

Revised by: K. Linde
Reviewed by: P. Martinez
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Textbook update: Spring 2021
C & G Ed approval: May 6, 2021
Board approved: June 9, 2021
Semester effective:

Petroleum Technology (PETC) 1100 Introductory Well Control (.25 Unit)
[formerly Petroleum Technology 94N]

Prerequisite: None

Hours and Unit Calculations:

4 hours lecture. 8 Outside of class hours; 4 hours lab (16 Total Student Learning Hours) .25 Units

Catalog Description: Successful completion of this course satisfies the requirements established by Title 30 Code of Federal Regulations, Part 250, Subpart O, for floor hand training. The course is intended for drilling floor hands. This course is designed to provide a working understanding of well control and the problems normally associated with pressure control. This course is offered on a Pass/No Pass basis only.

Type of Class/Course: Degree Credit

Textbook:

Westec. *Well Control Workbook*. WESTEC Energy Publications.

Additional Required Instructional Materials: None

Course Objectives:

By the end of the course, a successful student will be able to

1. perform hydrostatic pressure calculations,
2. discuss formation pressure and sources,
3. signs and causes of kicks,
4. perform shut-in procedures,
5. correctly operate blowout prevention (BOP) equipment, and
6. identify and mitigate potential circumstances.

Course Scope and Content:

- Unit I Introduction and Registration
- A. Course introduction
 - B. Complete student registration
- Unit II Reservoir and Drive Systems
- A. Description of oil reservoir zones
 - B. Description of free flow, steam, and water flood reservoir drive systems
- Unit III Reasons for Well Workover

- A. Production enhancement
 - B. Repair surface and downhole deficiencies
 - C. Well stimulation for lost production
- Unit IV Well Workover Safety
- A. Well site hazards
 - B. Rig and appurtenance hazards
 - C. Location hazard
- Unit V Well Bore Fluid Columns
- A. Functions of drilling fluids
 - B. Functions of completion and workover fluids
 - C. Fluid types
 - D. Fluid properties
- Unit VI Hydrostatic Pressure and Gradients
- A. Hydrostatic pressure definition and calculations
 - B. Gradient definition and calculations
- Unit VII Well Kicks
- A. Kicks defined
 - B. Conditions necessary for a kick to occur
 - C. Causes of kicks while drilling
 - D. Causes of kicks while tripping
- Unit VIII Warning Signs of Kicks at Various Stages
- A. Warning signs while drilling
 - B. Warning signs while tripping
- Unit IX Shut-in Procedures
- A. Surface stack drilling
 - B. Surface stack tripping
- Unit X Blowout Prevention (BOP) Equipment
- A. Basic stack design criteria
 - B. Types of BOP equipment
 - C. Safety valves
- Unit XI Auxiliary Equipment
- A. Accumulators
- Unit XII Kill Methods
- A. Drillers' methods
 - B. Wait and weight methods
 - C. Volumetric method
- Unit XIII Summary and Review
- A. Revisit all material
 - B. Review major definitions, calculations, and practices
- Unit XIV Training for Floorhand
- A. Testing

Lab Content:

1. Practical hands-on exercises for shut-in wells using a BOP simulator
2. Practice calculations from scenarios using simulators and computers



Learning Activities Required Outside of Class: None

Methods of Instruction:

1. Lecture/Discussion
2. Practical hands-on exercises

Methods of Evaluation:

1. Written exam
2. Performance observation of student operation

Supplemental Data:

TOP Code:	095430: Petroleum Technology
SAM Priority Code:	C: Clearly Occupational
Distance Education:	Not Applicable
Funding Agency:	Y: Not Applicable(funds not used)
Program Status:	I: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class
Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	N: Is not part of a cooperative work experience education program
Eligible for Credit by Exam:	NO
Eligible for Pass/No Pass:	C: Pass/No Pass
Taft College General Education:	NONE

Discipline:	Mining and Metallurgy
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