International Well Control Forum

Well Intervention Pressure Control Subsea Syllabus

Updated December 2025
Version 1.0

Contents

Guidance notes

1. Introduction

IWCF have created this Well Intervention Pressure Control (WIPC) Subsea optional module to enhance the existing WIPC syllabus. Although this module is primarily aimed at Level 4 candidates, it is also available for Level 3 candidates who have experience of subsea well intervention operations.

The Subsea module will:

1) Meet the International Association of Oil and Gas Producers (IOGP) recommendations for enhancements to well control training, examination and certification as highlighted in Report 476, issued April 2023.

2) Align where appropriate to industry standards such as the API STD 17 G series for subsea systems

3) Allow IWCF to continuously deliver the highest standards of well control training and assessment.

1.1. Who should take the WIPC Subsea course?

We recommend personnel in the following positions should take the Subsea module:

Level 3 : Experienced single intervention discipline subsea operator
Level 4 : Single intervention discipline subsea supervisor/engineer
Level 4 : Subsea well services supervisor/well site leader
Level 4 : Subsea completion supervisor/service leader.

1.2. How long is the course?

Please refer to the document ‘IWCF Well Intervention Subsea Guidance’ for all course durations and accreditation requirements.

1.3. How many candidates can a Centre have on a course?

IWCF recommends a maximum of fifteen candidates for each course (depending on room size/facilities) for maximum interaction.

2. The syllabi explained

2.1. Testing understanding

IWCF expects candidates' knowledge and understanding of well (pressure) control to be developed so that they can competently perform their assigned well control duties. It is insufficient for any candidate on any level of the course to be coached to pass the assessment.

"The quality of teaching must evolve to ensure learning objectives are met. Training must be taught in line with the stipulated syllabus, and it will not be sufficient to base training on "test-similar" or "test-identical" exam questions to help personnel pass the written exam" (IOGP Report 476).

2.2. Learning objectives

The learning objectives in the syllabus are based on the content (subject matter) the instructor must teach to meet the requirements of this module. The use of the wording "learning objective" is in line with the IOGP Report 476 and is a broad overview statement of what the student will be taught during the course.

Example:
'During the course, the student will gain an understanding of: subsea pressure control equipment'.

2.3. Learning outcomes

Learning outcomes have been developed for each of the learning objectives contained in the syllabus. The outcome indicates how each learning objective will be fulfilled with a detailed description of the skills a candidate must have at the end of the course. These learning outcomes are the basis for assessment questions.

Example:
'By the end of the course, the student will be able to: Describe the function of subsea pressure control equipment'.

3. Coding

Subsea completion and intervention	**WI-SS-SSO-01**
Overview	WI-SS-SSO-01.01
Subsea tress	WI-SS-SSO-01.02
Subsea wellheads and tubing hangers	WI-SS-SSO-01.03
Surface controlled subsurface safety valves (SCSSSVs)	WI-SS-SSO-01.04
Subsea well barrier philosophy	WI-SS-SSO-01.05
Subsea equipment suitability	WI-SS-SSO-01.06
Subsea wellhead pressure	WI-SS-SSO-01.07
Subsea well pressure calculations	WI-SS-SSO-01.08
Subsea hydrates	WI-SS-SSO-01.09
Subsea well integrity tests	WI-SS-SSO-01.10
Subsea intervention control systems	WI-SS-SSO-01.11
Subsea well kill methods	WI-SS-SSO-01.12
Subsea intervention lubricator (SIL) – Openwater riserless wireline operations	**WI-SS-SSO-02**
SIL pressure control equipment (PCE)	WI-SS-SSO-02.01
SIL operations	WI-SS-SSO-02.02
Subsea tree interface (SIL/WCP)	WI-SS-SSO-02.03
Barrier principles (SIL)	WI-SS-SSO-02.04
Barrier testing (SIL)	WI-SS-SSO-02.05
Problem situations (SIL)	WI-SS-SSO-02.06
Shut-in (SIL)	WI-SS-SSO-02.07
Openwater intervention riser system (OWIRS) operations	**WI-SS-SSO-03**
OWIRS pressure control equipment (PCE)	WI-SS-SSO-03.01
OWIRS operations	WI-SS-SSO-03.02
Subsea tree interface (OWIRS/LRP)	WI-SS-SSO-03.03
Barrier principles (OWIRS)	WI-SS-SSO-03.04
Barrier testing (OWIRS)	WI-SS-SSO-03.05
Problem situations (OWIRS)	WI-SS-SSO-03.06
Shut-in (OWIRS)	WI-SS-SSO-03.07
TBIRS/completion landing string/subsea test tree (SSTT) operations	**WI-SS-SSO-04**
TBIRS pressure control equipment (PCE)	WI-SS-SSO-04.01

TBIRS operations	WI-SS-SSO-04.02
Subsea wellhead/HXT interface with TBIRS	WI-SS-SSO-04.03
Barrier principles (TBIRS)	WI-SS-SSO-04.04
Barrier testing (TBIRS)	WI-SS-SSO-04.05
Problem situations (TBIRS)	WI-SS-SSO-04.06
Shut-in (TBIRS)	WI-SS-SSO-04.07

4. Glossary of Terms

BOP	Blowout preventer
CT	Coiled tubing
DP Systems	Dynamic positioning systems
EDP	Emergency disconnect package
HXT	Horizontal Xmas Tree
ID	Internal diameter
ITC	Internal tree cap
IWOCS	Intervention workover control system
LRP	Lower riser package
LV	Lubricator valve
MUX	Multiplex
OIM	Offshore installation manager
OWIRS	Openwater intervention riser system
PCE	Pressure control equipment
PSJ	Ported slick joint

ROV	Remotely operated vehicle
SFH	Surface flow head
SIL	Subsea intervention lubricator
SIMOPS	Simultaneous operations
SCSSSV	Surface controlled subsurface safety valve
SSTT	Subsea Test Tree
STT	Surface Test Tree
TBIRS	Through-BOP intervention riser system
THCP	Tubing hanger crown plug
THP	Tubing hanger plug
THRT	Tubing hanger running tool
THS	Tubing head spool
TRT	Tree running tool
VXT	Vertical Xmas Tree
WCP	Well control package

5. Levels

All learning outcomes have been given an ‘importance’ and a reference letter from A to C. This is shown in the right-hand column on the syllabus. The importance is based on their level of ‘criticality’ in the syllabus.

Importance level	Explanation
A	Critical knowledge required to prevent major/catastrophic damage to life, limb, and environment or industry.
B	Necessary knowledge to prevent moderate/serious risk to life, limb, or environment.
C	Foundation-level knowledge to prevent minor risk to life, limb, or environment.

6. Assessment Method

The Subsea Module is assessed by:

- Written assessment.

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
SUBSEA COMPLETION AND INTERVENTION			
Overview			
WI-SS-SSO-01.01.01	Pressure control in subsea completion and intervention operations.	Explain the unique challenges of managing pressure control during subsea completion and intervention operations: - sea water depth - hydrostatic effects due to sea water depth - floating vessel movement resulting from metocean environment - well control equipment on the seabed and PCE on surface - ROV and diver capabilities.	C
WI-SS-SSO-01.01.02	Subsea intervention lubricator (SIL) systems.	Describe how SIL systems are used and positioned for openwater riserless wireline intervention.	C
WI-SS-SSO-01.01.03	Openwater intervention riser system (OWIRS).	Describe how OWIRS are used and positioned for dual bore VXT installation and recovery, and for subsea interventions.	C

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-01.01.04	Through-BOP intervention riser systems (TBIRS)/completion landing strings/subsea test tree (SSTT) systems.	Describe how TBIRS are used and positioned in completion installation, completion recovery and intervention modes.	C
WI-SS-SSO-01.01.05	The well (pressure) control responsibilities of personnel involved in the subsea intervention.	Describe the lines of communication and the roles of responsible personnel (including OIM/Captain and Subsea Engineer) involved in subsea well intervention pressure control. Explain why toolbox talks and pre-job on site planning must include all responsible personnel.	B
WI-SS-SSO-01.01.06	Handover from and back to the host installation.	Describe the handover from and back to the host installation including: - system isolations and depressurisation - handover of well control functions - lines of communication with the host installation.	A

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-01.01.07	Vessel or rig positioning.	Describe anchor and/or dynamic positioning systems for floating rig /intervention vessels, including station-keeping watch circles. Explain marine operational risks and mitigations, including: - dropped object risk and safe handling zones - emergency response after anchor or DP failure.	B
WI-SS-SSO-01.01.08	Heave compensation systems.	Describe the function and failure modes of active and passive heave compensation systems for: - equipment land-out - riser tensioning - wireline and CT well entry.	B
Subsea trees			
WI-SS-SSO-01.02.01	Subsea tree pressure control functions and barrier elements.	Describe the primary function of HXT systems and VXT systems including the following barrier elements: - master, wing, swab and flow line valves - THCPs and ITC (HXT) - THPs and profiles - tubing hanger seals - connectors and seals.	A

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea wellheads and tubing hangers			
WI-SS-SSO-01.03.01	The types of subsea wellheads.	Describe the types of subsea wellheads: - HXT systems - VXT systems (including THS option for monobore VXT).	B
WI-SS-SSO-01.03.02	Subsea tubing hangers.	Describe the functions of subsea HXT and VXT tubing hangers including: - to seal off the annulus - to support the tubing weight - to provide a landing profile for THCPs or THPs - hydraulic and electric connections.	B
Surface controlled subsurface safety valves (SCSSSVs)			
WI-SS-SSO-01.04.01	Surface controlled subsurface safety valves (SCSSSVs) in a subsea environment.	For a subsea completion, describe: - SCSSSV control line routing and leak paths - how deep water can limit the choice of SCSSSV - the risk of hydrates due to the location of the SCSSSV (low temperatures and high pressures).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea well barrier philosophy			
WI-SS-SSO-01.05.01	Overview of barrier philosophy for subsea wells.	Describe the barrier element philosophy (mechanical and fluid) required on a subsea well, including installation and intervention modes.	A
WI-SS-SSO-01.05.02	How to test subsea mechanical barriers.	Describe both positive and negative (inflow test) methods for subsea mechanical barriers.	B
WI-SS-SSO-01.05.03	Fluid barriers in a subsea well.	Describe fluid hydrostatic pressure and the relationship with formation pressure in a subsea well, considering: - overbalance - water depth - air gap - riser margin.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea equipment suitability			
WI-SS-SSO-01.06.01	How to determine if intervention equipment is suitable for the planned operation.	From given subsea well data and a specific operation, determine if the intervention equipment is suitable, considering: - mechanical connections - pressure ratings (internal and external) - fluid exposure - temperature - environment (water depth and current).	B
Subsea wellhead pressure			
WI-SS-SSO-01.07.01	How to determine shut-in subsea wellhead pressure.	Demonstrate how to determine shut-in subsea wellhead pressure using: - previous well data - live instruments (such as tree and downhole gauges) - data from below the wellhead or at surface (with confirmed well fluid properties).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea well pressure calculations			
WI-SS-SSO-01.08.01	Calculating pressures in a subsea well.	From given data, calculate the pressures at points in the tubing and annulus (above and below any barrier) including riser margin calculations using: - sea water depth and fluid column - air gap.	B
Subsea hydrates			
WI-SS-SSO-01.09.01	Hydrate formation in a subsea environment.	Explain why hydrate formation may be more likely in a subsea environment due to: - lower temperature - higher hydrostatic pressure due to water and well depth - external hydrates around connectors. Explain how to prevent and mitigate hydrates by using chemical injection at different fluid entry points: - SSTT - riser and/or choke and kill lines - hoses - subsea tree - downhole - LV and STT/SFH.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea well integrity tests			
WI-SS-SSO-01.10.01	How to do subsea well integrity tests.	Describe the correct rig-up and how to do subsea well integrity tests (positive and negative/inflow) on intervention systems connected to: - wellhead - HXT - VXT. Explain the limits of 'A' annulus access only for: - casing integrity tests - plug tests - sliding sleeve tests.	B
WI-SS-SSO-01.10.02	How to analyse subsea integrity test results.	From given test data, describe the effects of the following factors on subsea integrity test results: - tested volume - temperature - fluid expansion - remoteness of subsea systems.	B
Subsea intervention control systems			
WI-SS-SSO-01.11.01	Subsea intervention control system types.	Describe the types of subsea intervention control systems and how they are used: - direct hydraulics - MUX.	C

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-01.11.02	Subsea operations using ROVs and divers.	Describe how ROVs and divers are used to operate manual valves and functions (including secondary override).	C
Subsea well kill methods			
WI-SS-SSO-01.12.01	How to select the most appropriate kill method for a subsea well.	From a given set of subsea wellbore conditions, explain the most appropriate kill method to choose, and describe limitations such as: - options available for handling hydrocarbons - available kill fluid volume.	B
WI-SS-SSO-01.12.02	Slow circulation rates for subsea wells.	Explain how subsea wellbore configuration and pump parameters affect the choice of slow circulation rates (considering choke/kill line friction loss).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
SUBSEA INTERVENTION LUBRICATOR (SIL) – OPENWATER RISERLESS WIRELINE OPERATIONS			
SIL pressure control equipment (PCE)			
WI-SS-SSO-02.01.01	The equipment required for subsea wireline/cable operations.	For a given subsea wireline/cable operation, describe the function of the subsea PCE.	B
WI-SS-SSO-02.01.02	How to install and test subsea PCE elements required for the subsea wireline/cable operation.	Describe how to install and test the subsea PCE elements required for the subsea wireline/cable operation.	B
WI-SS-SSO-02.01.03	The barrier element configuration on a SIL well control package (WCP).	From a given diagram or description of a SIL WCP: - describe the function - explain the reasons for the ram/valve configuration (to maintain well barrier envelopes at different phases of the operation).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-02.01.04	Operating a subsea grease injection/pressure control head.	From a given diagram or description of a subsea grease injection/pressure control head, identify the components and explain their function.	B
WI-SS-SSO-02.01.05	Operating a lower subsea lubricator section.	From a given diagram or description of a lower subsea lubricator section, identify the components and explain their function including: - pressure monitoring - bleed off systems. Describe how to determine if the equipment is fit for use.	B
SIL operations			
WI-SS-SSO-02.02.01	The limits of a SIL system for subsea intervention operations.	From a given rig-up with a SIL system, assess if an operation can be carried out: - slickline/e-line operations - setting and recovery operations - fishing operations (wireline tools). Explain why the SIL system ID must be considered when assessing if an operation can be carried out.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea tree interface (SIL/WCP)			
WI-SS-SSO-02.03.01	The components required for rig-up on a subsea tree during SIL operations.	From a given rig-up planned for SIL operations, identify the components required and explain how to prepare the equipment, including connections, adaptors and sealing surfaces. Consider intervention systems connected to: - HXT - VXT.	B
Barrier principles (SIL)			
WI-SS-SSO-02.04.01	The mechanical barrier elements used in SIL equipment for subsea wireline operations.	Describe the mechanical barrier elements used in SIL equipment for subsea wireline operations. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-02.04.02	Primary barrier elements, secondary barrier elements and shearing devices for SIL operations.	From a given SIL rig-up and well system diagram/description, identify the primary barrier elements, secondary barrier elements and shearing devices. Explain shearing device operating limits including: - shear valve capability - operating pressure - accumulator supply (including hydrostatic depth effects).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Barrier testing (SIL)			
WI-SS-SSO-02.05.01	How to pressure test a SIL equipment stack.	From a given situation, describe how to pressure test the SIL equipment stack for intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-02.05.02	How to pressure test a SIL equipment barrier element.	From a given diagram or description of SIL equipment, explain how to pressure test a well control barrier element, for example: a valve or BOP ram in the direction of wellbore pressure.	B
Problem situations (SIL)			
WI-SS-SSO-02.06.01	What to do if there is a leak in the stuffing box during a subsea slickline SIL operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the stuffing box during a subsea slickline SIL operation. Consider intervention systems connected to: - HXT - VXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-02.06.02	What to do if there is a leak in the PCE during a subsea slickline SIL operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the PCE during a subsea slickline SIL operation. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-02.06.03	What to do if there is a leak in the grease injection head during a subsea braided line SIL operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the grease injection head during a subsea braided line SIL operation. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-02.06.04	What to do if the cable breaks during a subsea braided line SIL operation.	Explain how to make the situation safe while maintaining control of the subsea well if the cable breaks during a subsea braided line SIL operation. Consider intervention systems connected to: - HXT - VXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-02.06.05	What to do if the hydraulic control unit fails on the SIL IWOCS.	Explain how to make the situation safe while maintaining control of the subsea well if the hydraulic control unit fails on the SIL IWOCS. Consider intervention systems connected to: - HXT - VXT.	B
Shut-in (SIL)			
WI-SS-SSO-02.07.01	How to safely shut in a subsea well during a SIL operation.	From a given situation, explain how to shut in the subsea well safely during a SIL operation with or without wire in the well, considering: - valve and connector sequence - lines of communication - emergency compared to planned shut in. Consider intervention systems connected to: - HXT - VXT.	A

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
OPENWATER INTERVENTION RISER SYSTEM (OWIRS) OPERATIONS			
OWIRS pressure control equipment (PCE)			
WI-SS-SSO-03.01.01	The equipment required for OWIRS operations, HXT and VXT.	For a given OWIRS operation, describe the function of the subsea equipment: - tree connector/TRT - LRP/WCP - EDP - riser joints - stress joint - annulus circulation line - lubricator valve - STT /SFH.	B
WI-SS-SSO-03.01.02	How to install and test OWIRS equipment required for the operation.	From a given configuration, explain how to install and test the OWIRS equipment: - tree connector/TRT - LRP/WCP - EDP - riser joints - stress joint - annulus circulation line - lubricator valve - STT/SFH.	B
WI-SS-SSO-03.01.03	The barrier element configuration in OWIRS LRP/WCP and in surface PCE.	From a given diagram or description of a OWIRS LRP/WCP and surface PCE: - describe the function - explain the reasons for the system configuration (to maintain well barrier envelopes throughout the operation).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
OWIRS operations			
WI-SS-SSO-03.02.01	The limits of an OWIRS system for subsea intervention operations.	From a given rig-up with an OWIRS, assess if an operation can be carried out: - slickline/e-line - CT - setting and recovery - fishing. Explain why the OWIRS ID must be considered when assessing if an operation can be carried out.	B
WI-SS-SSO-03.02.02	How to install and operate different types of OWIRS barrier sealing elements.	From a given diagram or description, identify the different types of OWIRS barrier sealing elements. Describe how to install and operate OWIRS barrier sealing elements considering the following situations: - pressure assistance on closing - different operating pressures - hydraulic connections.	B
Subsea tree interface (OWIRS/LRP)			
WI-SS-SSO-03.03.01	The components required for a compatible rig-up on a subsea tree during OWIRS operations.	From a given OWIRS diagram or description, identify the components (including adaptors and connectors) required for a compatible rig-up considering correct pressure ratings and dimensions. Explain how to prepare the equipment including sealing surfaces. Consider intervention systems connected to: - HXT - VXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Barrier principles (OWIRS)			
WI-SS-SSO-03.04.01	The mechanical barrier elements used in OWIRS equipment for subsea operations.	Describe the mechanical barrier elements used in OWIRS equipment for subsea operations. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-03.04.02	Primary barrier elements, secondary barrier elements, and shearing devices for OWIRS operations.	From a given OWIRS rig-up and well system diagram/description, identify the primary barrier elements, secondary barrier elements and shearing devices. Explain shearing device operating limits including: - shear valve capability - operating pressure - accumulator supply (including hydrostatic depth effects).	B
Barrier testing (OWIRS)			
WI-SS-SSO-03.05.01	How to pressure test an OWIRS equipment stack.	From a given situation, describe how to pressure test the OWIRS equipment stack for intervention systems connected to: - HXT - VXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-03.05.02	How to pressure test an OWIRS barrier element.	From a given diagram or description of OWIRS equipment rig-up, explain how to pressure test a well control barrier element, for example: a valve or BOP ram in the direction of wellbore pressure.	B
Problem situations (OWIRS)			
WI-SS-SSO-03.06.01	What to do if there is a leak in the riser during an OWIRS slickline operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the riser during an OWIRS slickline operation. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-03.06.02	What to do if there is a leak in the LRP/WCP during an OWIRS slickline operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the LRP/WCP during an OWIRS slickline operation. Consider intervention systems connected to: - HXT - VXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-03.06.03	What to do if there is a leak in the CT during an OWIRS operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the CT during an OWIRS operation. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-03.06.04	What to do if the CT breaks during an OWIRS operation.	Explain how to make the situation safe while maintaining control of a subsea well if the CT breaks during an OWIRS operation. Consider intervention systems connected to: - HXT - VXT.	B
WI-SS-SSO-03.06.05	What to do if the LRP/WCP or IWOCS fails during an OWIRS operation.	Explain how to make the situation safe while maintaining control of the subsea well if the LRP/WCP or IWOCS fails during an OWIRS operation. Consider intervention systems connected to: - HXT - VXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Shut-in (OWIRS)			
WI-SS-SSO-03.07.01	How to safely shut in a subsea well during an OWIRS operation.	From a given situation, explain how to shut in the subsea well safely during an OWIRS operation, with or without wire or CT in the well, considering: - valve and connector sequence - lines of communication - emergency compared to planned shut in. Consider intervention systems connected to: - HXT - VXT.	A

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
TBIRS/COMPLETION LANDING STRING/SUBSEA TEST TREE (SSTT) OPERATIONS			
Through-BOP intervention riser systems (TBIRS) pressure control equipment (PCE)			
WI-SS-SSO-04.01.01	The equipment required for TBIRS operations.	For a given TBIRS operation, describe the function of the equipment: - THRT - PSJ - SSTT - shear sub - landing string/riser joints - lubricator valve - STT/SFH - spanner joint (simplified TBIRS).	B
WI-SS-SSO-04.01.02	How to install and test equipment required for TBIRS operations.	From a given stack configuration, explain how to install and test the equipment required for TBIRS operations: - THRT - PSJ - SSTT - shear sub - landing string/riser joints - lubricator valve - STT/SFH - spanner joint (simplified TBIRS).	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-04.01.03	The barrier element configuration of a TBIRS, including SSTT and surface PCE.	From a given diagram or description of a TBIRS: - describe the function of the barrier elements - explain the reasons for the system configuration (to maintain well barriers envelopes at different phases of the operation).	B
WI-SS-SSO-04.01.04	Space out of the SSTT within the rig BOP.	Explain the positioning of the SSTT within the rig BOP. From a given situation, assess which BOP ram equipment must be changed to match the SSTT.	B
WI-SS-SSO-04.01.05	The shearing capabilities of the SSTT.	Describe the SSTT shearing capabilities and limits including: - operating pressure - accumulator supply (including hydrostatic depth effects). - non-shearable tubulars/downhole tools - physical shear testing.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-04.01.06	The secondary operational features of the TBIRS.	Describe the function of rupture discs and shuttle valve arrangements: - to close the SSTT valve using external annulus pressure - THRT or SSTT unlatch. Describe the advantages and disadvantages of these arrangements: - can unlatch if the umbilical fails - risk of rupture/unplanned unlatching - difficult to achieve annular BOP annulus pressure required (if there is a large annular slick joint OD).	C
WI-SS-SSO-04.01.07	The rig BOP ram equipment geometry and interface to the SSTT.	Explain how to configure the SSTT system for BOP vertical space-out: - pipe rams around ported slick joint - shear rams across the shear sub - annular around retainer valve or annular slick joint.	C
WI-SS-SSO-04.01.08	Check valves in SSTTs.	Describe how to use, position and test check valves within the chemical injection line of the SSTT. Explain the advantages and disadvantages of using check valves: - chemical injection fluids may have a lighter weight (no back pressure on reel) - avoids the risk of fluid contamination in the chemical injection line - check valves are a well barrier element and may leak.	C

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-04.01.09	When a rig BOP annular should be closed on a TBIRS.	Describe when and why a rig BOP annular should be closed when used with a TBIRS including: - during a planned disconnect (circulating hydrocarbons from the TBIRS bore) - if a BOP ram fails - when operating secondary unlatch methods.	C
WI-SS-SSO-04.01.10	Choke and kill lines within the rig BOP when using the TBIRS.	Describe how to use and position the choke and kill lines within the rig BOP when using a TBIRS.	C
TBIRS operations			
WI-SS-SSO-04.02.01	The well intervention operations that can be carried out with a TBIRS.	From a given subsea rig-up with a TBIRS, assess which operations can be carried out, considering: - ID limits - through tubing operations (slickline, e-line and CT) - through tubing fishing operations - pull and run completion/tubing hanger/ITC - TBIRS run through marine riser/subsea BOP.	C

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-04.02.02	The operations that can be carried out during well kill with an unlatched SSTT in the rig BOP.	From a given equipment rig-up, explain which operations can be carried out during well kill with an unlatched SSTT in the rig BOP.	B
WI-SS-SSO-04.02.03	How to install and operate different types of SSTT barrier sealing elements.	From a given diagram or description, identify different types of SSTT barrier sealing elements. Describe how to install and operate SSTT barrier sealing elements, considering the following situations: - well pressure assistance on closing - different operating pressures - hydraulic connections - unidirectional/bi-directional sealing - pump through capability.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Subsea wellhead/HXT interface with TBIRS			
WI-SS-SSO-04.03.01	How to prepare for TBIRS operations on a subsea wellhead or HXT.	For a given rig-up, explain how to prepare the equipment before TBIRS operations, including sealing surfaces, connections and BOP connector gaskets, considering the following methods: - ROV inspection - jet wash and/or brushing - marine riser and BOP cavity flushing to remove debris. Consider TBIRS connected to: - subsea wellhead - HXT.	B
WI-SS-SSO-04.03.02	The components required for a compatible rig-up on a subsea wellhead or HXT during TBIRS operations.	From a given TBIRS diagram or description, identify the components (including adaptors and connectors) required for a compatible rig-up considering: - BOP connector for interface to subsea wellhead or HXT - THRT - correct pressure ratings and dimensions. Consider TBIRS connected to: - subsea wellhead - HXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Barrier principles (TBIRS)			
WI-SS-SSO-04.04.01	The mechanical barrier elements used in TBIRS operations.	Describe the mechanical barrier elements used in TBIRS operations. Consider TBIRS connected to: - subsea wellhead - HXT.	B
WI-SS-SSO-04.04.02	Primary barrier elements, secondary barrier elements, and shearing devices in TBIRS operations.	From a given TBIRS rig-up and well system diagram/description, identify the primary barrier elements, secondary barrier elements and shearing devices.	B
Barrier testing (TBIRS)			
WI-SS-SSO-04.05.01	How to pressure test a TBIRS/subsea BOP equipment stack.	From a given situation, describe how to pressure test a TBIRS/subsea BOP equipment stack. Consider TBIRS connected to: - subsea wellhead - HXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-04.05.02	How to pressure test a TBIRS barrier element.	From a given diagram or description of a TBIRS rig-up, explain how to pressure test a well control barrier element, for example: a valve or BOP ram in the direction of wellbore pressure.	B
Problem situations (TBIRS)			
WI-SS-SSO-04.06.01	What to do if there is a leak in the marine riser during a TBIRS slickline operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the marine riser during a TBIRS slickline operation. Consider TBIRS connected to: - subsea wellhead - HXT.	B
WI-SS-SSO-04.06.02	What to do if there is a leak in the TBIRS during a slickline operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the TBIRS during a slickline operation. Consider TBIRS connected to: - subsea wellhead - HXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
WI-SS-SSO-04.06.03	What to do if there is a leak in the CT during a TBIRS operation.	Explain how to make the situation safe while maintaining control of the subsea well if there is a leak in the CT during a TBIRS operation. Consider TBIRS connected to: - subsea wellhead - HXT.	B
WI-SS-SSO-04.06.04	What to do if the CT breaks during a TBIRS operation.	Explain how to make the situation safe while maintaining control of the subsea well if the CT breaks during a TBIRS operation. Consider TBIRS connected to: - subsea wellhead - HXT.	B
WI-SS-SSO-04.06.05	What to do if the IWOCS fails during a TBIRS operation.	Explain how to make the situation safe while maintaining control of the subsea well if the IWOCS fails during a TBIRS operation. Consider TBIRS connected to: - subsea wellhead - HXT.	B

Syllabus Category	Learning objective. The student will gain an understanding of:	Learning outcome. The student will be able to:	Importance
Shut in (TBIRS)			
WI-SS-SSO-04.07.01	How to safely shut in a subsea well during a TBIRS operation.	From a given situation, explain how to shut in the subsea well safely during a TBIRS operation, with or without wire or CT in the well considering: - valve and connector sequence - lines of communication - emergency compared to planned shut in. Consider TBIRS connected to: - subsea wellhead - HXT.	A