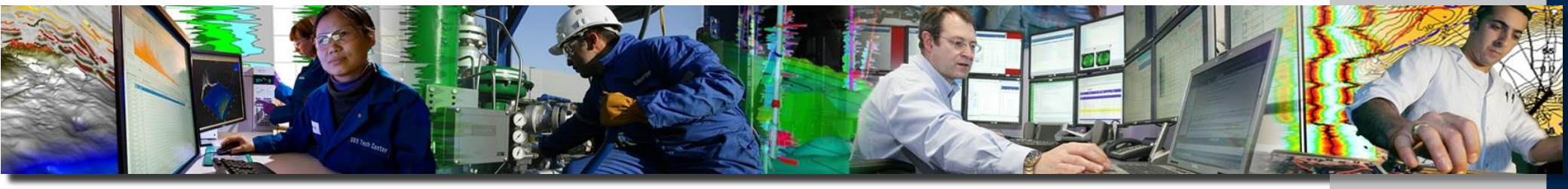
IADC WellSharp
Driller Level



STC
Skills For Technology and Coring

Registration procedure

- First The training head contact us with formal e-mail to booking@stc-eg.com)request registration application for IADC wellsharp. and provide participant's email id and valid ID proof to the instructor/STC coordinator in-advance
- The Training coordinator from STC adminstration@stc-eg.com provides him/her with the application to be filled and the course outline and content
- After confirmation and filling the application, the training head should contact the finance department finance@stc-eg.com to agree on courses fees
- After agreement on courses fees, the training coordinator provides all information about the start date and time of the course plus the materials used

Couse Objectives

- The Objectives of both IADC Well Sharp Driller & Supervisory Level program is to understand the Well control by:

- Effectively recognize and react to a kick in all operations
- Effectively shutting in kicked well and kill it successfully theoretically and practically
- Be aware with the testing, operating principles and functional problems of well control equipment
- Safe the people, equipment and environment by prevent blow out

Course Content

- Day 1
- Well barriers & standards for barriers
- Well barrier elements and acceptance criteria
- Responsibilities for well control& well integrity
- Pressure calculations
- Well control definitions & concepts
- API Recommended Practices and API Specifications
- U-tube analogy for well pressure calculations
- Well control Equipmnet (BOP, Diverter, Flamges,Rings,Rams,etc…)
- Kick tolerance
- Kick causes, prevention & detection
- Warning signs.
- Shallow gas
- Well control preparation
- Well shut-in procedures & first actions.
- Practical - simulator overview and demonstration of well control load cases

Course Content

- Day 2
- Hydrostatic pressure and barriers
- Gas behavior in WBM
- Tripping procedures for well control point of view
- Killing Methods
- Conventional well control procedures
- Unconventional well control procedures
- Well control complications
- Compensating for Choke Line Friction (for Subsea candidates)
- Riser Margin (for subsea candidates)
- Workshop - Driller's Method
- Gas behaviors in OBM
- Difference between vertical and deviated well control
- Circulation
- Practical - Full scenario (kick detection, shut-in, circulate out kick) simulations

Course Content

- Day 3
- Well control equipment Specifications
- Well control equipment selection
- Confirm shutting well in
- Well control while tripping
- Stripping operations
- Deviated wells killing procedures
- Well control equipment installation
- Well control equipment testing
- Practical - Full scenario (kick detection, shut-in, circulate out kick) simulations with ‘unexpected’ events included.

Course Content

- Day 4
- Killing procedure over view
- Case studies
- Worst situations while well control issues
- The needs to shut the well faster
- **Practical Assessment test with simulator**.
- Group discussion
- When not involved with the practical assessments, participants will be completing quiz test.
- Self-Study (using question bank) to prepare for written examinations
- Course review and open discussion.

- Note: The course content is the same for both supervisor and driller level. The difference is in the level of the exercises and the final exam.

Exam (Day 5) Online exam procedures

- Training Coordinator should provide the participant with roster details a username and password (Online exam) and the online exam link
- Every Participant should login using these login details
- Once the participant log in , he / she should do a survey / feedback about the whole course
- Then the participant can start the exam
- The duration of driller level exam is 2 hrs: 30 min for 61 MCQ
- After the participant finish the exam, he / she clicks on summit exam
- Then the participant can get his / her certificate and card

Practical Assessment

- In Driller practical assessment level, the driller candidate starts the exam by checking the line up, start the drilling, set the parameters, take slow pump rate, notice the drilling break, notice the flow indicator, shut-in the well in correct way and inform the supervisor
- The grading sheet is filled by the assessor and the candidate must score not less than 70% to pass the practical assessment
- In case the candidate's failure, he / she has two reset trials as per IADC policy

Materials

- STC is responsible to send driller exercise book to the participants including P&P and Equipment parts
- The level of the questions of exercise for the driller level is less than the supervisor level.

Reset Policy

- The candidate must score more than 70% in the exam to pass
- In case the candidate scores 50-69 % , he can get a free reset till 45 days
- In case the candidate scores less than 50%, he must attend the full course again as a new candidate with a new booking procedure

Teaching methods

- Power point
- Handout/Exercise
- Videos
- Group discussion
- Practical assessment training on simulator

Instructors

- Eng. Khaled Soliman
- Eng. Hany Zayed
- Eng. Ahmed Said
- Eng. Walaa Ahmed

- The instructors' CVs are attached in the mail

Online Course Procedures

- All trainings should be conducted through Microsoft Teams
- Instructor will arrange and send meeting request through Microsoft Teams to all participants including STC coordinator
- The instructor will make every candidate's microphone mute during the explanation of the course then he is going to unmute the microphone for questions and group discussion

Importance notes

- Every candidate must has a valid passport or ID copy
- No mobile allowed in exam
- No food or drinks is allowed in the exam hall
- The proctor or the admin should check the passport copy before the exam

LESSON PLAN FOR Driller

Time	Subject	Method	Materials
	DAY1 Sharp Well Sharp Driller **Lesson Plan-1** Well Sharp incidents, Importance of well control training and Assessment		
08:00-09:00	The impact of a well Sharp incident	**Discussion**	**Handout**
	The need for well Sharp training and assessment	**Discussion**	**Handout**
	Factors that affect hydrostatic pressure	**Whiteboard/** **Group discussion** **Whiteboard**	**Handout/Exercises**
	Hydrostatic pressure calculations	Power point/calculator	Exercises
	Lesson Plan-2 INTRODUCTION OF WELL SHARP		
9:00-10:00	**Formation pore pressure**	**Power point /discussion**	**Handout**
	Formation pore pressure as the lower limit of the mud weight window	**Group discussion** **Whiteboard/**	**Handout**
	The effects of water depth on formation fracture pressure	**Group discussion**	**Handout**
	Fracture pressure	**Whiteboard/discussion**	**Handout** **Exercises**
	Fracture pressure as the upper limit of the mud weight window	**White board/calculator**	**Handout**
	Factors that can influence primary well control	**Group discussion**	Handout

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		Whiteboard/discussion	
	Pore and fracture pressure estimation and the potential impact on primary well control	Whiteboard/discussion	Handout
	Secondary well control	Whiteboard/discussion	Handout
	Appropriate secondary well control equipment selection		
10:00– 10:15	**COFFEE BREAK**		
Lesson Plan- 3 BARRIERS			
10:15-11:15	**The well barrier elements in well operations**	**Discussion**	**Handout**
	The principles of different well barrier element types	**Discussion**	**Handout**
	Barrier terminology	**Discussion**	**Handout**
	Verification of well barrier elements	**Group discussion**	**Handout**
Lesson Plan-4 BARRIER CONCEPT			
11:15-12:00	**The criteria to test barrier elements**	**Discussion**	**Handout**
	Documentation for well barrier tests	**Discussion**	**Handout**
	The correct action to take when a well barrier element test fails	**Group discussion**	**Handout**
	How to verify the continued integrity of the well barrier envelop	**Group discussion**	**Exercises**

LESSON PLAN FOR Driller

12:00-12:30	**LAUNCH TIME**		
Lesson Plan-5 RISK MANAGEMENT, EMERGENCY DRILLS AND CHECKLISTS			
12:30-13:00	**Risk management**	**Group Discussion**	**Handout/Example**
	The Management of Change (MOC) process	**Group Discussion**	**Handout**
	The importance of checklists for operations with well Sharp implication	**Group Discussion**	**Handout**
	The need for well Sharp drills	**Discussion**	**Handout**
	The management of nonshearable and nonsealable tubulars through the BOP	**Discussion**	**Exercises**
	The effect of fluid properties in the riser, booster, choke, and kill lines	**PowerPoint**	**Handout**
	The effect of riser margin on bottom hole pressure	**Discussion**	**Exercises**
Lesson Plan-6 CAUSES OF KICK			
13:00-13:30	**The causes of kicks**	**Whiteboard**	**Handout/Examples**
	The consequences of failing to keep the hole full	**Group discussion**	**Handout**
	Factors that affect fluid density	**Power point**	**Handout/lecture**

LESSON PLAN FOR Driller

	Operations which can reduce hydrostatic head	**Power point**	**Handout** **Exercises**
Lesson plan 7 - HYDROSTATIC PRESSURE REDUCTION			
13:30-14:00	**Gas cutting of drilling fluid**	**Whiteboard**	**Handout/Exercise**
	The causes of gas cutting	**GROUP discussion/calculator**	**Handout/Exercise**
	The potential causes of lost circulation	**Discussion**	**Handout**
	The actions to take in the event of losses during normal operations	**Group discussion**	**Handout**
	The possible consequences of losses on riser integrity	**Group discussion**	**Exercises**
Lesson plan 8- Tripping , slug and trip sheet			
14:00-14:30	**The causes of swabbing and surging**	**Group Discussion**	**Handout/Lecture**
	The consequences of swabbing and surging	**Group discussion**	**Handout**
	Downhole swabbing and surging from the vessel	**Group discussion**	**Handout**

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	motion on **The tripping process The risks associated with tripping** **Actions to take when there are deviations from predicted trip tank volume** **The actions to take after trip sheet evaluation shows an influx** **Common tripping practices influx in the tubular**	**Discussion /Whiteboard** **Discussion** **Discussion** **Discussion**	**Handout/examples** **Handout** **Handout/Exercises** **Handout/Exercises**
DAY 2 Lesson Plan-9 KICK WARNING SIGNS AND INDICATORS			
08:00-10:00	**Kick warning signs while drilling and/or circulating** **Kick warning signs when tripping** **Actions to take after recognising a kick warning sign** **Kick indicators and the importance of early kick detection**	**Discussion/power point/ Simulator training** **Discussion / power point** **Simulator training** **Discussion** **Group discussion**	**Handout/Lecture** **Handout** **Handout** **Handout**

LESSON PLAN FOR Driller

	The interpretation of well flow-back (for example finger-printing' and trend analysis(The effect of rig motion on detecting kick indicators	Group discussion Group discussion	Exercises Handout
10:00-10:15	COFFEE BREAK		
Lesson Plan-10 TOP HOLE DRILLING AND SHALLOW GAS			
10:15-11:00	Shallow Gas The consequences of shallow gas kicks Prevention of shallow gas kicks The requirements for operations in a shallow gas zone Managing shallow gas flow implications of drilling top hole with or without a riser	Group Discussion Discussion Discussion Discussion Group discussion Group discussion Discussion	Hand out/lecture Handout Handout Handout Exercises Handout Exercises

LESSON PLAN FOR Driller

	The methods to identify and minimize the impact of a shallow gas kick		
Lesson Plan-11 CIRCULATING SYSTEM			
11:00-12:00	The use of barite Bottom hole circulating pressure and Equivalent Circulating Density (ECD) The relationship between pump pressure and pump speed The relationship between pump pressure and mud density	Group discussion WHITEBOARD/ PowerPoint Group discussion/calculator Group discussion/calculator	Hand out Hand out Exercises Exercises
12:00-12:30	**LAUNCH TIME**		
Lesson Plan-12 Slow Circulation Rate (SCR)			
12:30-13:00	The process of taking Slow Circulation Rates(SCR) The factors that influence selection of slow circulating rates How to establish choke line friction when using a subsea BOP	Discussion/ Simulator training Discussion/power point Discussion	Handout/lecture Simulator training Handout Handout
Lesson Plan-13 Leak Off Test (LOT), and MAASP			

LESSON PLAN FOR Driller

13:00-13:30	**The purpose of a Leak Off Test (LOT), and the difference between a LOT and a Formation Integrity Test (FIT)**	**WHITEBOARD/ discussion**	**Handout/exercise**
	How to perform a LOT or a FIT	**Group discussion/power point**	**Handout**
	The pressure versus volume graph from the LOT or FIT data	**Power point Discussion/calculator**	**Exercises**
	How to select MAASP from LOT/FIT results	**Group discussion**	**Exercises**
	When and why MAASP must be recalculated	**Discussion/calculator/ power point**	**Exercises**
	The principles of kick margin/tolerance/intensity and how it is applied to well operations	**Group discussion/power point**	**Handout**
Lesson Plan-14 INFLUX CHARACTRISTICS AND BEHAVIOUR			
13:30-14:30	**The different types of influx and the hazard they present**	**Group discussion**	**Handout/lecture Handout**
	How an influx can change as it is circulated up a well	**Power point**	**Handout Handout**
	The importance and use of the gas laws	**Group discussion**	**Handout**

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	Influx migration	**Group discussion** **Power point**	**Exercises** **Handout**
	The effects of influx fluids on the primary fluid barrier	**Group Discussion**	**Exercises**
	The solubility of hydrocarbon, carbon dioxide and hydrogen sulphide gases when mixed under downhole conditions with water based or (pseudo) oil based drilling fluid	**Group discussion**	Handout
	The behaviour of dissolved gas in different drilling fluid	**Group discussion**	Handout
	types when circulating the influx to surface including the effects of temperature and pressure	**Group discussion**	Exercises
	The impact of downhole conditions on the hydrocarbon gas state (gas or liquid influx)	**Group discussion**	Handout
	The actions required to mitigate the effects of gas break out	**Group discussion**	Exercises
	The behaviour of a gas influx as it circulates a horizontal well	**Group discussion**	Exercises

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	The effects of gas expansion in the riser **The actions to take with gas expansion in the riser**	**Group discussion** **Power point**	Handout Handout
DAY 3 Lesson Plan-15 SHUT IN PRODECURES			
08:00-10:00	**A suitable shut-in procedure if a primary barrier fails** **Monitoring the well after it is shut-in** **The actions to take with gas in the riser above the BOPs** **The hard shut-in method** **How to confirm if well closure is successful and the actions to take if not** **When and how to hang off the string in a well control**	**Discussion/ Whiteboard/Simulator training** **Group discussion** **Group discussion** **Discussion/ Simulator training** **Discussion**	**Handout** **Handout** **Handout** **Exercises** **Handout**

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	situation	Discussion	Handout
	Wire line movement effect on BHP		Handout
	Shut-in procedures while wire line logging operation	Discussion	Handout
	The limitation of BOP during wire line operations	Discussion	Handout
		discussion	
10:00-10:15	COFFEE BREAK		
Lesson Plan-16 Shut in data and interpretation			
10:15-10:45	recording parameters when shut-in well	Power point/ Whiteboard/Simulator training	Handout/Exercise
	Obtaining and interpreting shut-in pressures	Group discussion	Exercises
	Trapped pressure	Group discussion	Handout
	The SIDPP with a float valve in the drill string	Calculator	Exercise
	limitations of pressure gauges and different readings on rig	Whiteboard/Simulator	Handout

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		training	
	using of dedicated gauges for SIDPP and SICP	Whiteboard/Simulator training	Handout
	gas migration and causes of pressures increase and actions taken	Whiteboard/Simulator training	Handout
	Controlling BHP when an influx is migrating	Whiteboard/Simulator training	Handout
Lesson Plan-17 WELL CONTROL METHODS			
10:45-11:30	Standard well control methods	Power point	Handout
	The difference between controlling and killing a well	White board/ Calculator	Exercises Handout
	Selection of kill pump rate	Group discussion	Handout
	The appropriate kill methods with the bit on bottom	DISCUSSION	Handout
	The appropriate course of action to take when not on bottom	Power point	Handout
	Maintaining constant BHP	Whiteboard/Simulator	

LESSON PLAN FOR Driller

		training Power point	Handout
	The effect of Choke Line Friction (CLF) on BHP when starting and stopping circulation	Group discussion	Handout
	The effect of CLF on BHP when changing pump speed	Group discussion	Handout
	The measures to mitigate the impact of CLF	Group discussion	Handout
	when starting and stopping circulation	Whiteboard/Simulator training	Handout
	How to reduce well annular pressure if MAASP (at the well weak point) is approached	Group discussion Whiteboard/Simulator training	Handout
	Maintaining constant BHP when changing pump speed the driller's method	Power point	Exercises/ Handout
	the wait and weight method	Whiteboard/Simulator training	Handout

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	The actions required to establish kill mud weight in the riser and associated lines	**Whiteboard/Simulator training** **Power point**	**Handout**
	The actions required to safely remove gas trapped in the BOP	**Group discussion**	**Handout**
	Complete a kill sheet based on given vertical well data.	**Group discussion** **Calculator**	**Exercises**
Lesson Plan-18 WELL CONTROL METHODS			
11:30-12:00	**The principles of the volumetric process**	**Power point/** **Discussion**	**Handout/lecture**
	The procedure required for controlling a well with the Volumetric Method	**Power point**	**Handout**
	When the Volumetric Method is the appropriate well control method	**Power point**	**Handout**
	The principles of the Lubricate and Bleed	**Power point**	**Handout**

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	Method **The procedure required for controlling a well with the Lubricate and Bleed Method** **When the Lubricate and Bleed Method is the appropriate well control technique** **The principles of stripping** **The procedure required to safely strip into a well** **The factors which limit or complicate the ability to strip in the Hole**	**Power point** **Power point** **Group discussion** **Group discussion** **Group discussion** **Group discussion** **Power point**	**Handout** **Handout** **Exercises** **Handout** **Handout**
12:00-12:30	**LAUNCH TIME**		
Lesson Plan-19 WELL CONTROL DURING CASING AND CEMENTING OPERATIONS			
12:30-13:00	**Factors that increase the risk of kicks while casing operation** **how to reduce surge and swabbing pressures**	**DISCUSSION** **Group discussion**	**Handout/example** **Handout**

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	The limitations of self-filling float systems	Group discussion	Handout
	Monitoring returns when running and pulling casing	Discussion	Handout
	The calculation of displacements when tripping casing line	White board	Handout
	actions if losses happen when running casing	Group discussion	Handout
	The changes to BHP during a cementing operation	White board	Exercise
	cement job result	Group discussion	Exercise
	events result from entering formation fluids to casing or open hole after a cementing operation	Group discussion	Exercise
	The actions to take if a well starts to flow during a cementing operation	discussion	Exercise
	The steps to shut-in a well when running casing	discussion	Exercises
Lesson Plan-20 WELL SHARP MANAGEMENT			

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13:00-13:30	The concept and implementation of well Sharp drills as specified by API standards	Group discussion	Handout
	Indications that MAASP is exceeded during a well Sharp operation	Group discussion	Handout
Lesson Plan-21 CONTINGENCY PLANNING			
13:00-13:30	Indications of downhole or surface problems that can arise during well control operations	Discussion	Handout
	How to detect when gauges are malfunctioning	Discussion	Handout
	The actions to take when operating limits are being reached or have been reached in a MGS	Discussion	Handout
	Leak identification and responses to well control equipment failure	discussion	Handout
	What hydrates are and the conditions likely to lead to their formation	Power point Discussion/power point	Handout Handout
	Hydrate prevention and removal	Discussion/power point	Handout
	Monitoring and managing losses during		

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	a well control event		
13:30-14:30	**PRACTICAL TRAINING ON SIMULATOR-**		
DAY 4 **Lesson Plan-22 WELL SHARP EQUIPMENT, BOP stack configuration, Ram preventers**			
08:00-10:00	**BOP Stack and configuration.** **BOP function, configuration and the well control operations that can be carried out** **The overall pressure rating requirements of a BOP stack** **The configuration of the Marine Riser, Lower Marine Riser Package (LMRP) and subsea BOP** **The operational limits associated with particular BOP ram equipment**	**Power point** **Group discussion** **Power point** **Power point** **Power point** **Group discussion**	**Handout/exercise** **Handout** **Exercises** **Handout/Exercises** **Handout** **Handout**

LESSON PLAN FOR Driller

	changing ram equipment	Group discussion	Handout
	The function and operating principles of ram locks	Power point	Exercise
	The operating principles of BOP blind/shear equipment	Power point	Handout
	Shear ram operational procedures	Group discussion	Handout
	The operating principles of annular preventers	Group discussion	Exercises
	The deterioration and failure of annular preventers in service	Group discussion	Handout
	How hydrostatic pressure can affect annular preventers	Group discussion	Handout
	The application of the annular manufacturer data and well bore pressure	Group discussion	Handout
	The optimal location and size of side outlet valves on a BOP stack	Group discussion	Handout
	The importance of correct gasket selection and make up procedures		
10:00-10:15	COFFEE BREAK		
Lesson Plan-23 Diverters, INSIDE BOPS AND KELLY COCK , CHOKE MANIFOLDS			

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AND CHOKES, MUD/GAS SEPARATORS ,Vacuum degasser			
10:15-12:00	The two most common types of diverter	Group Discussion	Handout
	The principles of diverter operations	PowerPoint	Exercise
	The operating mechanisms of common types of diverters used	Power point	Exercise
	The different types of safety valves	Power point	Handout
	The application of the IBOP The capabilities and limitations of using float/flapper valves in the string	Group discussion	Handout
	DPSV installation during tubular running operations	Group discussion	Handout
	The alternative circulating routes to the well and through the choke manifold during well control operations	Group discussion	Exercises
	The operating principles and limitations of adjustable chokes	Group discussion	Handout
	The operating principles and limitations of a Mud Gas Separator (MGS)	Group discussion	Handout
	The operating principles		

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	and the role of a vacuum degasser	Group discussion	Handout
12:00-12:30	LAUNCH TIME		
Lesson Plan-24 BARRIERS and BOP EQUIPMENT Testing			
12:30-13:00	The importance of the procedures for maintaining and testing BOP stack and choke and kill manifolds (with reference to API standards)	Discussion	Handout Exercises
	The required frequency and test values of BOPs and well sharp equipment during well operations	PowerPoint	Handout
	Monitoring the non-pressured side of the barrier being tested	Discussion	Exercises
	The inverted test ram in a subsea BOP stack	Discussion	Handout
	the pressure test requirements for DPSVs, Kelly cocks and IBOPs	White board Discussion	Exercises
	The required frequency and test values for DPSVs and IBOPs	PowerPoint	Exercises
	The required BOP operating pressures and closing times Pressure and strength	Discussion	Handout

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	ratings for equipment used to test well sharp equipment	Discussion	Handout
	the function test and frequency requirements for BOP	Discussion	Handout
	The correct procedures to test diverter systems	Discussion	Exercises
	The frequency and test values required for diverter systems	Power point	Handout
	The principles of inflow testing	Discussion	Handout
	Factors to be considered during an inflow test	Discussion	Handout
	Mitigations to minimize the kick size if the test should fail	discussion	Exercises
	The procedures required for an effective inflow test	Discussion	Handout
Lesson Plan-25 BOP control systems			
13:00-13:30	BOP Control Systems The general operating principles of the remote control panel	Discussion Power point Group discussion	Handout Exercises

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	The normal operating pressures and stored volumes contained in the BOP control system	Group discussion Power point	Handout
	The normal operating pressures and stored volumes contained in the BOP control system	Power point	Handout
	The purpose and criteria for a successful accumulator drawdown test	Power point	Handout
	How to confirm if a specific function has successfully operated	Group discussion	Handout
	Possible functional problems during BOP/Diverter operations	Group discussion	Exercises
	The general operating principles of subsea BOP control systems	Power point	Handout
	The general operating principles of the remote control panel with a subsea installed BOP	Group discussion	Exercises
	How to confirm if a specific function has successfully operated on a subsea BOP	Power point	Exercises
	Functional problems during		

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	operations of a subsea installed BOP	**Group discussion**	**Handout**
	The purpose of having accumulator bottles at the subsea BOP	**Group discussion**	**Handout**
	The secondary closure systems and emergency device that are installed on the subsea BOP stack (with reference to API RP 53)	**Group discussion**	**Handout**
13:30 – 14:30	**PRACTICAL TEST ON SIMULATOR-**		