesson 7 Notes:

- 1) An Instructor shall be at the height chosen to descend from
- 2) Instructor(s) and Delegates shall be secured to an anchor point while waiting to descend. This can be achieved by correct use of the fall arrest lanyard
- 3) When Delegates are demonstrating the evacuation, a safety line that is connected to the Delegate's harness shall be used. This will be set up and controlled by the Instructor and be secured to a different anchor point than the evacuation device
- 4) Although not a requirement of the Standard, Delegates may repeat the evacuation exercises should sufficient time be available

Lesson 8 - EVALUATION

15 min.

The aim of the lesson is to summarise the BSTR Module and give the Delegates the opportunity to conduct an open-minded review of the training and the instructor.

To successfully complete this BSTR Module, Delegates must:



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- 1) Demonstrate active participation in the evaluation

ELEMENT 8.1 - SUMMARY

Training Staff shall:

- 8.1.1 Summarise the BSTR Module and give the Delegates final feedback

ELEMENT 8.2 - EVALUATION

Delegates shall:

- 8.2.1 Conduct a written evaluation

Training Staff shall:

- 8.2.2 Give necessary feedback on the written evaluations

ELEMENT 8.3 - TRAINING RECORDS

Training Staff shall:

- 8.3.1 Ensure that all Delegates are registered with a personal Delegate profile in WINDA and have provided their WINDA ID prior to completing the training course.

11.7 Delegate Performance Assessment

Assessment of learning outcomes:

Delegates will be assessed according to the learning outcomes stated in Section 11.6 by means of direct observation and supplementary oral questions, where appropriate.

The assessment shall be conducted by practical scenarios based on the WTG environment.

Each Delegate shall participate and demonstrate:

Correct Manual Handling throughout, including:

- 1) Reducing manual handling using suitable handling aids where possible
- 2) Planning of manual handling tasks using the T.I.L.E. Principle and a MAC tool - considering the load weight, maximum reaching distance and aggravating factors

Correct manual handling techniques

- 1) Practical exercise simulating the loading and unloading of a service truck. Use equipment common to a technician's daily duties. Loading truck exercise should include a dummy to simulate loading a casualty.



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Correct use of the evacuation/rescue device, including:

- 1) User inspection and test
- 2) Use of correct anchor points
- 3) Correct behaviour on ladder with PPE

Correct rescue methods, including:

- 1) Rescue of a **conscious** Casualty hanging by a guided type vertical fall arrester, secured by their work positioning lanyard (inside of the ladder) with the rescue equipment in a passive setup, preferably utilizing a rope clamp for rescue
- 2) Rescue of an **unconscious** Casualty hanging by a fall arrest lanyard (inside of the ladder) with the rescue equipment in an active setup
- 3) Rescue of a **conscious** casualty secured by their work positioning lanyard (from the outside of the ladder, with hip diversion, i.e. rescue line is diverted using the side D-ring located at the hip of the rescuer's harness. This creates greater space between the casualty and the ladder)

The formal evaluation of knowledge of above scenarios shall be in accordance with the Delegate assessment Form (template provided in the Requirements for Training Providers). The Trainer keeps the delegate assessment Forms until the completion/ evaluation of the BSTR Module.

Training Providers shall have a documented procedure in place for dealing with Delegates not meeting the stated learning outcomes. If a Delegate fails to meet the demands, they shall attend a new BST Working at Height Module.



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Sea Survival Refresher (SSR)



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12MODULE 6 - SEA SURVIVAL REFRESHER

Delivery of the Sea Survival Refresher module covers same content, duration, learning objectives as described in BST Sea Survival.



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Annexes





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ANNEX 1 - EQUIPMENT LISTS

The following pages contain the lists of equipment required for delivering each of the modules contained within this training standard. Any equipment used by the training provider and delegates during the delivery of training under this standard must satisfy or exceed the requirements of the equipment standards for the time being in force in the country where the training is taking place.

Where training takes place in a country where there are no equipment standards for the equipment being used, then the equipment used by the training provider and the delegates during the delivery of training under this standard shall satisfy or exceed the requirements of the European (EN) standards.

Note: All equipment shall be maintained and where appropriate, inspected and tested in accordance with current national standards/legislation and manufacturers' recommendations.

1. BSTR FIRST AID

The following equipment is required during the entire duration of the BST First Aid Training to meet the needs of the BST First Aid Training Module:

- 1) Torso anatomy dummy
- 2) Airway model
- 3) Resuscitation dummies - adult
- 4) First Aid equipment
- 5) First Aid bag
- 6) Make - up kit for First Aid scenarios
- 7) AED Trainers
- 8) Blankets

Any equipment used during this GWO training module shall meet or exceed the minimum requirements of the national standards in the country where the training is taking place.

When working in a country where there is no applicable national standard then the equipment shall meet or exceed the minimum requirements of the European standards.

2. BSTR MANUAL HANDLING

The following equipment is required during the entire duration of this BST Manual Handling Training to meet the needs of the BST Manual Handling Module:

- 1) A Lumbar Vertebrae model for educational purposes
- 2) A model of a shoulder for educational purposes



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- 3) A load that weighs no more than 30 Kg (66.14 lbs) and is unwieldy:
 - a. difficult to grasp,
 - b. difficult to grip,
 - c. with contents likely to move or shift (e.g. a rescue dummy)
- 4) Other lifting props for Manual Handling:
 - a. weighing maximum 15 Kg (33.07 lbs)
- 5) Personal Protective equipment.

3. BSTR FIRE AWARENESS

The following equipment is required to meet the needs for the Fire Awareness Module:

- 1) Handheld CO2 and water extinguishers
- 2) Fire blankets
- 3) Dummies
- 4) Personal Protective Equipment (PPE)
- 5) Personal escape mask

Any equipment used during this GWO training module shall meet or exceed the minimum requirements of the national standards in the country where the training is taking place.

When working in a country where there is no applicable national standard then the equipment shall meet or exceed the minimum requirements of the European standards.

4. BSTR WORKING AT HEIGHT

The following equipment is required to instruct the BST Working at Heights with Manual Handling Module.

Within each equipment category one product or more must be operative for practical training. Required additional different products are accepted in a limited quantity as products for hands-on demonstration.

The Training Provider must select the most relevant products according to his geographic location and target audience.

- 1) Full Body Harness:
 - a. At least 2 different products



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- 2) Work restraint lanyards
 - a. At least 2 different adjustable products
- 3) Fixed length fall arrest lanyards with an energy absorber:
 - a. 1 flexible Y-type;
 - b. 1 fixed adjustable Y- or I-type.
 - c. Recommended but not required: 1 fixed or flexible V-type.
- 4) Helmets
- 5) Vertical fall arrest system with the following sliders / gliders:
 - a. Cable Guide twist type attachment
 - b. Cable Guide Slot type attachment
 - c. Cable Guide Clamp Type attachment
 - d. Rail type attachment
- 6) Self-Retractable Lifeline (SRL)
- 7) Slings

Note: The European Standard for slings specifies safety requirements and test methods for slings used for mountaineering (slings are used as anchor points and since there are no industrial standard for slings, they must also comply with the requirements in EN795 type B, anchor devices)

- 8) Karabiner with mandatory automatic closing and locking system
- 9) Evacuation / Rescue devices:
 - a. 1 emergency descent and 1 rescue device, or,
 - b. 2 different rescue devices
- 10) Rope clamp for rescue (enabling lifting/safe disconnection of a loaded rope type fall protection lanyard)
- 11) Vertical aluminium ladders
- 12) Anchor points:

Note: The height of the anchor point shall ensure that in the event of a fall there will be enough space below the anchor point to allow the shock absorber in a fixed length fall arrest lanyard to fully deploy whilst preventing the person who is falling from coming into contact with the ground or structure below the anchor point.

The GWO recommends an anchor point height of 6.75 m (22.15') for the evacuation exercises.



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The recommended height is based upon the following formula,

$$RD = LL + DD + HH + C,$$

Where,

- RD = Required Fall Distance Clearance (minimum anchor point height)
- LL = Length of Lanyard
- DD = Deceleration Distance (fall distance)
- HH = Height of Suspended Worker
- C = Safety Factor

The value for HH is the length of the suspended worker *after* a fall and includes factors like the height of the person and harness stretch, to account for these variables this is set to 2.00 m.

Using the value for HH (2.00 m), the maximum allowed values for LL (2.00 m) & DD (1.75 m), and the minimum allowed value for C (1.00 m), we get,

$$RD = LL + DD + HH + C$$

and,

$$RD = 2.00\text{ m} + 1.75\text{ m} + 2.00\text{ m} + 1.00\text{ m},$$

therefore,

$$RD = 6.75\text{ m}.$$

Therefore, the GWO recommends that the anchor points used during the evacuation exercises are placed a minimum of 6.75 m (22.15') above the ground or any structure which a person may come into contact with, in the event of a fall.

Any equipment used during this GWO training module shall meet or exceed the minimum requirements of the national standards listed in table A3-31 and A3-32.

When working in a country where there is no applicable national standard then the equipment shall meet or exceed the minimum requirements of the European standards.



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	Country Specific Equipment Standards			
Equipment	Europe	North America	China	United Kingdom
Full Body Harness	EN 361 Or EN 813	ANSI Z359.3 ANSI Z359.11 OSHA 1926.28	GB 6095 GB/T 6096	BS EN 361 Or BS EN 813
Work Restraint Lanyards	EN 358	ANSI Z359.1-2 OSHA 1910.28 OSHA 1910.29 1926 Subpart M		BS EN 358
Fixed length Fall arrest lanyards	EN 355	ANSI Z359.3 OSHA 1910.28 OSHA 1910.29 1926 Subpart E	GB 24543	BS EN 355
Helmets	EN 397+A1	OSHA 1910.1333 OSHA 1926.28	GB 2811 GB/T 2812	BS EN 397+A1
Vertical fall arrest systems	EN 353-1+A1 EN 353-2 EN 1891 EN 892		GB 24542 GB/T 24537	BS EN 353-1+A1 BS EN 353-2 BS EN 1891 BS EN 892
SRL	EN 360	ANSI Z359.1-2 OSHA 1910.28 OSHA 1910.29 1926 Subpart M	GB 24544	BS EN 360
Anchor Points	EN 795		GB 30862	BS EN 795
Slings	EN 566		GB/T 30587 GB/T 20118	BS EN 566
Karabiners	EN 362		GB/T 23469	BS EN 362
Evacuation / Rescue devices	EN 341 and EN 1496			BS EN 341 and BS EN 1496
Vertical aluminium ladders	EN 131-2 and EN 14122-4		GB/T 17889.1 GB/T 17889.2	BS EN 131-2 and BS EN 14122-4

Table A1-31 - Country specific equipment standards – Working at Height



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5. BSTR SEA SURVIVAL

The following equipment is required to meet the needs for the Sea Survival Module.

- 1) Rigid lifejackets
- 2) Inflatable lifejackets
- 3) Survival suits
- 4) Helmets
- 5) Inflatable life raft with equipment
- 6) Helicopter rescue sling
- 7) Cradle
- 8) Rescue net
- 9) Rescue device
- 10) Safety harnesses
- 11) Twin fall arrest lanyards
- 12) SRL
- 13) PPE
- 14) Various types of accessories for each detachment – quick release, restraint lanyard etc.

Any equipment used during this GWO training module shall meet or exceed the minimum requirements of the national standards listed in table A3-51.

When working in a country where there is no applicable national standard then the equipment shall meet or exceed the minimum requirements of the European standards.



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	Country Specific Equipment Standards			
Equipment	Europe	North America	China	United Kingdom
Life Jackets				
Rigid			GB/T 32227	
Inflatable				
Survival Suits			GB/T 9953	
Helmets	EN 397+A1	OSHA 1910.1333 OSHA 1926.28	GB 2811 GB/T 2812	BS EN 397+A1
Rescue / Evacuation devices	EN 341 and EN 1496	ANSI Z359.4		BS EN 341 and BS EN 1496
Full body Harness	EN 361 Or EN 813	ANSI Z359.3 ANSI Z359.11 OSHA 1926.28	GB 6095 GB/T 6096	BS EN 361 Or BS EN 813
Fixed length Fall arrest lanyards	EN 355	ANSI Z359.3 OSHA 1910.28 OSHA 1910.29 1926 Subpart E	GB 24543	BS EN 355
SRL	EN 360		GB 24544	BS EN 360

Table A1-51 – Country specific equipment standards – Sea Survival.

ANNEX 2 - GUIDELINE FOR WARM-UP EXERCISES

Body part/major muscle group	Exercise	Duration/repetitions
Head	Head rotations: <ul style="list-style-type: none"> • Rotate your head clockwise and counter clockwise 	10 repetitions (five each way)
Shoulders	Shoulders rotation: <ul style="list-style-type: none"> • Place your legs at shoulder-width • Feet straight and toes facing forward • Keep your arms straight at your sides • Perform both shoulders rotation clockwise and counter clockwise 	10 repetitions
Arms	Arm swings and big arm circles: <ul style="list-style-type: none"> • Stand up straight with your feet shoulder-width apart • Rotate your arms forward making big circles and then switch rotating backwards. 	10 times clockwise 10 times (counter clockwise) 10 times (in opposite directions)
Wrists	Wrist rotation: <ul style="list-style-type: none"> • Perform wrists rotation in both directions 	10 repetitions for each wrist
Torso	Torso swings: <ul style="list-style-type: none"> • Stand with your legs straight • Place your feet at shoulder-width • Bend your torso forward 90 degrees • Raise both arms straight to the outside 	15 repetitions to each side
Hips	Hip rotation: <ul style="list-style-type: none"> • Place your hands on your hips and keep your head straight • Perform extensive hips rotation 	10 repetitions clockwise 10 repetitions counter clockwise.
Thighs	Squats: <ul style="list-style-type: none"> • Stand with your legs straight • Place your feet at shoulder-width • Push your hips back and slowly bend your knees. • Keep your back straight and your eyes looking forward. • Raise yourself back up when your knees reach a 90-degree angle 	15 repetitions
Ankle	Ankle rotation: <ul style="list-style-type: none"> • Place your feet slightly apart • Perform rotation for each foot clockwise and counter clockwise 	10 repetitions (for each foot)



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Back	<p>Back stretch:</p> <ul style="list-style-type: none">• Open legs slightly and place hands on the hips• Turn to the right and left• Incline the back to the right and left• Move Back forward and backward	
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ANNEX 3 - MANUAL HANDLING RISK ASSESSMENT

This is an instructor guidance elaborating the concept of aggravating factors related to manual handling risk assessment.

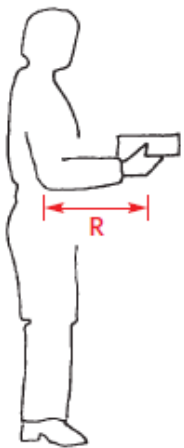
The baseline of assessing manual lifts is the load weight and the distance from the spine in the lower back (the reaching distance), respectively. The assessment chart below will assist you appraising manual handling.

While assessing manual handling, a number of additional risk factors to the lift must be considered; which, individually and especially combined, will enhance the strain on the muscular- skeletal system. These factors are the so-called aggravating factors.

Prior to delivering the Manual Handling Module, instructors should review local instructions and risks assessments for the tasks planned, including assessment of whether a given task should be solved by the Delegates by using a handling aid?

1. LOAD WEIGHT AND REACHING DISTANCE

The load weight compared to the reaching distance (R) indicates the gross strain on the lifting persons back.



It must be taken into consideration when the person performing the lift is carrying only a part of the load, e.g. when the load is tipped onto one end and partly resting on the ground or when the lift is performed by more than one person.

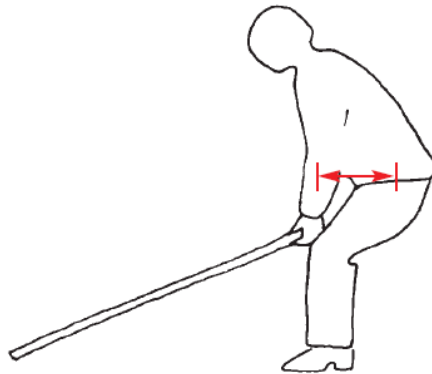
The assessment chart below guides you to evaluate and determine whether the strain on the muscular- skeletal system is harmful to health and control measures must be taken.

The reaching distance is illustrated by (R) in the diagram to the left. The diagram represents (R) as the lateral distance between the center of gravity of the load and the lifting persons lower back (the spinal column of the lumbar curve). The center of gravity of the load is usually found right between the handle points of the load.

When the load is tipped and partly resting on the ground or when the lift is performed by more than one person, the reaching distance is measured from the lifting persons lower back (the spinal column of the lumbar curve) to a line between the handle points of the load.



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When assessing manual handling, the *most excessive* reaching distance during the *entire operation* must be used in the assessment chart. The most excessive reaching distance is commonly found in the initial or ending part of the lifting operation (putting down the load).

Two different reaching distances are indicated in the assessment chart:

- 1) Forearm distance (approx. 30 cm / 1 foot from the spinal column of the lumbar curve)
- 2) $\frac{3}{4}$ arms distance (approx. 45 cm / 1.5 foot from the spinal column of the lumbar curve)

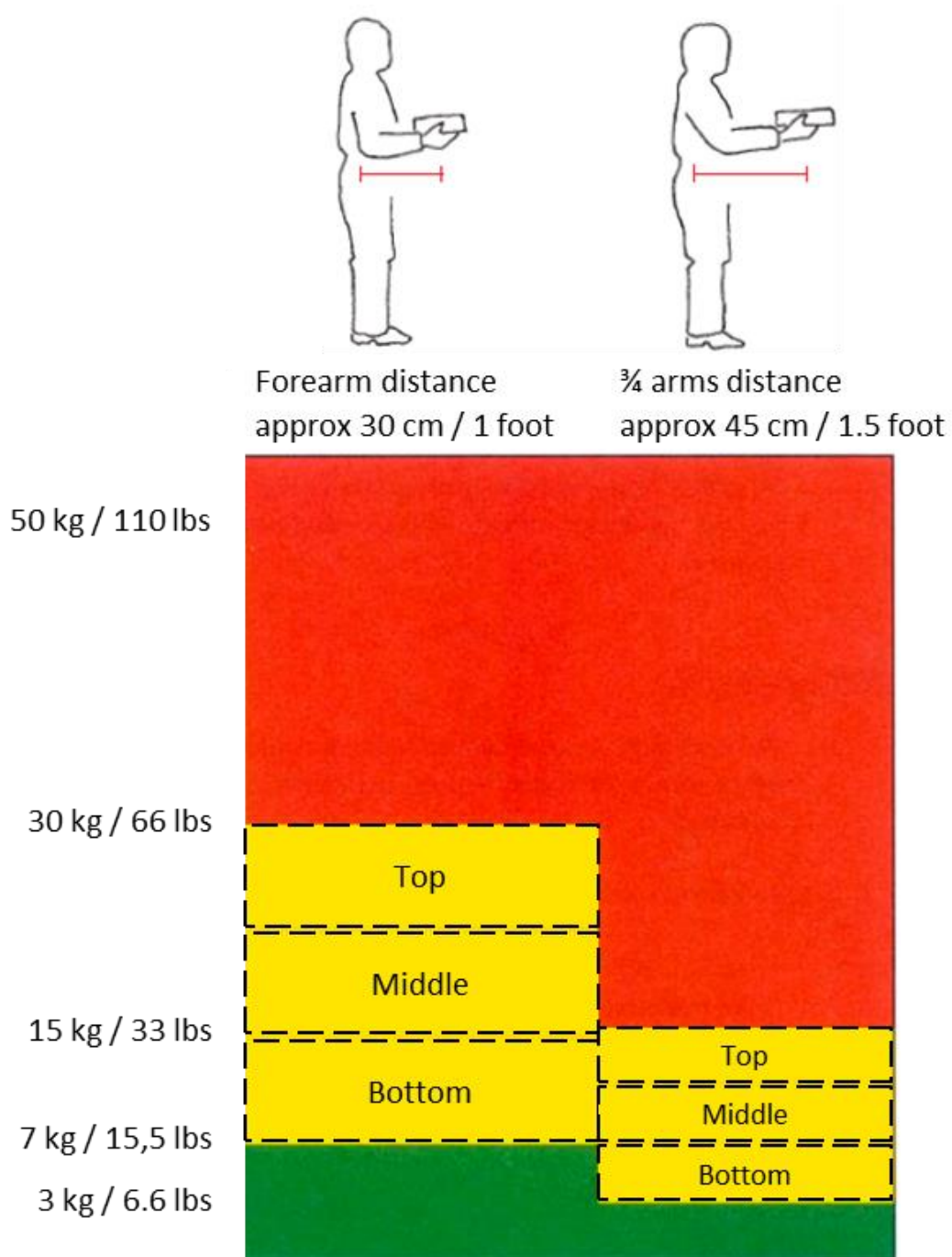
Note: In most cases load lifting close to the body equals forearm distance. Shorter reaching distance (i.e. lifting closer to the spinal column than forearm distance) is thus only achievable when using personal moving equipment (moving straps for lifting or the like).

In the assessment chart, reaching distances above $\frac{3}{4}$ arm's distance is not included since they will most likely be harmful to health, and must be evaluated separately.



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Manual handling assessment chart (MAC tool) – evaluating the load weight compared to the reaching distance



Red area: Lifting within the red area is without doubt harmful to health and must be avoided. To reduce the risk of injury control measures must be taken.



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Yellow area: Lifting within the yellow area requires a detailed evaluation of the aggravating factors. They must be considered to evaluate to what extent they enhance the strain on the muscular- skeletal system resulting in manual handling which is harmful to health.

When lifting within the **top most** $\frac{1}{3}$ part of the yellow area, manual handling is only accepted if it is performed under optimal conditions (i.e. the entire lifting operation is performed centered in front of the body, the lift is performed between mid-thigh and elbow height, the load is intended for manual handling, each lift is followed by a two-minute rest, the load is not carried, the foothold is stable, and the climate is appropriate).

Lifting within the **middle** $\frac{1}{3}$ part of the yellow area, the amount and degree of aggravating factors determine whether the manual handling is harmful to health – and to what extent it is harmful.

Lifting within the **bottom** $\frac{1}{3}$ part of the yellow area, it usually requires several aggravating factors for the manual handling to be harmful to health. In some cases, one single aggravating factor, e.g. the working posture, may cause lifting within the bottom $\frac{1}{3}$ part of the yellow area to be harmful to health.

Green area: Lifting within the green area is usually not harmful to health based on the load weight and reaching distance.

There may be additional risk factors, which are individually harmful, causing the manual handling to be harmful to health, e.g. poor working postures, a high lifting frequency, or an excessive overall strain on the body.

2. AGGRAVATING FACTORS

The aggravating factors of the lifting operation must be considered which, individually and especially in combination, will enhance the strain on the muscular- skeletal system posing a risk of injury and manual handling harmful to health.

Examples of aggravating factors - categorized related to the four elements of the **T.I.L.E** principle:

1) Concerning the **Task**

No suitable handling aid available, stooping/bending, twisting, stooping/bending *and* twisting, lifting below knee height or above shoulder height, carrying, pushing, pulling or precise positioning of the load, sudden movement or stop, lifting for a longer period of time, high pace of work, inadequate rest or recovery periods, asymmetric or one handed lifting, team handlingⁱ, seated or kneeling position, or lack of planning.

2) Concerning the **Individual**

No warm-up, capability, previous and pre-existing injuries, unusual strength or height required for the activity, specialist knowledge or training required, uneven height of team handling individuals.

3) Concerning the **Load**



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Unwieldy, difficult to grasp, difficult to grip, sharp edges, contents likely to move or shift, hot or cold.

4) Concerning the **Environment**

Transport route or floors uneven, slippery, unstable or with obstacles or steps, variations in floor levels, stairs, space constraints, draft, hot, cold or humid conditions, poor lighting, poor ventilation, rain, gusty winds, clothing or PPE that restricts movement, vibrating environment before manual handling.

5) Source of reference

This annex is based upon the legal requirements and guidelines of the Danish and UK EHS authorities and legislation on manual handling.

Note: Local legal requirements must always be adhered to when performing manual handling.

¹ Team handling is in general not a legitimate substitution for using handling aids.



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ANNEX 4 - VERSION HISTORY

Amendment Date	October 2019	Approved by & date	GWO TC Sept 2019
Version	10	Description of changes	

Minor corrections since launch date

- Minor spelling, grammar and formatting corrections

Document changes

Formatting of document changed and aligned throughout document, includes numbering all sections, lessons, elements, sub-sections and tables for ease of reference.

Header and footer aligned with other GWO training standards.

Inserted section 2 – Terms and definitions

Annex 3 – manual handling risk assessment moved to annex 5

Inserted annex 4 – guideline for warmup exercises

Imperial measurements included throughout

Anchor point height review

Requirement for anchor point height changed to a recommendation. With additional control measures if using a lower height.

Working at Heights & Manual Handling Review

Working group to combine the two modules. Therefore, V10 of BSTR has 6 modules.

Overall Changes

- Version changed from 9 to 10
- Date changed to reflect most recent date of changes.
- Added level and domain to all learning objectives (e.g. L2 – Knowledge) for ease of understanding)
- Aims for each lesson updated
- Taxonomy action verbs moved to each lesson element
- Added: Manual Handling theory is combined into Working at Heights Refresher module creating a Working at Heights with Manual Handling Refresher module.
- All references to working at height replaced with working at height with manual handling

Section specific changes

Table of contents

- Updated to reflect changes to standard.

2 Terms and definitions



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- Inserted

3 Change log

- Format changed for ease of reading

4 Scope

- Changed number of modules from 5 to 6.

9 BSTR Module 1 – First aid refresher

- Numbered to section 9 and all subsequent subsections now 9.x
e.g. 1.1 Aims and objectives of the BSTR first aid module becomes sub-section 9.1.

10 BSTR Module 2 – Manual handling refresher

- Numbered to section 10.
- Format changed for ease of reading.

11 BSTR Module 3 – Fire awareness refresher

- Numbered to section 11.
- Format changed for ease of reading.

12 BSTR Module 4 – Working at height refresher

- Numbered to section 12 and all subsequent subsections now 12.x
e.g. 1.1 Aims and objectives of the BSTR working at height with manual handling refresher module becomes sub-section 12.1.

13 BSTR Module 5 – Working at height & manual handling refresher

- Numbered to section 13.
- New module.

14 BSTR Module 6 – Sea survival refresher

- Numbered to section 14.
- Format changed for ease of reading.

ANNEX 3 Equipment list

- Moved manual handling risk assessment to annex 5 and inserted equipment list to align with other standards

ANNEX 4 Guideline for warm-up exercises

- Inserted

ANNEX 5 Manual handling risk assessment

- Moved from Annex 3

Sub-Section specific changes

5.1 Overview



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- Added working at heights and manual handling combined module.

5.6 Duration of BSTR Modules

- Text in this section has been reworked to clarify the concepts of contact time and total training day.
- Duration given as total contact time for the modules.
- Table 5-6 GWO BSTR Module durations inserted.
- Table 5-7 Maximum duration for training days inserted.

5.7 Duration of BSTR Modules

- Inserted table 5-7 for validity periods.
- Included combined working at height and manual handling module.

6.2 Training Equipment

- 6.2.3 inserted 'the equipment required for the delivery of each module is listed in annex 3.'

8.6 Delegate performance assessment form

- Renamed from Control measures.
- Changed terminology from control measures form to delegate assessment form.

9.2, 12.2 & 13.2 Duration of the xx module

- Reworded to clarify the concepts of contact time and total training day
- Inserted table x-2 with maximum allowed contact time per day and total training day

9.3, 12.3 & 13.3 xx module trainer / delegate ratio

- Table format adjusted and standardised

9.4, 12.4 & 13.4 Equipment for xx module

- Moved to Annex 3

9.5, 12.5 & 13.5 xx module timetables

- Table format adjusted and standardised

9.6, 12.6 & 13.6 Detailed description of the xx module

- Paragraph styles aligned throughout the lessons, elements & notes.
- Bullets removed and replaced with numbering throughout.

9.1 Aims and objectives of the BSTR First Aid module

- Aims updated to include CPR and AED

9.6 Detailed description of the BSTR First Aid module

- Minor spelling corrections throughout.

12.1 Aims and objectives of the BSTR Working at heights module



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- Aims updated inline with work done on combined module

12.3 Working at heights Instructor to delegate ratio

- Practical exercise ratio increased from 1:4 to 1:6.
- The ratio remains at 1:4 for onsite training.

12.4 Equipment for Working at heights module

- Equipment list moved to Annex 3.
- Inserted explanation of a generic approach to training
- Added a requirement for the TP to reduce the possible fall factor
- Requirement for an anchor point height of 6.75 m changed to recommendation with additional control measures.

12.5 BSTR Working at heights module timetable

- Updated inline with changes to module based on work done on combined module.

12.6 Detailed description of the BSTR Working at heights module

- Lesson changes inline with the work done on the combined module.

Lesson 1 - Introduction

- Time reduced to 15 minutes in line with other modules.

Lesson 2 – Knowledge Review

- Aim made more specific.
- Learning objectives made more specific.
- Taxonomy action verbs moved to individual sub elements making the elements more specific.

Lesson 3 – PPE Review exercises

- New lesson (was practical review exercises).

Lesson 4 – Theory

- Aim made more specific.
- Learning objectives made more specific.
- Inserted Learning objective 8 – Suspension trauma.
- Inserted 4.7.3 for suspension trauma.

Lesson 5 – Measures to prevent injury during training

- New Lesson.

Lesson 6 – Individual practical review exercises

- Aim made more specific.
- Learning objectives made more specific.
- Taxonomy action verbs moved to individual sub elements making the elements more specific.
- Element names shortened.



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Lesson 7 – Practical exercises - group

- Moved from Lesson 5.
- Aim made more specific.
- Learning objectives made more specific.
- Taxonomy action verbs moved to individual sub elements making the elements more specific.
- Element names shortened.

12.7 Delegate performance assessment

- Updated inline with work done on combined module.

13 Module 5 – Working at heights with manual handling refresher

- New module.
- This module combines the elements of the BSTR working at height refresher and BST manual handling initial modules.

Amendment Date	April 1 2019	Approved by & date	GWO TC March 20 2019
Version	9	Description of changes	
Content			
Overall changes			
<u>Anatomy</u>			
<ul style="list-style-type: none">- Anatomy section simplified- Element: <i>Other systems and vital organs of the human body</i> changed to: <i>Blood filled organs</i>- Lesson duration reduced to 60 min.- Changed 'Personal Hygiene' to 'Personal Protective Equipment against infections' and moved the element to 'lesson 4'			
<u>Lesson 4</u>			
Added secondary survey element to "lesson 4" and added 15 min			

Amendment Date	October 1 2018	Approved by & date	GWO SC on September 20, 2018
Version	8	Description of changes	
Content			
Overall changes			
- Removed: The original Sea Survival refresher module			
Added: A referral to the BST Sea Survival module, as the refresher is now identical to the core Sea Survival module			



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Amendment Date	May 31 2017	Approved by & date	GWO SC on April 27
Version	7	Description of changes	
<p><u>Content</u></p> <ul style="list-style-type: none"> - New intro "Scope" replaces "Foreword and Editorial" - General section: Target group detailed to "personnel working in a wind turbine environment" - General: new section on "Understanding GWO Learning Objectives" incl. Taxonomy Table - General: new section on Conformity with other training section added - FAR module: including use of AED in CPR lesson, and specified at least one scenario must be based on electrical incident - Manual Handling: may now be delivered as combined MH and MHR course, increased discussion based learning, introduced aggravating factors in theoretical lessons, specified scenario-based training. - FAW module: may now be delivered as combined FAW and FAWR course, increased discussion based learning, specified scenario-based training. - WaH module: tower height specified to minimum 6.75 meters measured from the delegates feet, always ensuring that safe distance is available for fall arrester to work. - PFPE changed to PPE <p><u>Major layout work:</u></p> <p>All common administrative elements now only in general sections of standard, and deleted from each of the module descriptions.</p> <ul style="list-style-type: none"> - Templates for Control Measures and Medical Self-assessment forms supplied as annex 1+2 - Specific requirements to trainer/delegate ratio, equipment and performance criteria remain in modules <p>Module learning outcomes and lesson elements merged into "detailed description".</p>			

Amendment Date	04.10.2016	Approved by & date	
Version	5	Description of changes	
<p>General</p> <p>Individual module update versions on front page of standard removed.</p> <p>Delegate prerequisites</p> <p>Added prerequisite for Delegate to possess a personal WINDA ID and provide it to the Training Provider prior to completing the course.</p> <p>All sections</p> <p>Changed certification requirement from issuing a certificate to instead upload a record of training to WINDA.</p>			



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Changed requirement from handing out certificates to Delegates to instead ensure that Delegates have provided their WINDA ID.

Validity Period

Changed text to include uploading of records to WINDA

Entire document

Switched logo to new GWO logo

Left the date field in the medical self-check forms blank.

Amendment Date	01.03.2016	Approved by & date	GWO SC 15.03.2016
Version	4	Description of changes	
<ul style="list-style-type: none"> • Introduction • Updated the requirements for renewal of certificate. • First Aid Module • Corrected trainer/delegate ratio in point 2.2 to 1 instead of 2. • Specified validity period in point 3.2 • Corrected numerical error in point 3.3 • Manual handling • Specified validity period in point 3.2 • Fire Awareness • Specified validity period in point 3.2 • Working at Heights • Specified validity period in point 3.2 • Sea Survival <p>Specified validity period in point 3.2</p>			

Amendment Date	01.12.2015	Approved by & date	
Version		Description of changes	
<p>Introduction</p> <ul style="list-style-type: none"> • Removed certification requirement 3 "Type of equipment used in the course and maximum training height (BST Working at Heights Module only)" in Working at Heights module. Removed due to RUK alignment. • Consequence of expired certificates added under Validity period. <p>Working at Heights Module</p> <ul style="list-style-type: none"> • Removed certification requirement 4 from point 3.3 "Type of equipment used in course and maximum training height". Removed due to RUK alignment. • Removed part of the note in point 3.3 WaH modul saying "However, a climb to a higher height than the minimum height stated in this Standard can be an indicator of the 			



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Delegate's capability and aptitude to work at heights. The maximum height used during the training must be stated on the certificate". Removed due to RUK alignment.

Sea Survival Module

- Alignment with updated requirements set by UK Health and Safety Executive for boat transfer
 - Section 1.5: Objective (3) added
 - Section 1.6: Lesson 2, Lesson 3, Lesson 4 and Lesson 5 altered
 - Section 1.9: Element 2.1, Element 3.2, Element 4.1 and Element 4.2 altered
- MES (Marine Evacuation system) added to List of abbreviations
- Removal of Safe Transfer from Vessel to Vessel exercise due to too high risk while practicing
- Validity reduced to 24 months (Section 3.2)
- Equipment for easy detachment added (Section 2.6)

Amendment Date	21.11.2013	Approved by & date	
Version	2	Description of changes	
Entire GWO Basic Safety Training Standard Document (All Modules)			
<ul style="list-style-type: none"> • Correction of minor mistakes • Time tables aligned with Learning Outcomes (Section 1.6) 			
Time Tables aligned with Elements (Section 1.9)			

Amendment Date	04.11.2013	Approved by & date	
Version	1	Description of changes	
Entire GWO Basic Safety Training Standard Document (All Modules)			
<ul style="list-style-type: none"> • Spelling, grammar corrected (no meanings of sentences have been changed), format corrected • Delegate prerequisites updated for each Module (Section 1.3) • Physical Demands updated for each Module (Section 1.4) • Added Appendix 1A to each Module (GWO's suggestion for Medical Self-Assessment) 			
Working at Heights Module			
Information about Certification (EN, ANSI, etc.) has been added for equipment list for module (Section 2.3, p. 134)			

Amendment Date	17.06.2013	Approved by & date	
Version		Description of changes	
Draft of Version 0 finalised			
Amendment Date	15.04.2013	Approved by & date	



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Version	Description of changes
	Draft of Version 0 created