Entek GRB LLC
Focus Ranch Unit Federal 3-1
API No. 05-107-06229
SHL: 2,101' FNL 1,612' FWL (SE/4 NW/4)
BHL: ±1,344' FNL ±857' FWL (QTR QTR)
Sec. 3 T11N R88W
Routt County, Colorado
Surface Ownership: Federal
Federal Mineral Lease: COC59491
Focus Ranch Federal Unit: COC63212X

SIDETRACK DRILLING PROGRAM – Revised May 2014

(All Drilling Procedures will be followed as Per Onshore Orders No. 1 and No. 2)

Please contact Kristen Stocks with Entek GRB LLC at, 307-200-1930, if there are any questions or concerns regarding this Drilling Program.

SURFACE ELEVATION – 7,662' (Current Elevation of Wellhead on Location)

SURFACE FORMATION – Lewis – Fresh water possible

1. ESTIMATED FORMATION TOPS – (Water, oil, gas and/or other mineral-bearing formations)

Formation	TVD	MD	Geology
Lewis	Surface		Preset Casing to 3752'
Almond	1562'		
Pioneer Coal	1735'		
Darling Coal	2039'		
Trout Creek	2496'		
Iles Coal system	3696'		
Delta Front Sheet	3864'		Sandstone
Hatfield	4006'		Sandstone
Cherokee Creek	4345'		Sandstone
Deep Creek	4768'		Sandstone
Mancos	4960'		Sandstone
Marapos Sand	5454'		Sandstone
Shannon	5885'		Shale, Sandstone, and Limestone (Target)
Lower Mancos	6910'		Sandstone and Siltstone
Niobrara	7470'		Shale, Sandstone, and Limestone (Target)
Carlisle Shale	8381'		Shale
Frontier	8616'		Sandstone (Target)

Frontier Sand	8725’		Sandstone (Target)
Total Depth	**8,950’**	**9,623’**	

2. ESTIMATED DEPTHS OF ANTICIPATED WATER, OIL, GAS, OR MINERAL BEARING FORMATIONS

Estimated depths at which water, oil, gas or other mineral-bearing formations are expected to be encountered:

Formation	TVD	MD	Formation Thickness	Lithology
Mancos	4960’		500’	Gas
Marapos Sand	5454’		136’	Oil & Gas
Shannon	5885’		35’	Oil & Gas
Lower Mancos	6910’		564’	Gas
Niobrara	7470’		900’	Oil & Gas
Carlisle Shale	8381’		391’	Oil & Gas
Frontier	8616’		156’	Oil & Gas
Frontier Sand	8725’		28’	Oil & Gas

All fresh water and prospectively valuable minerals encountered during drilling will be recorded by depth and protected.

3. BLOWOUT PREVENTION & PRESSURE CONTROL

- See attached blowout preventer diagram.

Blowout preventer (BOP) and related equipment (BOPE) will be installed, used, maintained, and tested in the manner necessary to assure well control and will be in place and operational prior to drilling into the open hole for this sidetrack operation. The BOP and related control equipment will be suitable for operations in those areas which are subject to sub-freezing conditions. The BOPE will be based on known or anticipated sub-surface pressures, geologic conditions, accepted engineering practice, and surface environment. The working pressure of all BOPE will exceed the anticipated surface pressure to which it may be subjected, assuming a partially evacuated hole with a pressure gradient of 0.22 psi/ft.

The choke manifold and accumulator will meet or exceed Colorado Oil and Gas Commission (COGCC) standards. All choke lines will be straight lines unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and reduce vibration. The BOP equipment will be tested when initially installed, whenever any seal subject to test pressure is broken, after any repairs to the equipment and at 30-day intervals. Pipe rams, blind rams and annular preventer will be activated on each trip and weekly BOP drills will be conducted with each crew. All tests, maintenance, and BOP drills will be documented on rig “tower sheets”.

BOP’s and choke manifold will be installed and pressure tested before drilling out of surface casing (subsequent pressure test will be performed whenever pressure seals are broken), and then will be checked daily as to mechanical operating condition. BOP’s will be pressure tested at least once every 30 days. Ram type preventers and related pressure control equipment will be pressure tested to related working pressure of the stack assembly, if a test plug is used. If a plug is not used, the stack assembly will be tested to the rated working pressure of the stack assembly, or 70% of the minimum internal yield of the casing,

whichever is less. Annular type preventers will be pressure tested to 50% of their working pressure. All casing strings will be pressure tested to 0.22 psi/ft or 1,500 psi, whichever is greater, not to exceed 70% of the internal yield.

A manual locking device (i.e. hand wheels) or automatic locking devices shall be installed on the system. A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking devise. The valve will be maintained the open position and will be closed only when the power source for the accumulator system is inoperative. Remote controls will be readily accessible to the driller.

Remote controls for the 3M system will be capable of closing all preventers. Master controls will be at the accumulator and will be capable of opening and closing all preventers and the choke line valves (if so equipped).

The drilling rig has not been selected for this well. Selection will take place after approval of this application is granted. Manual and/or hydraulic controls will be in compliance with COGCC standards for 3,000 psi system.

Auxiliary Equipment:

A. Upper Kelly cock; lower Kelly Cock will be installed while drilling and tested at the time of the BOP test.
B. Inside BOP or stabbing valve with handle (available on the rig floor for all connections in use.)
C. Safety valve(s) and subs to fit all string connections in use.
D. Mud monitoring will be with a flow sensor, pit level indicator, and visual observation.

If expected pressures approach the working pressure of the system, one remote kill line tested to stack pressure will be utilized.

4. CASING PROGRAM

Current Casing:

Hole Diameter	Casing Diameter	Setting Depth	Grade	Weight (lbs/ft)	Thread/ Coupling	Condition
	20”	0’ – 80’	Conductor			
17.5”	13-3/8”	0’ – 644’		48	ST&C	
12-1/4”	9-5/8”	0’ – 3,752’		36/40	ST&C	

Proposed Casing:

Hole Diameter	Casing Diameter	Setting Depth	Grade	Weight (lbs/ft)	Thread/ Coupling	Condition
8-3/4”	7”	0’ – 7,900’ MD	P-110	26	LT&C	New
8-3/4”	5.5”	7,900’ – to TD	P-110	17	LT&C	New

Design Criteria:

Size	Grade	Weight (lbs/ft)	Thread/ Coupling	Tension/ Joint Strength	Burst	Collapse
7”	P-110	26	LT&C	693,000	9,950	6,230
5-1/2”	P-110	17	LT&C	445,000	10,640	7,480

It is planned for this well to have 7" casing run from the Niobrara Top to Surface. A DV tool will be placed at the bottom of the 7" casing to allow for cement 200+' back into the surface casing. Below the top of the Niobrara and DV tool placement is planned to have 5.5" casing with external casing packers (ECP's) and sliding sleeves placed throughout the production intervals. A completion plan will be determined once the placement of ECP's and Sliding Sleeves is confirmed with logs of the Sidetrack.

5. CEMENT PROGRM

Cement Interval	Sacks	Cement
3500' – Niobrara Top +/-7,900' MD (7" casing only – 5.5" casing is planned to be completed without cement for production reasons)	Lead Cement: 360 Sks Tail Cement: 75 Sks	Lead Cement: Halliburton Light Standard *** Fluid Weight 12.50 lbm/gal Slurry Yield: 2.03 ft3/sk Total Mixing Fluid: 10.98 Gal/sk Calculated Fill: 3,900 ft Volume: 129.57 bbls Calculated Sacks: 358.4 sks Tail Cement: ECONOCEM (TM) SYSTEM *** Fluid Weight 14.20 lbm/gal Slurry Yield: 1.26 ft3/sk Total Mixing Fluid: 5.56 Gal/sk Calculated Fill: 500 ft Volume: 16.73 bbl Calculated Sacks: 74.57 sks

Cement calculated at gauge hole +25% excess. Actual volumes will be calculated per the caliper log with 25% excess.

Yields:

Lead Cement:	Halliburton Light Standard	=	Slurry Yield: 2.03 ft3/sk
Tail Cement:	ECONOCEM (TM) SYSTEM	=	Slurry Yield: 1.26 ft3/sk

Cement additives – (Note: Some additives and cement types are proprietary products***. If another cement contractor is used, these blends and products may vary slightly).

Cement additives:

Production:	Lead:	Halliburton Light Standard : 0.2 % Halad(R)-567 (Low Fluid Loss Control) 0.5 % D-AIR 5000 (Defoamer) 0.35 % HR-7 (Retarder) 6 lbm/sk Silicalite Compacted (Light Weight Additive) 0.3 % Econolite (Light Weight Additive) 0.15 % Fe-2 (Additive Material)
	Tail:	ECONOCEM (TM) SYSTEM : 0.2 % HR-5 (Retarder) Slurry Yield: 1.26 ft3/sk 3 lbm/sk Silicalite Compacted (Light Weight Additive) 0.15 % Econolite (Light Weight Additive)

6. MUD PROGRAM

3,752’	-	TD	OBM (** MI Swaco MegaDrill OBM or similar program) 75/25 OWR 25%CaCl2 Mud Weight (lg/gal) 8.9 – 9.2 Funnel Viscosity (sec/qt) 45 - 55 PV (cps) 8 - 12 YP (lb/100ft2) 10 - 15 10 Sec. Gel (lb/100ft2) 8 - 15 10 Min. Gel (lb/100ft2) 11 - 22 30 Min. Gel (lb/100ft2) 13 - 25 HTHP F.L. @ 250 deg F 10 - 15 OWR 75/25 Calcium Chloride (%) 25 ES (volts) 300 – 500 Low Gravity Solids (%) 4 - 6

Sufficient mud materials will be onsite to maintain mud properties, control lost circulation and to contain a “kick” will be available on location at all times. There will be no pits on this location a closed loop system will be utilized for this drilling operation. The cuttings will be taken directly from the closed loop system, dried with dryer shakers and upon determination that they are suitable for trucking will be hauled to an appropriate, licensed disposal facility.

** Please see attached mud proposal for more details.

7. LOGGING, CORING TESTING PROGRAM

Logging: Triple Combo: TD to 5,000’
Sonic Scanner: TD to 5,000’
FMI logging will be determined upon TD of well
Coring: Sidewall cores will be determined after logging.
Testing: Drill Stem tests will be determined after logging and may be run on shows of interest.

8. GEOLOGIC CONDITIONS

Estimated bottom-hole pressure gradient: 0.43 psi/ft
Estimated maximum bottom-hole pressure: 3,870 psi
Abnormal pressures: None anticipated
Abnormal temperatures: None anticipated
Additional potential hazards: None anticipated

9. ADDITIONAL FACETS OF PROPOSED OPERATIONS

Anticipated Start Date: July 2014

Currently Set Casing Information:
Surface Casing: 13-3/8” 48 PPF J55 STC @ 644’cemented to surface w/ 680 sxs Rockies lite
Intermediate Casing: 9-5/8” 36 & 40 ppf STC@ 3752’ cemented w/ 760 sxs lite and 470 sxs premium
Original KB: 7677’ (15’)
Original Hole: 8-3/4” hole drilled 3752’ to 8800’ DTD
Plugs: Surface Plug: 0-70’ (confirmed in 2013), CICR at 3693’ w/ cmt 3693’-3832’, Balance plug 6119’-6279’, Balance plug 6290’-6450’ (Please see attached WBD for more information)

Drilling/Sidetrack Plan:

MIRU Drilling Rig
RU Closed Loop Mud System – NO CUTTINGS OR RESERVE PIT

RU BOP's Consistent and Compliant with Onshore Order #2

Clean out surface plug and plug at 3693', Drill/Clean out approximately 300' plus into open hole to allow sufficient depth for kick off plug to be set.

Set +/- 500' of Kick Off Plug wait on cement 24 hours or per cement company recommendations, Dress plug and prepare for kick off.

Prepare hole with OBM for kick off into new drilling hole. RU Mud Loggers. (See attached mud plan for addl OBM properties.)

PU kick off directional assembly and TIH to top of dressed plug. Once sufficient kick off is achieved TOOH with existing directional assembly and PU assembly for 2.5 deg build. Build to 30 deg and 225 deg azimuth. Hold to TD per attached directional plan.

Directional Plan Annotations: (please see attached directional plan for more information)

MD (U.S. ft.)	TVD (U.S. ft)	Local Coordinates +N/-S (us ft)	Local Coordinates +E/-W (us ft)	Additional Info
+/- 3,800.00	+/- 3,800.00	+/- 0.00	+/- 0.00	Start Build @ 2.5 deg
5,000.00	4,945.92	-217.12	-217.12	Start Hold @ 5000' MD
9623.52	8,950.00	-1,851.78	-1,851.78	TD @ 30 Deg

Clean and condition hole for logs. Log hole.

PU 5.5" tail pipe with log determined ECP's and Sliding Sleeves for placement across Niobrara and below sections of well. PU DV tool and 7" 26# P-110 casing to run above Niobrara Formation. DV tool will be set at the top of the Niobrara formation and cement will be run 200' plus back into the existing casing with TOC @ approximately 3500'.

Planned on location personnel:

The housing that is contracted to be on location during the drilling phase will accommodate the following essential on location personnel:

2 Contract Company Representatives
Mud Logger
Mud Company Representative
Directional and MWD Personnel
Entek Company Representative
Crew and other rotational personnel will be housed offsite and will travel to and from location for each tour change

Completion:

The location pad will be sufficient size to accommodate all completion equipment activities and equipment. A string of 2 7/8" will be run as production tubing. A Sundry Notice (SN) will be submitted with a revised completion program, if warranted.