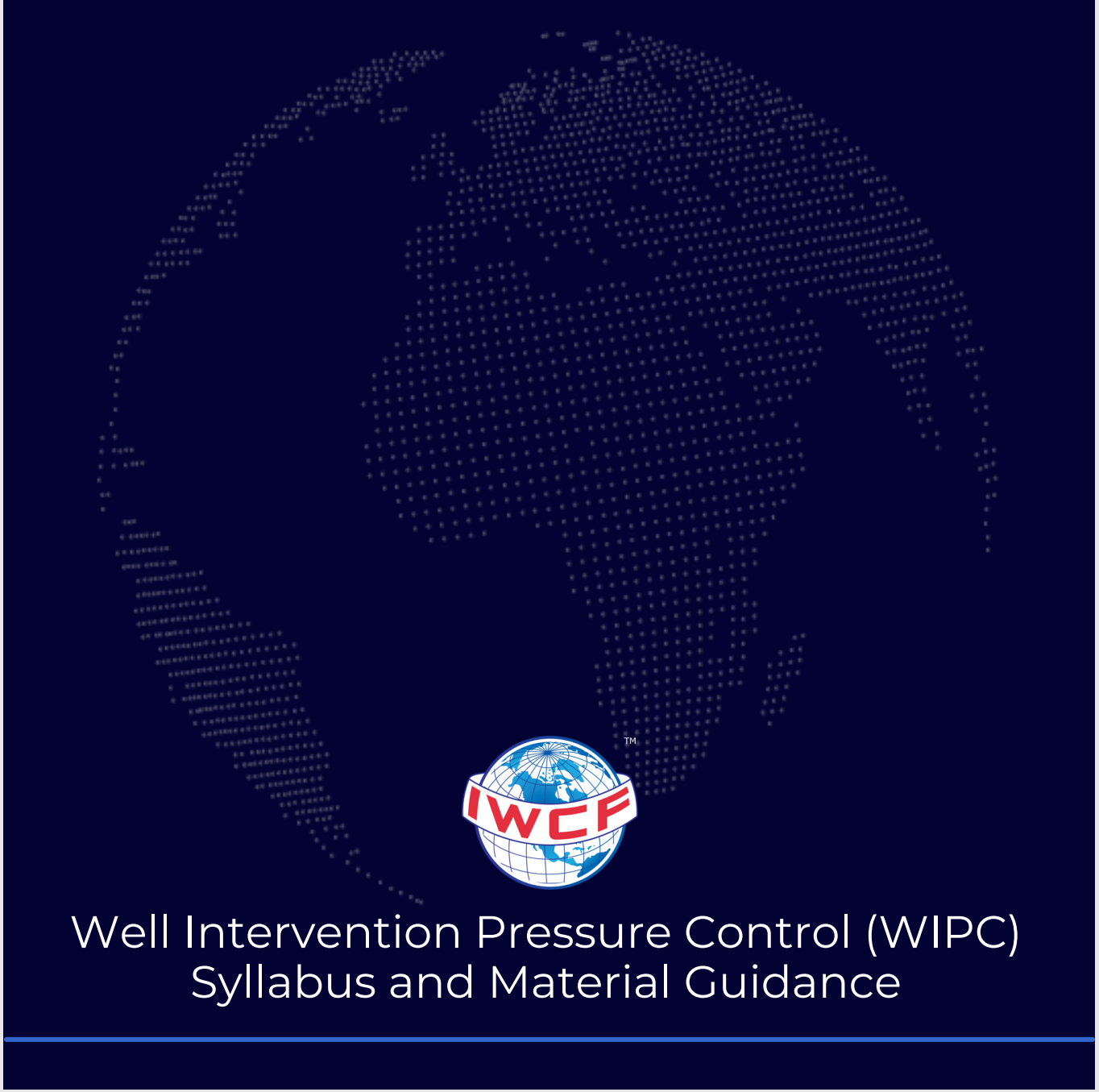

Well Intervention Pressure Control (WIPC) Syllabus and Material Guidance

Introduction

In 2019, IWCF released a new version of the Well Intervention Pressure Control (WIPC) syllabi. This aimed to address the requirements outlined in IOGP 476, *Recommendations for enhancements to well control training, examination and certification.*

When there is a change to an IWCF syllabi or programme, this requires centres to review and update their training materials. As new assessment questions will align with the new syllabi, up to date training materials will give candidates the best opportunity to perform well when taking their assessment.

Candidate and instructor feedback often highlights that syllabi or assessment content does not fully align with practices encouraged by specific employers or regulating authorities. Although IWCF aims to align as much as possible with our global candidate base, the syllabi and assessments will promote the safest course of action in any given situation.

In March 2021, IWCF started an in-depth technical review of training materials submitted by WIPC accredited centres. This review has shown common themes in training materials that require attention. One common theme is that the IOGP recommendations have not sufficiently been included.

We recommend for instructors to closely review their material based using the below information as a guide.

Summary

The below information highlights overall themes from feedback and our technical review process.

- The IWCF drilling and WIPC courses are two separate and distinct programmes and instructors should consider this in their approach. Principles in drilling operations cannot always be applied to a WIPC context. Reviews to date have shown that training centres often use drilling material to explain WIPC scenarios. Where technical review of WIPC material finds drilling references, we may highlight this to centres to update.
- Level 3 and Level 4 are different courses. They each contain elements that are appropriate for specific job roles and field experience. This aligns with the level guidance chart within IOGP 476, 2019. We share a responsibility to encourage candidates to take the correct level for their position. When candidates take the incorrect level for their job and experience, they may not fully benefit from the training and risk not passing their assessment. You can find the IOGP level guidance chart by visiting our website https://www.iwcf.org/course-levels/.
- Training materials must be relevant to the most current version of the syllabus. Technical review has found several training manuals contain outdated or irrelevant topics that are no longer included in the programme. Continuing to teach these items may reduce training time for more relevant topics.

Training material - specific areas for review

The below table highlights syllabus areas that we strongly recommend training centres closely review. This will ensure training materials sufficiently cover these key elements.

Topic	Elements for instructor review	Notes for instructors
Well Integrity	• MAASP for well intervention • The use of checklists • Risk management principles • Evaluation of well handover	Macondo, Montara and other incidents demonstrated the impact of poor well integrity management. A robust well integrity management system maintains well integrity over the well lifecycle. Well integrity, through maintenance and monitoring, also helps to maintain production. The new syllabus promotes understanding of 'why' we do operations in a certain way, compared to 'how' or 'when'. Materials should reflect the following key principles. • How MAASP can change and the potential impact. • The value of checklists in ensuring integrity is maintained. • The potential consequences of loss of integrity during WIPC activity. • How failure could impact life, assets, environment and company reputation. • The importance of detailed well and shift handover. This will include accurately recording information and handing the well back after the operation is completed.
Introduction to Well Control	• Hydrostatic pressure control • Formation injectivity.	Materials should reflect the following key principles. • Fluids cannot be barriers unless they can be monitored and maintained throughout the operation. The gradient must also overbalance the formation pressure. • How to manage pressures and volumes during a WIPC well kill. • How to calculate hydrostatic pressures, surface pressures and volumes.
Barriers	• Terminology for primary and secondary barrier elements • Maintaining BOP integrity during operations • The use of the correct elastomers for well conditions • BOP control systems.	The syllabus has a clear approach to barrier envelopes and barrier elements. A minimum of two barriers must be identified and maintained at each stage of the intervention operation. It is important to emphasise that barriers can change throughout the intervention campaign.

		Note The syllabus no longer references 'tertiary' barriers. Tertiary well control refers to activities such as relief well drilling. All valves that have a sealing function, including BOPs that shear and seal, are now considered to be secondary barrier elements. *You can find more information on Well Control and Barrier Definitions by visiting our website:* https://www.iwcf.org/learning-resources/
Barrier Verification Testing	• Confirmation of barrier element integrity testing • Monitoring to ensure that element and envelope integrity are maintained.	Materials should reflect the following key principles. • When a barrier is lost, the importance of responding immediately to maintain integrity. • Leaks in intervention PCE cannot be repaired with tools in the well unless it is possible to close and test two independent barriers. • PCE BOPs and stuffing boxes must all be capable of being closed remotely - hydraulically operated, not manually. • Risk assessments should be used to consider all potential issues and cover any mitigating actions that may be required.
Influx Characteristics and Behaviour	• Specific well control issues that might happen during completion installation or retrieval.	The syllabus promotes an understanding of how to assess and respond to different situations. Materials should reflect the following key principles. • Examples of potential issues when installing or retrieving completions. during completion installation or retrieval. Using examples which are relevant to candidate experience can aid learning. • The importance of robust risk assessment and planned mitigation if equipment fails. • The potential consequences of failing to act correctly when issues are identified **Note**

		The WIPC scope includes completion installation and retrievals using a drilling rig, hoist or workover rig, in addition to stand-alone well intervention activities.
Shut in Procedures	• Monitoring fluid levels • Monitoring pressures • Shut in with and without tools in the well • Verification and constant monitoring • Identifying potential failures and reacting to them.	Materials should reflect the following key principles. • Key indications of the operation not going to plan and how the crew should respond. • Actions to take when the operation does not go to plan. • The importance of the crew knowing their roles and responsibilities. • How the condition of the equipment can impact the operation. • A further emphasis that two barriers must be available at all times. **Note** There are very few situations when fluid can be used as a barrier during WIPC operations. When it is used as a barrier, it has to be: • equal to kill weight, • be monitorable, and • and the level must be maintained.
Well Kill Methods	• The specific benefits of each kill method • Preparation and contingency planning • Maximum and minimum parameters.	The syllabus includes circulation (reverse and forward), bullheading and lubricate and bleed methods. Drilling kill methods are not part of the programme and should not be included in WIPC training materials.
Surface Failures	• Risks associated with hydrates	Candidates must be able to assess a situation and understand when there is a risk of hydrates forming. Materials should reflect the following key principles. • The definition of hydrates and how they form. • Methods for preventing hydrates. • Safe actions to take (and those not to take) when trying to remove hydrates.
Completion Equipment	• Completion equipment functionality • How Xmas Trees work - different valves and different functions • Tubing stress analysis and selection of tubing.	The syllabus now has additional focus on the capability of the Xmas Tree. Materials should reflect the following key principles. • How well conditions can influence the selection of tubing and equipment. • The reasons for the positioning of components.

		• Equipment limitations due to well conditions and fluid compositions • Possible reasons for equipment/tubing failure • The importance of contingency plans. • Recognising when there has been a failure has and ensuring the crew are ready to act in an emergency.
WIRELINE		
Topic	**Elements for instructor review**	**Instructor notes**
	• When wireline is used and the different types • Wireline in different operating environments.	Candidates must understand current wireline practices, equipment and techniques in different fluids and well types. Materials should reflect the following key principles. • The limitations and the consequences of failure. • Recognising when wire fails and how to prevent it. • The potential consequences if integrity is lost.
Pressure Control	• Identification of the minimum requirements for pressure control throughout the WIPC operation • Where leaks are common, which controls are in place to prevent loss of integrity.	Materials should reflect the following key principles. • How to prevent equipment failures • The actions to take when there is a failure. • Equipment failure can rapidly create a dangerous situation and the priority must always be to protect people, the environment, assets and reputation. • Back-ups and contingencies are equally as important as primary protection during an operation. • Regaining integrity (if it is lost) must always be the immediate priority.
Pressure Control (Barrier Elements & Envelopes) Principles WL	• Maintaining double barrier protection • Operating limits of barrier elements • Barrier envelope verification and integrity.	Materials should reflect the following key principles. • The equipment required to safely carry out the operation. • Important considerations when planning the operation. • How to confirm pressure and integrity test results. • The importance of monitoring the operation so if there are indications that the operation is not going to plan, the crew have time to stop and assess the situation while integrity is still in place. **Note** IWCF technical review of submitted material has found diagrams that show single barrier rig ups. This wrongly suggests that this type of rig up is acceptable.

		For example, a triple braided line / e-line BOP rig-up, with one inverted ram and two conventional rams, is not a double barrier. Barriers must be independent. If an inverted ram in a triple BOP were to fail, the integrity of that BOP would be lost.
Well Intervention Operations WL	• Use and limitations of cutter bars • The force created by well pressure • The operation of a wireline BOP • Well shut in, with or without wire in the well.	The syllabus has a new focus on fishing operations. Materials should reflect the following key principles. • Fishing operations require additional safety considerations. • The possible consequences of poor planning • The possible consequences of a failed fishing operation. **Note** IWCF technical review of submitted material has found diagrams and information on manual wireline BOPs and manual stuffing boxes. These are considered dangerous and should not be promoted. Hydraulically activated stuffing boxes provide the only safe way to stop a stuffing box leak with wire in the well.
COILED TUBING		
Topic	**Elements for instructor review**	**Instructor notes**
Using coiled tubing	• When Coiled Tubing is used • Coiled Tubing in different operating environments.	Materials should reflect the following key principles. • The importance of considering height and access. • Buckling and helical lock up • The function of barrier elements and their operational limits.
Pressure Control	• Primary barrier integrity • BOP ram configurations.	Materials should reflect the following key principles. • How to function secondary barriers when a primary barrier fails. • How equipment rig ups must consider any contingency actions that may be required to respond to a changing situation.

		Note IWCF technical review of submitted material has found diagrams that show single barrier rig ups. This wrongly suggests that this type of rig up is acceptable.
Pressure Control (Barrier Elements & Envelopes) Principles CT	• Grouping barrier elements into barrier envelopes • The use of an annular preventer during coiled tubing operations.	Materials should reflect the following key principles. • How above surface and below surface barrier envelopes are formed during coiled tubing deployment. • How secondary elements will be brought into use. • Barrier elements and their operational limits. For example, tools a shear ram cannot cut. • How annular preventers are often part of the PCE when coiled tubing BHAs of differing sizes are deployed.
Well Intervention Operations CT	• Operational limits of coiled tubing • Wear and fatigue • Well geometry	Materials should reflect the following key principles. • The cyclical wear and fatigue of coiled tubing • The suitability of equipment in certain environments • How well design may negatively impact coiled tubing interventions. • How forces can impact a coiled tubing operation. • The importance of having a contingency plan when installing non-shearable equipment and how this could impact the ability to shut in the well in an emergency.

SNUBBING		
Topic	**Elements for instructor review**	**Instructor notes**
	• When snubbing is used.	Training material could benefit from including more details on various snubbing rig ups. Materials should reflect the following key principles. • The benefits of using a snubbing unit. • How a snubbing unit can be deployed when a rig or hoist cannot be. • The benefits of snubbing compared to coiled tubing.
Pressure Control	• PCE required for snubbing operations • Snubbing primary barrier elements	Materials should reflect the following key principles. • Snubbing rig ups for different well types

	• Barrier sealing elements • Barrier integrity • BOP ram configurations.	• How BOP configurations can result in increased basket height • How active primary barriers change and the importance of maintenance • The importance of equipment inspection and reliability • The importance of equipment compatibility.
Pressure Control (Barrier Elements & Envelopes) Principles SN	• Grouping barrier elements into envelopes • Pressurised deployment • Secondary elements if a primary element fails.	Materials should reflect the following key principles. • Barrier envelopes can change throughout a snubbing operation. • The double barrier requirement must always be maintained. • Actions to take if barriers have been lost. • The protection of seals and elastomers
Well Intervention Operations (SN)	• Snubbing collared pipe into and out of the well. • Operational parameters and limitations	Materials should reflect the following key principles. • Potential problems when stripping • How to manage collared tubulars. • How to transition between pipe light and pipe heavy. • Buckling forces and how to prevent failure.

Future syllabi updates and guidance

IWCF are committed to the continuous review and update of our syllabi and assessment content to ensure they align with industry standards, guidelines and best practices.

When our technical team make any minor updates to syllabi content, we will communicate with the instructors to ensure they understand the changes. Examples of minor updates include detail added to learning outcomes or changes to terminology based on feedback.

We are also exploring other ways to support instructors. This includes the following initiatives.

- The recent introduction of an instructor newsletter. This will focus on key themes from candidate feedback, industry lessons learned and any IWCF updates.
- The development of interactive resources and exercises with WIPC accredited instructors.

If you have any questions, please contact us at iwcfinformation@iwcf.org.