

## Lesson plan 3 Coiled Tubing Level 2

Time	Lecture	Content	Delivery Method	Teaching Aids	Assessing understanding
8:00 - 8:30		<b>Homework revision</b>	Check the answers for yesterday homework with students and discuss the correct answers.	Verbal White board	Discussion
08: 30 - 10: 00	3.1	<b>Application CT</b> When coiled tubing is used	Explain when coiled tubing is used, and the different sizes available	Verbal Power point	Open Question Q & A
	3.2	<b>Equipment CT</b> The coiled tubing equipment in different operating environments	From a given surface layout diagram, identify the coiled tubing components used in well intervention	Power point Video	Discussion
10: 00 - 10: 15		Coffee Break			
10: 15 - 12: 00	3.3	<b>PRESSURE CONTROL Surface PCE Stack CT</b> PCE required for coiled tubing operations	From a given diagram or description, identify the function and positioning of the surface PCE components required for coiled tubing operations	Power point Video	Open Question Q & A
	3.4	<b>PRESSURE CONTROL Primary Barrier Elements CT</b> Primary barrier elements (strippers) used during coiled tubing operations	From a given diagram or description, identify the function and positioning of primary barrier elements (strippers) used during coiled tubing operations: - Side door - Radial	Power point White board	Open Question Q & A
12.00 - 12: 30		Lunch Break			
12: 30 - 14: 00	3.5	<b>PRESSURE CONTROL Primary Barrier Elements CT</b> Primary barrier elements (strippers) used during coiled tubing operations	Outline the factors that can affect the integrity of the primary barrier elements	Power point Manual	Group discussion

			<p>during coiled tubing operations.</p> <ul style="list-style-type: none"> <li>- Hydraulic pressure</li> <li>- Roughness of the coiled tubing</li> <li>- Fluid composition</li> <li>- Maintenance</li> <li>- Running speeds</li> </ul>		
	3.6	<p><b>PRESSURE CONTROL</b>  <b>Secondary Barrier Elements – BOPs (Ram Type Preventers) CT.</b>            Secondary barrier elements (coiled tubing BOPs) used during coiled tubing operations</p>	<p>From a given diagram or description, identify the function and the positioning of secondary barrier elements (coiled tubing BOPs) used during different coiled tubing operations:</p> <ul style="list-style-type: none"> <li>- Combi</li> <li>- Triple</li> <li>- Quad.</li> </ul> <p>Explain why it is important to consider equipment access for loading various tool string configurations</p>	Power point Video	Open Question Q & A
14: 00 - 14: 30	3.7	<p><b>PRESSURE CONTROL</b>  <b>Secondary Barrier Elements – BOPs (Ram Type Preventers) CT</b>            BOP ram configurations for different coiled tubing operations</p>	<p>Explain why BOP ram configurations must change for different types of coiled tubing operations</p>	Power point Video Manual	Open Question Q & A
14: 30 - 14: 45		Coffee Break			
14: 45 - 15:00	3.8	<p><b>PRESSURE CONTROL</b>  <b>Shearing Devices CT</b>            Coiled tubing shearing devices</p>	<p>Explain the function and positioning of coiled tubing</p> <ul style="list-style-type: none"> <li>- Shear ram</li> <li>- Shear/seal ram/valve</li> </ul>	Power point White board	Open Question Q & A

15: 00 - 15: 15	3.9	<b>PRESSURE CONTROL Other Well Control Devices CT</b> Downhole check valves(back pressure valves) in a Bottom Hole Assembly (BHA) during coiled tubing operations	From a given diagram or description identify the function and positioning of downhole check valves (back pressure valves) used in a coiled tubing BHA	Power point Video	Open Question Q & A
15: 15 - 15: 30	3.10	<b>PRESSURE CONTROL (BARRIER ELEMENTS and ENVELOPES) PRINCIPLES CT</b> Grouping barrier elements into barrier envelopes during coiled tubing operations	From a given coiled tubing situation or surface rig-up diagram, identify primary barrier elements and group them into envelopes	Power point Video	Open Question Q & A
15: 30 - 15: 45	3.11	<b>Safely repair or replace a failed primary barrier element CT</b> Maintaining a double barrier when changing a coiled tubing stripper rubber during intervention operations	Explain why two barriers must be maintained when changing coiled tubing stripper rubber during intervention, in line with industry good practice	Power point Manual	Discussion
15: 45 - 16: 00	3.12	<b>Safely repair or replace a failed primary barrier element CT</b> Secondary barrier elements and envelopes for coiled tubing operations if a primary barrier element fails	Describe the use of equipment as secondary barrier elements/envelopes during coiled tubing operations. From a given diagram or description identify double barrier protection while repairing and/or replacing failed components	Power point Manual	Open Question Q & A
16: 00 - 16: 15	3.13	<b>Operational Considerations (with well control consequences) CT</b> The forces on coiled tubing created by well pressure	Explain the forces on the coiled tubing caused by well pressure: - Buckling - Collapse	Power point Manual	Open Question Q & A
16: 15 - 16: 30	3.14	<b>Controlled Well Shut in CT</b> Coiled tubing shear ram equipment operating limits	Explain when the coiled tubing shear ram equipment will shear and when it will not	Power point Manual	Open Question Q & A
16: 30 - 17: 00	3.15	<b>Controlled Well Shut in CT</b> How to shut in the well quickly and safely with or without coiled tubing in the hole	Outline why it is important to safely shut in the well during a coiled	Power point video	Group discussion

			tubing operation: - With coiled tubing in the hole - Without coiled tubing in the hole		
30 min.		Homework (multi-choices) exercises		Exercises Book	To be discussed next day