

**WellCAP Cross-reference Tool\***  
**WELL SERVICING OPERATIONS-SNUBBING**  
**WCT-2SS-X – SUPERVISORY LEVEL**

<b>WELLCAP WCT-2SS SUPERVISORY LEVEL</b>		<b>REFERENCE TO APPLICATION MATERIALS</b> (Note Where Each Topic Can Be Found)			
<b>WELLCAP OUTLINE NO.</b>	<b>TRAINING TOPIC</b>	<b>MANUAL</b> (Cite Chapter and Page No.)	<b>LECTURE</b> (Note Day/Time of Course Outline)	<b>SIMULATION</b> (Identify Exercise)	<b>OTHER RESOURCE</b> (Identify Video, CBT Program, Handout, Etc.)
<b>I.</b>	<b>REASONS FOR WELL SNUBBING OPERATIONS</b>				
A.	Definitions of well servicing operations				
B.	Definitions of snubbing operations				
D.	Reasons for snubbing operations				
<b>II.</b>	<b>DEFINITIONS AND CALCULATIONS</b>				
A.	Pressure fundamentals				
B.	Live wells and kicking wells				
C.	Volumes/Capacities/ Displacements				
D.	Force				

\* To further facilitate cross-referencing, the proposed document may include a margin or parenthetical reference to the appropriate WellCAP outline number.

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<b>III.</b>	<b>KICK FUNDAMENTALS</b>				
A.	Definition of a kick				
B.	Causes of kicks				
C.	Kick detection				
D.	Importance of responding to kick indicators in a timely manner				
<b>IV.</b>	<b>GAS CHARACTERISTICS AND BEHAVIOR</b>				
A.	Pressure, volume, relationship (Boyle's Law)				
B.	Gas expansion and migration relationships				
C.	Solubility of gases				
<b>V.</b>	<b>DRILLING, COMPLETION AND WORKOVER FLUIDS</b>				
A.	Primary function: pressure control				
B.	Characteristics of circulated fluids				
C.	Fluid types				
D.	Pressure losses and causes				
E.	Fluid density concerns and measuring techniques				

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<b>Via.</b>	<b>GENERAL SURFACE EQUIPMENT</b>				
<b>A.</b>	Production (Christmas or Xmas) tree				
<b>B.</b>	Rig blowout preventer stacks				
<b>C.</b>	Auxiliary well control equipment				
<b>D.</b>	Accumulators				
<b>E.</b>	Chokes and choke manifolds				
<b>F.</b>	Fluid measuring devices				
<b>G.</b>	Gas detection and handling systems				
<b>H.</b>	Lubricator/Stripper assemblies				
<b>I.</b>	Accumulators				
<b>VIb.</b>	<b>SNUBBING EQUIPMENT</b>				
<b>A.</b>	Snubbing equipment				
<b>B.</b>	Lubricator/Stripper assemblies				
<b>C.</b>	Blowout preventer stack				
<b>D.</b>	Auxiliary well control equipment				
<b>E.</b>	Accumulators				
<b>VII.</b>	<b>SUBSURFACE EQUIPMENT</b>				
<b>A.</b>	Workstring and production tubing				
<b>B.</b>	Completion equipment				

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<b>VIII.</b>	<b>PROCEDURES</b>				
A.	Set/Check alarm limits				
B.	Pre-recorded well information				
C.	Preparing for well entry				
D.	Shut-in				
E.	Verification of shut-in				
F.	Well monitoring during shut-in				
G.	Tripping				
H.	Stripping Operations				
I.	Well control drills				
J.	Flow checking after cementing				
<b>IX.</b>	<b>WELL CONTROL TECHNIQUES</b>				
A.	Objectives of well control techniques				
B.	Techniques for controlling or killing a producing well				
C.	No returns pumping technique (e.g., bullheading)				
D.	Volumetric techniques and lubricate and bleed				
E.	Constant bottomhole pressure methods (forward and reverse circulation)				
F.	Preparation of well control worksheet				
G.	Well control procedures				

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<b>X.</b>	<b>COMPLICATIONS AND SOLUTIONS</b>				
<b>A.</b>	Blockages in string and trapped pressure				
<b>B.</b>	Pressure on casing				
<b>C.</b>	Underground flow				
<b>D.</b>	Cannot circulate well (e.g., plugged workstring)				
<b>E.</b>	Hydrates				
<b>F.</b>	Lost circulation				
<b>G.</b>	Collapsed tubing				
<b>H.</b>	Junk in hole				
<b>I.</b>	Hole in tubing or parted tubing				
<b>J.</b>	Stuck tool string				
<b>K.</b>	Fishing under pressure				
<b>L.</b>	Hole angle				
<b>XI.</b>	<b>ORGANIZING A WELL KILL OPERATION</b>				
<b>A.</b>	Personnel assignments				
<b>B.</b>	Pre-recorded information				
<b>C.</b>	Planning responses to anticipated well control scenarios				
<b>D.</b>	Communication responsibilities				

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<b>XII.</b>	<b>TESTING</b>				
A.	Testing of completion pressure control equipment				
B.	Pressure and function tests				
C.	BOP testing				
D.	Installation of rings, flanges and connections				
<b>XIII.</b>	<b>GOVERNMENT, INDUSTRY &amp; COMPANY RULES, ORDERS &amp; POLICIES</b>				
A.	Incorporate by reference				
<b>XIV.</b>	<b>SPECIAL SITUATIONS (OPTIONAL)</b>				
A.	H2S considerations				
B.	Subsea considerations				
C.	Nitrogen operations				
D.	Drilling operations				
E.	Workover operations				
F.	Wireline operations				
G.	Small tubing unit				
H.	Safety systems and Emergency Shutdown Devices (ESD)				
I.	Operations with specific well control concerns				