

**OCS-G-21164, SS001 , ST00BP01  
MISSISSIPPI CANYON BLOCK 296 (BHL)  
MISSISSIPPI CANYON BLOCK 252 (Surface)**

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**OBJECTIVE:** Complete as a single, gas well with two stacked, frac packs in the Upper and Lower Rob-E Sand. The 5-1/2" production tubing assembly includes 2 direct, hydraulically operated sliding sleeves that provide the ability to selectively shut in the Lower Rob-E Sand without future well intervention.

**PROJECTED COMPLETION START DATE:** March 20, 2005

**PROCESS 1: MOB RIG, LATCH / TEST BOP'S**

- Run BOP's on marine riser to latch onto FMC, subsea wellhead at ~5,289' ORKB (Water Depth = 5229')
- Test BOP connector to 5,000 psi.
- Test blind/shear ram to 5,000 psi on 8.6 ppg SW (7,400 psi at BSR)
  - MASSP = 5,500 psi at SST with .15 psi/ft gas gradient
- Run test plug with test tool to test upper and middle VBR's for 5-1/2" to 6,000 psi. Test upper and lower annulars to 6,000 psi. Test surface manifold, choke/kill lines and BOP equipment to 6,000 psi.

Note the following Waiver Request for future BOP test during Completion operations:

- Waive lower VBR for 5-1/2" x 7-5/8" pressure test after BOP's latched
  - Lower VBR used only for sub sea test tree, during well test
- ROV inspection of subsea wellhead and BOP stack every 72 hours
- Pressure test BOP's every 14 days with function test every 7 days

**PROCESS 2: TIE BACK THE 10-3/4 x 9-7/8" CASING TO FMC WELLHEAD**

- Drill out TA, cement plugs. Condition and cut back SBM to 11.5 ppg
- Set EZSV with TCP to perf for block squeeze; 11,728' – 11,732' MD
- Pump block squeeze below the Lower Rob-E Sand to isolate water sand
- Run CBL on EL to evaluate the 9-7/8" block squeeze job.
- Polish 9-7/8" PBR at 10,980' MD.
- Run ~2,000' of 10-3/4", 65.7 ppg, Q-125 x ~3,700' of 9-7/8", 62.8 ppg, Q-125 casing to tieback from 10,980' to FMC subsea wellhead at 5,289' ORKB.
- Install FMC Spacer Hanger (10.75" ID) in the FMC "UWD-15" Rigid-lock wellhead @ ~5,289' ORKB.
- Pressure test Spacer Hanger to 6,000 psi (surface pressure on sea water).

**PROCESS 3: INSTALL CAMERON SUBSEA TREE**

- Install storm packer. Displace riser to sea water.
- Unlatch BOP's from FMC, subsea wellhead
- Install subsea tree with HCLS.
- Land and lock subsea tree to FMC wellhead (2700 psi locking pressure)
- Test AX/VX gasket to 7,500 psi for 15 min.

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**PROCESS 4: PREPARE WELLBORE, DISPLACE 11.5 SBM WITH 11.4 CaCl/CaBr2**

- Latch BOP's onto Cameron, subsea tree at ~5,279' ORKB
- Test BOP connector to 5,000 psi.
- Test blind/shear ram to 5,000 psi on 8.6 ppg SW (7,400 psi at BSR)
- Run test plug with storm packer pulling tool and test tool to test upper and middle VBR's for 5-1/2" to 6,000 psi. Test upper and lower annulars to 6,000 psi. Test surface manifold, choke/kill lines and BOP equipment to 6,000 psi.
- Pull storm packer.
- Drill cement plug at 9-7/8" tieback seals @ ~10,980'.
- CIH to PBD. Condition SBM.
- Test 10-3/4" x 9-7/8" liner to 5,000 psi on 11.5 ppg.
- Displace 11.5 ppg SBM with 11.4 ppg CaCl/CaBr2
- RU EL. Set Sump packer at 11,688' ELM. RD EL.

**PROCESS 5: PERFORATE LOWER ROB-E SAND WITH TCP**

- Run TCP assembly on 5-1/2" DP
- Locate sump packer to place guns in position to perf the Lower Rob-E Sand (11,640' – 11,680' MD / 11,125' – 11,154' TVD)
- Perforate in 11.4 ppg CaCl/CaBr2 with ~ 240 psi overbalance.
- Monitor fluid loss and stabilize wellbore. POOH with TCP assembly

**PROCESS 6: FRAC PACK THE LOWER ROB-E SAND**

- Run GP assembly to land in sump packer at 11,688' ELM.
- Set GP packer at 11,590' (as base for the Upper Rob-E Sand)
- Test packer to 2,000 psi
- Pump frac pack: ~30,000 lbs of 20/40 prop, 18 BPM max rate
- Fluid loss controlled through HES Shurshot.

**PROCESS 7: PERFORATE UPPER ROB-E SAND WITH TCP**

- Run TCP assembly on 5-1/2" DP loaded 14 SPF
- Set packer plug in GP Packer @ 11,590' MD.
- Perforate the Upper Rob-E Sand (11,558' – 580' ELM)
- Perforate in 11.4 ppg CaCl/CaBr2 with ~ 240 psi overbalance
- Monitor fluid loss and stabilize wellbore. POOH with TCP assembly

**PROCESS 8: PULL PACKER PLUG**

- Run pulling tool with Cavins bailer to recover the packer plug
- Monitor fluid loss and stabilize wellbore. POOH with packer plug

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**PROCESS 9: FRAC PACK THE UPPER ROB-E SAND SAND**

- Run GP assembly to land in lower GP packer @ 11,590'.
- Set upper GP packer ~11,430'
- Test packer to 2,000 psi
- Pump frac pack: 30,000 lbs of 20/40 prop, 16 BPM max rate
- Fluid loss controlled through HES Twin Flow AIS.

**PROCESS 10: RUN PRODUCTION TUBING / SMART ACCESSORIES**

- Run 5-1/2" Production tubing with "smart valves", DHPT, CIM, SCSSV
- MU Cameron Hanger on THRT & Expro SSTT on 6-5/8" landing string.
- Land hanger with Production Packer set at ~11,200'.
- Use IWOCs to function all accessories in tubing and valves on SST.

**PROCESS 11: WELL TEST**

- Close ball valve in SSTT. Test surface tree and 6-5/8" landing string to 6,000 psi surface pressure. MASP (on rig) = 4,700 psi.
- Close lower VBR on 7-5/8" slick joint. Pressure down choke/kill to test lower VBR to 6,000 psi.
- Flowback to clean up the Lower Rob-E Sand.
- Max sustained rate (~ 4 hours) = 20,000 MCFPD
- Flowback to clean up the Upper Rob-E Sand.
- Max sustained rate (~ 4 hours) = 30,000 MCFPD

**PROCESS 12: DEMOB RIG**

- Displace 6-5/8" landing string with SW.
- Close SCSSV.
- RU SL. Set SST plug in hanger. RD SL.
- POOH with Expro SSTT & THRT
- Run Subsea Tree Cap on THRT & Expro SSTT
- Unlatch BOP's.
- Set Corrosion Cap on SST with ROV.
- Demob rig.

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**TOTAL DEPTH:** 16,200' MD / 14,162' TVD      **MAX DEV.:** 52 degrees @ 14,600' MD  
**ELEVATIONS:** ORKB-MWL: 72'    **ORKB-ML:** 5,301'    **WATER DEPTH:** 5,229'  
**SURFACE LOCATION:** X = 1,197,146 ; Y = 10,423,273  
**LOCATION @ TD:** X = 1,194,111 ; Y = 10,419,571  
**COMPLETION FLUID:** 11.4 ppg CaCl/CaBr2

**\*\*\* Upper Rob-E Sand \*\*\***

**PERFS:** 11,558' – 11,580' MD / 11,066' – 11,082' TVD    **PERF LENGTH:** 22' MD / 16' TVD  
**MID PERFORATION:** 11,569' MD / 11,074' TVD      **DEV. THRU PERFS:** 44 degrees

**\*\*\* Lower Rob-E Sand \*\*\***

**PERFS:** 11,640' – 11,680' MD / 11,125' – 11,154' TVD    **PERF LENGTH:** 40' MD / 30' TVD  
**MID PERFORATION:** 11,660' MD / 11,140' TVD      **DEV. THRU PERFS:** 44 degrees

**RESERVOIR PRESSURE DATA:**

SANDS	MID PERF TVD ( ft )	STATIC BHP (psi)	STATIC BHT ( F )	PORE PRESSURE ( ppge )	HYDROSTATIC of CaCl2 at TVD (Derated)	OVER/(UNDER) BALANCE PRESSURE ( psi )	MASP, (Using a 0.15 psi/ft)
Upr Rob-E	11,074	6,410 #	135	11.13	6,610 (11.4 ppg)	240	5,500
Lwr Rob-E	11,140	6,450 #	135	11.13	8,650 (11.4 ppg)	240	5,500

# BHP based on MDT data plots

\* MASP based on ((MP,TVD - 5300)\*0.15 psi/ft)

**CASING / DRILL PIPE / TUBING DATA:**

O.D.	WT.	GRADE	CONN.	DEPTH	I.D.	DRIFT	BURST	COLL.	YIELD	CAP. (bbl/ft)
10-3/4	65.7	Q-125	Hyd 523	5300 – 7300	9.56	9.404	12110	7920	1863	0.08877
9-7/8	62.8	Q-125	Hyd 523	7,300 – 10,980	8.625	8.500	13840	11140	1817	0.07226
6-5/8	47.8	S-135	GTM-69	0 – 5300	5.375		22288	28069	1245	
5-1/2	22.5	S-135	XT-55	0 – 11,800	4.67	3.875	16805	11177	704	0.00971
5-1/2	20.0	13Cr95	BTS-8	5300 – 11,200	4.698	4.653	10910	10020	554	0.022170
3-1/2	9.30	13Cr85	BTS-8	11,200 – 11,600	2.992	2.867	10160	10540	207	0.008706

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**WELL HISTORY**

09-04-03 Mob the Cajun Express

09-06-03 Spud well.

Drilled 36", X-56 @ 5,536' MD

26", 202.25 ppg, X-56, RL4S @ 6,112' MD/TVD:

Drilled 30" open hole to 6151' w/ 8.9 ppg WBM.

Cemented with 1482 cu.ft, 13.8 ppg + 494 cu.ft, 14.1 ppg to surface

20", 166.4 ppg, X-65, S60/MT to 7906' MD/TVD:

Drilled 24" open hole to 7950' with 9.8 ppg WBM.

Cmt'd w/ 3962 cu.ft, 14 ppg + 473 cu.ft, 14 ppg to surface

Tested 20" to 2786 psi on 9.8 ppg

Perform FIT: 10.81 EMW w/ 370 psi on 9.8 ppg SBM.

16", 97 ppg, N80HC, GB-3P-SC: 7463' to 8925' MD/TVD:

Drilled 20" open hole to 8953' with 10.2 ppg SBM.

Cmt'd w/ 853 cu.ft, 16.4 ppg

Tested 16" hanger to 2312 psi on 10.2 ppg

Perform FIT: 11.6 EMW w/ 350 psi on 10.6 ppg SBM.

13-5/8", 88.2 ppg, Q125, SLSF to 9731' MD/ 9680' TVD:

Drilled 14.75" open hole to 9855' with 10.9 ppg SBM.

Cmt'd w/ 444 cu.ft, 16.4 ppg

Tested 13-5/8" casing hanger to 6000 psi on 10.9 ppg

Tested 13-5/8" casing to 4600 psi on 10.9 ppg

Squeezed shoe.

Perform FIT: 12.1 EMW w/ 500 psi on 10.9 ppg SBM.

11-7/8", 71.8 ppg, Q-125, Hyd 511: 9496' MD/ 11,148' MD/ 10,776'  
TVD:

Drilled 12.25" open hole to 11172' MD/10,792' TVD w/ 11.4 ppg SBM.

Cemented with 258 sxs, 16.4 ppg + 745 sxs, 16.4 ppg.

Tested 11-7/8" hanger to 1630 psi on 11.4 ppg.

Tested 11-7/8" casing to 1575 psi on 11.5 ppg

10-10-03 Perform FIT: 13.8 ppg EMW w/ 490psi on 11.6 ppg SBM.

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**WELL HISTORY (Cont'd)**

- 9-7/8", 62.8 ppg, Q-125, Hyd 523: 10980' MD/ 13989' MD/ 12689' TVD:  
Drilled 10.625" open hole to 14104' MD/12,763' TVD w/ 12.1 ppg SBM.  
Cemented with 986 sxs, 16.4 ppg.  
Tested 9-7/8" hanger to 2000 psi on 12.1 ppg.  
Set CR to squeeze shoe
- 11-01-03 Perform FIT: 13.8 ppg EMW w/ 660psi on 12.8 ppg SBM.
- 11-02-03 Reached TD at 16,200' MD / 14,162 TVD with 12.9 ppg SBM
- 11-04-03 P&A OH from 15,200' to 16,060' with 427 sxs (458 cf) of 16.4 ppg.  
Set 9-7/8" CR at 13738'. Pumped 236 sxs, leaving 100' on top.  
Ran SLB cement bond log  
Set 13-5/8" CR at 9406'. Negative test 13-5/8" CR to 8.6 ppg EMW.  
Pumped 78 sxs, leaving 100' on top  
Pumped 158 sxs (167 cf) for balanced cement plug 5441 to 5640'.  
Installed corrosion cap.
- 11-07-03 Demob and release Cajun Express.