

IADC SNUBBING COURSE OUTLINE

<u>IADC WELLSERVICE SNUBBING</u>		
<u>COURSE OUTLINE</u>		
<u>DAY1</u>		
TIME	Subject	Lesson plan
8:00 - 9:00	Risk Awareness and Management :Potential Impacts of a Well Control Event Live/Dead Well , Risk Management Systematic risk ,Pre-job Communication , Handover for Tour and Hitch Change ,Safety Margin Selection , Bridging Documents , Emergency Equipment , Requirements procedures (MAASP)	Lesson plan -1
9:00 - 10:30	Installation of rings, flanges and connections , Load Bearing Considerations(requires lifting certifications , environmental factors) , Pressure Fundamentals (Types of pressure a. Hydrostatic pressure , b. Applied Pressures 1. Surface pressure a. SITP b. Annulus Pressure	Lesson plan -2
10:30 - 10:45	BREAK	
10:45 - 11:00	2. Pump Pressure 3. ECDs (Equivalent Circulating Densities) 4. Trapped Pressure 5. Swab/surge c. Formation pressure d. Differential pressure e. Fracture pressure	Lesson plan -3
11:00-12:00	f. Bottom hole pressure 1. Balanced 2. Underbalanced 3. Overbalanced, (MASP) , Kill Mud Weight , <u>ECD and calculation</u> , U-tubing , <u>Buoyancy and calculation</u> , <u>Volume , strokes and rates /Displacement calculations</u> , Snub force calc.	Lesson plan -4
12:00-12:30	Launch Time	
12:30-02:00	Principles(Tubing Collapse and Casing Burst , <u>von Mises equivalent (VME) form.</u>) , Given well data, complete a well data question form (wellbore profile , deviation) pre-recorded information (Well configuration " Top and bottom of perforations , Packer/tool locations) , <u>Maximum allowable working pressure(well head , casing)</u> , <u>casing burst ,tubing collapse</u> ,	Lesson plan -5
02:00-02:45	Snubbing/Buckling (calculate friction forces) The well (Wellhead / Well Control Stack / Christmas tree valves – function test), Reduction of Tensile under Collapse Loading Barriers : Philosophy and Operation of Barrier Systems(Barriers and barrier envelope ,Purpose of barriers)	Lesson plan -6
02:45: 03:00	BREAK	

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03:00-03:45	Types of Barriers (fluid , mechanical) Levels of Barriers (Hierarchy , primary ,secondary and tertiary) Barrier Management (test criteria , monitoring and detecting failure) Validating fluid barriers (monitoring , fluid weight , crystallization , if barrier fail), Hoses , fittings and Connections	Lesson plan -7
03:45: 05:00	Influx Fundamentals : Influx : Detention , Causes , Influx detection (signs and indicators) , Importance of Influx Management in Open Hole Operations (Managing Risk , Consequences of not Managing influx "pollution" Pressure and Volume Relationship (Boyles Law) " Gas Volume/Pressure .	Lesson plan -8
05:05	END OF TRAINING DAY	
<u>DAY 2</u>		
08:00-09:45	Completion and Workover Fluids (purpose, corrosion) Brine requirements . Fluid properties (Density , viscosity ,PH, saturation ,Crystallization , Fluid Flow Behavior (viscosity , rate , friction pressure loss , geometry) Fluid Types (Gas , oil , water) <u>Measuring Techniques (density and viscosity)</u>	Lesson plan -9
09:45-10:00	BREAK	
10:00-11:00	Surface and Subsurface Wellbore Equipment Christmas Tree BOP component stack (function component HCR & manual valve	Lesson plan -10
11:00-12:00	Annular Blind/shear Shear or cutter ram Configuration , Stripping rams (HWO) , tapered string) Auxiliary Well Control (<u>Down hole check valve , full opening safety valve</u>)	Lesson plan -11
12:00-12:30	LAUNCH TIME	
12:30-02:45	<u>Accumulator(function ,min. system pressure , Drawdown test . Closing time , regulators , panel)</u> <u>Chokes and Choke Manifolds</u> <u>Fluid Measuring (strokes, rates)</u> Workstring and Production Tubing integrity(burst , collapse ,torsion , IBOP)	Lesson plan -12
02:45 : 03:00	BREAK	

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03:00-05:00	Completion Equipment: Tubing HGR Surface & sub-surface Controlled Sub-Surface Safety Valve (SCSSV) Packers SSD Gas lift mandrill	Lesson plan -13
05:00	END OF TRAINING DAY	
<u>DAY 3</u>		
08:00-09:30	Procedures: <u>Set/Check Alarm Limits(PIT LEVEL &FLOW RETURN)</u> <u>Shut-in (procedures , Non-sharable)</u> <u>Monitoring and Recording During Shut-in (visual check , accumulator) ,</u> <u>Verification of Shut-in (annular , BOP , manifold)</u>	Lesson plan -14
09:30-09:45	BREAK	
09:45-10:45	Importance of strip/trip tank and line up (<u>valve line up while stripping , bleed off calculation- volumetric method</u>) Snubbing Equipment : Types of snubbing unit: a. Stand-alone b. Rig Assist (Space Saver) Snubbing Barriers (internal , external)	Lesson plan -15
10:45-12:00	Stripper , Dynamic Stripping BOPs (Main Stripping Stack Annular Stripping ram Safety ram Equalizing Loop and Bleed-off Line)	Lesson plan -16
12:00-12:30	LAUNCH TIME	
12:30-02:00	Well Kill in Preparation of Well Interventions : Live vs. Dead Well intervention (without killing the well , Bull heading , circulation Special Situations: Blockages and Trapped Pressure in Tubing / Wellbore , Hydrates , H2S consideration (detention , necessary equipment) ,	Lesson plan -17
02:00-02:15	BREAK	
02:15-03:45	Describe and discuss conditions where pressure calculations exceed MASP <u>Operations with Specific Well Control Concerns(acid, frac , Perf.) ,</u> R/U :Special BOP Equipment (guide ram , guide tube)	Lesson plan -18

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03:45-05:00	Cont. Planned Responses to Anticipated Well Control Scenarios: Buckling Piston effect Slip bowl failure	Lesson plan -19
05:05	END OF TRAINING DAY	
	<u>DAY 4</u>	
08:00-09:30	Cont. Planned Responses to Anticipated Well Control Scenarios: Power unit or hydraulic circuit failure Stripping annular element failure leak below BOP	Lesson plan -20
09:30-09:45	BREAK	
09:45 :11:00	Pressure at surface inside the work string , leak in stripper BOP ram) Buckling of tubular (detention , prevention) Parting of string (prevention , immediate action)	Lesson plan -21
11:00-12:00	Organizing a Well Control Operation : personnel -Roles and Responsibilities , Plan Responses to Anticipated Well Control Scenarios	Lesson plan -22
12:00-12:30	LAUNCH TIME	
12:30-03:00	Testing : Pressure and Function Tests (purpose , Maximum safe working pressures of well control equipment , low & high pressure test) , BOP Testing (specific equipment , pressure test value) Testing of Completion Equipment (Packers , deep set plug , documentation	Lesson plan -23
03:15-03:30	BREAK	
03:30-05:00	Government, Industry and Company Rules, Order and Policies : API and ISO recommended practices, standards and bulletins pertaining to well control , Company/operator specific requirements Ancillary Considerations: Gas detector , fluid gas separator , <u>Choke Drills</u> , Wellhead Control Panel	Lesson plan -24
05:00	END OF LAST TRAINING DAY	