International Well Control Forum

IWCF Drilling Well Control Syllabus

Level 2

July 2017
Version 5.0

Contents

Guidance Notes

1.1. Introduction

The new syllabi 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 August 2016
2) Allow IWCF to continuously deliver the highest standards of well control training and assessment.

1.2. Who takes the Drilling Well Control training course?

We recommend personnel in the following positions should attend the appropriate level of training and assessment:

Level 2: Operation Team personnel - well-site based position whose action or inaction could directly influence well control assurance.
Level 3: Equipment Operator - has to perform an action to prevent or respond to well control accident.
Level 4: Supervisor - specifies and has oversight that the correct actions are carried out

1.3. How long is the training course?

The level 2 Drilling Well control training course must be a minimum 20 hours, excluding examination time.

The level 3 and level 4 Drilling Well Control training courses must be a minimum of 32 hours, excluding examination time.

1.4. How many candidates can a Centre have on a training course?

A course can have a maximum of 15 candidates on a training course (depending on room size/facilities).

1.5. When can a candidate move on from Level 2 to Level 3 and then to Level 4?

Level 2 Drilling training courses should be run as a separate course.

Level 3 Drilling training courses may be partly combined with the Level 4 Drilling course.

If Level 3 and Level 4 Drilling Well Control training courses are partially combined, Level 3 candidates should spend time on training to improve detection and immediate response skills while the Level 4 candidates are taught advanced well control operations.

IWCF recommends a minimum three-month period to build further industry experience and competence before the candidate moves onto the next level. It is unacceptable for a Level 3 candidate to be enrolled on a Level 4 course at the same time.

The syllabus is designed to show progression through IWCF levels 2, 3 and 4. If a syllabus outcome is not assessed at higher levels, IWCF assumes that the candidate will have previously learned this knowledge at the previous IWCF level.

2. The Level 2, 3 and 4 syllabi explained

2.1. Testing understanding

IWCF expects candidates' knowledge and understanding of basic drilling well 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 level. 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: Standard Well control methods'.

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 student 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: Define and list kill and control methods'.

2.4. Syllabus division

The written test syllabus is divided into two compulsory sections:

- Principles and Procedures
- Equipment.

2.5. Coding

Drilling Well Control

Principles and procedures

	Surface	Subsea
Overview	DR-SF-PNP-01	DR-SS-PNP-01
Introduction to well control	DR-SF-PNP-02	DR-SS-PNP-02
Barriers	DR-SF-PNP-03	DR-SS-PNP-03
Risk management	DR-SF-PNP-04	DR-SS-PNP-04
Causes of kicks	DR-SF-PNP-05	DR-SS-PNP-05
Kick warning signs and kick indicators	DR-SF-PNP-06	DR-SS-PNP-06
Circulating system	DR-SF-PNP-07	DR-SS-PNP-07
Influx characteristics and behaviour	DR-SF-PNP-08	DR-SS-PNP-08
Shut in procedures	DR-SF-PNP-09	DR-SS-PNP-09
Well control methods	DR-SF-PNP-10	DR-SS-PNP-10
Well control during casing and cementing	DR-SF-PNP-11	DR-SS-PNP-11
Well control management	DR-SF-PNP-12	DR-SS-PNP-12
Contingency planning	DR-SF-PNP-13	DR-SS-PNP-13 (Level 3 and Level 4 only)

Well Control Equipment

	Surface	Subsea
Blow Out Preventers (BOPs)	DR-SF-EQP-01	DR-SS-EQP-01
Associated well control equipment	DR-SF-EQP-02	DR-SS-EQP-02
Choke manifolds and Chokes	DR-SF-EQP-03	DR-SS-EQP-03
Auxiliary equipment	DR-SF-EQP-04	DR-SS-EQP-04
Testing	DR-SF-EQP-05	DR-SS-EQP-05
BOP control systems	DR-SF-EQP-06	DR-SS-EQP-06

2.6. Importance Levels

All learning outcomes have an 'importance' level which is displayed in the far-right column of the syllabus. The importance is based on the criticality factor; the potential risk of a candidate not holding the knowledge. The levels shown below are based on the potential risk of the candidate **not** having the knowledge:

Importance	Level of risk	Explanation
10	Critical	Could lead to catastrophic damage to life, limb, environment, industry.
5	Major	Major risk factor.
4	Serious	Key knowledge – could lead to risk to life, limb and the environment.
3	Moderate	Necessary knowledge.
2	Minor	Underpinning knowledge.
1	Foundation	Foundation knowledge.

2.7. Assessment method

The Level 2 course Drilling well control course is based on:

- Written assessments.

The Level 3 and Level 4 Drilling Well control courses are based on:

- Written assessments
- A practical assessment.

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
PRINCIPLES AND PROCEDURES				
OVERVIEW				
Well Control Incidents				
DR-SF-PNP-01.01.01	IA01.01	The impact of a well control incident.	Describe the potential impact of a well control incident on: - Personnel - Employment - Environment.	5
Well Control Training and Assessment				
DR-SF-PNP-01.02.01	IA02.01	The need for well control training and assessment.	Explain "why are we here?" including: - Capability to apply well control skills - Responsibility to colleagues - Reduce the severity of impact of a well control event.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
INTRODUCTION TO WELL CONTROL				
Hydrostatic Pressure				
DR-SF-PNP-02.01.01	IB01.01	Factors that affect hydrostatic pressure.	Explain hydrostatic pressure and factors that can affect it.	10
DR-SF-PNP-02.01.02	IB01.03	Hydrostatic pressure calculations.	Calculate hydrostatic pressure at a given depth.	10

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Formation Pressure				
DR-SF-PNP-02.02.01	IB02.01	Formation pore pressure.	Explain what formation pore pressure is and calculate normal formation pore pressure.	5
DR-SF-PNP-02.02.02	NEW	Formation pore pressure as the lower limit of the mud weight window.	Explain why hydrostatic pressure must exceed pore pressure.	5
Fracture Pressure				
DR-SF-PNP-02.03.01	IB03.01	Fracture pressure.	Explain fracture pressure.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-02.03.02	NEW	Fracture pressure as the upper limit of the mud weight window.	Explain why hydrostatic pressure must be less than fracture pressure.	5
Primary Well Control				
DR-SF-PNP-02.04.01	IB04.01	Primary well control.	Explain the main principles of primary well control, and why hydrostatic pressure must be kept above formation pressure and below fracture pressure.	5
Secondary Well Control				
DR-SF-PNP-02.05.01	IB05.01	Secondary well control.	Explain secondary well control.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Subsea Factors and Complications for Surface Candidate's				
DR-SF-PNP-02.07.01	IB07.01	The differences between surface and subsea drilling operations.	Describe the effects of: - Vessel movement and weather (emergency disconnect) - BOP on the sea bed - Water depth - Riser above the BOP - Choke and kill lines.	2
BARRIERS				
Barrier Concept				
DR-SF-PNP-03.01.01	IC01.01	Well barrier philosophy in drilling and workover operations.	From a given situation, identify examples of primary and secondary barriers: - Procedural (monitoring), drilling fluid density and BOP testing - Drilling fluid, cement, casing, liners, pack-offs, BOPs and packers. Describe best practice of two independently tested well barriers between the source of pressure in the well and the environment.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-03.01.02	IEQE01.01	The term ‘barrier’.	Define the term ‘barrier’. (See IWCF Well Barrier Document).	5
DR-SF-PNP-03.01.03	NEW	The well barrier envelopes in well operations.	Define a well barrier envelope. (See IWCF Well Barrier Document).	5
DR-SF-PNP-03.01.04	EQE01.02	The well barrier elements in well operations.	Define a well barrier element. (See IWCF Well Barrier Document).	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-03.01.05	NEW	The principles of different well barrier element types.	Describe the principles of different well barrier element types and explain the differences between: - Mechanical barriers - Hydrostatic barriers.	5
DR-SF-PNP-03.01.06	NEW	Barrier terminology – 'primary' and 'secondary' barrier elements.	Describe the terms 'primary" and 'secondary' barriers elements.	4
DR-SF-PNP-03.01.07	NEW	Verification of well barrier elements.	Explain why well barrier elements must be verified.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
RISK MANAGEMENT				
Well Control and Emergency Drills				
DR-SF-PNP-04.01.01	ID01.01	Risk management.	Describe the main processes of risk management: - Hazard identification and mitigations - Crew meetings and handovers - Use instructions - Toolbox talks.	3
DR-SF-PNP-04.01.02	NEW	The Management of Change (MOC) process.	Explain why a MOC process is required.	2
DR-SF-PNP-04.01.04	D02.01	The need for well control drills.	Describe the main well control drills and explain why they are important: - Pit drill - Trip drill - Choke drill - Diverter drill.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
CAUSES OF KICKS				
General				
DR-SF-PNP-05.01.01	IE01.01	The causes of kicks.	Identify situations that can cause hydrostatic pressure to be less than formation pressure.	5
Loss of Hydrostatic Pressure				
DR-SF-PNP-05.02.01	IE03.01	The consequences of failing to keep the hole full.	Describe what can happen: - When pipe is pulled and the hole is not full - When circulation is lost. - When there is a formation fracture.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-05.02.02	IE03.02	Factors that affect fluid density.	List the possible causes of a reduction in fluid density: - Adding water to the fluid system - Use of centrifuges - Gas-cut drilling fluid.	4
Gas Cutting				
DR-SF-PNP-05.04.01	IE04.01	Gas cutting of drilling fluid.	Explain what gas-cut drilling fluid is and its effect on Bottom Hole Pressure (BHP). Explain what actions to take: - Alert the Driller.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Lost Circulation				
DR-SF-PNP-05.05.01	NEW	The methods to recognise losses.	Identify how losses are recognised: - The pit levels - The rate of returns.	5
Swab and Surge Effects				
DR-SF-PNP-05.06.01	IE05.01	The causes of swabbing and surging.	Outline the factors that cause swabbing and surging: - Drilling fluid density - Drilling fluid viscosity - Pipe running speeds - Well and pipe/BHA geometry - Measured depth.	5
DR-SF-PNP-05.06.02	IE05.01	The consequences of swabbing and surging.	Outline the potential effects of swabbing and surging on BHP: - Formation breakdown - Losses - Swabbed influx.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Tripping				
DR-SF-PNP-05.07.01	NEW	The tripping process.	Describe the process tripping: - Pulling Out of Hole (POOH) - Run In Hole (RIH) - Tripping in and out of the hole.	4
DR-SF-PNP-05.07.02	NEW	The risks associated with tripping.	Identify the primary risks encountered during tripping: Pulling out of hole: - Swabbing Running in hole: - Surging.	3
DR-SF-PNP-05.07.03	IE06.01	The use of a trip tank and trip sheet.	Explain the purpose of a trip tank and how fluid enters and leaves it. Explain the purpose of a trip sheet.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-05.07.04	NEW	Actions to take when there are deviations from predicted trip tank volumes.	Describe the trip tank indications that an influx or loss is occurring.	5
DR-SF-PNP-05.07.05	IE06.03	The actions to take after trip sheet evaluation shows an influx.	Describe the actions to take after identifying an influx while tripping: - Flow check - Run back to bottom - Circulate the influx out.	10
DR-SF-PNP-05.07.06	IE06.04	Common tripping practices.	Explain what pumping a 'slug' means and its intended result. Explain why it may be necessary to pump out of the hole.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
KICK WARNING SIGNS AND KICK INDICATORS				
Kick Warning Signs and First Actions				
DR-SF-PNP-06.01.01	IF03.01	Kick warning signs while drilling and/or circulating.	Identify kick warning signs including: - Rate of penetration changes - Cuttings size and shape - Drilling fluid temperature increase - Changes in gas trends at the shakers - Increase in torque and drag.	5
DR-SF-PNP-06.01.03	IF03.01	Actions to take after recognising a kick warning sign.	Explain actions to take: - Communicate to the Driller.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Kick Indicators				
DR-SF-PNP-06.02.01	IF03.01	Kick indicators and the importance of early kick detection	Define what a kick indicator is: - An increase in flow - An increase in tank volume. Outline why detecting a kick early is important: - Minimise kick volume - Minimise pressures on the well - Minimise the chances of losses.	10
Shallow gas				
DR-SF-PNP-06.03.01	IF05.01	Shallow Gas	Define shallow gas as a potentially uncontrollable (by conventional methods) flow of gas to surface.	5
DR-SF-PNP-06.03.02	NEW	The consequences of shallow gas kicks.	Identify that shallow gas accumulation can: - Unload very rapidly - Have extremely high abrasive flow rates - Have very high noise levels.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SS-PNP-06.03.06	*ISF03.02*	*Implications of drilling top hole with or without a riser.*	*Outline the advantages of drilling top hole without a riser:* - *There is no gas directly to the rig.* - *Can move rapidly off site.*	*3*
CIRCULATING SYSTEM				
Definition and Principles				
DR-SF-PNP-07.01.01	IG01.01	The circulating system.	Describe the drilling fluid circulating system.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-07.01.02	NEW	The role of drilling fluid in well control.	Describe the main uses of drilling fluid: - Maintaining primary control - Carry and suspend drill cuttings - Filter cake.	3
DR-SF-PNP-07.01.03	IG01.02	Pressure losses around a circulating system and how they can affect pump pressure and the BHP.	Identify the frictional pressure losses in a circulating system: - Pump pressure - Annular Pressure Losses (APL) - Calculate the dynamic BHP.	2
DR-SF-PNP-07.01.04	IG01.03	The various types of mud cleaning equipment and what they do.	Explain the role of: - Shakers - Desanders/desilters - Centrifuges.	2

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-07.01.05	NEW	The use of barite.	Explain the use of barite as a weighting agent.	2
DR-SF-PNP-07.01.06	IG01.04	The effects of switching pumps on/off or changing pump speed.	Explain the effect on: - Flow - Pit levels - Pressures.	4
DR-SF-PNP-07.01.08	IG01.05	The relationship between pump pressure and pump speed.	Calculate how changes in pump speed can affect pressures.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-07.01.09	IG01.05	The relationship between pump pressure and drilling fluid density.	Calculate how changes in drilling fluid density affect pressures	3
Slow Circulation Rates (SCRs)				
DR-SF-PNP-07.02.01	IG02.01	Why well control operations must be performed slowly and in a controlled way.	Explain why well control operations must be performed slowly and in a controlled way: - To control BHP - To control the choke.	5
DR-SF-PNP-07.02.02	NEW	The process of taking Slow Circulation Rates (SCRs).	Describe why you should take SCRS and where they are measured.	2

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SS-PNP-07.02.04	*ISG02.02*	*The differences in the circulating system when using a subsea BOP.*	*Identify how the system changes once the BOP is closed:* - *Choke line/kill line* - *No riser circulation.*	*3*
Fracture Pressure and MAASP				
DR-SF-PNP-07.03.01	IH01.02	Methods used to determine fracture pressure.	Describe what a Leak Off Test (LOT) is and what a Formation Integrity Test (FIT) is. Explain the differences between a LOT and a FIT.	2
DR-SF-PNP-07.03.02	NEW	The generation of the MAASP value from LOT or FIT.	Define the term 'MAASP' and explain how the results from LOT and FIT affect the MAASP value.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
INFLUX CHARACTERISTICS AND BEHAVIOUR				
Principles				
DR-SF-PNP-08.01.01	II01.01	The different types of influx and the hazards they present.	Describe the different types of influx fluids: - Gas - Oil - Water.	4
DR-SF-PNP-08.01.03	II01.03	The importance and use of the gas laws.	Explain how gas behaves as it is circulated up the well (No calculations) using Boyle's law (P1V1 = P2V2).	5
DR-SF-PNP-08.01.04	II01.04	Influx migration.	Explain what can happen when an influx migrates: - in an open well - in a shut-in well.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
SHUT-IN PROCEDURES				
General Principles				
DR-SF-PNP-09.01.01	IJ01.01	A suitable shut-in procedure if a primary barrier fails.	Explain the hard shut-in procedure after a kick is detected for: - Drilling - Tripping. Explain the responsibility of the Driller and the crew.	5
DR-SF-PNP-09.01.02	IJ01.02	The correct equipment line-up before drilling or tripping.	From a given diagram, identify simple line-ups of standpipe and choke manifolds before: - Drilling - Tripping.	5
DR-SF-PNP-09.01.04	IJ01.04	Monitoring the well after it is shut-in.	Outline how to monitor the well after it is shut-in: - Monitor the well for flow - Record well pressures at regular intervals.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Hang Off				
DR-SS-PNP-09.03.01	*NEW*	*When and how to hang-off the string in a well control situation.*	*Explain what it means to 'hang-off' a drill string.*	*4*
Interpretations				
DR-SF-PNP-09.05.01	IJ02.01	Recording shut-in well pressures.	Explain why pressures are recorded after the well has been shut-in to establish stabilised pressures.	5
DR-SF-PNP-09.05.02	NEW	The possible differences between Shut-in Drill Pipe Pressure (SIDPP) and Shut-in Casing Pressure (SICP) gauge readings.	Explain SIDPP and SICP, and the reasons for the differences between the pressures. Calculate formation pressure using initial stabilised SIDPP. Calculate kill fluid density using SIDPP/formation pressure.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Observations				
DR-SF-PNP-09.06.03	NEW	The use of dedicated gauges for SIDPP and SICP.	Identify the specific gauges used to measure SIDPP and SICP.	5
WELL CONTROL METHODS				
Principles				
DR-SF-PNP-10.01.01	IK01.01	Standard well control methods.	Explain the essential steps of killing a well: - Removing the influx - Regaining primary control - Controlling the BHP to avoid another influx or break down of the formation - The method for rounding kill fluid weights.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-10.01.02	NEW	The difference between controlling and killing a well.	Outline the principles of controlling the well compared to killing the well.	5
Kill Sheets				
DR-SF-PNP-10.02.01	IK02.01	A kill sheet.	Describe the purpose of a kill sheet and list the basic elements.	3
Calculations				
DR-SF-PNP-10.05.01	IK03.01	Oilfield calculations.	Calculate: - Pipe volumes and capacity - Annular volumes and capacity - Open hole volumes and capacity - Displacement volumes and capacity - Volume and length calculations when tripping pipe - Circulation strokes and times.	10

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Driller's Method and Wait and Weight Method				
DR-SF-PNP-10.06.01	IK01.02	The Driller's Method of well kill operations.	Outline the Driller's Method: - First circulation removes the influx - Second circulation displaces to kill fluid.	5
DR-SF-PNP-10.06.02	IK01.02	The Wait and Weight Method of well kill operations.	Outline the Wait and Weight Method: Circulate out influx while displacing the well with kill fluid.	5
WELL CONTROL DURING CASING AND CEMENTING				
Running and Pulling Casing and Liner				
DR-SF-PNP-11.01.01	IL01.01	The factors that increase risk of swabbing and surging when tripping large diameter tubulars (reduced annular clearance).	Explain the factors that increase the chance of kicks when running and pulling casing: - Swab - Surge.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-11.01.04	NEW	How returns are monitored when tripping large diameter tubulars (reduced annular clearance).	Explain how to monitor returns when running and pulling casing: - Monitor the trip tank - Monitor fill up - Casing running sheet.	3
Cementing Casing and Liner				
DR-SF-PNP-11.02.01	IL02.01	The changes to BHP during a cementing operation.	Describe the changes to BHP during a cementing operation: - Hydrostatic from the drilling fluid - Weighted spacer (wash) so that the BHP is maintained greater than formation pressure - Cement slurry increases BHP.	3
DR-SF-PNP-11.02.02	IL02.02	The importance of a successful cementing job and the risk of primary barrier failure.	Explain how to confirm that the cement has been successfully placed and the potential consequences of failure: - Correct returns - No back flow - Correct quantity and weight. Explain how you verify that the cement has set to form a confirmed barrier: - Pressure test.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-PNP-11.02.04	NEW	The actions to take if a well starts to flow during a cementing operation.	Explain the actions to shut-in a well during a cementing operation: - Stop operations - Secure the string - Shut-in the well.	3
Shut-in Procedures When Running Casing				
DR-SF-PNP-11.03.01	NEW	The steps to shut-in a well when running casing.	Explain the actions to take to shut-in a well when running casing: - Stop operations - Secure the string - Shut-in the well.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
WELL CONTROL MANAGEMENT				
Well Control Drills				
DR-SF-PNP-12.01.01	NEW	The concept and implementation of well control drills as specified by API standards.	Explain the role of crew members during well control drills.	10

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
WELL CONTROL EQUIPMENT				
BLOWOUT PREVENTERS (BOPs)				
BOP Stack Configuration				
DR-SF-EQP-01.01.01	IEQA01.01	BOP function, configuration and the well control operations that can be carried out.	From a given diagram, identify the main features of a BOP, and describe the role of: - The annular preventer - The pipe rams (fixed and variable bore) - The blind/shear ram - The choke and kill lines - Manual and hydraulically operated side outlet valves.	4
DR-SF-EQP-01.01.02	IEQA01.02	The overall pressure rating requirements of a BOP stack.	From given data, identify the rated working pressure of a BOP stack.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SS-EQP-01.01.03	*ISEQA01.03*	*The configuration of the Marine Riser, Lower Marine Riser Package (LMRP) and subsea BOP.*	*Describe the role of the main parts of the marine riser:* - *Ball/flex joint* - *Telescopic/slip joint* - *Tension ring and tensioners* - *Buoyancy* - *Drill string compensator.* *Describe the role of the main parts of the LMR):* - *Pods* - *Annular Preventer* - *Subsea accumulators.* *Describe the role of the main parts of the subsea BOP stack:* - *Accumulators* - *Annular preventer* - *Pipe rams* - *Blind/shear ram* - *Fail safe valves* - *Choke and kill lines.*	*4*
Ram Type Preventers				
DR-SF-EQP-01.02.01	IEQA02.01	The operating principles of BOP ram type equipment.	Describe the capabilities and limitations of what each BOP ram type can do, including: - Sealing direction - Pipe sizes. - Hang off the drill string.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
DR-SF-EQP-01.02.04	ISEQA02.02	The function and operating principles of ram locks.	Explain why ram locks are fitted to BOPs.	3
Blind/Shear Ram Preventers				
DR-SF-EQP-01.03.01	IEQA03.01	The operating principles of BOP blind/shear equipment.	Explain why and when to use blind/shear rams: - Cuts the pipe in the hole (inside the BOP) - Closes and seals the well.	5
Annular Preventers				
DR-SF-EQP-01.04.01	IEQA04.01	The operating principles of annular preventers.	Explain how annular preventers work and what they can and cannot do: - Operating principle - One size fits all - Pressure limitations compared to rams - Stripping - Full closing.	5

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Diverters				
DR-SF-EQP-01.07.02	IEQA06.01	The principles of diverter operations (reference API RP 64).	Explain the purpose and function of diverters.	5
ASSOCIATED WELL CONTROL EQUIPMENT				
Inside BOPS (IBOPs) and Drill Pipe Safety Valves (DPSVs)				
DR-SF-EQP-02.01.01	IEQB01.01	The different types of safety valves.	Explain the different types of safety valves available, what they do, and why the correct size of crossover must be available on the drill floor.	4

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
CHOKE MANIFOLDS AND CHOKES				
Manual and Remote Chokes				
DR-SF-EQP-03.02.01	IEQC02.01	The operating principles and limitations of adjustable chokes (reference API 53).	Describe what a choke does.	2
AUXILIARY EQUIPMENT				
Mud Gas Separators (MGS)				
DR-SF-EQP-04.01.01	IEQD01.01	The operating principles and limitations of a Mud Gas Separator (MGS).	Outline the principles and limitations of the MGS.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Vacuum Degasser				
DR-SF-EQP-04.02.01	IEQD02.01	The operating principles and the role of a vacuum degasser.	Describe the role of vacuum degassers and when they are used.	2
TESTING				
BOP and Equipment Testing				
DR-SF-EQP-05.01.01	IEQF01.01	The importance of the procedures for maintaining and testing BOP stack and choke and kill manifolds (reference API standards).	Explain the need for testing: - High pressure - Low pressure - Function testing - Direction - Frequency.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
Inflow Testing				
DR-SF-EQP-05.02.01	IEQF02.01	The principles of inflow testing.	Explain the principles of an inflow test.	3

New category	Old category	Learning objective. During this course the student will gain an understanding of:	Learning outcome. By the end of this course the student will be able to:	Importance
BOP CONTROL SYSTEMS				
BOP Control Systems				
DR-SF-EQP-06.01.01	IEQG01.01	The general operating principles of the BOP control system and the remote-control panels.	Describe the operating principles of a BOP control system and its remote-control panels: - Hydraulic control panel - Accumulator bottles.	3
Subsea BOP Control Systems				
DR-SS-EQP-06.02.01	*ISEQG01.02*	*The general operating principles of subsea BOP control systems.*	*Describe the main components and operation of a subsea BOP control system:* - *Panels* - *Hydraulics* - *Pilot lines* - *Accumulator bottles* - *Pods* - *Shuttle valve.*	*3*