Entek GRB LLC
FRU Federal 11-14
607' FSL 2,342' FWL (SE/4 SW/4)
Sec. 11 T11N R88W
Routt County, Colorado
Surface: Federal
Federal Mineral Lease: COC59203
Focus Ranch Unit: COC63212X

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

Entek GRB LLC respectfully requests that all information regarding this well be kept confidential.

This Application for Permit to Drill (APD) was initially filed under the Notice of Staking (NOS) process as stated in Onshore Order No. 1 (OSO #1) and supporting Bureau of Land Management (BLM) documents. The process was changed to the "APD" process per Onshore Order No. 1. This document was prepared using language and requirements consistent with those previously approved by BLM.

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

SURFACE ELEVATION – 7,623' (Un-graded ground elevation)

SURFACE FORMATION – Lewis Shale – Freshwater possible

ESTIMATED FORMATION TOPS

Lewis Shale	Surface Shale	
Trout Creek	1,273'	Sandstone
Iles Coal	2,455'	Sandstone, shale & minor coal
DFS	2,555'	Sandstone
Hatfield	2,690'	Sandstone
Cherokee Creek	3,001'	Sandstone
Deep Creek	3,413'	Sandstone
Marapos	4,018'	Sandstone
Mancos Lower	5,697'	Sandstone
Niobrara	6,313'	Shale, sandstone & limestone
Carlile	7,197'	Shale
Frontier	7,457'	Sandstone
Bent	7,601'	Shale & Sandstone
TOTAL DEPTH	**7,800'**	

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:

Lewis Shale	Surface	Some water bearing
Trout Creek	1,273’	Some water, oil, & gas bearing
Iles Coal	2,455’	Some water, oil & gas bearing
DFS	2,555’	Some water, oil, & gas bearing
Hatfield	2,690’	Some water, oil, & gas bearing
Cherokee Creek	3,001’	Some water, oil, & gas bearing
Deep Creek	3,413’	Some water, oil, & gas bearing
Marapos	4,018’	Some water, oil, & gas bearing
Mancos Lower	5,697’	Some water, oil, & gas bearing
Niobrara	6,147’	Some oil & gas bearing
Carlile	7,197’	Some oil & gas bearing
Frontier	7,647’	Some water, oil & gas bearing
Bent	7,601’	Some water, oil & gas bearing

CASING PROGRAM

Total Depth (TD)	**Hole Diameter**	**Casing Diameter**	**Casing Weight and Grade**	**Cement**
0’ – 60’	20”	16”	Conductor Casing	Redi Mix to surface
0’ – 2,500’	12-1/4”	9-5/8”	36# J-55 ST&C New	To surface (Lead: ±338 sxs Varicem; Tail: ± 150 sxs Vericem) *
0’ – 7,800’	8-3/4”	7”	23# P-110 LT&C New	Stage 1: TD-5,747’ (±280 sxs Econocem (TM) System) ** A DV tool will be run at ±5,947’. Stage 2: Lead: 5,947 to 2,000’ (±292 sxs Halliburton Light Standard); Tail: 5,447’ to 5,947’(±75sxs Econocem (TM) System) **

* *Cement volume calculated with 60% excess.*

** *Cement volume calculated with 15% excess.*

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

Yields:	Surface:	Lead: Tail:	Varicem (TM) System= Varicem (TM) System=	2.97 ft^3/sx (11.5ppg) 17.82gps 1.81 ft^3/sx(13.5 ppg) 9.17 gps
	Intermediate:	Stage 1:	Econocem =	1.28 ft^3/sx (14.2 ppg) 5.45 gps
		Stage 2: Lead: Tail:	HES Light Standard Econocem	2.03 ft3/sx (12.5 ppg) 10.96 gps 1.26 ft^3/sx (14.2 ppg) 5.56 gps

Surface casing top 100' will use 1" tubing, with Class "G" cement with 2% $CaCl_2$ if necessary.

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

Cement additives:

Surface:		Lead:	Varicem (TM) Cement 3 lbm/sk Pheno Seal Medium
		Tail:	Varicem (TM) Cement 3 lbm/sk Pheno Seal Medium
Production:	Stage 1:		Econocem (TM) System 0.25% HR-5 (Retarder) 0.15% Econolite 3 lbs/sk Silicate
	Stage 2:	Lead:	HES Light Standard 0.2% Haldad HR-5 6 lbs/sk Silicate 0.5% D-Air 3000 0.35% HR-7 (Retarder)
		Tail:	Econocem (TM) System 0.15% HR-5 (Retarder) 0.15% Econolite 3 lbs/sk Silicate

PRESSURE CONTROL

- See attached blowout preventer diagram.

BOPs 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. BOPs 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. If a 5M system or greater is used, the casing shoe will be tested by drilling 5-20' out from under the shoe and pressure tested to a maximum expected mud weight equivalent as shown in the mud program listed below.

A manual locking device (i.e. hand wheels) or automatic locking devices shall be installed on the BOP stack. Remote controls capable of both opening and closing all preventers shall be readily accessible to the driller.

The choke manifold and accumulator will meet or exceed Onshore Order No. 2 (OSO #2) standards. The BOP equipment will be tested after any repairs to the equipment. 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".

Statement of Accumulator System and Location of Hydraulic Controls

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 OSO #2 for 2,000 psi system.

A remote accumulator will be used. Pressures, capacities, location of remote hydraulic and manual controls will be identified at the time of the BLM supervised BOP test.

MUD PROGRAM

0’	-	60’	Water
60’	-	2,500’	Natural Gel M.W.: 8.5 ppg – 9.0 ppg Visc.: 40 – 50 PV: 10 – 20 YP: 10 – 15 pH: 8.5 – 9.0 WL: 9 - 10
2,500’	-	TD’	Flexdrill-flexfirm potassium silicate M.W.: 8.5 – 9.0 ppg Visc.: 38 – 45 PV: 8 – 16 YP: 10 – 12 pH: 10.5 – 11.0 WL: 9 - 12

Sufficient mud materials to maintain mud properties, control lost circulation and to contain a “kick” will be available on location.

Entek will utilize a closed loop drilling system and will dry the cuttings and bury them in an approved pit. The rest will be disposed of at an approved offsite facility.

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 rig floor).
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 visually observation.

LOGGING, CORING TESTING PROGRAM

A. Logging: Platform Express, Array Induction Lithio density/ Compensated Nuetron.
B. Coring: None planned – Whole core or rotary sidewall cores as warranted.
C. Testing: None planned – Drill Stem tests may be run on shows of interest.

ABNORMAL CONDITIONS

A. Pressures: No abnormal conditions are anticipated.
Anticipated BHP gradient: 0.45 psi/ft
B. Temperatures: No abnormal conditions are anticipated.
C. H_2S: None Anticipated.
D. Estimated bottom hole pressure: 3,510 psi

ANTICIPATED START DATE

August 1, 2012

COMPLETION

The location pad will be sufficient size to accommodate all completion equipment activities and equipment. A string of 2-7/8" 6.5#, N-80 8rd EUE will be run as production tubing. A Sundry Notice (SN) will be submitted with a revised completion program if warranted.

Historically there had not been enough gas to flare while drilling and completing. Due to the high BTU nature of natural gas in this area, a sales line is not currently available. Entek plans to flare any gas in excess of lease fuel demands, until such time that additional rich gas is developed in the area making it economically justifiable to install gas treating facilities that will ensure the gas can meet interstate transmission quality specifications.

It is intended that the maximum daily flare for this well will not exceed 30 MCF per day average for the year and will be permitted accordingly with the Air Quality Division for any flared gas emissions.

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SURFACE CASING AND CENTRALIZER DESIGN

Proposed Total Depth:				7,800	'
Proposed Depth of Surface Casing:				2,500	'
Estimated Pressure Gradient:				0.45	psi/ft
Bottom Hole Pressure at				7,800	'
0.45 psi/ft	x	7,800 '	=	3,510	psi
Hydrostatic Head of gas/oil mud:				0.22	psi/ft
0.22 psi/ft	x	7,800 '	=	1,716	psi

Maximum Design Surface Pressure

Bottom Hole Pressure	–	Hydrostatic Head	=	
(0.45 psi/ft x 7,800 ')	–	(0.22 psi/ft x 7,800 ')	=	
3,510 psi	–	1,716 psi	=	1,794 psi

Casing Strengths — 9-5/8" J-55 36# ST&C

Wt.	Tension (lbs)	Burst (psi)	Collapse (psi)
36 #	394,000	3,520	2,020
40 #	452,000	3,950	2,570

Safety Factors

Tension (Dry): 1.8 Burst: 1.0 Collapse: 1.125

Tension (Dry): 36 # / ft x 2,500 ' = 90,000 #

Safety Factor = 394,000 / 90,000 = 4.38 ok

Burst: Safety Factor = 3,520 psi / 1,794 psi = 1.96 ok

Collapse: Hydrostatic = 0.052 x 9.0 ppg x 2,500 ' = 1,170 psi

Safety Factor = 2,020 psi / 1,170 psi = 1.73 ok

Use 2,500 ' 9-5/8" J-55 36# ST&C

Use 2,000 psi minimum casinghead and BOP's

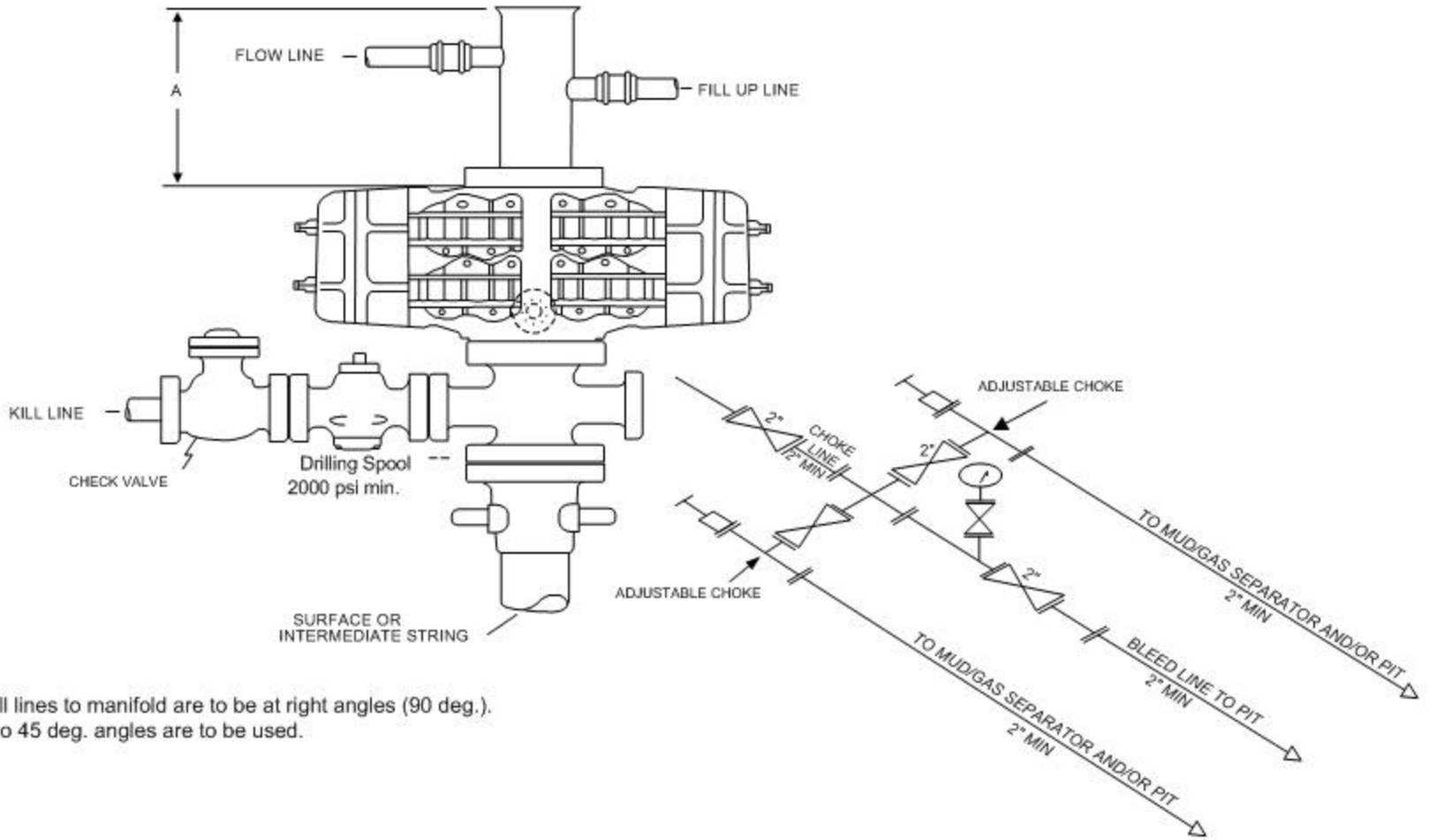
Centralizers

8 Total
1 near surface at 160'
3 -1 each at middle of bottom joint, second joint, third joint
4 -1 each at every other joint ±80 ' spacing

Total centralized ± 600 ' (1,900 ' – 2,500 ')

Note that field experience indicates that additional centralizers greatly increase the chance of "sticking" the surface casing prior to reaching surface casing total depth.

ANNULAR PREVENTER MAY BE SUBSTITUTED FOR DOUBLE GATE PREVENTERS



All lines to manifold are to be at right angles (90 deg.).
No 45 deg. angles are to be used.

2M CHOKE MANIFOLD EQUIPMENT – CONFIGURATION MAY VARY

BLOWOUT PREVENTER

2,000 psi minimum