Entek GRB LLC
Battle Mountain Federal 14-10L
1,656' FSL 888' FEL (NE/4 SE/4)
Sec. 14 T12N R89W
Moffat County, Colorado
Surface: Fee
Federal Mineral Lease: COC69110

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

This Application for Permit to Drill (APD) is 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. This NOS process included an onsite meeting on August 4, 2010, prior to the submittal of this application, at which time the specific concerns of Entek GRB LLC (Entek) and the BLM were discussed. All specific concerns of the BLM representatives are addressed herein, as are specific stipulations from the BLM.

Please contact Mr. Michael Verm, with Entek at (303) 282-4933, extension 1005, if there are any questions or concerns regarding this Drilling Program.

SURFACE ELEVATION – 6,675.8' (Un-graded ground elevation)

SURFACE FORMATION – Almond – Freshwater possible

ESTIMATED FORMATION TOPS

Almond	Surface	Sandstone, siltstone, shale & minor coal
Pioneer	162'	Coal seam
Darling	362'	Coal seam
BWF	589'	Sandstone, shale & coal
Trout Creek	679'	Sandstone
Iles	1,829'	Sandstone, shale & minor coal
DFS	1,929'	Sandstone
Hatfield	2,064'	Sandstone
Cherokee Creek	2,157'	Sandstone
Deep Creek	2,787'	Sandstone (Target Formation)
Cow Creek/MRPS	4,258'	Sandstone
Shannon	5,204'	Sandstone & siltstone
Niobrara	6,147'	Shale, sandstone & limestone
Frontier	7,647'	Sandstone
TOTAL DEPTH	**7,900'**	

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:

Almond	Surface	Some water, oil, & gas bearing
Pioneer	162’	Some water & gas bearing
Darling	362’	Some water & gas bearing
BWF	589’	Some water, oil, & gas bearing
Trout Creek	679’	Some water, oil, & gas bearing
Iles	1,829’	Some water, oil, & gas bearing
DFS	1,929’	Some water, oil, & gas bearing
Hatfield	2,064’	Some water, oil, & gas bearing
Cherokee Creek	2,157’	Some water, oil, & gas bearing
Deep Creek	2,787’	Some water, oil, & gas bearing
Cow Creek/MRPS	4,258’	(Target Formation)
Shannon	5,204’	Some oil & gas bearing
Niobrara	6,147’	Some oil & gas bearing
Frontier	7,647’	Some water, oil & gas bearing

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

CASING PROGRAM

Total Depth (TD)	**Hole Diameter**	**Casing Diameter**	**Casing Weight and Grade**	**Cement**
0’ – 40’	20”	16”	Conductor Casing	Redi Mix to surface
0’ – 800’	12-1/4”	9-5/8”	36# J-55 ST&C New	To surface (Lead: ±130 sxs Control Set “C”; Tail: ± 130 sxs Thixmix)*
0’ – 6,100’	8-3/4”	7”	23# J-55 ST&C New	To surface (Lead: ±500 sxs ThixLite; Tail: ±225 Thixmix) **
6,100’ – 7,900’	6-1/4”	4-1/2”	Slotted Liner	N/A

* *Cement volume calculated with 100% excess.*

** *Lead cement volume calculated with 30% excess. Tail cement volume calculated with 30% excess.*

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

Yields:	Surface:	Lead:	Control Set "C" yield = 2.66 ft^3/sx (11.8 ppg) 15.9 gps
		Tail:	Thixmix yield = 1.35 ft^3/sx (14.5 ppg) 6.50 gps
	Intermediate:	Lead:	ThixLite yield = 1.63 ft^3/sx (12.6 ppg) 9.04 gps
		Tail:	Thixmix yield = 1.35 ft^3/sx (14.5 ppg) 6.5 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 Sanjel proprietary products. If another cement contractor is used, these blends and products may vary slightly).

Cement additives:

Surface:Lead:	**Control Set "C"**	
		1.0% $CaCl_2$
		1.0% SMS
		1.0% OGC-60
		2 lb/sk PSflake
	Tail:	**Thixmix**
		1.0% $CaCl_2$
		2 lb/sk PSflake
Intermediate:	Lead:	**ThixLite**
		1.0% SMS
		0.2% LTR
		1/4 lb/sk Polyflake
	Tail:	**Thixmix**
		0.2% LTR
		1/4 lb/sk Polyflake

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'	-	40'	Water
40'	-	800'	Natural Gel M.W.: 9 ppg Visc.: 40 – 50 PV: 10 – 20 YP: 10 – 15 pH: 8.5 – 9.0 WL: 9 - 10
800'	-	TD'	KCl aerated as necessary to control mud weight and lost circulation M.W.: 7.5 ppg Visc.: 38 – 45 PV: 6 – 16 YP: 6 – 12 pH: 10.8 – 11.0 WL: 9

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

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: 3,555 psi

ANTICIPATED START DATE

February 15, 2011

COMPLETION

The location pad will be sufficient size to accommodate all completion equipment activities and equipment. A string of 2-3/8", 4.7#, N-80, EUE 8rnd will be run as production tubing. A Sundry Notice (SN) will be submitted with a revised completion program if warranted.

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MOFFAT COUNTY, COLORADO

SURFACE and PRODUCTION CASING DESIGN

Proposed Total Depth	6,100	TVD	7,900
Proposed Depth of Surface Casing	800	Feet	(Producing Depth)
Estimated Pressure Gradient	0.450	Psi/ft	
BHP at Producing Depth	2,745	Producing TD x Gradient	
Hydrostatic Head of Gas/Oil/Mud:	1,738	Producing TD x 0.22 psi/ft	
Mud Weight - Production	8.10	#/gal	
Mud Weight - Surface	8.40	#/gal	

SURFACE CASING

MAXIMUM DESIGN SURFACE PRESSURE

Bottom Hole Pressure			minus	Hydrostatic Head			
0.450	PSI/FT x	7,900	minus	0.220	PSI/FT x	7900	
	3555	psi	minus		1738	psi	**1817 psi**

CASING STRENGTH

	Weight / Type	Collapse (psi)	Burst (psi)	Tension (lbs)
9 5/8" 36# J55	36.00	2020	3520	394,000
9 5/8" 36# H40	36.00	1740	2560	294,000

SAFETY FACTORS

DESIGN FACTORS

Tension (dry)	9 5/8" 36# J55	28,800	lbs	#/ft x TVD	
9 5/8" 36# J55	Safety Factor	design/actual	**13.68**	**Tension OK**	1.800
9 5/8" 36# H40	Safety Factor	design/actual	**10.21**	**Tension OK**	1.800
Burst					
9 5/8" 36# J55	Safety Factor	design/actual	**1.94**	**Burst OK**	1.000
9 5/8" 36# H40	Safety Factor	design/actual	**1.41**	**Burst OK**	1.000
Collapse	Hydrostatic =	0.052 x MW Surf x depth	349		
9 5/8" 36# J55	Safety Factor =	design/actual	**5.78**	**Collapse OK**	1.125
9 5/8" 36# H40	Safety Factor =	design/actual	**4.98**	**Collapse OK**	1.125

PRODUCTION CASING

MAXIMUM DESIGN PRODUCING PRESSURE

Bottom Hole Pressure			minus	Hydrostatic Head			
0.450	PSI/FT x	6,100	minus	0.220	PSI/FT x	7900	
	2745	psi	minus		1738	psi	**1007 psi**

CASING STRENGTH

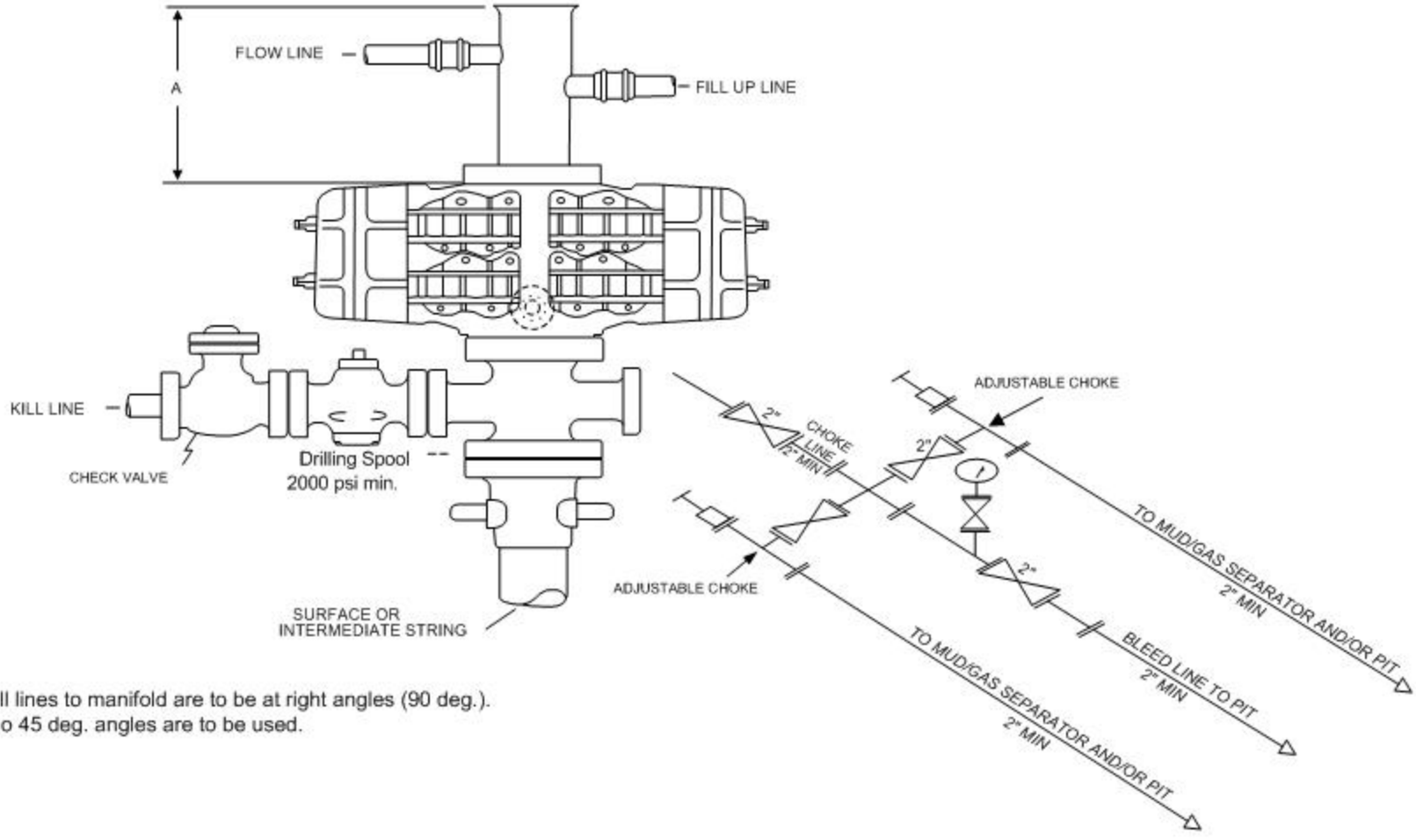
	Weight / Type	Collapse (psi)	Burst (psi)	Tension (lbs)	
7" 23# J55 STC	23.00	3270	4360	284,000	
7" 26# J55 STC	26.00	4320	4980	334,000	
4 1/2" 10.5# J55 STC	10.50	4010	4790	132,000	UN-CEMENTED SLOTTED LINER

SAFETY FACTORS

DESIGN FACTORS

Tension (dry)	#/ft x TVD	140,300	lbs	23.00	6,100	ft	
	#/ft x TVD	158,600	lbs	26.00	6,100	ft	
	#/ft x TVD	19,425	lbs	10.50	1,850	ft	
7" 23# J55 STC	Safety Factor	design/actual	**2.024**	**Tension OK**	1.800		
7" 26# J55 STC	Safety Factor	design/actual	**2.106**	**Tension OK**	1.800		
WILL HANG 1900 FT 4 1/2 LINER IN BOTTOM OF 7"	4 1/2 10.5# J55	Safety Factor	design/actual	**6.795**	**Tension OK**	1.800	
Burst							
7" 23# J55 STC	Safety Factor	design/actual	**4.330**	**Burst OK**	1.000		
7" 26# J55 STC	Safety Factor	design/actual	**4.945**	**Burst OK**	1.000		
NA - LINER WILL BE SLOTTED	4 1/2" 10.5# J55 STC	Safety Factor	design/actual	**4.757**	**Burst OK**	1.000	
Collapse	Hydrostatic =	0.052 x mud wt x depth	2569				
7" 23# J55 STC	Safety Factor =	design/actual	**1.273**	**Collapse OK**	1.125		
7" 26# J55 STC	Safety Factor =	design/actual	**1.681**	**Collapse OK**	1.125		
NA - LINER WILL BE SLOTTED	4 1/2" 10.5# J55 STC	Safety Factor =	design/actual	**1.561**	**Collapse OK**	1.125	

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