Well Service Operations : 15 Days

Learning Objectives:

- Provide an understanding of the range of well servicing operations.
- Highlight the critical aspects of well servicing and the pressure control.
- Learn the function and use of a wide range of wireline tools.
- Utilise a “hand-on” approach to consolidating learning in a workshop.
- Use cutaway tools to ensure an understanding of equipment operation.
- Gain exposure to the operation of the wireline unit.
- Learn the “job planning” aspects of successful well service operations.
- Provide a venue for questions and discussion.

Who should attend:

- Oil & service company personnel who will be involved in well servicing.
- Graduates and recent hires who will be involved in well services.
- Experienced personnel who are being cross trained.
- Critical logistics and support personnel.

Venue: Vause Training Centre New Plymouth, NZ (VTC) or clients choice of location

Pre-requisites: Field exposure to completions, wireline or coiled tubing and well service operations and a prior knowledge of well completions is an advantage.

Support material
Course presented in .ppt with multi media animations, video clips and movies.
VTC: Fully equipped workshop, cutaway tool demonstrator and 1000 ft well.

Course description:
Starting with basic completion design and an explanation of the components installed in a well, this course goes thru the range of operations associated with well services.

Participants learn classroom theory, with workshop exposure to actual tools. This is followed by demonstrations of cutaway tools before planning and executing slickline operations within a 1000 ft training well. The use of pressure and flow can be used to create realistic, but safe conditions.

VTC’s location in close proximity to the oilfields of Taranaki, along with the support of the local operating companies permits site visits to view drilling and wireline activities, subject to current activity.

Refer to course details overleaf:
Brief History of oil
Timeline: 300BC to present

Crude Oil
Chemical composition & API density ratings

Basic Geology
Erosion & deposition process
Hydrocarbon creation
Reservoirs – types of traps
Formation characteristics – Porosity / permeability
Reservoir drive mechanisms

Exploration Methods
Seismic
Exploration drilling

Drilling Process (on Land well)
Rig Components
Drilling a well and completion design
Spudding In, Mud System, Bit types, BOPs
Casing schematic and Cementing sequence

Types of Rigs
Land – Desert, jungle heli-rig
Geothermal
Platform rig
Tender rigs
Jack up
Semi Submersible
Drillships
Sub sea operations

Overview of floating rig operations
Overview of subsea operations

Well Design variations
Straight, Deviated / directional, Multi lateral
Well measurements

Completion Components
Nipples, Packers, Sliding Side Doors [SSD’s]
Gaslift : Side Pocket Mandrels [SPM’s ]
Safety Valves, Tubing Hangars

Sand Control
Gravel Pack, Conventional screens,
ESS – Expandable Sand screens

Artificial Lift
Overviews of Beam Pumps, Electric Submersible
pumps, Progressing Cavity pumps, Jet Lift, Plunger Lift
Gaslift : Theory of gaslift operations
Side Pocket mandrels
Gaslift valves - design and function.

Xmas Trees
Tree types, operation and wellhead safety:
Single, dual, composite, solid block.
Operating procedures
Safety considerations
SSV actuators and lockout procedures
Back pressure valves/Hanger plugs
Pressure ratings

Production platforms
Basic types and conditions

Well Servicing
Wireline (slickline), Electric Line
Coiled Tubing
Snubbing HWO units

Remedial Operations
Workover rigs, Cement Squeeze, Fracturing, Acidizing

Enhanced Oil Recovery
Water Flood
Gas re-injection

H₂S Implications
Material selection & safety precautions

Well Completions:
Description of down hole components as related to wireline,
Types of completions, casing programs
Deviation effects on wireline operations
Hydrostatic pressure calculations and well kill concepts
Perforating – guns and TCP

Wireline
Use and limitations of wireline.
Wire types and strengths.

Wireline Units
Design, function and operating procedure

Surface Equipment:
Pressure control equipment - stuffing boxes, lubricators, BOP’s

Braided line equipment
Grease injection systems, tool catchers, tool traps

eLine Applications
PLT : Production Logging Tools
Surveys: T/P Spinner
PNN : Pulsed Neutron Neutron Log
Gamma ray
CCL : Casing Correlation Log
CBL : cement Bod logs
Caliper surveys
USIT : Ultra Sonic Imaging Tool
Plus : Memory versions of above for slickline: MPLT, MPNN
Basic log interpretation overview

Pressure Testing:
Industry standards (WP. TP etc)
Test Procedures
Safety precautions
Pressure test pumps
Toolstring Components
- Rope sockets - knot, tear drop, braided types
- Stem - sizes, selecting correct amount.
- Jars - mechanical, hydraulic, spring, accelerators
  Knuckle joints, swivels.

Plan Wireline Operation
As group exercise, then carry out that plan in training well.

Rig-up Procedures
- Lifting options: crane, HIAB type, masts
- Clamping and lifting slings

Basic Service Tools
- Gauge cutters, Blind boxes, Lead Impression Blocks
- Depth correlation

Running / Pulling tools:
- Otis R, S, G series
- Camco JD, JU series

Lock Mandrels / Plugs
Specific types from the main manufacturers will be discussed: Otis (HES), Petroline, Baker
- Selective systems
- No go locks
- Plugs and Flow controls
- Running and pulling procedures.
- Significance of correct equalizing and differential forces.

Sliding Side Doors
- Description and use in the well.
  Types: XO, XD, XA, Baker CMD, CMU
- Shifting tools and procedures
- Side Door Chokes.
- Separation tools

Additional Equipment
- Pack-offs, Calliper surveys - brief overview
- TCP guns - wireline release options / procedures.

Safety Valves
- SSV – Surface tree actuators and lock out
- SCSSV – wireline and tubing retrievable
- TRSSV – Tubing Retrievable
- DCSSV – back up downhole valves

Gaslift
- Running and pulling procedures.
- Additional uses of SPM’s
  - Well kill, water flood, chemical injection.

Training wellsite: use of cutaway SPM to show operation, plus ruin in well.

Extreme Deviation
- Use of rolling systems and options for highly deviated wells.
- Roller Stem
- Slip Over Roller Centralizers
- Roller Centralizers: options and positioning

Wireline Fishing
- Avoidance by due care and good job planning.
- Detailed discussion on correct preventative procedures, job planning and error avoidance by good practices and appropriate knowledge and use of equipment

Fishing Job Planning
- Line/force/pressure considerations
- Lubricator length considerations
- Use of appropriate equipment
- Site constraints: Platform size, tie down point strength etc.

Fishing Tools
- Go thru all tools available, design, function and operation.
- Fishing scenarios and calculations
- Various part fishing situations, requiring calculation of wire end depth etc.

HD Jarring Activity
- Use of braided lines and grease injection systems
- Spring jars – setting, calibration and redressing
- Accelerators – use and matching to jar operations
- Use of HD fishing tools

Elastomers and Metallurgy
- Effects of wellbore fluids on equipment selection

Summary
- Final discussion and review of course and revisiting initial objectives
- Final written exam

General:
- Each day will start with discussion of prior days activities, question and answers, then written test on topics covered. Practical sessions will be conducted in workshop/rig/well where appropriate to consolidate the classroom theory.
- Certificates will be issued on successful completion

For further information, contact:
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