Well Integrity
What is your role?

Formation Evaluation Society of Australia and Society of Petroleum Engineers – Western Australia

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All references to dollars, cents or $ in this presentation are to Australian currency, unless otherwise stated.
References to “Woodside” may be references to Woodside Petroleum Ltd. or its applicable subsidiaries.
Well Integrity – An Old Story

Baku June 1873
Coalinga, Ca (USA) 1896
Spindletop; Texas 1901
Well Integrity – Problems Occur Everywhere

Santa Barbara Channel
1969

Algeria – 2006
Well Integrity – Even Today

Elgin Platform – UK
March 2012

Nigeria
January 2012
Is this You?

CAN'T THOSE DRILLERS GET ANYTHING RIGHT!!!???
Well Integrity – Key Elements

• Planning
  • Geoscience
  • Mechanical – Drilling & Completions Engineering
• Execution
  • Rig / Drilling and “Third Party” Services Contractors
• Well monitoring / well interventions

COMPETENCE
Well Planning – Starts with Geoscience Input

- Pore Pressures
- Rock Strength / frac gradients
- Formation depths and thicknesses
- Fluids content estimates – gas / oil / water
- Understand and communicate uncertainties

Get this wrong and your well is at risk!

COMPETENCE
Geoscience Input and Well Integrity Incidents
Drilling Engineers take the Geoscience input to develop:

- Casing Design – “Skeleton of the well on which everything else hangs
- Burst and collapse pressures, tensile loads
- Fluids and Hydraulics
- Cementing Program
- Other – LWD, mud logging, bits, wireline logging, etc. etc.
Mechanical – Completions Engineering; Well Life Cycle Management

- Well Type
  - Producer; Injector; Both? Other?
- Fluids
- Pressures
- Temperatures
- Material Selection
- Reservoir / production monitoring?
- Monitoring requirements
- Intervention strategy
Drilling Contractor’s well control procedures and equipment
Full understanding of Operator - contractor interfaces required
Well control equipment reliability
Competence

“the ability to do something well, measured against a standard, especially ability acquired through experience or training”

How seriously do we really take “competence”?  
How do we develop “it”  
How do we measure “it”?
Same rig crew did not detect a kick for ~ 30 minutes 6 weeks prior to April 20
Is this You?

CANT THOSE DRILLERS GET ANYTHING RIGHT!!!???
Well Integrity issues have plagued our industry for over 100 years
Well Integrity issues are plaguing our industry today
True cost is unknown – but what we do know is staggering
Everyone involved with planning a well can have an impact
Understand YOUR role and impact on well integrity
Well Integrity Master Class Schedule

Tom Nolan – GM Well Construction & Integrity – INPEX
  • Well Integrity During Drilling Operations

- Vladislav Konogorov / Abdenour Sidhoumi - Senior Cementing Engineers, Halliburton
  • Cementing

- Nick Muecke - Well Construction Manager – Vermilion Oil & Gas
  • Well Completion

- Roger Marsh - Wireline System Engineering and Geoscience Manager, Baker Hughes
  • Well Monitoring

- David Press - Senior Geomechanics Advisor, Schlumberger

- Gavin Guyan - Well Integrity Team Manager, NOPSEMA