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Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMLC0029509B Sf NMLC0029509A Bt.

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER ATS-14-891
Acid Gas Injection Well

7. If Unit or CA Agreement, Name and No.
N/A

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other ☐ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
Maljamar AGI #2 (39029)

2. Name of Operator Frontier Field Services, LLC (22115)

9. API Well No.
NOT ISSUED 30-025-42626

3a. Address 4200 Skelly Dr., #700, Tulsa, OK 74135

3b. Phone No. *(include area code)*
(918) 492-4450 / 918-794-0208

10. Field and Pool, or Exploratory
Exp. Wolfcamp AGI; WOLFCAMP (97756)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 400 FSL, 2,100' FEL Section 21, T17S, R32 E (32.813967, -103.769748) (O)
At proposed prod. zone 350' FSL, 650' FWL Section 21, T17S, R32 E (32.813936, -103.777906 (M)

11. Sec., T. R. M. or Blk. and Survey or Area
Section 21, T17S, R32 E NMPM

14. Distance in miles and direction from nearest town or post office*
3 MILES SOUTH OF MALJAMAR, NM POST OFFICE (88264)

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
Srf: 400' FSL NMLC0029509B
Bot: 350' FSL NMLC0029509A

16. No. of acres in lease
NMLC0029509B: 1601.99A
NMLC0029509A : 640A

17. Spacing Unit dedicated to this well
N/A

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
Srf.Loc:3002540420
(Act.) 408' AZ. 315 Deg.

19. Proposed Depth
~10,960' MTV
~10,300' TVD

20. BLM/BIA Bond No. on file
NMB001173

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
4018FT GL

22. Approximate date work will start*
10/01/2014

23. Estimated duration
45 DAYS

24. Attachments

R-13443-B

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name *(Printed/Typed)*
James C.Hunter, RG

Date
06/19/2014

Title
Senior Geologist - Consultant to Frontier Field Services

Approved by *(Signature)*
Steve Caffey

Name *(Printed/Typed)*

Date
JUN 3 2015

Title
FIELD MANAGER

Office
CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

KZ 06/10/15

SEE ATTACHED FOR CONDITIONS OF APPROVAL

JUN 11 2015

SUBJECT TO LIKE APPROVAL BY STATE

Approval Subject to General Requirements & Special Stipulations Attached

FRONTIER field services, llc

GEOLEX INCORPORATED

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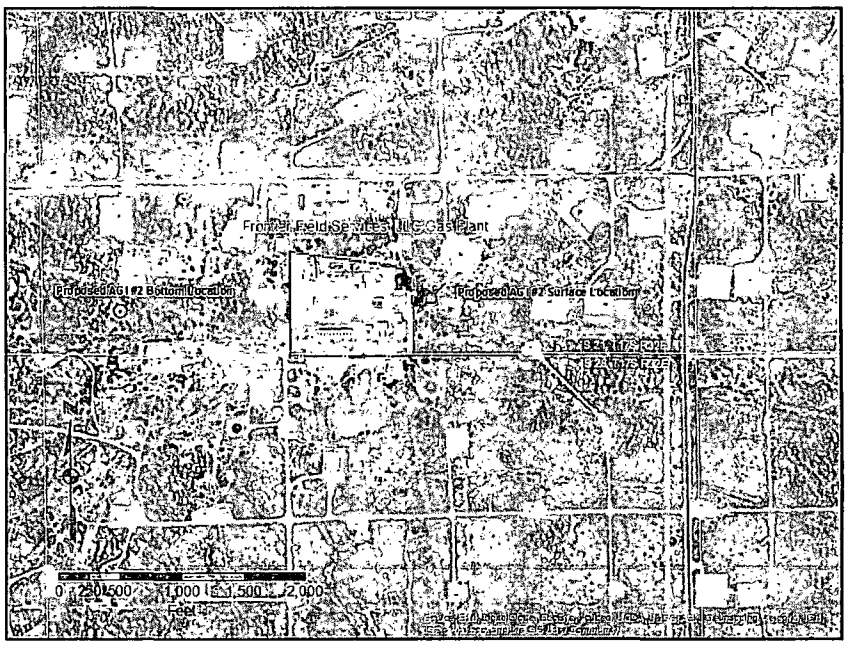
Nine-Point Drilling Plan
Maljamar AGI #2
Frontier Field Services, LLC

Maljamar AGI #2

Surface Location: 400'FSL & 2,100' FEL Section 21, T17S, R32E
Bottom Hole Location: 350' FSL & 650' FWL Section 21, T17S, R32E
Lea County, New Mexico



June 19, 2014

Prepared For:

Frontier Field Services, LLC
4200 E. Skelly Dr., #700
Tulsa, OK 74135

Prepared By:

Geolex, Inc.
500 Marquette Avenue, NW, Suite 1350
Albuquerque, New Mexico 87102
(505)-842-8000

TABLE OF CONTENTS

LIST OF TABLES (embedded in text)

LIST OF FIGURES

LIST OF ATTACHMENTS

MALJAMAR AGI #2 NINE POINT DRILLING PLAN FOR BLM APD

EXECUTIVE SUMMARY

On behalf of Frontier Field Services, LLC (Frontier), Geolex®, Inc. (Geolex) has prepared and is hereby submitting a completed Application for Permit to Drill (APD) and Nine Point Drilling Plan for a combined acid gas injection and CO_2 sequestration well (Maljamar AGI #2) 205 feet to the east of the office building of the Frontier Gas Plant and 96 feet east north-east of the flare fence. Both AGI #1 and AGI #2 wells are located on approximately 19 acres near Maljamar in Lea County, New Mexico (Figure 1 & Figure 2). This well is being drilled as a redundant backup well for AGI #1. This is the 9-point drilling plan supporting the APD which also contains the 12-Point Surface Use Plan of Operation (SUPO), and all other required attachments.

NAME OF WELL: Maljamar AGI #2

LEGAL DESCRIPTION: Surface Location: 400 FSL, 2100 FEL, Section 21, T17S, R32E, Bottom Hole Location: 350' FSL, 650' FWL, Sec 21, T17S, R32E, NMPM, Lea County, New Mexico.

Figure 2 shows the specific locations of the proposed well and the anticipated bottom-hole location. The Maljamar AGI #2 is anticipated to be an inclined well (approximately 29 degrees from the vertical and westerly from the surface location) with a total measured depth (TMD) of approximately 10,964 feet and a total vertical depth (TVD) of 10,306 feet; and completed in the Wolfcamp series along the northern margin of the Delaware Basin (Permian). The primary proposed injection zone will be within a porous debris and algal mound carbonate facies in the Wolfcamp. These injection zones are between approximately 9,673 feet TVD (10,238 ft TMD) and 10,238 feet TVD (10,886 ft TMD) from the surface. Analysis of the reservoir characteristics of these units confirms that they act as excellent closed-system reservoirs that should easily accommodate the future needs of Frontier for disposal of acid gas and sequestration of CO_2 from the plant. Frontier needs to safely inject up to 2.0 million standard cubic feet (MMSCF) per day of treated acid gas (TAG) for 30 years and cannot rely on one well to operate continuously for the 30 year period, therefore, a second AGI well is being drilled to allow for maintenance on AGI #1 without shutting down the plant. Geologic studies conducted for the selection of this location demonstrate that the proposed injection zone is capable of accepting and containing the proposed acid gas and CO_2 injection volumes well within NMOCD's recommended maximum injection pressures and that no hydrocarbons are present in the proposed injection zone (see Section IX of this plan).

In preparing this Drilling Plan Geolex conducted a detailed evaluation of the nine points that BLM's Onshore Oil and Gas Order #1 outlines as required for submission of such a plan. These include:

I.	Estimated Formation Tops
II.	Depth to Zones that Contain Water, Oil, Gas and/or Mineral Bearing Formations
III.	Pressure Control
IV.	Casing
V.	Cement
VI.	Circulation Medium
VII.	Testing, Coring, Logging
VIII.	Pressures, Temperatures, LCZ's, H2S
IX.	Other Aspects of the Proposal

Supplemental information is included in:

Attachment 1: Active Oil and Gas Well Data; Permanently Plugged Oil and Gas Well Data
Attachment 2: Active Well and Plugging Reports
Attachment 3: Directional Plan
Attachment 4: Twelve Point Surface Use Plan of Operation (SUPO)
Attachment 5: NMOCC Order R-13443
Attachment 6: Demonstration of No Hydrocarbons
Attachment 7: Operator Certification
Attachment 8: Well Location and Acreage Plat (NMOCD Form C-102)
Attachment 9: Casing and Joint Specifications for SM2352 and Ultra-SF Joints

I. ESTIMATED FORMATION TOPS

Formation	Anticipated Vertical Depth to Top (ft)
Alluvium/Ogallala	0
Dockum/Rustler	200
Rustler "Magenta Dolomite"	860
Top Salt	985
Tansil	1989
Yates	1,267
Seven Rivers	2,207
Queen	3,176
Grayburg	3,537
San Andres	3,931
Glorietta	5,571
Yeso	6,300
Tubbs	7,036
Abo	7,667
Lower Leonard	9,206
Wolfcamp	9,648
Cisco	10,238

II. DEPTHS TO ZONES THAT CONTAIN OIL AND GAS, WATER AND/OR MINERAL BEARING FORMATIONS

Figure 3 shows the general stratigraphy of the Permian Basin. In the area of the Frontier Gas Plant, the surficial deposits are relatively thin layers of aeolian sands and both active and stabilized dunes. These materials are described in the *Soil Survey-Lea County, New Mexico* (United States Department of Agriculture, 1974) as the Kermit Dune Lands and the Maljamar Fine Sands. Under these sandy deposits lie the "redbeds" of the Triassic Dockum Group, in which groundwater locally occurs in sandier beds of the mudrocks characterizing the Dockum. Local depth to groundwater in the Dockum is reported to be approximately 200 feet. The only significant aquifer in the area is the Pliocene Ogallala Formation, which crops out in the Mescalero Ridge, a prominent landform seen near Maljamar, approximately 3 miles northeast of the Plant (Nicholson and Clebsh, 1961).

The anticipated vertical and measured depths to formations tops and kick-off point (KOP) are shown on Table 1. Depths are shown as vertical depths and as measured depths since AGI #2 will be drilled vertically to a kick-off point depth at approximately 5,820 feet. Starting at approximately 5,820 feet, the borehole will be angled at approximately 29 degrees for a total vertical distance of 4,486 feet and a total measured depth (TMD) of 10,964 feet with a total vertical depth (TVD) of 10,306 feet (Table 1). All depths are estimated depths and are subject to change based on geological information obtained at the time of drilling.

TABLE 1
Depths to Formation Tops
and Other Important and Relevant Depths

Formation	Vertical Depth to Top (ft)	Measured Depth to Top (ft)	Horizontal Distance From SPUD Location (ft)	Resource
Alluvium/Ogallala	0	0	0	Fresh Water
Dockum/Rustler	200	200	0	Freshwater
Rustler "Magenta Dolomite"	860	Rustler "Magenta Dolomite"	0	None
Top Salt	985	Top Salt	0	None
Tansil	1989	Tansil	0	None
Yates	1,267	1,267	0	None
Seven Rivers	2,207	2,207	0	Oil/Gas
Queen	3,176	3,176	0	Oil/Gas
Grayburg	3,537	3,537	0	Oil/Gas
San Andres	3,931	3,931	0	Oil/Gas
Glorietta	5,571	5,571	0	Oil/Gas
Kick-Off Point	***5,820***	***5,820***	0	NA
Yeso	6,300	6,370	269	Oil/Gas
Tubbs	7,036	7,214	682	Oil/Gas
Abo	7,667	7,938	1,036	Oil/Gas
Center of Cement				
Diverter Tool	**9,137**	**9,624**	**1861**	**NA**
Top of CRA	**9,400**	**9,925**	**2009**	**NA**
Lower Leonard	9,206	9,703	1,900	Barren
Packer Set Depth	**9,600**	**10,155**	**2121**	**NA**
Bottom of CRA	**9,662**	**10,226**	**2156**	**NA**
Top of Wolfcamp	9,648	10,210	2148	Locally Barren
Top Perf	**9,673**	**10,238**	**2162**	**NA**
Bottom Perf	**10,238**	**10,886**	**2479**	**NA**
Cisco	10,238	10,886	2,479	Locally Barren
PBTD	**10,261**	**10,912**	**2492**	**NA**
AGI #2 Total				
Depth	**10,306**	**10,964**	**2517**	**NA**

Water Wells and Fresh Water Resources in the Vicinity

The only significant aquifer in the area is the Pliocene Ogallala Formation, which crops out in the Mescalero Ridge, a prominent landform seen near Maljamar, approximately 3.25 miles northeast of the Plant.

One water well is reported within one mile of the Plant, with a total depth of 158 feet (Figure 4). The nearest well for which groundwater analysis exists is in Section 3, T17S, R32E, approximately 3 miles north of the plant. This well is completed in the Ogallala Formation, and has a Total Dissolved Solids of approximately 500 mg/L. There are no reported natural bodies of surface water within 5 miles of the Plant; however, there is an artificial pond built by the BLM that uses groundwater to fill the pond for nature preservation and recreation that is located approximately one mile to the east of the plant.

Oil and Gas Resources in the Maljamar AGI #2 Area of Review and Vicinity

A summary of potential oil and gas bearing zones in the area is included in Table 1. Attachment 1 contains a complete list based on NMOCD records of all active, temporarily abandoned, abandoned and plugged oil and gas wells within two and ½- miles (Figures 5 & 6 and Attachment 1). There are 805 recorded wells within two miles of the Plant, of which 288 are active and 163 are listed as plugged and abandoned, and 185 are listed as not completed and there are two wells that do not have a status. There are 56 wells that are within ½-mile of the injection interval surface location, of which 36 are active and 7 are plugged and abandoned. These wells are shown in Figure 8, Attachment 1, and Table 2.

A review of the available NMOCD data regarding the wells within ½- mile of the proposed AGI well shows that of the 56 total wells, only 2 intersect and/or penetrate the proposed injection zone in the Wolfcamp (Table 2). All reported depths are vertical depths. Of the total 56 wells, 32 are less than 6,000 feet deep. These wells are or were targeted into the Grayburg/San Andres formations. An additional 24 wells are drilled between 6,000 feet and 8,000 feet, targeting the Yeso formations. All of these wells' total depths are well above the Wolfcamp, which lies from 9,650 to 10,240 feet in this area. Zones which contain potentially economic minerals or oil and gas in the area of review include: San Andres, Grayburg, Glorietta/Paddock and Abo Formations above the targeted injection zone and the Cisco, Strawn, Morrow and Devonian below the targeted injection zone.

AGI #2 is to be completed in the same formation as AGI #1 and the Pearsall injection well. There were no indications of recoverable oil and gas observed during geological evaluations conducted during drilling, mud logging, e-logging, or testing AGI #1 or the Pearsall Well, both of which are just outside ½-mile from the AGI #2 injection zone. The formation fluid sample results for the sample collected from AGI #1 did not indicate the presence of recoverable hydrocarbons (Attachment 6). The geology and hydrocarbon content is anticipated to be the same for AGI #2 as it is for the nearby evaluated offset wells. AGI #2 will inject in the same formation as AGI #1 under very similar conditions that support the absence of recoverable oil and gas. The BLM approved the 3160-5 Form for Demonstration of No Recoverable Hydrocarbons for AGI #1 on September 25, 2012 (Attachment 6).

See COA

Still a Requirement

NO EXCEPTION ##

Status of Wolfcamp-Penetrating Wells Within One-Mile

As shown in Table 2 in red, there is a total of (1) well penetrating the Wolfcamp "deep wells" in the ½-mile area of review. Information on the one well in the ½-mile area of review includes total depth, production or injection interval and current status and is found in Attachment 1. Maljamar AGI #1 is not included on the list of penetrating wells because the Maljamar AGI #1 injection zone is over ½-mile away from Maljamar AGI #2 injection zone location. Maljamar AGI #2 is being drilled at an angle of 29.3 degrees that places its injection zone approximately ½ -mile to the west of the Maljamar AGI #1 injection location.

A review of the available data on Queen B 036 (also known as MCA Unit #133) is shown in Table 2 and in Attachment 1. **Queen B 036 well was plugged.** Plugging reports for Queen B 036/MCA Unit #133 are included in Attachment 3. The well was drilled to 10,747' in 1948, and was cased with 5 1/2" production casing, cemented to 5,890'. Subsequent 1949 testing and plugging (including perforating and squeezing the well in multiple intervals) resulted in the well being plugged back to 5,024'. No economical hydrocarbons were encountered. Although the well was permitted as an SWD in 1982 (SWD-241) the well was never recompleted or used as an SWD and was permanently plugged and abandoned in 2004.

TABLE 2:
Wells Within the 1/2-Mile Area of Review
That Penetrate the AGI #2 Injection Depths

Map ID	API	OPERATOR	Well Name	Status	Well Type	Production Formation	TD	Miles
7	3002500751	CONOCOPHILLIPS COMPANY	QUEEN B 036	Plugged	Oil		10747	0.17

As part of the work performed to support this application, a detailed investigation of the structure, stratigraphy and hydrogeology of the area surrounding the proposed Maljamar AGI #2 injection well has been performed. The investigation included the analysis of available geologic data and hydrogeologic data from wells and literature identified in Sections 3, 4 and 5 of the C-108 application including related appendices. Based on this investigation and analysis of these data, it is clear that there are no open fractures, faults or other structures which could potentially result in the communication of proposed injection zone with any known sources of drinking water in the vicinity as described above. The proposed injection zone is a closed system and over 8,000 vertical feet from fresh water-bearing zones.

Geolex's analysis of the impact of injection of TAG from the proposed AGI #2 completed in the Wolfcamp porosity zones would not negatively impact the production of any economic hydrocarbons within a one-mile radius of the AGI #2 injection zone. This opinion is based upon test and production results, seismic identification of porosity zone limits, experience with the depositional systems of the lower Permian rocks, and Wolfcamp structure. Any injected fluid would be confined to an area significantly less than a one-mile radius away from the AGI #2, and would be unlikely to break through to any producing wells updip of the site.

III. PRESSURE CONTROL

A general schematic of the proposed well is provided in Figure 7. Details of the BOP/BOPE and manifold system are shown in Figures 8 and 9.

SPECIFICATIONS FOR PRESSURE CONTROL EQUIPMENT:

A 2,000# WP annular will be installed after running the 13-3/8" surface casing. A 5,000# WP double BOP stack will be installed on the 9-5/8" and 7" casing (Figure 8). Pressure tests will be conducted prior to drilling out under all casing strings. BOP controls will be installed prior to drilling under surface casing and will remain in use until completion of drilling operations. BOP's will be inspected and operated as recommended in Onshore Order #2. A Kelly cock and a sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position when the Kelly is not in use. The 2,000# WP annular on the 13-3/8" casing will be tested to ~~1,500#~~ 2,000psi. The 9-5/8" and 7" BOP's will be tested to 5,000# and the annular to 1,500# using a third party testing company prior to drilling below each shoe. If operations last more than 30 days from 1st test, the BOPE will be tested again per BLM Onshore Oil & Gas Order #2. The preventer rams will be function tested daily (when possible) and on each trip to ensure the preventers are functioning properly.

* See COA

See COA

Figure 9 is a schematic of the manifold system between the BOP/BOPE, the mud separator and the close-loop mud control system, and Figure 10 shows the proposed well site layout.

IV. CASING

A schematic of the proposed Zia AGI #1 is shown in Figure 7. The casing specifications for Zia AGI #1 were specially developed to be more resistant to the anticipated TAG stream. There are two lines of defense against TAG corrosion. The first line of defense is supplied by 300 feet of CRA casing surrounded with TAG resistant cement (CORROSACHEM or equivalent) (Tables 5, 6, and 7). The second line of defense against corrosion is the acid resistant fiberglass lined 3- 1/2" production tubing which should protect the metal interior against the effects of TAG. Both of these material upgrades will aid in reducing corrosion and add additional life to the well.

The Directional Plan is included as Attachment 3.

TABLE 3
Casing Design Specifications

TYPE	COLLAR TYPE	INTERVAL (MD)	HOLE SIZE	PURPOSE	CONDITION
20", 94#/ft	STC	0' – 20'	24"	Conductor	Contractor Discretion
13-3/8", ~~40~~ 48#/ft, H40	STC	0' – 890'	17 ½"	Surface	New
9-5/8", 40#/ft, J55	LTC	0' – 5,700'	12 ¼"	Intermediate	New
7", 26#/ft, HCL80	LTC	0' –9,925' 10,226' – 10,964' MD	8 3/4 "	Production	New
7", 28#/ft, CRA SM 2535 or equivalent	LTC	9,925' – 10,226'	8 3/4 "	Production	New

Detailed specifications for the SM2352 casing and Ultra-SF Joints are included in Attachment 9.

The design criteria and casing loading assumptions are shown in Table 4 and discussed below for each casing string.

TABLE 4
Casing Design Safety Factors (PSI)

TYPE	TENSION	COLLAPSE	BURST
13-3/8", ~~40~~ 48#/ft, H40	9.04	1.77	1.73
9-5/8", 40#/ft, J55	3.07	0.78	3.46
7", 26#/ft, HCL80	2.36	1.6	2.48
7", 26#/ft, CRA SM2535	2.36	1.6	2.48
7", 26#/ft, HCL80	2.36	1.6	2.48

The surface casing design criteria and assumptions are as follows:

SURFACE CASING – (13-3/8")

Tension	A 1.8 design factor utilizing the effects of buoyancy (9.4 ppg).
Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.488 psi/ft). The effects of axial load on collapse will be considered.
Burst	A 1.1 design factor with a surface pressure equal to the fracture gradient at setting depth. Internal burst force at the shoe will be cement hydrostatic pressure at that depth. No backup pressure or effects of tension on burst are utilized.

The design criteria and casing load assumptions for the intermediate string are as follows:

INTERMEDIATE CASING – (9-5/8")

Tension	A 1.8 design factor utilizing the effects of buoyancy (10.1 ppg).
Collapse	A 1.125 design factor with 25% internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.514 psi/ft).
Burst	A 1.1 design factor with an internal burst force at the shoe equal to the fracture pressure at that depth. Back pressure will be formation pore pressure. The effects of tension on burst will not be utilized.

The design criteria and casing load assumptions for the production casing are as follows:

PRODUCTION CASING – (7") (Even though section from 9,925' – 10,226' is SM 2535 or equivalent CRA 28#/ft has higher strength, the entire string is assumed to be HCL-80 26#/ft)

Tension	A 1.8 design factor utilizing the effects of buoyancy (9.2 ppg).
Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse are considered.
Burst	A 1.1 design factor with an anticipated maximum tubing pressure (5,000 psig) on top of the maximum anticipated packer fluid (diesel) gradient (0.37 psi/ft). Back pressure on production string will be formation pore pressure (0.433 psi/ft). The effects of tension on burst will not be utilized.

The Well Design Schematic for AGI #2 is included as Figure 4.

V. CEMENT

The borehole for the surface casing will be drilled with a 17 ½ inch bit to a depth of approximately 890 feet, and 13 $^{3}/_{8}$ inch, 48.0 ppf, H40, STC casing will be installed and cemented to the surface with approximately 950 sacks of cement (or amount adequate to circulate the cement to the surface). The intermediate hole will be drilled with a 12 ¼ inch bit to a depth of approximately 5700 feet. There an 9 $^{5}/_{8}$ inch, 40.0 ppf, J55, STC surface casing string will be run and cemented to surface with approximately 1350 sacks of cement or the amount adequate to circulate the cement to the surface (Table 5). Visual inspections of cement returns to the surface will be noted in each casing job. Casing and cement integrity will be demonstrated by pressure-testing after each cement job.

The cementing of the Production string will be accomplished in two stages (Table 5). The first stage will seal the annular space from total depth (~10,964 feet) to a level about 200 feet above the upper most Corrosion Resistant Alloy joint where the cement diverter tool is located at 9,624 (MD) feet. This stage will employ acid-resistant cement (CORROSACEM™ or equivalent). For the second stage, a DV Tool previously inserted in the casing (at ~9,624 feet) will be used to pump the lead cement to the surface. The Class C lead cement will be followed with Class H tail cement (Table 5). To help ensure good cement bonding and filling throughout the inclined section of the production casing, at least one centralizer suitable for horizontal wells will be placed on each joint of casing in the angled section, and turbolizers will be installed on the casing string as recommended by the centralizer company.

TABLE 5
Cement Program Design Specifications

INTERVAL	AMOUNT (sx)	FEET	EXCESS	TYPE	ADDITIVES	GALS/SX	PPG	FT^3/SX
Surface	950	890	100%	Class C	2% CaCl+1/4pps Celloflake	6.32	14.8	1.32
Intermediate (Lead)	1,350	4,810	100%	35:65 Cl C	6%Gel+5%Salt+ 5pps Gilsonite+2pps EC-10+1/4pps Celloflake	11.85	12.4	2.14
Intermediate (Tail)	320	890	50%	Class C	1% CaCl	6.32	14.8	1.32
Production	DV tool	@ 9624'						
Stage 1 (10,000' – 10,976')	250	1,100	25%	CorrosaCem (Tail)	none	3.44	15	0.91
Stage 2 (Surf-10,000') Lead	1,000	8,950	50%	35:65 Cl H	6%Gel+5%Salt+ 5pps Gilsonite+2pps EC-10+1/4pps Celloflake	11.85	12.4	2.14
Stage 2 (Surf-10,000') Tail	200	1,050	25%	Class H	0.2% C-49+3%C-12+ 0.004gps CF-41L	5.23	15.6	1.18

See COA

VI. CIRCULATING MEDIUM (MUD PROGRAM)

A closed loop system for the handling of drilling fluids and cuttings will be utilized in the drilling of this well. This system is included as Attachment 4 to this drilling plan. Drilled solids will be hauled to an approved site and disposed of according to state and federal guidelines.

MUD PROGRAM: mud weights differ from Table A

Drill 17-1/2" surface hole with ~~fresh water (8.4 to 8.7 ppg)~~ to a depth of approx 890'. Control lost circulation with paper and LCM pills. Viscosity 28-55, no fluid loss control. Fresh water gel sweeps.

Drill 12-1/4" hole from 890' to 5,700' with **Brine or Cut Brine ~~(9.2 to 10.0 ppg)~~**. Watch for potential lost circulation in Capitan Aquifer. Control lost circulation with paper and LCM pills. Viscosity 28-30, no fluid loss control. Salt water gel sweeps.

Drill 8 ¾" production hole from 5.700' to **10,964 (MD)'** (10,306 TVD) with **fresh water ~~(8.4 to 8.7 ppg)~~**. Control lost circulation with paper and LCM pills. From 5,200' to TD, control filtrate with starch and water loss additives. Clean hole with pre-hydrated freshwater gel sweeps, as necessary. System properties: viscosity 34-40, fluid loss <20 ml/30min.

All necessary mud products for weight addition and fluid loss control will be on location at all times. Mud program subject to change due to hole conditions.

Mud monitoring system: Mud will be maintained and checked daily for mud weight, viscosity, API water loss, pH, etc. Additional electronic monitoring will include a pit volume totalizer to monitor mud volume in active system, pump rate, and mud return flow percentage. H2S monitors and alarms will be located on rig floor, shale shakers, and mud tanks (see rig plat). Gas chromatograph with monitor hydrocarbon gas content of mud from 4,600' to TD. A third-party corrosion company will utilize H2S/oxygen scavengers to monitor for corrosion and limit damage to tubulars.

See COA

Auxiliary Equipment

A. A Kelly cock will be in the drill string at all times. BOP and fittings must be in good condition with minimum of 2,000 psi working pressure on 13-3/8" casing and 3000 psi working pressure on 9-5/8" and 7" casing. Accumulator will be at least 40 gallon capacity with 2 independent sources of pressure on closing unit and meet all other API specifications.

B. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times with 3,000 psi working pressure.

See COA

C. Hydrogen Sulfide detection equipment will be in operation before drilling out the 13 3/8" casing shoe until the 7" casing is run/set and rigging down operations have begun.

TESTING, LOGGING & CORING PROGRAM:

a. Testing: No DST's are expected.
b. Open hole logs are planned at TD of pilot hole, w/ side wall cores.
c. Mud logging will take place from 5,700ft to TD 10ft samples

POTENTIAL HAZARDS:

See COA

No significant hazards are expected to TD, no abnormal pressures or temperatures are expected. Lost circulation may occur. No H_2S is expected but may occur in the Yates, so the operator will utilize a 3rd party H_2S monitoring package from 785' to TD. If H_2S is encountered the operator will comply with the provisions of Onshore Oil & Gas Order #6, and the Contingency Plan included in Section X. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well.

TABLE 8
Mud Program Specifications

DEPTH	MUD TYPE	WEIGHT	FV	PV	YP	FL	pH
0' –890'	FW Spud Mud	8.5 – 9.0	32-34	2-6	1-10	NC	9.0-9.5
890'-5,700'	Brine/CBW	9.5 – 10.0	28-30	1-2	1-2	NC	10.0-10.5
5,700'–10,964'	CBW/Gel	8.7 - 9.2	28-36	1-2	1-2	NC	9.5-10.0
		8.7 - 9.0	28-36	NC	NC	NC	9.5-10.0

VII. TESTING, CORING, LOGGING — See COA

Mud logging will commence at approximately 5,700 feet. The proposed open hole logging suite for the TD run consists of a Dual Induction, Density-Neutron-Gamma Ray Porosity and Fracture Matrix Identification (FMI) log in the lower Leonard and the Wolfcamp and a portion of the caprock and basal seal formations. Conventional coring and rotary sidewall coring will not be performed. The cores from AGI #1 have provided the necessary information to evaluate the caprock and proposed injection zone.

A 360° cement bond log will be run to ascertain the quality of the cement bond of each casing. It is important that a good bond be established around the injection interval as well as below the corrosion resistant joint to assure that acid gas mixed with formation water does not travel up the outside of the casing and negatively impact the integrity of the casing job.

→ Submit a Separate NOI - Sundry

A comprehensive injection and step rate testing program will be conducted after perforation in order to establish the injection parameters for final design of the surface facilities.

See COA

VIII. PRESSURES, TEMPERATURES, LOST CIRCULATION ZONES, H_2S

Expected pressure gradient will be 0.35 psi/ft, estimated BHP is approximately 3,450 psi at TVD of 10,306 ft, and Estimated BHT is 132° F, based on logs and testing from the adjacent Maljamar AGI #1. Lost circulation was observed in the lower San Andres-Glorieta zone during the drilling of Maljamar AGI #1 and appropriate precautions, including the availability of appropriate LCM materials and additives, will be available as described above in the mud program. In addition, occasional occurrences of H_2S have been reported from the Yates Formation and appropriate precautions for handling potential H_2S in mud are also described above in Section VI and in Section X.

IX. OTHER ASPECTS OF THE PROPOSAL

Additional information relative to the proposed completion of the proposed Maljamar AGI #2 which relates to its proposed use as an acid gas injection and CO_2 sequestration well is included in the C-108 application that was submitted to the NMOCD and BLM. Some of this information has been summarized and included in this section of the 9-point drilling plan for easy reference. No interim remediation is required and is discussed in Attachment 4: 12-Point SUPO. A copy of the NMOCC Order (R-13443) is included as Attachment 5 to this plan.

Additional Completion Information — submit a Separate NOI - Sundry

See COA

Once the integrity of the cement job has been determined, the selected injection intervals will be perforated with approximately six shots per foot. At this location, a total up to 650 feet of target areas may be perforated. A temporary string of removable packer and tubing will be run, and injection tests (step tests) will be performed to determine the final injection pressures and volumes. Once the reservoirs have been tested, the final tubing string including a permanent packer, approximately 10,200 feet (MD) of 2 $^{7}/_{8}$ inch, 6.5 ppf, L80 premium thread tubing with corrosion resistant lining, and an SSV will be run into the well. A ¼ inch Inconel steel line will connect the SSV to a hydraulic panel at the surface.

The National Association of Corrosion Engineers (NACE) issues guidelines for metals exposed to various corrosive gases like the ones in this well. For a H_2S/CO_2 stream of acid gas that is de-watered at the surface through successive stages of compression, downhole components such as the SSV and packer need to be constructed of Inconel 625, 925, or equivalent. The corrosion resistant joint will be constructed of a similar alloy from a manufacturer such as Sumitomo. A product like SM2530 (with 50% nickel content) will likely be used. The gates, bonnets and valve stems within the Christmas tree will be nickel coated as well.

The rest of the Christmas tree will be made of standard carbon steel components and outfitted with annular pressure gauges that report operating pressure conditions in real time to a gas control center located remotely from the wellhead. In the case of abnormal pressures or any other situation requiring immediate action, the acid gas injection process can be stopped at the compressor and the wellhead shut-in using a hydraulically operated wing valve on the Christmas tree. The SSV provides a redundant safety feature to shut in the well in case the wing valve does not close properly.

After the AGI well is drilled and tested to assure that it will be able to accept the volume of injection fluid (without using acid gas), it will be completed with the approved injection equipment for the acid gas stream. The Rule 11 Plan will be finalized when the compression facility design and well connection design is complete and will be submitted for NMOCD review and approval prior to commencement of TAG injection into the Maljamar AGI #2 well.

Calculated Areas of Fluid Injection

The range of injection areas for the anticipated ranges of injection volume over an estimated 30-year life of the AGI well are calculated based on the geology, anticipated range of injection volumes, and the injection pressures and temperatures in the reservoir. These calculations are shown in Table 7, and the results of the calculations are plotted on Figure 7.

Flightless Energy

Lea County, New Mexico
Sec 21, T17S, R32E
Frontier Maljamar AGI #2

Wellbore #1

Plan: Design #2

DDC Well Planning Report

05 June, 2014

The DIRECTIONAL DRILLING COMPANY

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Frontier Maljamar AGI #2
Company:	Flightless Energy	**TVD Reference:**	Well @ 0.0usft
Project:	Lea County, New Mexico	**MD Reference:**	Well @ 0.0usft
Site:	Sec 21, T17S, R32E	**North Reference:**	Grid
Well:	Frontier Maljamar AGI #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Project	Lea County, New Mexico		
Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec 21, T17S, R32E				
Site Position:		**Northing:**	0.00 usft	**Latitude:**	30° 59' 24.512 N
From:	Map	**Easting:**	0.00 usft	**Longitude:**	105° 55' 44.137 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well	Frontier Maljamar AGI #2					
Well Position	**+N/-S**	0.0 usft	**Northing:**	0.00 usft	**Latitude:**	30° 59' 24.512 N
	+E/-W	0.0 usft	**Easting:**	0.00 usft	**Longitude:**	105° 55' 44.137 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	0.0 usft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	6/3/2014	8.15	58.54	47,328

Design	Design #2				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.0	0.0	0.0	268.87	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,820.0	0.00	0.00	5,820.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,071.5	30.18	268.87	6,060.0	-1.3	-64.7	12.00	12.00	-36.24	268.87	
10,976.3	30.18	268.87	10,300.0	-50.0	-2,530.0	0.00	0.00	0.00	0.00	PBHL Frontier Maljam

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Frontier Maljamar AGI #2
Company:	Flightless Energy	**TVD Reference:**	Well @ 0.0usft
Project:	Lea County, New Mexico	**MD Reference:**	Well @ 0.0usft
Site:	Sec 21, T17S, R32E	**North Reference:**	Grid
Well:	Frontier Maljamar AGI #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Frontier Maljamar AGI #2
Company:	Flightless Energy	**TVD Reference:**	Well @ 0.0usft
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Site:	Sec 21, T17S, R32E	**North Reference:**	Grid
Well:	Frontier Maljamar AGI #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP @ 5820' / Build 12°/100'									
5,820.0	0.00	0.00	5,820.0	0.0	0.0	0.0	0.00	0.00	0.00
5,825.0	0.60	268.87	5,825.0	0.0	0.0	0.0	12.00	12.00	0.00
5,850.0	3.60	268.87	5,850.0	0.0	-0.9	0.9	12.00	12.00	0.00
5,875.0	6.60	268.87	5,874.9	-0.1	-3.2	3.2	12.00	12.00	0.00
5,900.0	9.60	268.87	5,899.6	-0.1	-6.7	6.7	12.00	12.00	0.00
5,925.0	12.60	268.87	5,924.2	-0.2	-11.5	11.5	12.00	12.00	0.00
5,950.0	15.60	268.87	5,948.4	-0.3	-17.6	17.6	12.00	12.00	0.00
5,975.0	18.60	268.87	5,972.3	-0.5	-24.9	24.9	12.00	12.00	0.00
6,000.0	21.60	268.87	5,995.8	-0.7	-33.5	33.5	12.00	12.00	0.00
6,025.0	24.60	268.87	6,018.8	-0.9	-43.3	43.3	12.00	12.00	0.00
6,050.0	27.60	268.87	6,041.2	-1.1	-54.3	54.3	12.00	12.00	0.00
End of Build @ 6072' MD / 30.18° Inc. / 6060' TVD									
6,071.5	30.18	268.87	6,060.0	-1.3	-64.7	64.7	12.00	12.00	0.00
6,100.0	30.18	268.87	6,084.7	-1.6	-79.0	79.0	0.00	0.00	0.00
6,200.0	30.18	268.87	6,171.1	-2.6	-129.3	129.3	0.00	0.00	0.00
6,300.0	30.18	268.87	6,257.6	-3.5	-179.6	179.6	0.00	0.00	0.00
6,400.0	30.18	268.87	6,344.0	-4.5	-229.8	229.9	0.00	0.00	0.00
6,500.0	30.18	268.87	6,430.4	-5.5	-280.1	280.1	0.00	0.00	0.00
6,600.0	30.18	268.87	6,516.9	-6.5	-330.3	330.4	0.00	0.00	0.00
6,700.0	30.18	268.87	6,603.3	-7.5	-380.6	380.7	0.00	0.00	0.00
6,800.0	30.18	268.87	6,689.8	-8.5	-430.9	431.0	0.00	0.00	0.00
6,900.0	30.18	268.87	6,776.2	-9.5	-481.1	481.2	0.00	0.00	0.00
7,000.0	30.18	268.87	6,862.7	-10.5	-531.4	531.5	0.00	0.00	0.00
7,100.0	30.18	268.87	6,949.1	-11.5	-581.7	581.8	0.00	0.00	0.00
7,200.0	30.18	268.87	7,035.6	-12.5	-631.9	632.0	0.00	0.00	0.00
7,300.0	30.18	268.87	7,122.0	-13.5	-682.2	682.3	0.00	0.00	0.00
7,400.0	30.18	268.87	7,208.4	-14.5	-732.4	732.6	0.00	0.00	0.00
7,500.0	30.18	268.87	7,294.9	-15.5	-782.7	782.9	0.00	0.00	0.00
7,600.0	30.18	268.87	7,381.3	-16.5	-833.0	833.1	0.00	0.00	0.00
7,700.0	30.18	268.87	7,467.8	-17.5	-883.2	883.4	0.00	0.00	0.00
7,800.0	30.18	268.87	7,554.2	-18.4	-933.5	933.7	0.00	0.00	0.00
7,900.0	30.18	268.87	7,640.7	-19.4	-983.8	983.9	0.00	0.00	0.00
8,000.0	30.18	268.87	7,727.1	-20.4	-1,034.0	1,034.2	0.00	0.00	0.00
8,100.0	30.18	268.87	7,813.6	-21.4	-1,084.3	1,084.5	0.00	0.00	0.00
8,200.0	30.18	268.87	7,900.0	-22.4	-1,134.5	1,134.8	0.00	0.00	0.00
8,300.0	30.18	268.87	7,986.5	-23.4	-1,184.8	1,185.0	0.00	0.00	0.00
8,400.0	30.18	268.87	8,072.9	-24.4	-1,235.1	1,235.3	0.00	0.00	0.00
8,500.0	30.18	268.87	8,159.3	-25.4	-1,285.3	1,285.6	0.00	0.00	0.00
8,600.0	30.18	268.87	8,245.8	-26.4	-1,335.6	1,335.9	0.00	0.00	0.00
8,700.0	30.18	268.87	8,332.2	-27.4	-1,385.9	1,386.1	0.00	0.00	0.00
8,800.0	30.18	268.87	8,418.7	-28.4	-1,436.1	1,436.4	0.00	0.00	0.00
8,900.0	30.18	268.87	8,505.1	-29.4	-1,486.4	1,486.7	0.00	0.00	0.00
9,000.0	30.18	268.87	8,591.6	-30.4	-1,536.6	1,536.9	0.00	0.00	0.00
9,100.0	30.18	268.87	8,678.0	-31.4	-1,586.9	1,587.2	0.00	0.00	0.00
9,200.0	30.18	268.87	8,764.5	-32.4	-1,637.2	1,637.5	0.00	0.00	0.00
9,300.0	30.18	268.87	8,850.9	-33.3	-1,687.4	1,687.8	0.00	0.00	0.00
9,400.0	30.18	268.87	8,937.3	-34.3	-1,737.7	1,738.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Frontier Maljamar AGI #2
Company:	Flightless Energy	**TVD Reference:**	Well @ 0.0usft
Project:	Lea County, New Mexico	**MD Reference:**	Well @ 0.0usft
Site:	Sec 21, T17S, R32E	**North Reference:**	Grid
Well:	Frontier Maljamar AGI #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,500.0	30.18	268.87	9,023.8	-35.3	-1,788.0	1,788.3	0.00	0.00	0.00
9,600.0	30.18	268.87	9,110.2	-36.3	-1,838.2	1,838.6	0.00	0.00	0.00
9,700.0	30.18	268.87	9,196.7	-37.3	-1,888.5	1,888.9	0.00	0.00	0.00
9,800.0	30.18	268.87	9,283.1	-38.3	-1,938.7	1,939.1	0.00	0.00	0.00
9,900.0	30.18	268.87	9,369.6	-39.3	-1,989.0	1,989.4	0.00	0.00	0.00
10,000.0	30.18	268.87	9,456.0	-40.3	-2,039.3	2,039.7	0.00	0.00	0.00
10,100.0	30.18	268.87	9,542.5	-41.3	-2,089.5	2,089.9	0.00	0.00	0.00
10,200.0	30.18	268.87	9,628.9	-42.3	-2,139.8	2,140.2	0.00	0.00	0.00
10,300.0	30.18	268.87	9,715.3	-43.3	-2,190.1	2,190.5	0.00	0.00	0.00
10,400.0	30.18	268.87	9,801.8	-44.3	-2,240.3	2,240.8	0.00	0.00	0.00
10,500.0	30.18	268.87	9,888.2	-45.3	-2,290.6	2,291.0	0.00	0.00	0.00
10,600.0	30.18	268.87	9,974.7	-46.3	-2,340.8	2,341.3	0.00	0.00	0.00
10,700.0	30.18	268.87	10,061.1	-47.3	-2,391.1	2,391.6	0.00	0.00	0.00
10,800.0	30.18	268.87	10,147.6	-48.2	-2,441.4	2,441.8	0.00	0.00	0.00
10,900.0	30.18	268.87	10,234.0	-49.2	-2,491.6	2,492.1	0.00	0.00	0.00
PBHL @ 10976' MD / 10300' TVD									
10,976.3	30.18	268.87	10,300.0	-50.0	-2,530.0	2,530.5	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL Frontier Maljamar - plan hits target center - Point	0.00	0.00	10,300.0	-50.0	-2,530.0	-50.00	-2,530.00	30° 59' 23.657 N	105° 56' 13.185 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,820.0	5,820.0	0.0	0.0	KOP @ 5820' / Build 12°/100'
6,071.5	6,060.0	-1.3	-64.7	End of Build @ 6072' MD / 30.18° Inc. / 6060' TVD
10,976.3	10,300.0	-50.0	-2,530.0	PBHL @ 10976' MD / 10300' TVD

Flightless Energy

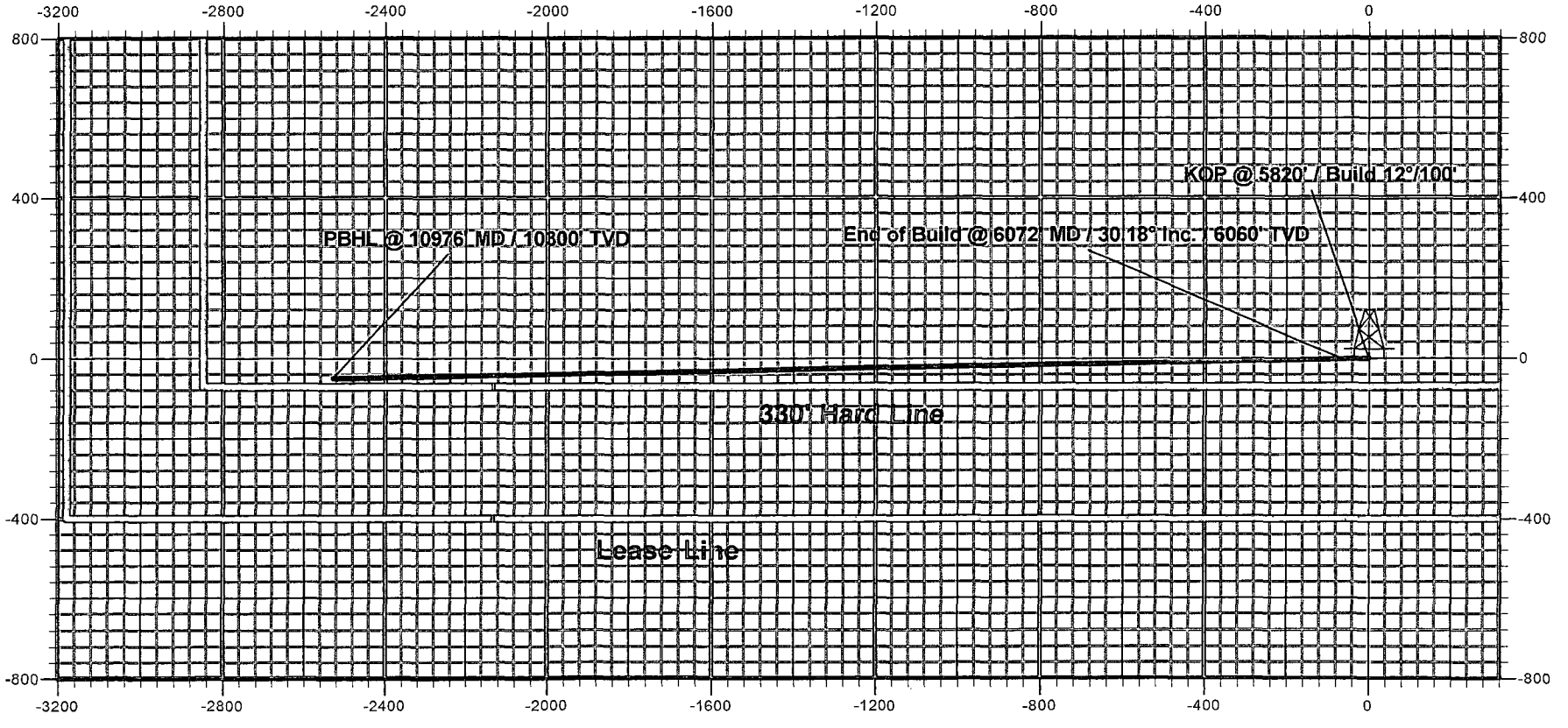
Lea County, New Mexico

Sec 21, T17S, R32E

Frontier Maljamar AGI #2

Design #2

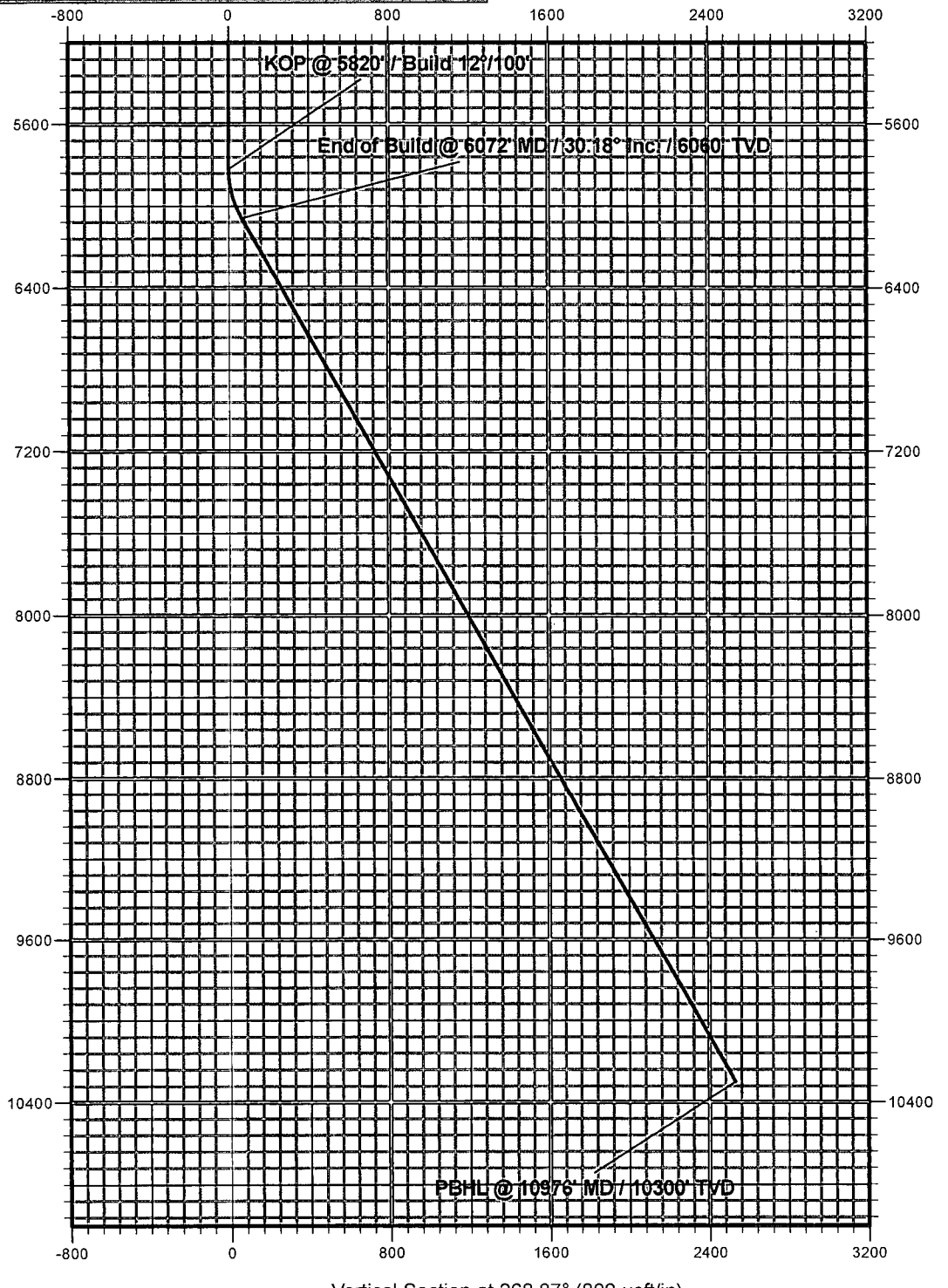
The DIRECTIONAL DRILLING COMPANY



Flightless Energy

Lea County, New Mexico
Sec 21, T17S, R32E
Frontier Maljamar AGI #2
Design #2

The DIRECTIONAL DRILLING COMPANY



Vertical Section at 268.87° (800 usft/in)

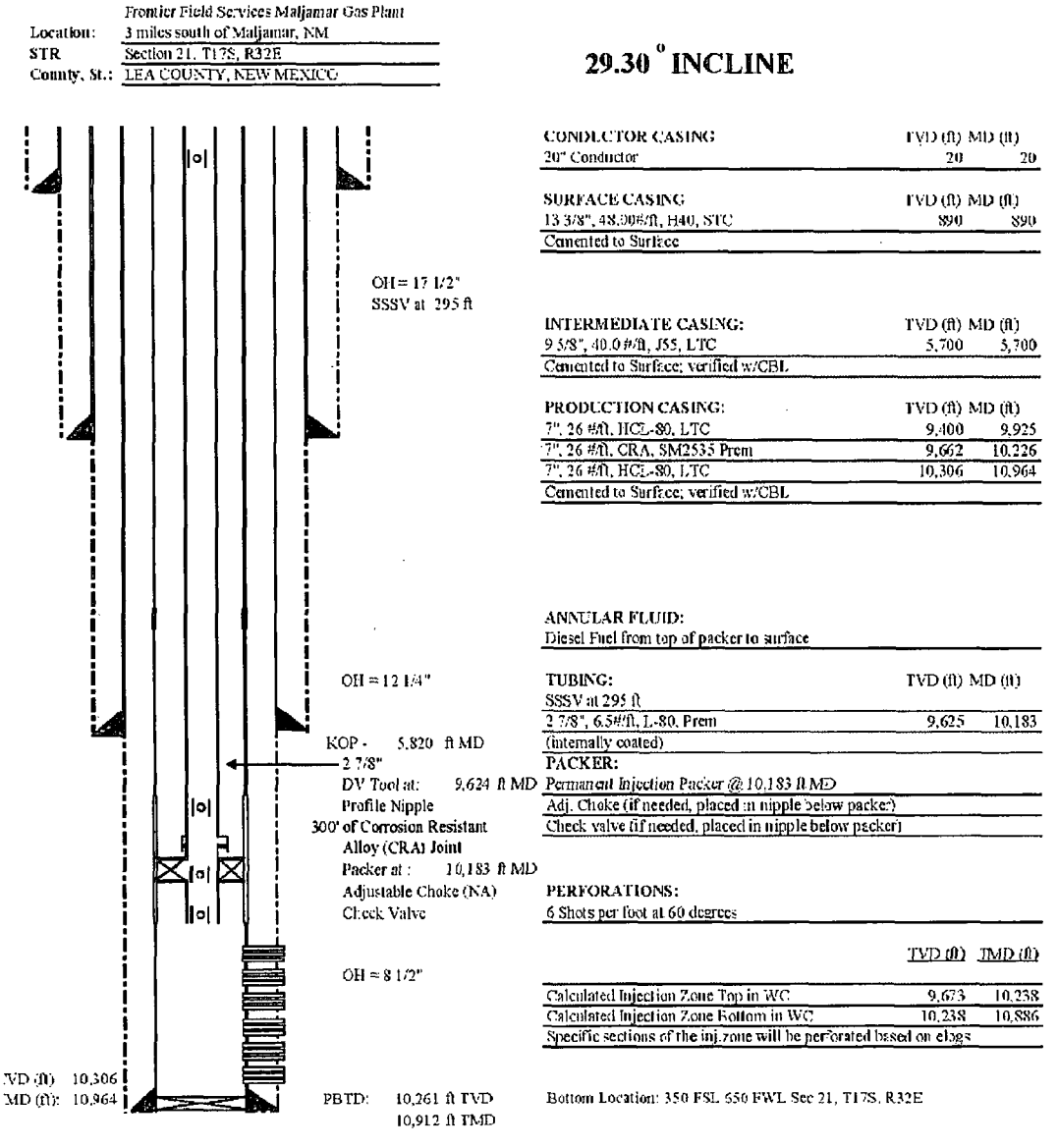
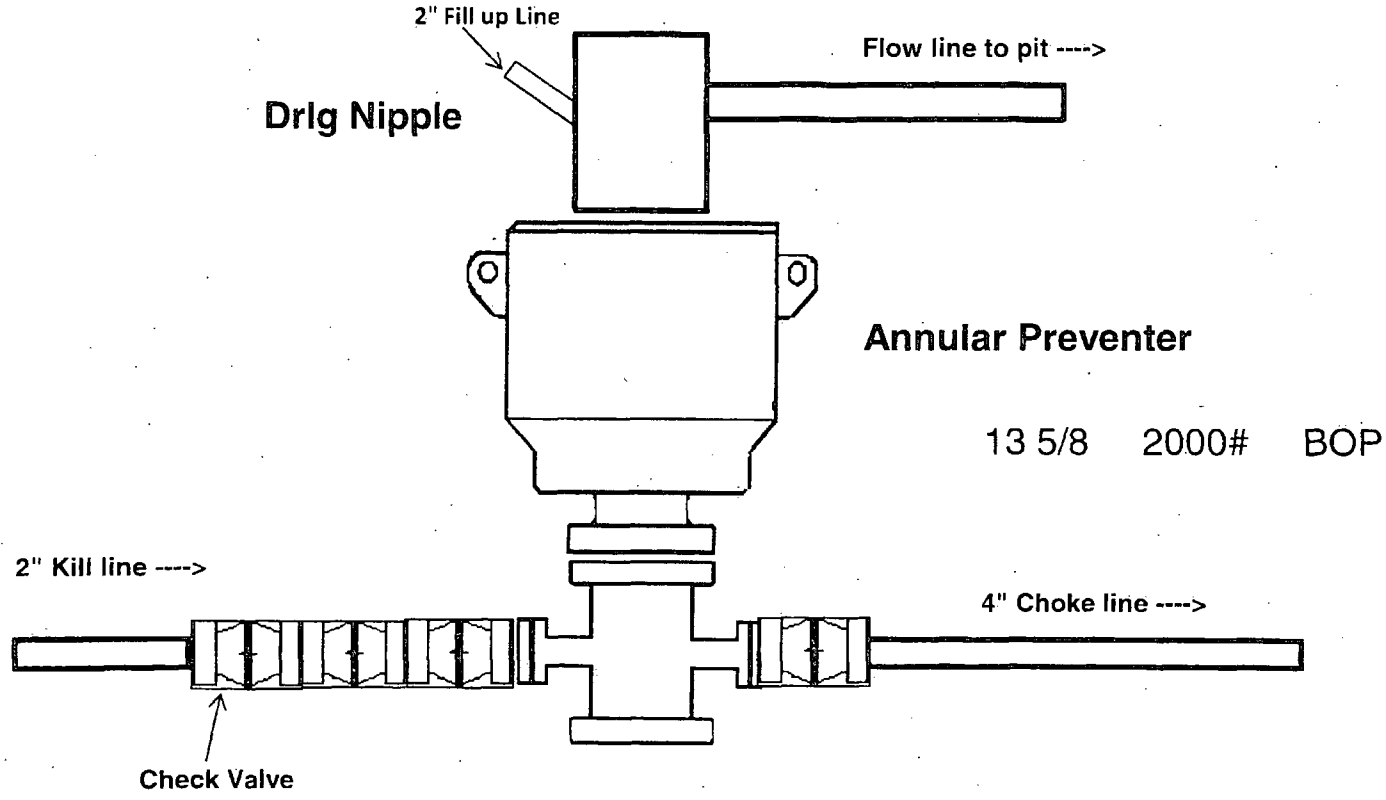
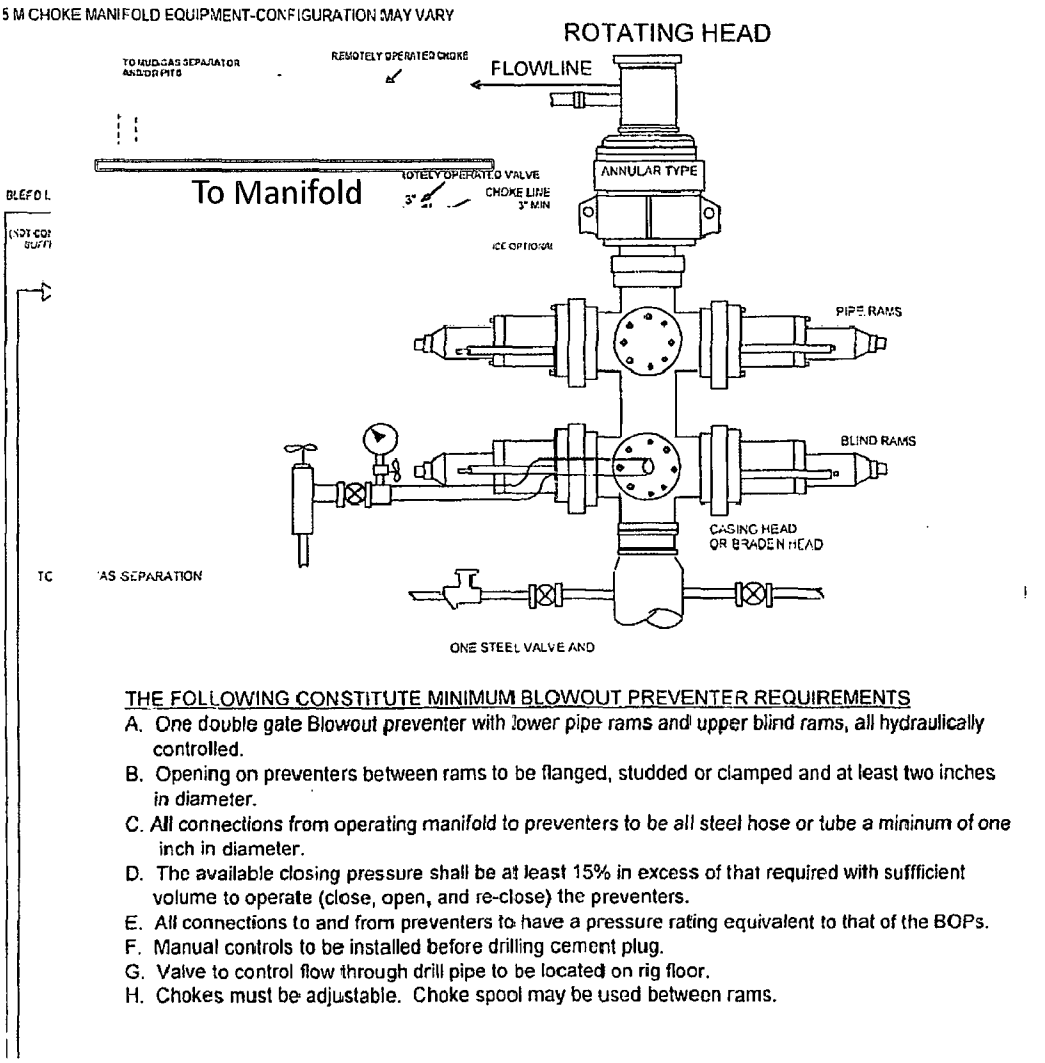


Figure 7: Schematic Design of Proposed Maljamar AGI #2

2,000 psi BOP Schematic





THE FOLLOWING CONSTITUTE MINIMUM BLOWOUT PREVENTER REQUIREMENTS

A. One double gate Blowout preventer with lower pipe rams and upper blind rams, all hydraulically controlled.
B. Opening on preventers between rams to be flanged, studded or clamped and at least two inches in diameter.
C. All connections from operating manifold to preventers to be all steel hose or tube a mininum of one inch in diameter.
D. The available closing pressure shall be at least 15% in excess of that required with suffficient volume to operate (close, open, and re-close) the preventers.
E. All connections to and from preventers to have a pressure rating equivalent to that of the BOPs.
F. Manual controls to be installed before drilling cement plug.
G. Valve to control flow through drill pipe to be located on rig floor.
H. Chokes must be adjustable. Choke spool may be used between rams.

Figure 8: BOPE Schematic

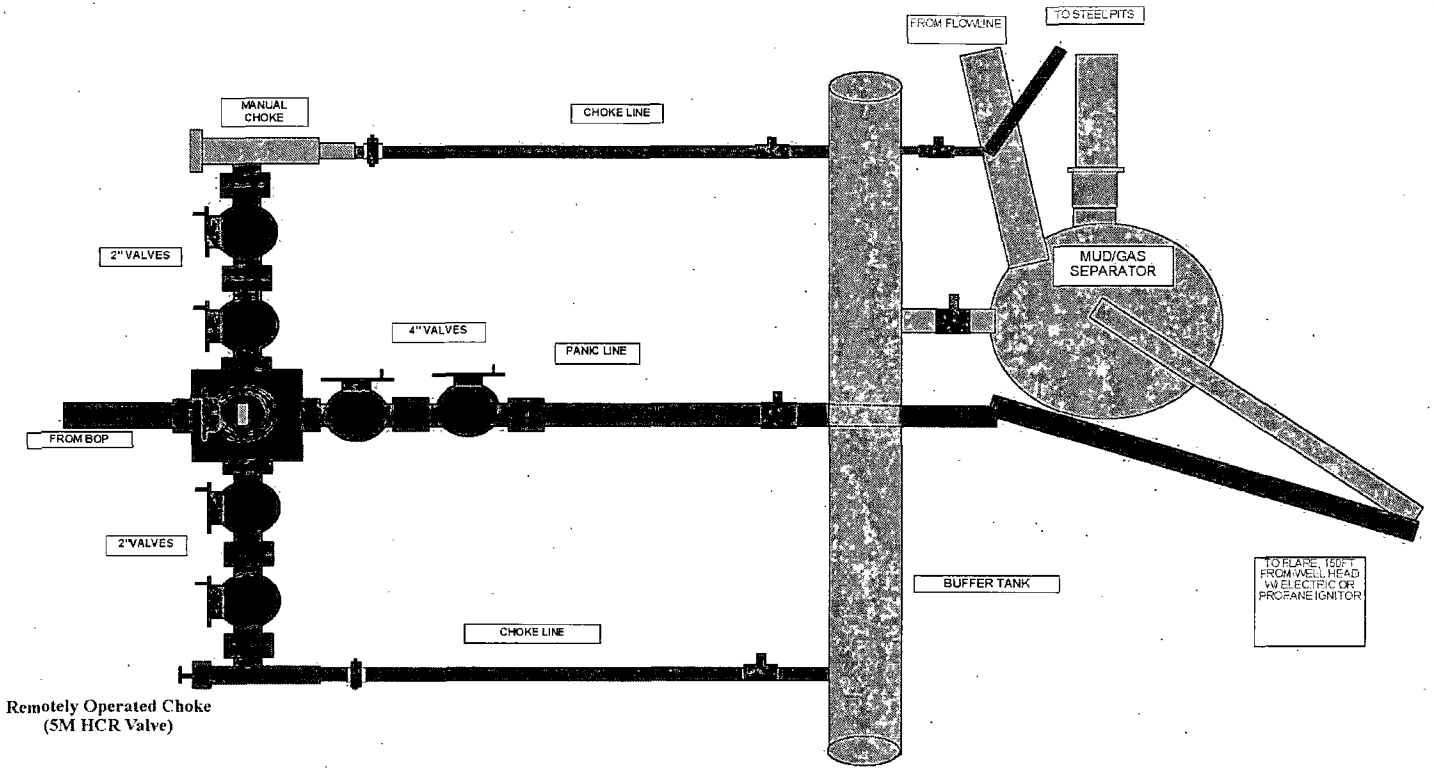


Figure 12 (Revised): BOP Manifold Schematic

Alberto A.Gutierrez, RG (Geolex)

From: Bob Pedrick <BPedrick@cralloys.com>
Sent: Wednesday, May 28, 2014 12:11 PM
To: 'aag@geolex.com'
Cc: Matt Etter; Brad Huber
Subject: Technical data

Good afternoon Alberto. It was a pleasure to talk with you earlier.
I have listed the Burst and Collapse values of interest below for both Alloys 2535 and 28 Cr. They have identical values within any single strength level.

	Min YS	Burst	Collapse
7" x 23# (0.317" wall)	80	6,340 psi	3,830 psi
	110	8,720	4,440
	125	9,910	4,650
7" x 26# (0.362" wall)	80	6,600	5,410
	110	9,100	6,230
	125	10,300	6,450
7" x 29# (0.408" wall)	80	8,160	7,030
	110	11,220	8,530
	125	12,750	9,110

Please talk with Brad Huber about the specifications you require as this can have commercial implications.

Regards,

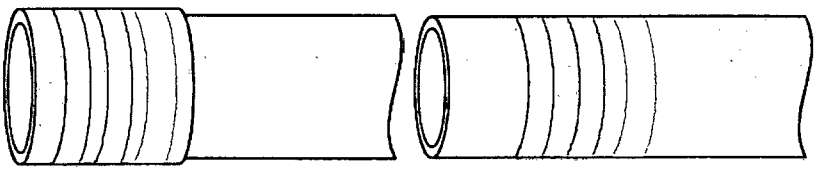
Bob Pedrick | Technical Quality
CRA
Corrosion Resistant Alloys | Houston, Texas
Office: 713-827-8600 | Fax: 281-768-8858 |
Mobile: 713-992-2927
bpedrick@cralloys.com

Please select a material application among SM series and proprietary grades.

Selection Tool

Nickel Alloy | SM2535-110

Nickel Alloy - SM2535-110



Coupling: Green, Orange, White Pipe Body: Green, Orange, White

pdf document

open all

General description

SM2535 is an Austenitic Fe (Iron) base material required for critical well conditions combining high concentrations of CO_2, H_2S and Chlorides. Launched in the mid-80's as an innovative development, SM2535 has become the reference product for Tubing & Liner applications in severe environments. It benefits from NSSMC's unrivaled know-how in manufacturing CRA (Corrosion Resistance Alloys) materials and best-in-class quality control.

SM2535-110 is manufactured based on API 5CT / ISO 11960 and API 5CRA / ISO 13680.

Diameters: 2 3/8" to 7 5/8" (larger sizes can be available upon request)

Weights: as per API 5CT/ISO 13680. Please note that while the API 5CT/ISO 11960 linear weight will define the pipe wall thickness the actual linear weight of the material will be slighter greater due to the heavier density of the elements it contains versus carbon steel.

Special application: Please contact NSSMC engineer, should you require specific size, weight, drift, or any other characterization.

Reference document

- Proprietary SM2535 series. TGP-2020 (latest revision)
- API 5CT / ISO11960
- NACE MR0175 / ISO 15156
- API RP 5C1 / ISO 10405
- API 5CRA / ISO 13680
- VAM Book
- NSSMC Storage and handling procedure for CRA materials

Applicable environment