Recent Chevron deepwater permitting experience

5 approved permits for deepwater wells (WD: 4500-6800’)

- Development wells: 2 x APD+APM (injectors, no WCD/NTL10)
- Exploration/Appraisal wells: 2 x RPD, 1 x APD
  - All exploration/appraisal wells re-designed to allow full shut in

Experience from most recent approved permit (exploration well)

- APD submitted 5/20, 1 revision on 8/10, approved 8/15
- Few comments on well containment portion (RP checklist and WCST)
- Majority of comments on conventional part of APD
  - Mostly requests for additional info
  - Request to change BOP test pressures (50/50 to mudline instead of RKB)
Success factors for permitting
Challenge = keeping up with changes ...

Communication with BOEMRE region & district engineers

Transfer of learnings (info/docs required, deviations)
  • Share comments received on APD submittals
  • Permitting documents on shared server accessible to all teams
  • SME’s (casing design, cementing, internal BOP group), one person entering all permit applications

Well containment portion
  • Roll out WCST
  • Integration with MWCC interim containment plan
  • “Standardized” RP checklist
  • Well data supplement for containment (same document format for all permits)
    • Potential for HC bearing zones by hole section
    • Gradients – data sources & description of methodology
    • WCST (L1&2) with supplemental information
    • Broaching discussion

Well design
Well design to meet NTL-10

To date, all wells were redesigned to allow full shut-in

Challenges

- Collapse (16”, 13-5/8”)
- Burst (16”, 22.5/23”)

Shoe strength (broaching)

Major issue

- Use of existing pre-NTL10 wells
No sealed annuli

Single worst flow zone or WCD flow resulting in highest mudline pressure
Inclination <30°
<1 yr installed
P₁ < FG Exposed Shoe

START

Level 1 Criteria

NO

YES

Level 2

Burst

Collapse

Burst

P₁ = MW above TOC
P₂ = FP below TOC
P₃ = P₁ - δCE

Collapse

P₁ = FG above TOC
P₂ = FP below TOC (50%)
P₃ = 3/4 P₁ + δCE

Manufacturer's Equipment Rating

Level

Burst/Collapse Calculations

APB Analysis

Proof Annulus Open

Advanced Pipe & Equipment Ratings

Burst/Collapse Disks

Corringle Flow Zones

Well Integrity Total Shut-in

NO

YES

Shoe Holds

Exceed FG at Collapse Pt Where Shut-in

Failure Mode

NO

YES

Consequence Analysis

Accept Underground Flow until Well is Killed

Broach study
G&G, salt, cement

Accept Temporary Underground Flow

NO

YES

Shut-in until Capture Equipment in Place

Partial Shut-in, Vent to Sea until Capture Equipment in Place

Flow/Pressure Study

Remaining Flow

Partially Shut-in, Capture Remaining Flow

Failure Point

DEEP

SHALLOW

Partially Shut-in, Capture Remaining Flow

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