

WellCAP Cross-Reference Tool*
DRILLING OPERATIONS
WCT-2DF-X – FUNDAMENTAL LEVEL

WELLCAP WCT-2DF FUNDAMENTAL LEVEL		REFERENCE TO APPLICATION MATERIALS (Note Where Each Topic Can Be Found)			
WELLCAP OUTLINE NO.	TRAINING TOPIC	MANUAL (Cite Chapter and Page No.)	LECTURE (Note Day/Time of Course Outline)	SIMULATION (Identify Exercise)	OTHER RESOURCE (Identify Video, CBT Program, Handout, Etc.)
I.	CAUSES OF KICKS				
A.	Unintentional flow				
B.	Intentional flow				
II.	KICK DETECTION				
A.	Kick indicators				
B.	Warning signals that kick may be occurring or is about to occur				
C.	Indicators of possible increasing formation pressure				
D.	Importance of timely response to kick indicators				
E.	Distinguishing kick indicators/warning signals from other occurrences				
III.	PRESSURE CONCEPTS AND CALCULATIONS				
A.	Types of pressure				
B.	Calculations				
C.	Conversion of pressure to an equivalent mud weight				

* 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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D.	Volume/Height relationship and effect on pressure				
E.	Drop in pump pressure as fluid density increases during well control operations				
F.	Maximum wellbore pressure limitations				
IV.	PROCEDURES				
A.	Pre-recorded well control information				
B.	Flow checks				
C.	Shut-in				
D.	Well monitoring during shut-in				
E.	Response to massive or total lost circulation				
F.	Tripping				
G.	Formation competency				
H.	Stripping operations				
I.	Shallow gas hazards				
V.	GAS CHARACTERISTICS AND BEHAVIOR				
A.	Gas types				
B.	Density				
C.	Migration				
D.	Expansion				
E.	Compressibility and phase behavior				

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F.	Solubility in mud				
VI.	FLUIDS				
A.	Types of drilling fluids				
B.	Fluid density measuring techniques				
VII.	CONSTANT BOTTOMHOLE PRESSURE WELL CONTROL METHODS				
A.	Objectives of well control methods				
B.	Principles of constant bottomhole pressure methods				
C.	Example steps for maintaining constant bottomhole pressure well control: Driller's or Wait and Weight methods				
D.	Well control kill sheets				
E.	Well control procedures				
VIII.	EQUIPMENT				
A.	Well control related instrumentation				
B.	BOP configuration				
C.	Manifolds and piping				
D.	Valving				
E.	Auxiliary well control equipment				
F.	BOP closing unit: function and performance				

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G.	Testing/Completion pressure control equipment				
H.	Pressure and function tests				
I.	Well control equipment arrangements				
IX.	GOVERNMENT, INDUSTRY AND COMPANY RULES, ORDERS AND POLICIES				
A.	Incorporate by reference				
X.	SUBSEA WELL CONTROL (REQUIRED FOR SUBSEA ENDORSEMENT)				
A.	Subsea equipment				
B.	Diverter system				
C.	Kick detection issues:				
D.	Procedures				
XI.	SPECIAL SITUATIONS (OPTIONAL)				
A.	Hydrogen sulfide (H ₂ S)				
B.	Horizontal well control considerations				
C.	Underground blowouts				