RIGEL/17 HANDS
SUBSEA DEVELOPMENT

Larry Starlight - Dominion E&P
17 HANDS OVERVIEW

OCS Block
Mississippi Canyon 299

Water Depth: 5880'

Ownership:
- Murphy Exploration & Production, Inc. 37.5%
- Dominion Exploration & Production, Inc. 37.5% (Operator)
- Spinnaker Exploration & Production (Hydro) 25.0%

History:
Drilled, May 2001, MC299#1 and MC299#1 ST across Rob E Objective

SITP
5650 psi
17 HANDS DEVELOPMENT
Gemini–VK900 ChevronTexaco HOST FACILITIES

GEMINI
MC 292

RIGEL
DIRECT DISTANCE

23 miles

17 HANDS
MC 299
RIGEL OVERVIEW

OCS Blocks
Mississippi Canyon 208
Mississippi Canyon 252
Mississippi Canyon 296

**Water Depth:** 5230’

**Ownership:**
Dominion Exploration & Production, Inc. 52.5% (Operator)
Newfield Exploration & Production 25.0%
Mariner Energy, Inc. 22.5%

**History**
MC252#1 ST2 – Drilled and T&A’d (cased across Rob E).
MC296#1 – Drilled and T&A’d Oct 2003 (cased across Rob E upper and Rob E)

**SITP**
5810 psi
LOG ANALYSIS

- DISCOVERY WELL
  - MC252 TEXACO #1 ST-2
  - TVD GR
  - TVD AHT90
  - LOG ANALYSIS
    - 53 NFG
    - AVG. φ 22.6%
    - AVG. SW 53%
    - NG 54%

- APPRAISAL WELL
  - MC296 #1 BP (MD log)
  - Gamma Ray
  - A40B UNC
  - LOG ANALYSIS
    - 97 NFG
    - AVG. φ 28%
    - AVG. SW 29%
    - NG 69%

TOP OF SAND

GWC -11131’ ss

RIGEL FIELD
RIGEL / 17 HANDS

Leading Host Options

- **OPTION 1:** Chevron via Gemini (VK 900)
- **OPTION 2:** Gulf Terra, et al (VK 817)
- **OPTION 3:** Williams Canyon Station (MP 261)

Option 1: 20 miles to Gemini (New)
24 miles to VK 900 (existing)

Option 2: 33 miles

Option 3: 40+ miles
DESIGN and IMPLEMENTATION

Integrated Project Team Approach

• All 5 Partners
• Specialized Subsea Engineering Consultants
• Central Core of 9-10 People
RIGEL / 17 HANDS

Project Implementation
RIGEL/17 HANDS
Development Components

• 2- Cameron 10K Horizontal Subsea Trees
• 23 miles of 8”, 0.5” wt, X-60 pipe
• 23 miles of 3.5” Oceaneering Umbilical-8 zinc coated 19D tubes, 2 electrical quads
• ABB Vetco Control System
• 2- Roxar Subsea Wet Gas Meters
• Plets, Jumpers, UTAs, Flying Leads
RIGEL / 17 HANDS
LOCATION MAP

IVAN 135 mph Cat 4
Sept 2004
Delmar – HCLS System
Cal Dive – Spoolbase
External Buckle Arrestors
Rigel PLET
Cal Dive - Intrepid
Flowline Jumpers at SIT
Roxar Subsea Wet Gas Meter
Subsea Wet Gas Meters
Overboarding Jumper
Umbilical X Section

UMBILICAL CROSS-SECTION

(1) 16mm² TWISTED UNSHIELDED JACKETED QUAD

(1) 16mm² TWISTED SHIELDED JACKETED QUAD

NON-METALLIC FILLER

POLYETHYLENE OUTER SHEATH (YELLOW) 0.250" NOMINAL THICKNESS
Umbilical X Sections
Umbilical SIT
Tensioner
Damaged Section
Damaged Section
Splice in Progress
Splice in Progress
Tensioner Solution
Completed Splice
Overboarding UTA
RIGEL/17 HANDS

- Successful Startup following VK900 Repairs – March 1, 2006
- Ramped up rates to 145 MMCFPD
RIGEL/17 HANDS

Conclusion

• Successful Extension of Existing Subsea Infrastructure
• Win–Win solution for both Chevron and R/17 Partners
• Despite numerous delays and problems, perseverance and the solution driven focus of the project team paid off.