INTRODUCTORY LEVEL

For information on how an Introductory Level course should be delivered and documented, refer to Form WCT-21.

The purpose of WellCAP core curriculum is to identify a body of knowledge and a set of job skills, which can be used to provide well control skills for wireline operations. The curriculum is divided into three course levels: Introductory, Fundamental, and Supervisory. The suggested target students for each core curriculum level are as follows: **INTRODUCTORY:** New Hires (May also be appropriate for non-technical personnel) **FUNDAMENTAL:** Helpers, Assistants, “Hands” and personnel involved with the operational aspects of the unit **SUPERVISORY:** Supervisors, Superintendents, and Project Foreman

Upon completion of a well control training course based on curriculum guidelines, the student should be able to perform the job skills in italics identified by a "□" mark (e.g., □ Identify causes of kicks).
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B. Pre-recorded information

C. Plan responses to anticipated well control scenarios

D. Communications responsibilities

XI. TESTING

A. Testing of pressure control equipment

XII. GOVERNMENT, INDUSTRY AND COMPANY RULES, ORDERS AND POLICIES

A. Incorporate by reference

XIII. SPECIAL SITUATIONS (OPTIONAL)

A. H2S considerations

B. Subsea considerations

C. Coiled tubing operations

D. Snubbing and HWO operations

E. Small tubing unit

F. Drilling operations

G. Workover operations

H. If pump unit is utilized by wireline crew: Techniques for controlling or killing a producing well

I. If pump unit is utilized by wireline crew: No returns pumping technique (e.g., bullheading)
## I. REASONS FOR WELL SERVICING OPERATIONS

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II. DEFINITIONS AND CALCULATIONS

A. Pressure fundamentals

1. Definition of pressure
   a. Force
   b. Area

2. Types of pressure
   a. Pressure gradient 1) Liquid 2) Gas
   b. Hydrostatic pressure 1) General 2) Effect of fluid level change
   c. Total downhole pressure 1) Considering multiple fluid columns with
      varying densities 2) Considering shut-in surface pressures
   d. Bottomhole pressure
   e. Formation pressure 1) Balanced 2) Underbalanced 3) Overbalanced
   f. Differential pressure
   g. Trapped pressure
   h. Swab pressure
   i. Surge pressure
   j. Fracture pressure

Define the following items:

- Force
- Pressure gradient
- Hydrostatic pressure
- Bottomhole pressure
- Differential pressure
- Total downhole pressure
- Formation pressure

Explain causes and effects of swab and surge pressures in the wellbore.
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4. Reworking a producing reservoir to control water and/or gas production.
5. Rework to reduce or eliminate water coning.
6. Repair mechanical failure.
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*Definitions and Calculations continued on next page.*
III. KICK FUNDAMENTALS

Kick Fundamentals continued on next page.
A. Definitions of well-servicing operations

Describe well-servicing operations.

B. Definition of well-servicing unit types

Describe types of well-servicing units.

C. Reasons for well-servicing operations which may include

1. Completing for production from a new reservoir. 2. Completing a well in more than one reservoir. 3. Stimulating a well.

Identify reasons for performing well-servicing activities or working over a well.

List potential well control problems that could occur during well-servicing and workover operations.
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IV. GAS CHARACTERISTICS AND BEHAVIOR
V. FLUIDS
VI. SURFACE EQUIPMENT
D. General rig and coiled tubing and snubbing units blowout preventer equipment
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1. Rig/unit Equipment that may be encountered  
   a. Annular preventers and strippers  
   b. Rams 1) Blind 2) Pipe/Multiple string 3) Shear 4) Blind/Shear 5) Variable bore and slip  
   c. Ram locking mechanisms  
   d. Sealing elements  
   e. Safety valves  
   f. Chokes and manifolds

**E. Auxiliary well control equipment**

1. Kelly valves (kelly cock)  
2. Full open safety valve  
   a. Top drive valves  
   b. Floor stabbing valves  
3. Inside BOP  
4. Floats/back pressure valves

**Identify function and configuration of key rig BOP stack components.**

**Identify flow path(s) used in well control operations.**

**Describe function and use of the following rig/unit equipment that may be used during wireline activities:**  
- Kelly/top drive system valve  
- Full open safety valve  
- Inside blowout preventer  
- Floats/back pressure valves
Surface Equipment continued on next page.
**JOB SKILLS**

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| Identify reasons for performing well servicing activities or working over a well. |
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VII. SUBSURFACE EQUIPMENT

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**VIII. PROCEDURES**

*Procedures continued on next page.*
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*Procedures continued on next page. Procedures continued on next page.*
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   ☒ ☐ List potential well control problems that could occur during well servicing and workover operations.

X. ORGANIZING OPERATIONS
XI. TESTING

A. Testing of pressure control equipment

1. BOPs/wireline valves
2. Surface pressure control accessory equipment
3. Packers
4. Lubricators
5. Xmas trees
6. Test trees

Demonstrate the ability to line up piping and valving to perform test.

Form WCT-2WSI Revision 030627
XII. GOVERNMENT, INDUSTRY AND COMPANY RULES, ORDERS AND POLICIES

A. Incorporate by reference

1. API and ISO recommended practices, standards and bulletins pertaining to well control
2. Regional and/or local regulations where required
3. Company/operator specific requirements where required

Describe or identify appropriate regional government or company specific regulations pertaining to job being completed.
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H. If pump unit is utilized by wireline crew: Techniques for controlling or killing a producing well

1. Bullheading
2. Lubricate and bleed
3. Constant bottomhole pressure (BHP) techniques
   a. Wait and weight
   b. Drillers's method
4. Reverse circulate

Recognize chain of command and that you will work as directed
I. If pump unit is utilized by wireline crew: No returns pumping technique (e.g., bullheading)

1. Well shut-in will stop influx when BHP equals formation pressure
2. Determine status of shut-in tubing pressure (SITP), shut-in casing pressure (SICP)
3. Pump rates and pressure limitations
   a. Maximum pump pressure
   b. Friction of fluids vs. rate
   c. Gain in hydrostatic pressure vs. volume pumped
   d. Burst pressure of tubulars
   e. Collapse pressure of tubulars
   f. Formation fracture pressure
4. Determine volume to be pumped
   a. Theoretical volume to formation
   b. Overdisplacement (if any)
   c. Volume to pump to load surface lines
5. Pump rate vs. volume pumped
6. Gas migration vs. pumped fluid viscosity
7. Determine if well has been successfully killed
8. Barrier concept

Recognize chain of command and that you will work as directed