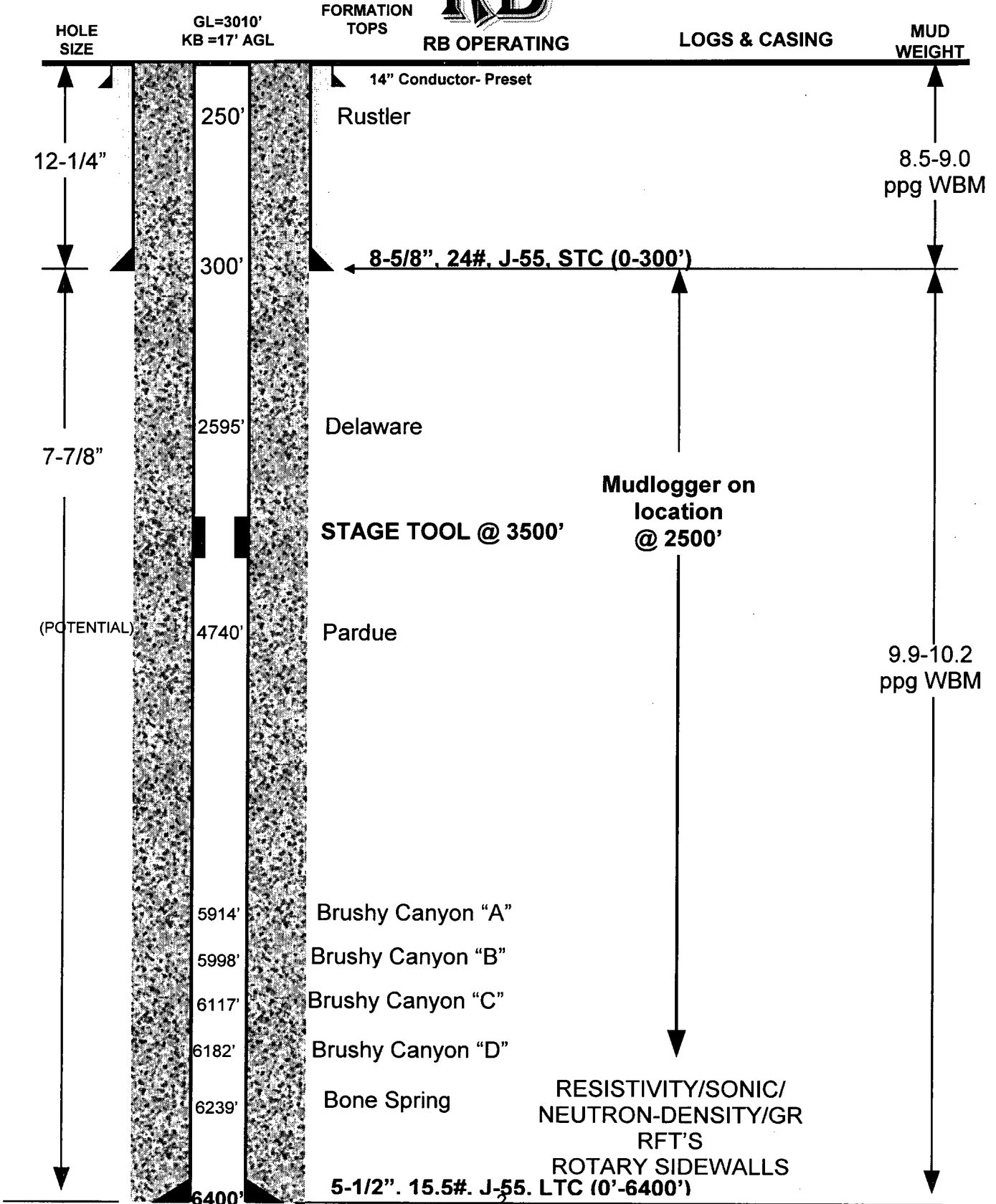
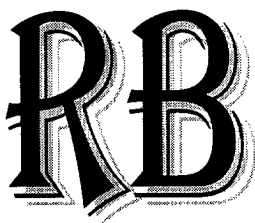


**WELL** : SCB #23-16  
**SL** : 330' FSL & 2310' FWL, Sec 23-T23S-R28E  
**COUNTY** : EDDY COUNTY  
**STATE** : NEW MEXICO

**AFE:**  
**FIELD:** East Loving  
**OBJECTIVE TD:** 6400'  
**PERMIT NO:**



1 30-015-39177



**RB OPERATING COMPANY**  
**SCB #23-16**  
**Eddy County, NM**  
**Drilling Program**  
 Prepared 6/22/05

**PROPOSED DEPTH:** 6400' MD / 6400' TVD  
**GROUND ELEVATION:** 3010'  
**KB:** 17'

**LOCATION:** 330' FSL & 2310' FWL, Sec. 23-T23S-R28E, Eddy County, NM

**ANTICIPATED PRODUCTIVE FORMATION:** Brushy Canyon

**API NO:**

**GENERAL:**

The scb #23-16 will be a 6400' Brushy Canyon producer in Eddy Co., New Mexico drilled on a daywork basis by Adobe Rig #2. A 12-1/4" surface hole will be drilled to +/-570. Actual TD will be spaced so that casing will be landed where the casing head can be screwed on. A string of 8-5/8" casing will be run and cemented to surface. A closed loop will be required.

Nipple up BOPs and test same, drilling will continue with a 7-7/8" hole to a total depth of 6400'. Actual TD will be spaced so that casing will be landed where the casing head can be screwed on. After electric-logging the open-hole interval, a string of 5-1/2" casing will be run and cemented from total depth to surface and the tubing head installed.

Well will be drilled on a daywork contract at \$11,250 per day plus fuel.

**ESTIMATED FORMATION TOPS: (Log Depths)**

Upper Permian Rustler Fm	+2775 ft	250 ft MD	
Upper Permian Delaware Gr	+430 ft	2595 ft MD	
Upper Permian BC "Pardue"	-1715 ft	4740 ft MD	+
Upper Permian BC "A"	-2889 ft	5914 ft MD	*
Upper Permian BC "B"	-2973 ft	5998 ft MD	*
Upper Permian BC "C"	-3092 ft	6117 ft MD	*
Upper Permian BC "D"	-3157 ft	6182 ft MD	*
Lower Permian Bone Spring Fm	-3214 ft	6239 ft MD	
PTD	-3380 ft	6400 ft MD	

\*= Primary Reservoir Targets

+ = Secondary Reservoir Targets

**CORRELATION LOG TOPS:**

Correlations	RB OPERATING SCB "23" No. 1 Sec. 23, T23S, R28E KB: 3012 ft	DELTA DRILLING Brantley Com. No. 1 Sec. 23, T23S, R28E KB: 3017 ft
Upper Permian Rustler Fm	NL	NL
Upper Permian Delaware Gr	2582 ft (+430 ft)	2602 ft (+415 ft)
Upper Permian BC "Pardue"	4661 ft (-1649 ft)	4665 ft (-1648 ft)
Upper Permian BC "A"	5894 ft (-2882 ft)	5914 ft (-2897 ft)
Upper Permian BC "B"	5984 ft (-2972 ft)	5998 ft (-2981 ft)
Upper Permian BC "C"	6097 ft (-3085 ft)	6116 ft (-3099 ft)
Upper Permian BC "D"	6164 ft (-3152 ft)	6180 ft (-3163 ft)
Lower Permian Bone Spring Fm	6212 ft (-3200 ft)	6237 ft (-3220 ft)
TD	6500 ft (-3488 ft)	7508 ft (-4491 ft)

**DETAILED DRILLING PROCEDURE**

TIMES AND EVENTS THAT MUST BE NOTED ON DRILLING REPORT:

- A. SPUD (date and time)
- B. TD (each interval date and time)
- C. Cement in place (date and time)
- D. RIG RELEASE (date and time)

**BIT & HYDRAULICS PLAN**

Bit #	Size	Mfg.	Type	IADC	Jets	Out	Hrs	ROP	WOB	RPM	GPM	PSI
			FDS									
1	12.25	SEC	(RR)	116	3-12's	300	4	75	35-45	100	400	1000
2	7.875	HTC	HX20CJ	517	3-11's	5200	116	44	45-50	70-100	330	1800
3	7.875	HTC	HRS30C	537	3-12's	6500	<u>29</u>	35	50-55	60-65	300	1800
							149					

**BOTTOM HOLE ASSEMBLIES**

- BHA #1: (0-300') - Bit, 2-8" DC, 10-6.25" DC's
- BHA #2: (300'-5500') - Bit, NBS, Tri-collar, IBS, (22) 6.25" DC's
- BHA #3: (5500'-6500') - Bit, (22) 6.25" DC's

Stiff assembly (#2) will be pulled and replaced with slick assembly prior to drilling the Brushy Canyon.

## USE OF RT TOOL

Two RT tools will be run, one 500' above the top of the collars and the other at 1500' above the top the first RT tool. These tools will be used throughout the 7-7/8" section.

### MUD PROGRAM

INTERVAL	MUD WEIGHT	FUNNEL VIS.	API Fluid Loss
0' - 300'	8.4 – 9.0	36-45	NC
300'-6400'	9.9 – 10.1	28-32	NC

- 1) Level and build an all-weather location and access road.
- 2) MIRU Adobe Rig #2. Perform rig safety inspection and ensure that everything is in proper working order prior to spudding well. The well will be drilled with a closed loop mud system. RU rails and cuttings catch tanks and additional mud cleaning equipment.
- 3) Notify NMOCD of intent to spud, run casing and cement each 24 hours in advance 505-748-1283.
- 4) Spud well with 12.25" mill tooth bit. BHA should consist of 3-8" drill collars and 6" drill collars. Drill to +/- 300' (Actual depth will be determined by the length of the casing). Circulate hole clean. Sweep and condition hole to run casing. Drop a TOTCO prior to POOH (must run 1st survey prior to 500' per NMOCD rules). Pull out of hole, lay down 12.25" BHA.

**NOTE:** Mud through this interval will be a native spud mud supplemented with Bentonite. Lime may be used to flocculate the mud and increase the yield point to clean the hole. Mix paper for seepage control. Utilize all solids control equipment to control drill solids. Run as fine of mesh shaker screens as possible. Use water to control mud weight and viscosity. Maintain mud weight at 8.4 – 9.0 ppg.

- 5) Rig up casing crew and run 8-5/8", 24.0#, J-55, ST&C (\$15.50/ft) as follows:
  - 1-8-5/8" Texas Pattern Shoe
  - 1-8-5/8" Insert Float Collar
  - 1-8-5/8" x 12-1/4" Centralizer 10' above shoe
  - 1-8-5/8" x 12-1/4" Centralizer every other joint
  - 1-8-5/8" Stop Ring
- 6) Circulate for at least bottoms up plus one casing volume with mud prior to cementing. Cement surface casing according to cement recommendation. NOTE: Have field bin, cement, and circulating equipment on location prior to casing job.
  - a) Review rates, pressures, displacement volumes and casing pressure rating with Service Company and rig personnel. All cement slurries are to be lab tested; both a pilot test and a test of the actual field blend. Report results, including 24 hour compressive strengths, to the office. **(See Cement Testing Requirements below)**. Also keep two samples of each dry cement in the event that a problem is encountered while cementing. Discard this sample if all indications are positive.
  - b) Cement well as follows: Pump 20 bbl fresh water followed by 350 sxs class "C" with 2% CcCl<sub>2</sub>, 1/4# celloseal mixed @ 14.8ppg & 1.32 ft<sup>3</sup>/ sx Tail, Displace with fresh water, Bump plug with w/ 500 psi over final pump pressure.
  - c) If cement is not circulated to surface, contact the office and the NMOCD and prepare to run 1" and top out cement. Have 1" pipe on location for possible top-out.
  - d) If cement falls, fill 12.25" X 8-5/8" annulus with cement.

- 7) Release pressure and check for flow back. Set casing on bottom. If float is holding, base nipple up of wellhead and BOP on the surface cement samples. Well must stand at least 8 hours total before any testing of casing is performed per NMOCD.
- 8) After Cementing casing, run a slip-on, weld-on casing head and test head to 1000 psi. Test BOP blind Rams & choke manifold 250# low & 3000# high. Pick up Bit #2 (7-7/8") & BHA , trip in hole, test BOP pipe rams 250# low & 3000#. Pressure test casing to 1000 psi for 30 minutes prior to drilling out shoe. Clearly report this test information of the daily drilling report.

**MUD NOTES: See Mud Program for details**

After cementing 8-5/8" casing circ pit with brine water. Mix paper for seepage control. Utilize pre-hydrated Gel/Lime sweeps for flushing the hole. Run all available solids control equipment to control weight. Add brine water as needed to maintain volume. Add LCM to system only as needed. Use batch LCM treatment if losses occur and maintain as needed.

- 9) Drill ahead with brine water in 7-7/8" hole taking deviation surveys every  $\pm 500'$  or nearest bit run per NMOCD rules. Use sweeps as needed to clean hole. Drill to  $\pm 6400'$ ; exact TD will be determined by the length of the casing. Sweep and condition hole in preparation for logging. Spot a 50 bbl, 40-42 visc pill prior to POOH for logs. Strap out of hole.
- 10) RU Wire line Truck and Tools. Log well as instructed by RB Operating. Rotary sidewall cores may be required along with RFTs.
- 11) Make a conditioning trip prior to running casing. Trip into hole with BHA and drill pipe, break circulation at 2400'. Ream last two stands to bottom. Circulate and condition hole. Maintain viscosity of 38. TOH laying down 4-1/2" drill pipe and drill collars. Clear floor and prepare to run casing.
- 12) Rig up casing crew and run 5-1/2" 15.5#, J-55, LT&C (**\$10.25/ft**) as follows:
  - a) Float shoe (thread-lock)
  - b) 2 jts. 5-1/2", 15.5#, J-55, LT&C casing (thread-lock)
  - c) Float collar (thread-lock)
  - d) 5-1/2", 15.5#, J-55, LT&C Casing to 3500'.
  - e) Cement Stage Tool @ 3500'
  - f) 5-1/2", 15.5#, J-55, LT&C Casing to surface

The two bottom joints of 5-1/2" casing and the float shoe and float collar should be thread-locked (do not weld pipe). Run 1 centralizer 5' above shoe with limit clamp, one on the next collar, one just below the float collar with limit clamp and one per joint up to 4500'.
- 13) Circulate mud for at least bottoms up plus one casing volume prior to cementing.
- 14) Cement the production casing as follows. Re-figure cement volumes on a basis of: caliper + 20% + 50 sx. Precede Cement with 20 bbl fresh water, 500 gals superflush, 20 bbl fresh water

**Stage One:**

Slurry: PVL Cement + 0.3% D-167 + 0.2% D-65 + 0.1% D-13 + 0.2% D46 + 4#/sk D-24 + 1#/sk D-44

Slurry Weight: 13.0 ppg      Slurry Yield: 1.41 cuft/sk      Water: 6.83 gals/sk

## **Stage Two:**

Slurry: 65/35 (Class C/POZ) + 6% D-20 + 5% D-44 + 0.3% S-1 + 4#/sk D-24 + 0.25#/sk

Slurry Weight: 12.4 ppg      Slurry Yield: 2.21 cuft/sk      Water: 12.11 gals/sk

Review rates, pressures, displacement volumes and casing pressure rating with Service Company and rig personnel. All cement slurries are to be lab tested; both a pilot test and a test of the actual field blend. Report results, including 24 hour compressive strengths, to the office. (**See Cement Testing Requirements below**). Also keep two samples of each dry cement.

- a) Have additional water storage on location as necessary for mixing cement. Have water analyzed by cementing company for compatibility with cement and chemicals.
  - b) Reciprocate pipe during 1<sup>st</sup> Stage job. Take special care to move pipe very slowly on the down stroke. Pump spacer and cement at 7-8 BPM. When the last cement has been pumped, maintain rate at 7-8 BPM. Displace with fresh water. When reaching displacement to shoe joint minus 10 bbls slow pump rate to 2 barrels per minute or less prior to bumping plug. Bleed off pressure and check for backflow. If negative, remove the cap and drop the opening bomb for the second stage job. Wait 30 minutes then attempt to open stage tool. Circulate a minimum of 2 hours prior to pumping second stage job.
  - c) Cement second stage. Bump plug with 500 psi over final displacement pressure and hold pressure for 15 minutes.
  - d) If cement does not circulate notify NMOCD office.
- 15) Release pressure and check for flow back. If floats are holding, continue to make preparations to hang 5-1/2" casing one foot off bottom. If floats do not hold, wait 12 hours on cement.
- 16) Set 5-1/2" slips in "A" section with full string weight. Nipple down BOP, Nipple up well head.
- 17) Install cap. Clean mud pits and release rig.

## **CEMENT TESTING REQUIREMENTS:**

**Laboratory Blend:** Obtain thickening time, rheology, water loss, and compressive strengths of the laboratory cement blend with a water sample of the actual water to be used in cementing for each cement slurry to be pumped.

**Field Blend:** Obtain thickening time of the field cement blend with a water sample of the actual water to be used in cementing for each slurry to be pumped. If the thickening time of the field blend is consistent with the thickening time of the laboratory blend, proceed with the cement job. If not, wait on the compressive strength results. Regardless of thickening time results, obtain all of the compressive strengths of field blend to compare with the compressive strengths of the laboratory blend.

NAME	POSITION	CELL PHONE	HOME PHONE	OFFICE PHONE
Don Robinson	Drilling Manager	469-450-2281	972-317-8345	817-509-1506
George Allen Teer	VP of Operations	(817) 723-1107	(817) 491-3740	(817) 870-2601
Andrew Tullis	District Engineer			(817) 870-2601
Martin Emery	Chief Geologist	(817) 366-3693	(817) 430-4861	(817)870-2601
Linda Stiles	Regulatory Tech	(817) 291-4618		817-509-1505

COMPANY NAME	SERVICE	CONTACT PERSON	TELEPHONE NO.
Adobe., Midland, TX	Rig Company	Bill Butler	(432)-425-4498
Adobe Rig #2	Rig Floor		
	Tool Pusher		
Suttles Logging, Inc. – Midland, TX	Mudlogging	Sam Samford	432-687-3148
Schlumberger-Artesia, NM	Cementing Service	Lynn Northcutt	(505)-748-1392 cell 505-365-7510
Nova Mud, Inc- Hobbs, NM	Drlg Mud	Dale Welch	(800) 530-8786
National – Hobbs, NM	Well Heads		(505) 393-9928
Master Tubulars – Midland, TX	Casing & Tubing	Randy Martin	(800) 682-8996
TFH –Hobbs, NM	Dirt Contractor		(505) 397-3270
Weatherford –Artesia, NM	Float Equipment		
Halliburton Logging –Hobbs, NM	Open Hole Logs	Michael Escriva Tommy Johnson	(505) 392-7543
Allen's Casing Crew -Hobbs, TX	Csg Crew		
Riverside- Carlsbad, TX	Water -		(505) 885-6663
National –Hobbs, NM	General Supplies		(505) 393-9928
TFH –Hobbs, NM	Fork Lift		(505) 397-3270
Adobe Rentals	Trailer, sewage, water		
Abbot Brothers	Conductor setting		
RTO Sales & Lease	Satellite Internet		432-550-5678