

Wireline Logging Diary – Macondo MC252 #1 BP01 – Run 1

9 5/8" ft casing shoe @ 17,168 ft md;
TD @ 18,360 ft md / 18,349 ft tvd
MW 14.0 ppg SOBM;
Max pull on B-Capstan 23,000 lbs
Cable 748 ASUS, 0.485", seasoned, not spliced
Max pull on wire line 19,000 lbs

BP representatives: Galina Skripnikova / Stuart Lacy

Schlumberger Personnel:

Victor Emanuel (Lead Engineer)
Ryan O'Toole (Logging Engineer)
Darryll Domangue (MSCT)
Stephen Torgenson (MDT)
Dave Kruzeniski (MDT)
Josh Haack (MDT/Seismic)
Randy Louviere (Seismic Engineer)
John Moore (Capstan Operator)
John Chaisson (MDT Operator)
Milton Johnson (Operator)
Jorge Saldana (Operator)
Paul M. Culpepper (Pencor)
Ryan Ripple (Oilphase)

All depths are MD unless noted otherwise

April 9th 2010

14:00 Wireline crew arrive on rig, start unloading / rigging up & checking tools
18:40 Stop circulating and POOH to test BOP's

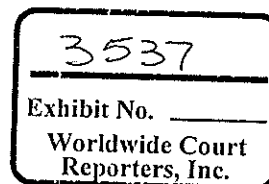
April 10th 2010

14:00 Pencor crew arrive on rig, start unloading & checking tools
20:15 BHA at surface, lay down same, clear rig floor, start rigging up Schlumberger
20:30 Schlumberger safety meeting on the rig floor
23:00 Rigging up with two 48" wheels, which prevent the wire twisting (first time they do it this way), need more details on that. Thermometers were shaken
23:25 Radioactive source is loaded
23:30 TIH with Descent #1 ZAIT-HLDS-HAPS-GR-LEH-QT (TripleCombo)
with ~10,000 ft/hr

April 11th 2010

00:05 Slow down TIH to 3,000 ft/hr at BOP at 5,060'; go back to 10,000 ft/hr below mudline
00:17 Stop at 6,000', TOH to check normal tension = 2,812 lb, continue TIH with ~11,000' ft/hr
00:25 Stop at 9,000', TOH to check normal tension = 3,800 lb, continue TIH with ~11,000' ft/hr
00:50 Slow down to 3,000 ft/hr at 11,500' to pass 13 5/8" liner top; go back to 10,000 ft/hr at 11,900'
01:00 Stopped at 12959.2 to flag the cable – to check how much cable takes for the new rig up.
01:35 Stopped at 17,100' inside casing, open calipers, run up – tension 6600 lb.
01:39 Stop at 16,945, close calipers
01:46 Log down the hole with 3600 ft/hr and tension above 3960 lb (3960 is 60 % of 6600 lb recommended to run in less than 10 deg deviated wells)
02:00 Sat down for a second at 17,442'
02:09 Sat down at 18,284'
02:10 Log down with 4,800 stop at the same depth
02:12 Stop log down
02:14 Go down with 4,500 ft/hr, stopped at 18,280' – can't go through – LCM plug of fill? Made 4 attempts
02:20 Start logging up repeat section with 1600 ft/hr, tension 7000 lbs – 400' of repeat section
02:30 Close caliper, finish logging repeat section at 17,900'

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02:31 Run in hole for main pass at 5000 ft/hr
 02:37 On the obstruction at 18,280', stopped at the same point, can't go through, start main pass at 1800 ft/hr, tension 7,000 lbs.
 02:45 At 18,060' took a pull 400 lbs on head tension
 02:50 At 17,790 took a pull 500 lbs on head tension
 02:54 At 17,770 took a pull 750 lbs on head tension
 02:57 At 17,685 took a pull 900 lbs on head tension
 02:58 At 17,672 took a pull 1000 lbs on head tension
 03:15 At 9 7/8" casing shoe
 03:22 Finished main pass at 16,900'. Pulling out of hole.
 05:15 Tools at surface, unload sources, rig down same, rig up Descent #2

Max Depth = 18,280' md (obstruction in hole)
 BHT's from Descent #1 = 228 °F, 228 °F, 228 °F

06:45 TIH with Descent #2 CMR-ECS-HNGS-LEHQT @ 9000 ft/hr
 08:45 At 9 7/8" casing shoe, stop to thermally stabilise the CMR
 09:00 Tension @ 17,000' = 7200 lbs, htens = 1100 lbs
 09:05 Start downlog with HNGS & ECS @ 2000 ft/hr
 09:10 Increase downlog speed to 3600 ft/hr
 09:28 Start tie-pass from 18,220' – 6 ft shallow, drop down to tune CMR
 09:40 Tune CMR in main sand @ 200 ft/hr
 09:48 Excellent tune considering we're moving (sticking concerns) & in an HC not H2O sand. Drop down to TD.
 09:53 Set down as in descent #1 @ 18,280' md, start repeat pass @ 500 ft/hr
 10:25 Stop repeat pass @ 18,000' md, data looks good, drop to re-tune CMR
 10:27 Start tuning in main sand @ 200 ft/hr
 10:48 Finish tuning @ drop to TD for main pass
 10:51 Tag bottom (18,280') and start main pass @ 600 ft/hr – data over main sands repeating nicely
 11:58 Speed up to 1800 ft/hr through shale from 17,680' to 17,500'
 12:05 Slow down to log thin sand @ 17,468' md
 12:10 Power down CMR, speed up to 1800 ft/hr to 9 7/8" shoe
 12:20 At casing shoe, log inside casing @ 900 ft/hr for ECS calibration
 12:30 POOH with Descent #2
 14:40 At surface with Descent #2, rig down same, rig up Dual OBMI-Sonic

Max Depth = 18,280' md
 BHT's from Descent #2 = 232 °F, 232 °F, 232 °F

16:25 TIH with Descent #3 Dual OBMI-DSI-GPIT-GR-LEHQT @ 9500 ft/hr
 18:15 Tension @ 16,890' = 6650 lbs, htens 1100 lbs
 18:20 Downlog from 9 7/8" shoe at 3500 ft/hr
 18:25 Stop due data / software over-speed
 18:29 Start downlogging again @ 2000 ft/hr, still over-speeding, slow to 1000 ft/hr, still over-speeding
 18:35 Stop downlog, try uplogging @ 1500 ft/hr – OK. OK at 1800 ft/hr.
 18:42 RIH to TD @ 6000 ft/hr without downlogging due software problem
 18:54 Tag bottom/obstruction @ 18,280' md and open calipers / start main pass
 19:45 Finish main pass at 9 7/8" shoe, drop to TD @ 6000 ft/hr
 20:06 Start repeat pass attempting to get bottom sand @ 18,230' – did not succeed due to tool sticking
 20:20 Start repeat pass from TD @ 800 ft/hr, got image of lowest sand lobe @ 18,230' md
 20:30 Finish repeat pass @ 17,950', close calipers, pull up to casing for sonic in casing
 20:40 Log sonic in casing
 22:10 Telemetry dropped out at 14,700', restart operating system and re-log 200'

April 12th 2010

02:00 Tools at surface, rig down R1D3

Max Depth = 18,280' md
 BHT's from Descent #3 = 232 °F, 233 °F, 233 °F

03:00 Finish safety meeting & start rigging up R1D4 MDT
 04:15 Finish rigging up, power up & check tools
 04:35 RIH with Descent #4 MDT-GR-LEHQT
 06:25 Stop just inside casing shoe to let tool thermally stabilise
 07:23 Tool stable, RIH to tie in
 07:25 Start tie-in pass @ 1950 ft/hr from 18,250'. Tens = 9860 lbs / htens = 3350
 07:42 6' shallow with 1' creep – add 5 ft, drop to 1st point @ 18,121 ft
 07:49 At first pretest @ 18,123' md, start MDT program – tight
 07:57 At 18,123' – formation pressure looks close to GeoTap from lobe above, make 2nd & 3rd pretests as tool set up for higher formation pressures – still building too slowly for a sand with 70 mD/cp mobility.
 08:15 At 18,124' – try 10 cc's first – same slow build-up as before, with a mob of 62 – LCM plugging or leaking in from wellbore through LCM? Try a 20 cc pretest – better at first but then build starts – however we might be able to get some gradient work done by taking the initial stable pressure
 08:38 At 18,126' md – take 20cc pretest – again initially stable then built again as before
 08:53 At 18,133' md – same – initially stable then builds
 09:10 At 18,130' md – built down then up but not stable, call town, decision made to attempt a sample in top of main lobe as pressures not giving any kind of gradient
 09:25 At 18,124' md – set quicksilver probe and pretest - mobility very poor, shouldn't be, pull another, OK 65 mD/cp
 09:50 Start pumping out slowly on guardside @ 55%, 11800 psi FP
 09:55 Increase pump speed to 65% - ok so far, seeing filtrate or possibly formation on the OFA. Pumped 1.6 gals.
 10:05 Start upper pump, it's having to work a bit harder but is coping just
 10:12 Split the flow – looks good so far, GOR 2950.
 10:26 4 gals pumped so far, GOR stable @ 3150
 10:38 6 gals pumped – some water appearing in guardside probe, co-mingle flow to determine where water is coming from – probably from the gunk pills pumped
 10:45 Split the flow again and resume pumping, contamination below 5%
 10:55 Start filling MRSC_01 (2 ¾ gal) #77
 12:24 MRSC is full, appear OK
 12:41 Fill MPSR #2471
 12:50 Fill MPSR #4168
 13:01 Fill MPSR #4096
 13:12 Fill MPSR #1142, total of 34 gals pumped
 13:21 Fill SPMC #477
 13:31 Fill SPMC #520
 13:36 Bottle full, 39 gals pumped in 3 hrs 45 mins - check
 13:42 Take pretest – much more stable result though building very slowly. No pull coming off wall.
 13:48 At 18,086' md, take pretest – stable pressure! Maybe less LCM on this sand?
 13:57 Start pumping out @ 60% on guardside
 14:02 Switch pump to upper pump / sample side – moving fluid faster in this sand lobe.
 14:09 GOR at 2400 so far, looks like light oil / condensate from the OFA
 14:12 Split the flow
 14:23 Guardside plugged – attempt to clear by reversing check valves
 14:28 Guardside cleared, resume pumping at a lower rate
 14:55 GOR up to 3080, flattening out now, 9 gals pumped in 1 hr
 15:24 Started filling 2 ¾ gal chamber - MRSC #150 – 14 gals pumped in 90 mins, GOR = 3120 (very close to lower sand lobe)
 15:44 Upper pump has stopped pumping – likely plugged – attempt to clear, shut chamber
 15:49 Back to pumping out into wellbore to clean up sample again
 15:57 Start filling chamber again as GOR back up to 3120. 20 gals pumped in 2 hrs
 16:58 Close the sample chamber
 17:02 Restart motor on the pump, pump into the borehole till GOR is stable as before
 17:07 Start filling MPSR #746
 17:11 Filled the bottle, check GOR
 17:16 Start filling MPSR #925
 17:20 Filled the bottle, check GOR
 17:27 Start filling MPSR #4069
 17:31 Filled the bottle, check GOR

17:34 Start filling MPSR #601
 17:39 Filled the bottle, check GOR
 17:46 Start filling SPMC #484
 17:49 Filled the bottle, check GOR – takes longer, GOR is a bit more spiky than before
 17:59 Start filling SPMC #552
 18:03 Bottle full, 77 gals pumped in 4 hrs 13 mins
 18:05 Take pretest – very stable 0.5 psi higher than before sample pressure. No pulls coming off wall at all. Run in down to Sample point 3
 18:20 Take pretest at 18,140' md, Started well then continue building with spikes
 18:32 Move to 18,145 md, take pre-test.
 18:45 Build up is much slower than at 18,140'. Move to 18,142 md
 18:52 Take pre-test at 18,142' md. Build up is similar to 18,140' - start pumping
 19:00 Start pumping out @ 60% on guardside
 19:15 Pumping, GOR=2678
 19:25 Switch pump to upper pump
 19:31 GOR=2330
 19:36 Split the flow
 19:45 GOR=3000
 20:11 GOR=3100, contamination=7.7%
 20:22 GOR=3110, contamination=6.75% Waiting on Slb expert to look at the data
 20:43 GOR stable 3100, Contamination 6% Waiting on Slb expert to look at the data
 21:11 GOR=3110, contamination 5.5% Waiting on Slb expert to look at the data
 21:25 Start filling MRSC (2 ¼ gal) #147, mobility 95 md/cp
 22:42 Filled chamber, check GOR
 22:46 Start filling MPSR #3810
 22:50 Filled the bottle
 22:46 Start filling MPSR #3547
 23:02 Filled the bottle
 23:07 Start filling MPSR #1268
 23:12 Bottle full
 23:18 Start filling MPSR #1181
 23:22 Bottle full
 23:28 Start filling MPSR #3980
 23:32 Bottle full
 23:37 Start filling MPSR #4065
 23:41 Bottle full, flush lines, pumped 52.4 gals inn 4 hrs 41 mins. Pumped a total for all sample depths – 167 gallons
 23:46 Take pretest – good stable pressure
 23:51 Move down to take pressures in main lobe – pulled 2000 lbs on cable / 2200 lbs on head getting off wall
 11:56 At 18,157' - take pretest – good test

April 13th 2010

00:07 At 18,167' - take pretest – good test
 00:15 At 18,180' - take pretest – good test, we appear to have a gas gradient
 00:24 At 18,130' - take pretest, only drew 5 cc, re-test, good, same gradient
 00:34 At 18,082' – take pretest – only drew 5 cc again, possibly some plugging, next pretest good
 00:33 At 18,069' – take pretest - only drew 5 cc, re-test, good pressure
 00:56 At 18,077' – take pretest – building down fast, pump out briefly to clean lines/probe, lost communication with bottom pump & LFA. Attempt to retract and reset probe. No joy. Power tool down & up. Lower quicksilver probe and lower pump module fried. Will use XLD probe.
 01:17 Move tool to set XLD sampling probe at 18,077'
 01:21 At 18,077' – take pretest – good test but a bit off the gradient – due to using different probe?
 01:31 At 17,976' – take pretest – tight, move 1 ft down
 01:40 At 17,977' – take pretest – tight, move 2 ft up
 01:47 At 17,975' – take pretest – tight. Frankly the interval looked tight on the logs. Tool's getting cranky, some communication issues.
 01:53 Tie-in pass from 17,990'
 02:02 6 ft shallow, add 6 ft, -1 ft creep. Move to 17,805'
 02:07 At 17,805' – take pretest – tight, move down 1 ft
 02:14 At 17,806' – take pretest – tight, move down 1 ft
 02:23 At 17,807' – take pretest – good test – 13.01 ppg EMW. Looks like we are 2 ft high.

02:33 At 17,703' – take pretest – no seal, try further down
 02:42 At 17,706' – take pretest – no seal, try further up
 02:49 At 17,701' – take pretest – no seal & unlikely to get one
 02:53 POOH @ 6000 ft/hr in 9 7/8" liner to avoid swabbing
 05:45 MDT tool @ surface – lay down same, start rigging up RSCT

Max Depth = 18,250' md
BHT's from Descent #4 = 237 °F, 240 °F, 240 °F

07:55 RIH with Descent #5 MSCT-GR-LEHQT @ 10,000 ft/hr
 11:00 Tie in from 18,230: 6 ft deep to TCOMBO
 11:15 Core 1, at 18,188, 6 mins, 2.5"
 11:30 Core 2, at 18,174, 45 mins, multiple stalling out, 2.5"
 11:40 Motor locked up due debris/LCM?
 11:48 Motor spinning OK but stalling as we attempt to core – jamming with LCM or loose sand?
 11:50 Motor stalled again
 12:15 Core 3, at 18,163, 12 mins, 2.5"
 12:35 Core 4, at 18,152 lost, bit stuck or tool hydraulics failure? Got bit freed from wall eventually.
 12:40 Core 5, marker dropped
 12:45 Core 6, 18,077, 1.3 mins, 2.5"
 13:00 Core 7, marker dropped, motor hydraulic seal failed
 13:30 Low oil light came on and we had to POOH
 16:00 Schlumberger test back-up tool motor, OMNI lab getting ready to photograph / freeze cores
 17:00 At surface with MSCT tool (note MSCT run on normal wireline cable not QUAD cable as less than 26,000 ft)

Max Depth = 18,230' md
BHT's from Descent #5 = 240 °F, 240 °F, 240 °F

18:00 RIH with Descent #6 MSCT-GR-LEHQT @ 10,000 ft/hr
 18:10 Open tube from Descent #5, Core 1, Core 2, Core 3, Core 5 are recovered, Core 5 is very fractured. Samples are marked, pictures taken. Weatherford getting samples ready to be packed for shipping in the box with dry ice.
 19:20 Stop at 11,000' md to check the tool, all ok
 20:14 Stop at the shoe.
 20:17 RIH for tie in. Depth and tension notes: @4,400'–1,750 lb, @8,000'–2,973 lb, @12,000'–4,262 lb, @16,000'–5,635 lb, @17,100'–6,081 lb
 20:28 Tie in from 18,230' - 13 ft deep to TCOMBO
 20:43 Core 1 at 18,087' - 6 mins, 2"
 20:56 Core 2 at 18,068' - 2.5 mins, 2.2"
 21:02 Core 3 at 18,030.5' - 0.7 mins, 2.5"
 21:08 Core 4 at 17,988' - 2.7 mins, 2.5"
 21:20 Core 5 at 18083 - Motor locked –attempt to get motor working. Core 5 never cut.
 22:00 Decision made to POOH (while still attempting to get motor going) & run VSP while waiting on back-up coring tools to arrive

April 14th 2010

01:05 Tool @ surface, retrieve core barrel
 01:50 3 whole cores recovered (1,2 & 3), 1 missing (4) and one partial/fragments (5)

Max Depth = 18,238' md
BHT's from Descent #6 = 242 °F, 242 °F, 242 °F

03:00 RIH with Descent #7 VSI4-GR-LEHQT
 05:00 At 17,168' md at shoe
 05:07 Drop to 17,575' to tie-in for down-shot at casing shoe
 05:15 Start tie-in from 17,575' @ 1800 ft/hr – 4 ft shallow, move up to 16,946.5' for down-shot
 05:29 At 16,946' – take down-shots – data quality looks good
 05:48 RIH @ 7000 ft/hr to tie-in from 18,100'
 05:58 Start tie-in pass from 18,100' at 1800 ft/hr – 1 ft shallow, add 1 ft
 06:08 At 18096.5' = bottom shuttle @ 1st level @ 18,250' – start shooting the survey – 7 shots/level, no sign of the CGS survey in the data or visually for the 1st time in days

06:17 Move up to next level
 06:23 At 17,896.5' / 18,050' level, anchor tools and shoot
 06:33 At 17,696.5' / 17,850' level, anchor tools and shoot
 06:44 At 17,496.5' / 17,650' level, anchor tools and shoot
 06:53 At 17,296.5' / 17,450' level, anchor tools and shoot
 07:03 At 17,096.5' / 17,250' level, anchor tools and shoot – last open hole level – data quality good in open hole
 07:16 At 16,896.5' / 17,050' level, anchor tools and shoot – 1st level in casing – data looks good, continue shooting levels in casing. Some ringing around liner tops but otherwise good data.
 11:13 Entering 16" casing, calipers just reach OK, data quality good
 12:45 Data quality consistently good but casing ringing from 8950' upwards – data still usable though.
 13:12 At 5063.5' / 5217' level – last level of survey, close calipers, POOH @ 10,000 ft/hr
 14:12 VSI tools at surface, start rigging down same

Max Depth = 18,260' md

BHT's from Descent #7 = 242 °F, 242 °F, 242 °F

15:38 RIH with **Descent #8 MSC-T-GR-LEHQT** (this tool has the new Cascon motor)
 17:45 At casing shoe, tension = 4200 lbs going down, 6400 lbs up
 17:48 RIH to 18,230' for tie-in pass
 17:59 Start tie-in pass from 18,230' @ 1700 ft/hr – 1.5 ft shallow, add 1.5 ft
 18:09 Core 1 at 18,083' – 5.8 mins, 2.5"
 18:21 Core 2 at 18,072' – 4.5 mins, 2.5"
 18:33 Core 3 at 18,085' – 5.0 mins, 2.5"
 18:44 Core 4 at 18,075' – 5.6 mins, 2.5"
 18:57 Core 5 at 18,082' – 5.2 mins, 2.5"
 19:08 Core 6 at 18,070' – 5.0 mins, 2.5", drop to lower sand lobe
 19:22 Core 7 at 18,144' – 4.2 mins, 2.5"
 19:32 Core 8 at 18,134' – 3.5 mins, 2.5"
 19:41 Core 9 at 18,125' – 6.5 mins, 2.5"
 19:51 Core 10 at 18,115' – 1.2 mins, 2.5"
 20:00 Core 11 at 18,185' – 9.5 mins, 2.5"
 20:16 Core 12 at 18,167.5' – 6.1 mins, 2.5"
 20:28 Core 13 at 18,166' – 9.1 mins, 2.5"
 20:43 Core 14 at 18,158' – 7.5 mins, 2.5"
 20:57 Core 15 at 18,148' – 8.5 mins, 2.5"
 21:10 Acquisition glitch, restart station log
 21:13 Core 16 at 18,139' – 7.1 mins, 2.5", stalled out several times
 21:26 Core 17 at 18,129' – 6.2 mins, 2.5"
 21:38 Core 18 at 18,121' – 1.4 mins, 2.5", looks like shale, add 1ft as should be very top of the sand
 21:48 Core 19 at 18,180' – 5.1 mins, 2.5"
 21:58 Core 20 at 18,171' – 11 mins, 2.5"
 22:16 Core 21 at 18,161' – 10.9 mins, 2.5"
 22:32 Core 22 at 18,150' – 9.2 mins, 2.5"
 22:48 Core 23 at 18,142' – 8.1 mins, 2.5"
 23:01 Core 24 at 18,132' – 7.6 mins, 2.5"
 23:13 Core 25 at 18,123' – 1.3 mins, 2.5", looks like shale, should be in sand, will do a tie-in pass
 23:20 Start tie-in pass from 18,230' at 1700 ft/hr – 0.5 ft, subtract 0.5 ft
 23:25 Core 26 at 18,080' – 6.7 mins, 2.5"
 23:41 Core 27 at 18,183' – 8 mins, 2.5"
 23:56 Core 28 at 18,176' – 6.5 mins, 2.5"

April 15th 2010

00:07 Core 29 at 18,154' – 9.7 mins, 2.5"
 00:23 Core 30 at 18,127' – 8.3 mins, 2.5"
 00:40 Core 31 at 18,237' – aborted as wouldn't drill more than 1.25"
 01:02 Core 32 at 18,236' – 8.2 mins, 2.5"
 01:14 Core 33 at 18,233' – 2.7 mins, 2.5" - shale?
 01:21 Core 34 at 18,214.5' – 1.6 mins, 2.5"
 01:28 Core 35 at 18,178' – 10.7 mins, 2.5"
 01:46 Core 36 at 18,063' – 4.6 mins, 2.5"

01:57 Core 37 at 17,988' – 2.5 mins, 2.5", could be shale
 02:03 Start tie-in pass from 17,980' @1800 ft/hr – on depth, no adjustment
 02:12 Core 38 at 17,805' – 0.5 mins, 1", washed out, looks like shale, try a bit lower
 02:19 Core 39 at 17,807' – 2.7 mins, 2.5" – sand this time, but might be a jam in core tube?
 02:27 Core 40 at 17,707' – 11.9 mins, 2.5" then bit stuck
 02:40 Bit stuck, no rotation, unable to retract, work on freeing bit, no success
 02:54 Slack off 3 ft to try and work bit free, then come up 3 ft
 03:05 Bit came free, not sure if it's still attached to the tool though
 03:10 Core 41 at 17,702' – unable to get bit out of tool to core – jammed with core?
 03:28 No success getting tool to core, POOH
 03:35 At casing shoe, continue POOH @ 5000 ft/hr (then 1500 ft/hr from 1500' and 1000 ft/hr from 500' to limit rapid gas expansion in cores)
 06:45 Tool @ surface, retrieve core barrel, rig down same
 07:45 Schlumberger fully rigged down. Recovery is 26 whole cores recovered, 4 partial cores and 10 missing. We were a bit unlucky that core 6 jammed halfway down the barrel and everything else backed up behind causing some compressive damage to the soft sand cores and meaning the last 6 cores were lost as there was no room in the barrel. Omni are cataloguing, photographing & stabilising the cores and will accompany the cores in on the boat.

Max Depth = 18,257' md
 BHT's from Descent #8 = 249 °F, 249 °F, 250 °F