

OCD - HOBBS
10/27/2020
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FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☐ DRILL ☐ REENTER		5. Lease Serial No.
1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.
		8. Lease Name and Well No. [320762]
2. Name of Operator [372224]		9. API Well No. 30-025-47940
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory [33813]
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
		13. State
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
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.

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.

GCP Rec 10/27/2020

SL

APPROVED WITH CONDITIONS
Approval Date: 02/24/2020

KZ
10/29/2020



APD ID: 10400045411

Submission Date: 08/05/2019

Highlighted data
reflects the most
recent changes

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
508465	RUSTLER ANHYDRITE	3001	1173	1173	ANHYDRITE	NONE	N
508478	SALADO	1389	1612	1612	SALT	NONE	N
508479	TANSILL	-406	3407	3407	LIMESTONE	NONE	N
508490	CAPITAN REEF	-878	3879	3879	LIMESTONE	USEABLE WATER	N
508461	LAMAR	-2081	5082	5082	LIMESTONE	NONE	N
508462	BELL CANYON	-2205	5206	5206	SANDSTONE	NATURAL GAS, OIL	N
508486	BRUSHY CANYON	-4150	7151	7151	SANDSTONE	NATURAL GAS, OIL	N
508487	BONE SPRING LIME	-5178	8179	8179	LIMESTONE	NONE	N
508468	BONE SPRING 1ST	-6565	9566	9566	SANDSTONE	NATURAL GAS, OIL	N
508474	BONE SPRING 2ND	-7086	10087	10087	SANDSTONE	NATURAL GAS, OIL	N
508475	BONE SPRING 3RD	-7641	10642	10642	LIMESTONE	NATURAL GAS, OIL	N
508493	BONE SPRING 3RD	-8240	11241	11241	SANDSTONE	NATURAL GAS, OIL	N
508495	WOLFCAMP	-8518	11519	11519	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Pressure Rating (PSI): 10M

Rating Depth: 15000

Equipment: 10M BOPE SYSTEM WILL BE USED AFTER THE SURFACE CASING IS SET. A KELLY COCK WILL BE KEPT IN THE DRILL STRING AT ALL TIMES. A FULL OPENING DRILL PIPE STABBING VALVE WITH PROPER DRILL PIPE CONNECTIONS WILL BE ON THE RIG FLOOR AT ALL TIMES.

Requesting Variance? YES

Variance request: Co-Flex Choke Line, 5M Annular Preventer

Testing Procedure: See attachment

Choke Diagram Attachment:

10M_Choke_Manifold_REV_20190805142258.pdf

BOP Diagram Attachment:

5M_Annular_Preventer_Variance_and_Well_Control_Plan_20190805142306.pdf

5M_BOP_System_20190805142307.pdf

Pressure_Control_Plan_Single_Well_MB4_3String_Big_Hole_BLM_20190805142307.pdf

4_String_MB_Ameredev_Wellhead_Drawing_net_REV_20190805142315.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1298	0	1298	3001	1703	1298	J-55	68	OTHER - BTC	7.07	1	DRY	10.37	DRY	12.12
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	11519	0	11519		-8518	11519	HCL-80	29.7	OTHER - BTC	1.19	1.25	DRY	1.91	DRY	2.75
3	PRODUCTION	6.75	5.5	NEW	API	N	0	22636	0	11669		-8668	22636	P-110	20	OTHER - BTC	1.76	1.9	DRY	2.81	DRY	3.12

Casing Attachments

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

13.375_68_20190805143844.00

Redbud_Fed_Com_25_36_32_103H___Wellbore_Diagram_and_CDA_20190805143851.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

7.625_29.70_L80HC_BORUSAN_20190805143708.pdf

Redbud_Fed_Com_25_36_32_103H___Wellbore_Diagram_and_CDA_20190805143715.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Redbud_Fed_Com_25_36_32_103H___Wellbore_Diagram_and_CDA_20190805143805.pdf

5.50_20_USS_P110_HC_BTC_API_20190805143814.pdf

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	912	616	1.76	13.5	1083.37	50	Class C	Bentonite, Accelerator, Kolseal, Defoamer, Celloflake
SURFACE	Tail		912	1298	200	1.34	14.8	268	100	Class C	Salt
INTERMEDIATE	Lead	3407	0	2167	262	2.47	11.9	647.86	25	Class C	Salt, Bentonite, Kolseal, Defoamer, Celloflake, Anti-Settling Expansion Additive
INTERMEDIATE	Tail		2167	3407	200	1.33	14.8	266	25	Class C	Retarder
INTERMEDIATE	Lead	3407	3407	9688	1092	2.47	11.9	2696.76	25	Class H	Bentonite, Salt, Kolseal, Defoamer, Celloflake, Retarder, Anti-Settling Expansion Additive
INTERMEDIATE	Tail		9688	11519	300	1.24	14.5	371.1	25	Class H	Salt, Bentonite, Retarder, Dispersant, Fluid Loss
PRODUCTION	Lead		0	22636	1762	1.34	14.2	2361.21	25	Class H	Salt, Bentonite, Fluid Loss, Dispersant, Retarder, Defoamer

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary supplies (e.g. bentonite, cedar bark) for fluid control will be on site.

Describe the mud monitoring system utilized: An electronic pit volume totalizer (PVT) will be utilized on the circulating system to monitor pit volume, flow rate, pump pressure, and pump rate.

Circulating Medium Table

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1151 9	1166 9	OIL-BASED MUD	10.5	12.5							
0	1298	WATER-BASED MUD	8.4	8.6							
1298	1151 9	OTHER : DIESEL BRINE EMULSION	8.5	9.4							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A directional survey, measurement while drilling and a mudlog/geologic lithology log will all be run from surface to TD.

List of open and cased hole logs run in the well:

DIRECTIONAL SURVEY, MEASUREMENT WHILE DRILLING, MUD LOG/GEOLOGIC LITHOLOGY LOG, MUD LOG/GEOLOGICAL LITHOLOGY LOG,

Coring operation description for the well:

No coring will be done on this well.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6371

Anticipated Surface Pressure: 3803

Anticipated Bottom Hole Temperature(F): 165

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

H2S_Plan_20190805144637.pdf

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

RB103_LLR_20190805144700.pdf

RB103_DR_20190805144700.pdf

5M_Annular_Preventer_Variance_and_Well_Control_Plan_20190805144709.pdf

Pressure_Control_Plan_Single_Well_MB4_3String_Big_Hole_BLM_20190805144709.pdf

Other proposed operations facets description:

4-STRING CONTINGENCY PLAN AND SKID PROCEDURE ATTACHED

Other proposed operations facets attachment:

CAPITAN_PROTECTION_CONTINGENCY_PLAN_WC_PACKET_20190606_20190805144722.pdf

Rig_Skid_Procedure_20190805144730.pdf

Other Variance attachment:

Requested_Exceptions___3_String_Revised_01312019_20190805144743.pdf

R616___CoC_for_hoses_12_18_17_20190805144750.pdf



5M Annular Preventer Variance Request and Well Control Procedures

Note: A copy of the Well Control Plan must be available at multiple locations on the rig for review by rig personnel, as well as review by the BLM PET/PE, and a copy must be maintained on the rig floor.

Dual Isolation Design for 5M Annular Exception

Ameredev will utilize 13-5/8” 10M (5M Annular) BOPE System consisting of:

- 13-5/8” 5M Annular
- 13-5/8” 10M Upper Pipe Rams
 - o 3-1/2” – 5-1/2” Variable Bore Ram
- 13-5/8” 10M Blind Rams
- 13-5/8” 10M Drilling Spool /w 2 - 4” 10M Outlets Double 10M Isolation Valves
- 13-5/8” 10M Lower Blind Rams
 - o 3-1/2” – 5-1/2” Variable Bore Ram

All drilling components and casing associated to exposure > 5000 psi BHP requiring a 10M system will have a double isolation (secondary barrier) below the 5M Annular that would provide a barrier to flow. The mud system will always be primary barrier, it will be maintained by adjusting values based on tourly mud tests and monitoring a PVT System to maintain static wellbore conditions, displacement procedures will be followed and recorded on daily drilling reports during tripping operations. Surge and swab pressure values will be calculated and maintained and static flow check will be monitored at previous casing shoe and verified static well conditions prior to tripping out of hole and again prior to pulling last joint of drill pipe through BOPE. The below table, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

Drill Components	Size	Primary Barrier	Secondary Barrier	Third Barrier
Drillpipe	3-1/2”-5-1/2”	Drilling Fluid	Upper Pipe Rams	Lower Pipe Rams
HWDP Drillpipe	3-1/2”-5-1/2”	Drilling Fluid	Upper Pipe Rams	Lower Pipe Rams
Drill Collars	3-1/2”-5-1/2”	Drilling Fluid	Upper Pipe Rams	Lower Pipe Rams
Production Casing	3-1/2”-5-1/2”	Drilling Fluid	Upper Pipe Rams	Lower Pipe Rams
Open Hole	13-5/8	Drilling Fluid	Blind Rams	
All Drilling Components in 10M Environment will have OD that will allow full Operational RATED WORKING PRESSURE for system design. Kill line with minimum 2” ID will be available outside substructure with 10M Check Valve for OOH Kill Operations				

Well Control Procedures

Proper well control procedures are dependent to differentiating well conditions, to cover the basic well control operations there are will be standard drilling ahead, tripping pipe, tripping BHA, running casing, and pipe out of the hole/open hole scenarios that will be defined by procedures below. Initial Shut In Pressure can be taken against the Uppermost BOPE component the 5M Annular, pressure control can be transferred from the lesser 5M Annular to the 10M Upper Pipe Rams if needed. Shut In Pressures may be equal to or less than the Rated Working Pressure but at no time will the pressure on the annular preventer exceed the Rated Working Pressure of the annular. The annular will be tested to 5,000 psi. This will be the Rated Working Pressure of the annular preventer. All scenarios will be written such as shut in will be performed by closing the 10,000 psi Upper Pipe Rams for faster Accumulator pressure recovery to allow safer reaction to controlling wellbore pressure.

Shutting In While Drilling

1. Sound alarm signaling well control event to Rig Crew
2. Space out drill string to allow FOSV installation
3. Shut down pumps
4. Shut in Upper Pipe Rams and open HCR against Open Chokes and Valves
Open to working pressure gauge
5. Install open, full open safety valve and close valve, Close Chokes
6. Verify well is shut-in and flow has stopped
7. Notify supervisory personnel
8. Record data (SIDP, SICP, Pit Gain, and Time)
9. Hold pre-job safety meeting and discuss kill procedure

Shutting In While Tripping

1. Sound alarm signaling well control event to Rig Crew
2. Space out drill string to allow FOSV installation
3. Shut in Upper Pipe Rams and open HCR against Open Chokes and Valves
Open to working pressure gauge
4. Install open, full open safety valve and close valve, Close Chokes
5. Verify well is shut-in and flow has stopped
6. Notify supervisory personnel
7. Record data (SIDP, SICP, Pit Gain, and Time)
8. Hold pre-job safety meeting and discuss kill procedure

Shutting In While Running Casing

1. Sound alarm signaling well control event to Rig Crew
2. Space out casing to allow circulating swedge installation
3. Shut in Upper Pipe Rams and open HCR against Open Chokes and Valves
Open to working pressure gauge
4. Install circulating swedge, Close high pressure, low torque valves, Close Chokes
5. Verify well is shut-in and flow has stopped
6. Notify supervisory personnel
7. Record data (SIDP, SICP, Pit Gain, and Time)
8. Hold Pre-job safety meeting and discuss kill procedure

Shutting in while out of hole

1. Sound alarm signaling well control event to Rig Crew
2. Shut-in well: close blind rams and open HCR against Open Chokes and Valves
Open to working pressure gauge
3. Close Chokes, Verify well is shut-in and monitor pressures
4. Notify supervisory personnel
5. Record data (SIDP, SICP, Pit Gain, and Time)
6. Hold Pre-job safety meeting and discuss kill procedure

Shutting in prior to pulling BHA through stack

Prior to pulling last joint of drill pipe thru the stack space out and check flow
If flowing see steps below.

1. Sound alarm signaling well control event to Rig Crew
2. Shut in upper pipe ram and open HCR against Open Chokes and Valves Open
to working pressure gauge
3. Install open, full open safety valve and close valve, Close Chokes
4. Verify well is shut-in and flow has stopped
5. Notify supervisory personnel
6. Record data (SIDP, SICP, Pit Gain, and Time)
7. Hold pre-job safety meeting and discuss kill procedure

Shutting in while BHA is in the stack and ram preventer and combo immediately available

1. Sound alarm signaling well control event to Rig Crew
2. Space out BHA with upset just beneath the compatible pipe ram
3. Shut in upper compatible pipe ram and open HCR against Open Chokes and Valves Open to working pressure gauge
4. Install open, full open safety valve and close valve, Close Chokes
5. Verify well is shut-in and flow has stopped
6. Notify supervisory personnel
7. Record data (SIDP, SICP, Pit Gain, and Time)
8. Hold pre-job safety meeting and discuss kill procedure

*FOSV will be on rig floor in open position with operating handle for each type of connection utilized and tested to 10,000 psi

Shutting in while BHA is in the stack and no ram preventer or combo immediately available

1. Sound alarm signaling well control event to Rig Crew
2. If possible pick up high enough, to pull string clear and follow “Open Hole” scenario

If not possible to pick up high enough:

3. Stab Crossover, make up one joint/stand of drill pipe, and install open, full open safety valve (Leave Open)
4. Space out drill string with upset just beneath the compatible pipe ram.
5. Shut in upper compatible pipe ram and open HCR against Open Chokes and Valves Open to working pressure gauge
6. Close FOSV, Close Chokes, Verify well is shut-in and flow has stopped
7. Notify supervisory personnel
8. Record data (SIDP, SICP, Pit Gain, and Time)
9. Hold pre-job safety meeting and discuss kill procedure

13 5/8" 5M BOP
Configuration

CO-FLEX LINE TO
CHOKE MANIFOLD

2" KILL LINE

4" 10M VALVES &

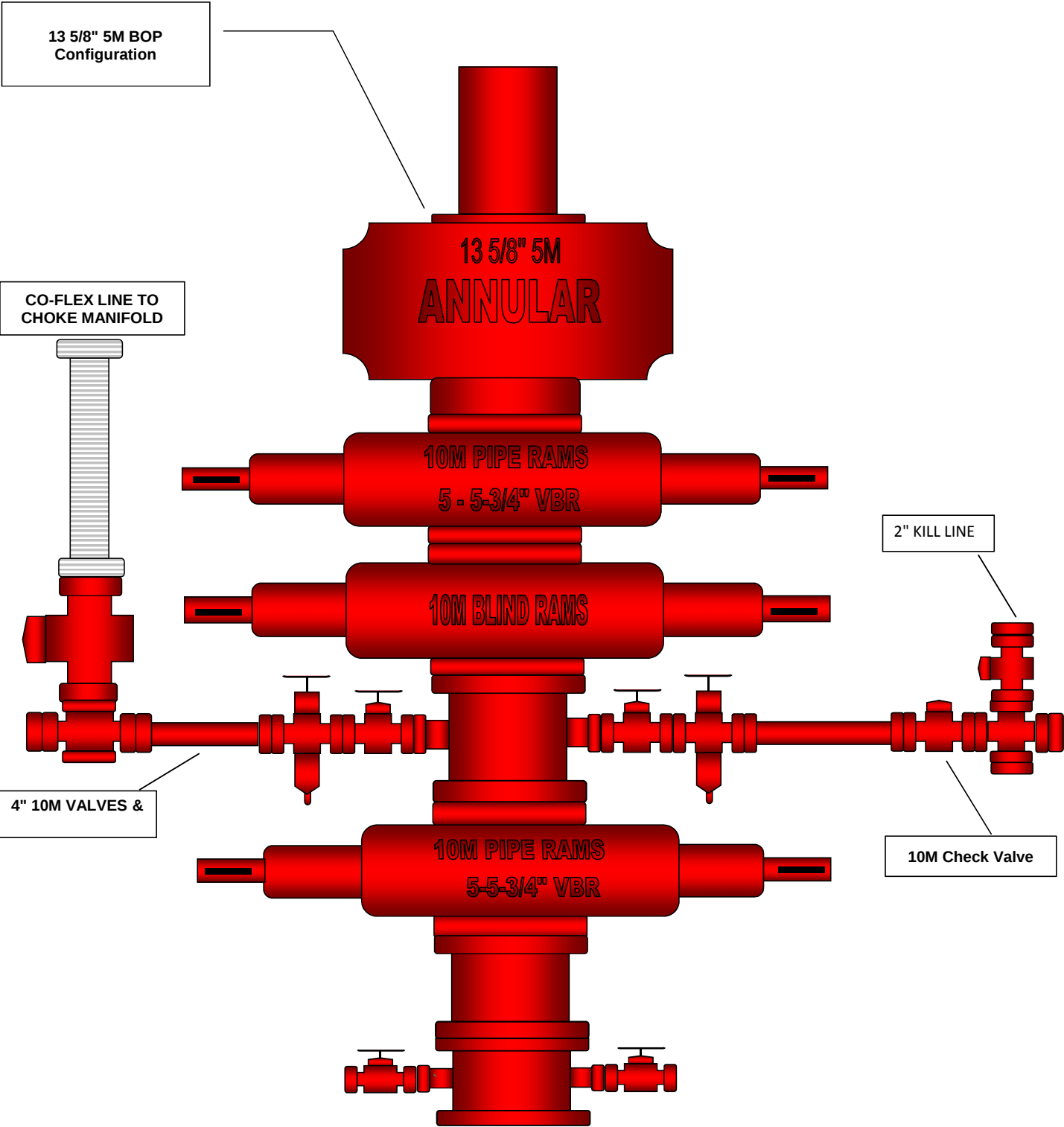
10M Check Valve

13 5/8" 5M
ANNULAR

10M PIPE RAMS
5 - 5-3/4" VBR

10M BLIND RAMS

10M PIPE RAMS
5-5-3/4" VBR





Pressure Control Plan

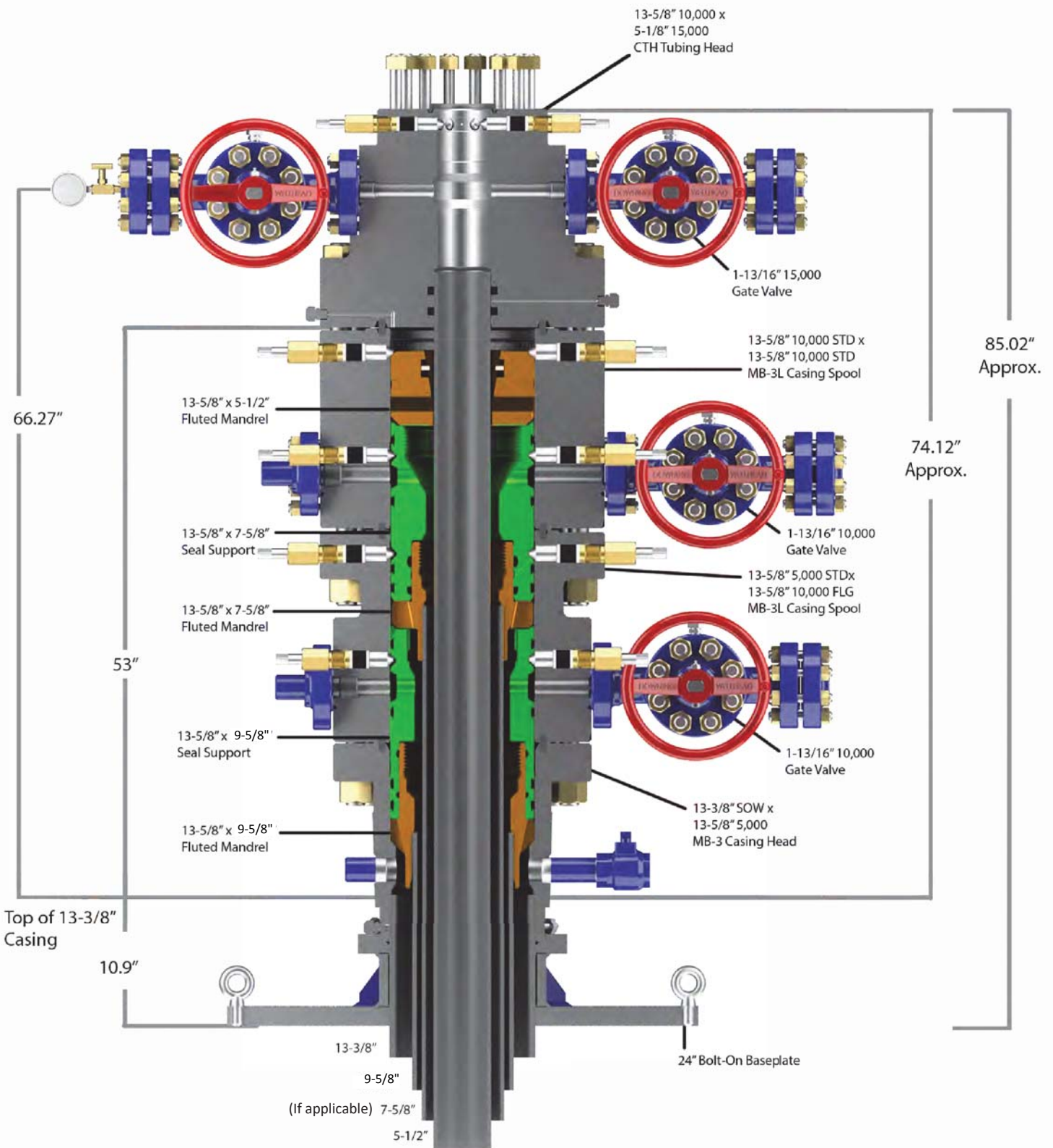
Pressure Control Equipment

- Following setting of 13-3/8" Surface Casing Ameredev will install 13-5/8 MB4 Multi Bowl Casing Head by welding on a 13-5/8 SOW x 13-5/8" 5M in combination with 13-5/8 5M x 13-5/8 10M B-Sec to Land Intm #1 and a 13-5/8 10M x 13-5/8 10M shouldered to land C-Sec to Land Intm #2 (Installation procedure witnessed and verified by a manufacturer's representative).
- Casing will be tested to 1500 psi or .22 psi/ft whichever is greater for 30 minutes with <10% leak off, but will not exceed 70% of the burst rating per Onshore Order No. 2.
- Ameredev will install a 5M System Blowout Preventer (BOPE) with a 5M Annular Preventer and related equipment (BOPE). Full testing will be performed utilizing a full isolation test plug and limited to 5,000 psi MOP of MB4 Multi Bowl Casing Head. Pressure will be held for 10 min or until provisions of test are met on all valves and rams. The 5M Annular Preventer will be tested to 50% of approved working pressure (2,500 psi). Casing will be tested to 1500 psi or .22 psi/ft whichever is greater for 30 minutes with <10% leak off, but will not exceed 70% of the burst rating per Onshore Order No. 2.
- Setting of 9-5/8" Intermediate will be done by landing a wellhead hanger in the 13-5/8" 5M Bowl, Cementing and setting Well Head Packing seals and testing same. (Installation procedure witnessed and verified by a manufacturer's representative) Casing will be tested to 1500 psi or .22 psi/ft whichever is greater for 30 minutes with <10% leak off, but will not exceed 70% of the burst rating per Onshore Order No. 2.
- Full testing will be performed utilizing a full isolation test plug to 10,000 psi MOP of MB4 Multi Bowl B-Section. Pressure will be held for 10 min or until provisions of test are met on all valves and rams. The 5M Annular Preventer will be tested to 100% of approved working pressure (5,000 psi).
- Before drilling >20ft of new formation under the 9-5/8" Casing Shoe a pressure integrity test of the Casing Shoe will be performed to minimum of the MWE anticipated to control formation pressure to the next casing depth.
- Following setting of 5-1/2" Production Casing and adequate WOC time Ameredev will break 10M System Blowout Preventer (BOP) from 10M DOL-2 Casing Head, install annulus casing slips and test same (Installation procedure witnessed and verified by a manufacturer's representative) and install 11" 10M x 5-1/8" 15M Tubing Head (Installation procedure witnessed and verified by a manufacturer's representative). Ameredev will test head to 70% casing design and install Dry Hole cap with needle valve and pressure gauge to monitor well awaiting completion.



Pressure Control Plan

- Slow pump speeds will be taken daily by each crew and recorded on Daily Drilling Report after mudding up.
- A choke manifold and accumulator with floor and remote operating stations will be functional and in place after installation of BOPE, as well as full functioning mud gas separator.
- Weekly BOPE pit level drills will be conducted by each crew and recorded on Daily Drilling Report.
- BOP will be fully operated when out of hole and will be documented on the daily drilling log.
- All B.O.P.s and associated equipment will be tested in accordance with Onshore Order #2
- All B.O.P. testing will be done by an independent service company.
- The B.O.P. will be tested within 21 days of the original test if drilling takes more time than planned.
- Ameredev requests a variance to connect the B.O.P. choke outlet to the choke manifold using a co-flex hose with a 10,000 psi working pressure that has been tested to 15,000psi and is built to API Spec 16C. Once the flex line is installed it will be tied down with safety clamps. (certifications will be sent to Carlsbad BLM Office prior to install)
- Ameredev requests a variance to install a 5M Annular Preventer on the 10M System to drill the Production Hole below the 9-5/8" Intermediate Section. 5M Annular will be tested to 100% working pressure (5,000 psi). A full well control procedure will be included to isolate well bore.



Quotation

Downing Wellhead Equipment

Oklahoma City,
Oklahoma - USA

Reference Data:

16925 AMEREDEV

Proprietary and Confidential

The information contained in this drawing is the sole property of Downing Wellhead Equipment, any reproduction in part or in whole without the written permission of Downing Wellhead Equipment is prohibited.

TITLE:

AMEREDEV

DRAWN

CHECKED

APPROVED

SIZE

A

DWG. NO.

Scale:

Weight:

REV.

Sheet:



Wellbore Schematic

Well: Redbud Fed Com 25-36-32 103H
SHL: Sec. 05 26S-36E 230' FNL & 1650' FWL
BHL: Sec. 29 25S-36E 50' FNL & 1672' FWL
 Lea, NM
Wellhead: A - 13-5/8" 10M x 13-5/8" SOW
 B - 13-5/8" 10M x 13-5/8" 10M
 C - 13-5/8" 10M x 13-5/8" 10M
 Tubing Spool - 5-1/8" 15M x 13-3/8" 10M
Xmas Tree: 2-9/16" 10M
Tubing: 2-7/8" L-80 6.5# 8rd EUE

Co. Well ID: xxxxxx
AFE No.: xxxx-xxx
API No.: xxxxxxxxxxxx
GL: 3,001'
Field: Delaware
Objective: Wolfcamp A
TVD: 11,669'
MD: 22,636'
Rig: TBD **KB:** 27'
E-Mail: Wellsite2@ameredev.com

Hole Size	Formation Tops	Logs Cement	Mud Weight
17.5"	Rustler 1,173' 13.375" 68# J-55 BTC 1,298'	816 Sacks TOC 0' 50% Excess	8.4-8.6 ppg WBM
9.875"	Salado 1,612' DV Tool 3,407' Tansill 3,407' Capitan Reef 3,879' Lamar 5,082' Bell Canyon 5,206' Brushy Canyon 7,151' Bone Spring Lime 8,179' First Bone Spring 9,566' Second Bone Spring 10,087' Third Bone Spring Upper 10,642' Third Bone Spring 11,241' 7.625" 29.7# L-80HC BTC 11,519'	462 Sacks TOC 0' 25% Excess 1,392 Sacks TOC 0' 25% Excess	8.5 - 9.4 ppg Diesel Brine Emulsion
6.75"	Wolfcamp A 11,519' 5.5" 20# P-110 USS RYS SF 22,636' Target Wolfcamp A 11669 TVD // 22636 MD	1,762 Sacks TOC 0' 25% Excess	10.5 - 12.5 ppg OBM

Casing Design and Safety Factor Check

Casing Specifications						
Segment	Hole ID	Depth	OD	Weight	Grade	Coupling
Surface	17.5	1,298'	13.375	68	J-55	BTC
Intermediate	9.875	11,519'	7.625	40	HCL-80	BTC
Prod Segment A	6.75	11,175'	5.5	20	CYHP-110	BTC
Prod Segment B	6.75	22,636'	5.5	20	CYHP-110	BTC

Check Surface Casing				
OD Cplg	Body	Joint	Collapse	Burst
<i>inches</i>	<i>1000 lbs</i>	<i>1000 lbs</i>	<i>psi</i>	<i>psi</i>
14.375	1,069	915	4,100	3,450
Safety Factors				
1.56	12.12	10.37	7.07	0.61
Check Intermediate Casing				
OD Cplg	Body	Joint	Collapse	Burst
<i>inches</i>	<i>1000 lbs</i>	<i>1000 lbs</i>	<i>psi</i>	<i>psi</i>
7.625	940	558	6700	9460
Safety Factors				
1.13	2.75	1.91	1.19	1.25
Check Prod Casing, Segment A				
OD Cplg	Body	Joint	Collapse	Burst
<i>inches</i>	<i>1000 lbs</i>	<i>1000 lbs</i>	<i>psi</i>	<i>psi</i>
5.777	728	655	12780	14360
Safety Factors				
0.49	3.12	2.81	1.76	1.90
Check Prod Casing, Segment B				
OD Cplg	Body	Joint	Collapse	Burst
<i>inches</i>	<i>1000 lbs</i>	<i>1000 lbs</i>	<i>psi</i>	<i>psi</i>
5.777	728	655	12780	14360
Safety Factors				
0.49	73.68	66.30	1.69	1.90

PERFORMANCE DATA

API BTC

13.375 in

68.00 lbs/ft

J-55

Technical Data Sheet

Tubular Parameters

Size	13.375	in	Minimum Yield	55,000	psi
Nominal Weight	68.00	lbs/ft	Minimum Tensile	75,000	psi
Grade	J-55		Yield Load	1,069,000	lbs
PE Weight	66.10	lbs/ft	Tensile Load	1,458,000	lbs
Wall Thickness	0.480	in	Min. Internal Yield Pressure	3,500	psi
Nominal ID	12.415	in	Collapse Pressure	1,950	psi
Drift Diameter	12.259	in			
Nom. Pipe Body Area	19.445	in ²			

Connection Parameters

Connection OD	14.375	in
Coupling Length	10.625	in
Threads Per Inch	5.000	in
Standoff Thread Turns	1.000	
Make-Up Loss	4.513	in
Yield Load In Tension	---	lbs
Min. Internal Yield Pressure	3,500	psi

Printed on: February-13-2015

NOTE:

The content of this Technical Data Sheet is for general information only and does not guarantee performance or imply fitness for a particular purpose, which only a competent drilling professional can determine considering the specific installation and operation parameters. Information that is printed or downloaded is no longer controlled by TMK IPSCO and might not be the latest information. Anyone using the information herein does so at their own risk. To verify that you have the latest TMK IPSCO technical information, please contact TMK IPSCO Technical Sales toll-free at 1-888-258-2000.





API 5CT Casing Performance Data Sheet

Manufactured to specifications of API 5CT 9th edition and bears the API monogram.
Designed for enhanced performance through increased collapse resistance.

Grade	L80HC
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Pipe Body Mechanical Properties

Minimum Yield Strength	80,000 psi
Maximum Yield Strength	95,000 psi
Minimum Tensile Strength	95,000 psi
Maximum Hardness	23.0 HRC

Sizes

OD	7 5/8 in
Nominal Wall Thickness	0.375 in
Nominal Weight, T&C	29.70 lb/ft
Nominal Weight, PE	29.06 lb/ft
Nominal ID	6.875 in
Standard Drift	6.750 in
Alternate Drift	N/A

Minimum Performance

Collapse Pressure	5,780 psi
Internal Pressure Yield	6,880 psi
Pipe body Tension Yield	683,000 lbs
Internal pressure leak resistance STC/LTC connections	6,880 psi
Internal pressure leak resistance BTC connections	6,880 psi

Inspection and Testing

Visual	OD Longitudinal and independent 3rd party SEA
NDT	Independent 3rd party full body EMI after hydrotest Calibration notch sensitivity: 10% of specified wall thickness

Color code

Pipe ends	One red, one brown and one blue band
Couplings	Red with one brown band

U.S. Steel Tubular Products
Product Information
5.5 in. 20 lb/ft (0.361 in. wall) P-110 HC Casing
STAR SEAL - CDC™

Grade(s)		P-110 HC	
MECHANICAL PROPERTIES			
	Yield Strength		
	Minimum	110	ksi
	Maximum	140	ksi
	Tensile Strength		
	Minimum	125	ksi
PIPE PROPERTIES			
Dimensions, Nominal	Pipe Outside Diameter	5.500	in.
	Wall	0.361	in.
	Pipe Inside Diameter	4.778	in.
	Pipe Drift		
	API	4.653	in.
	Special (If Applicable)	N/A	in.
	Weight, T&C	20.00	lbs/ft
	Weight, Plain End	19.83	lbs/ft
	Pipe Cross Sectional Area	5.828	sq. in.
Performance Properties	Minimum Pipe Body Yield Strength	641	1,000 lbs
	Minimum Collapse Pressure	12,200	psi
	Minimum Internal Yield Pressure	12,640	psi
CONNECTION PROPERTIES			
Dimensions, Nominal	Connection Outside Diameter	6.050	in.
	Connection Inside Diameter	4.778	in.
	Connection Drift		
	API	4.653	in.
	Special (If Applicable)	N/A	in.
	Makeup Loss	4.63	in.
	Critical Area	5.828	in.
	Joint Efficiency	100	%
	Performance Properties	Joint Strength	667
Compression Rating		400	1,000 lbs
API Collapse Pressure Rating		12,200	psi
API Internal Pressure Resistance		12,360	psi
Maximum Uniaxial Bend Rating		57.2	deg/100 ft
Recommended Torque Values	Minimum Shoulder Torque	5,000	ft-lbs
	Maximum Shoulder Torque	7,500	ft-lbs
	Connection Yield Torque	16,100	ft-lbs

* STAR SEAL - CDC (Casing Drilling Connection) is a Modified API Buttress threaded and coupled connection designed for field proven in drilling with casing applications. Star Seal is a registered trademark of U. S. Steel Corporation. All material contained in this publication is for general information only. This material should not therefore, be used or relied upon for any specific application without independent competent professional examination and verification of its accuracy, suitability and applicability. Anyone making use of this material does so at their own risk and assumes any and all liability resulting from such use. U. S. Steel disclaims any and all expressed or implied warranties of fitness for any general or particular application.



U.S. Steel Tubular Products, Inc.
600 Grant Street
Pittsburgh, PA 15219



H₂S Drilling Operation Plan

1. **All Company and Contract personnel admitted on location must be trained by a qualified H₂S safety instructor to the following:**
 - a. Characteristics of H₂S
 - b. Physical effects and hazards
 - c. Principal and operation of H₂S detectors, warning system and briefing areas
 - d. Evacuation procedure, routes and first aid
 - e. Proper use of safety equipment and life support systems
 - f. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.
2. **Briefing Area:**
 - a. Two perpendicular areas will be designated by signs and readily accessible.
 - b. Upon location entry there will be a designated area to establish all safety compliance criteria (1.) has been met.
3. **H₂S Detection and Alarm Systems:**
 - a. H₂S sensors/detectors shall be located on the drilling rig floor, in the base of the sub structure/cellar area, and on the mud pits in the shale shaker area. Additional H₂S detectors may be placed as deemed necessary. All detectors will be set to initiate visual alarm at 10 ppm and visual with audible at 14 ppm and all equipment will be calibrated every 30 days or as needed.
 - b. An audio alarm will be installed on the derrick floor and in the top doghouse.
4. **Protective Equipment for Essential Personnel:**
 - a. **Breathing Apparatus:**
 - i. Rescue Packs (SCBA) - 1 Unit shall be placed at each briefing area.
 - ii. Two (SCBA) Units will be stored in safety trailer on location.
 - iii. Work/Escapes packs - 1 Unit will be available on rig floor in doghouse for emergency evacuation for driller.
 - b. **Auxiliary Rescue Equipment:**
 - i. Stretcher
 - ii. 2 - OSHA full body harnesses
 - iii. 100 ft. 5/8" OSHA approved rope
 - iv. 1 - 20# class ABC fire extinguisher
5. **Windsock and/or Wind Streamers:**
 - a. Windsock at mud pit area should be high enough to be visible.
 - b. Windsock on the rig floor should be high enough to be visible.
6. **Communication:**
 - a. While working under mask scripting boards will be used for communication where applicable.
 - b. Hand signals will be used when script boards are not applicable.



H₂S Drilling Operation Plan

- c. Two way radios will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at Drilling Foreman's Office.

7. **Drill Stem Testing:** - No Planned DST at this time.

8. **Mud program:**

- a. If H₂S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavengers if necessary.

9. **Metallurgy:**

- a. All drill strings, casing, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H₂S service.
- b. Drilling Contractor supervisor will be required to be familiar with the effect H₂S has on tubular goods and other mechanical equipment provided through contractor.



H₂S Contingency Plan

Emergency Procedures

In the event of a release of H₂S, the first responder(s) must:

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H₂S monitors and air packs in order to control the release.
- Use the “buddy system” to ensure no injuries occur during the response.
- Take precautions to avoid personal injury during this operation.
- Contact Operator and/or local officials the aid in operation. See list of phone numbers attached.
- Have received training in the:
 - Detection of H₂S and
 - Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

Characteristics of H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air=1	2 ppm	N/A	1000 ppm

Contacting Authorities

Ameredev Operating LLC personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including direction to site. The following call list of essential and potential responders has been prepared for use during a release. Ameredev Operating LLC’s response must be in coordination with the State of New Mexico’s “Hazardous Materials Emergency Response Plan” (HMER)



H₂S Contingency Plan

Ameredev Operating LLC – Emergency Phone 737-300-4799			
Key Personnel:			
Name	Title	Office	Mobile
Floyd Hammond	Chief Operating officer	737-300-4724	512-783-6810
Zachary Boyd	Operations Superintendent	737-300-4725	432-385-6996
Blake Estrada	Construction Foreman		432-385-5831

<u>Artesia</u>			
Ambulance			911
State Police			575-746-2703
City Police			575-746-2703
Sheriff's Office			575-746-9888
Fire Department			575-746-2701
Local Emergency Planning Committee			575-746-2122
New Mexico Oil Conservation Division			575-748-1283
<u>Carlsbad</u>			
Ambulance			911
State Police			575-885-3137
City Police			575-885-2111
Sheriff's Office			575-887-7551
Fire Department			575-887-3798
Local Emergency Planning Committee			575-887-6544
US Bureau of Land Management			575-887-6544
<u>Santa Fe</u>			
New Mexico Emergency Response Commission (Santa Fe)			505-476-9600
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs			505-827-9126
New Mexico State Emergency Operations Center			505-476-9635
<u>National</u>			
National Emergency Response Center (Washington, D.C.)			800-424-8802
<u>Medical</u>			
Flight for Life - 4000 24th St.; Lubbock, TX			806-743-9911
Aerocare - R3, Box 49F; Lubbock, TX			806-747-8923
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM			505-842-4433
'SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM			505-842-4949



Ameredev Operating, LLC.

RB/HOL

RB/HOL #4S

Redbud 103H

Wellbore #1

Plan: Design #1

Lease Penetration Section Line Foot

21 February, 2019



Ameredev Operating, LLC
Lease Penetration Section Line Footages

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Project	RB/HOL		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		RB/HOL #4S			
Site Position:		Northing:	394,020.12 usft	Latitude:	32° 4' 44.207 N
From:	Lat/Long	Easting:	864,441.19 usft	Longitude:	103° 17' 24.553 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55 °

Well	Redbud 103H					
Well Position	+N/-S	0.0 usft	Northing:	394,019.54 usft	Latitude:	32° 4' 44.207 N
	+E/-W	0.0 usft	Easting:	864,381.20 usft	Longitude:	103° 17' 25.251 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,001.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/13/2018	6.65	59.95	47,730.99246493

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.55

Survey Tool Program	Date	2/21/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	22,635.8	Design #1 (Wellbore #1)	MWD	OWSG MWD - Standard

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
100.0	0.00	0.00	100.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
200.0	0.00	0.00	200.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
300.0	0.00	0.00	300.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
400.0	0.00	0.00	400.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
500.0	0.00	0.00	500.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
600.0	0.00	0.00	600.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
700.0	0.00	0.00	700.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
800.0	0.00	0.00	800.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
900.0	0.00	0.00	900.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,000.0	0.00	0.00	1,000.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,100.0	0.00	0.00	1,100.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
1,200.0	0.00	0.00	1,200.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,300.0	0.00	0.00	1,300.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,400.0	0.00	0.00	1,400.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,500.0	0.00	0.00	1,500.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,600.0	0.00	0.00	1,600.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,700.0	0.00	0.00	1,700.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,800.0	0.00	0.00	1,800.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
1,900.0	0.00	0.00	1,900.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
2,000.0	0.00	0.00	2,000.0	-230.6	1,650.0	32° 4' 44.207 N	103° 17' 25.251 W
2,100.0	2.00	221.00	2,100.0	-231.9	1,648.9	32° 4' 44.194 N	103° 17' 25.264 W
2,200.0	4.00	221.00	2,199.8	-235.8	1,645.4	32° 4' 44.155 N	103° 17' 25.304 W
2,300.0	6.00	221.00	2,299.5	-242.4	1,639.7	32° 4' 44.091 N	103° 17' 25.372 W
2,400.0	6.00	221.00	2,398.9	-250.3	1,632.8	32° 4' 44.013 N	103° 17' 25.452 W
2,500.0	6.00	221.00	2,498.4	-258.2	1,626.0	32° 4' 43.936 N	103° 17' 25.533 W
2,600.0	6.00	221.00	2,597.8	-266.1	1,619.1	32° 4' 43.859 N	103° 17' 25.613 W
2,700.0	6.00	221.00	2,697.3	-274.0	1,612.3	32° 4' 43.781 N	103° 17' 25.694 W
2,800.0	6.00	221.00	2,796.7	-281.9	1,605.4	32° 4' 43.704 N	103° 17' 25.775 W
2,900.0	6.00	221.00	2,896.2	-289.8	1,598.6	32° 4' 43.626 N	103° 17' 25.855 W
3,000.0	6.00	221.00	2,995.6	-297.6	1,591.7	32° 4' 43.549 N	103° 17' 25.936 W
3,100.0	6.00	221.00	3,095.1	-305.5	1,584.8	32° 4' 43.472 N	103° 17' 26.016 W
3,200.0	6.00	221.00	3,194.5	-313.4	1,578.0	32° 4' 43.394 N	103° 17' 26.097 W
3,300.0	6.00	221.00	3,294.0	-321.3	1,571.1	32° 4' 43.317 N	103° 17' 26.177 W
3,400.0	6.00	221.00	3,393.4	-329.2	1,564.3	32° 4' 43.239 N	103° 17' 26.258 W
3,500.0	6.00	221.00	3,492.9	-337.1	1,557.4	32° 4' 43.162 N	103° 17' 26.339 W
3,600.0	6.00	221.00	3,592.3	-345.0	1,550.6	32° 4' 43.085 N	103° 17' 26.419 W
3,700.0	6.00	221.00	3,691.8	-352.9	1,543.7	32° 4' 43.007 N	103° 17' 26.500 W
3,800.0	6.00	221.00	3,791.2	-360.8	1,536.8	32° 4' 42.930 N	103° 17' 26.580 W
3,900.0	6.00	221.00	3,890.7	-368.6	1,530.0	32° 4' 42.852 N	103° 17' 26.661 W
4,000.0	6.00	221.00	3,990.1	-376.5	1,523.1	32° 4' 42.775 N	103° 17' 26.742 W
4,100.0	6.00	221.00	4,089.6	-384.4	1,516.3	32° 4' 42.698 N	103° 17' 26.822 W
4,200.0	6.00	221.00	4,189.0	-392.3	1,509.4	32° 4' 42.620 N	103° 17' 26.903 W
4,300.0	6.00	221.00	4,288.5	-400.2	1,502.6	32° 4' 42.543 N	103° 17' 26.983 W
4,400.0	6.00	221.00	4,387.9	-408.1	1,495.7	32° 4' 42.465 N	103° 17' 27.064 W
4,500.0	6.00	221.00	4,487.4	-416.0	1,488.8	32° 4' 42.388 N	103° 17' 27.144 W
4,600.0	6.00	221.00	4,586.9	-423.9	1,482.0	32° 4' 42.311 N	103° 17' 27.225 W
4,700.0	6.00	221.00	4,686.3	-431.8	1,475.1	32° 4' 42.233 N	103° 17' 27.306 W
4,800.0	6.00	221.00	4,785.8	-439.6	1,468.3	32° 4' 42.156 N	103° 17' 27.386 W
4,900.0	6.00	221.00	4,885.2	-447.5	1,461.4	32° 4' 42.078 N	103° 17' 27.467 W
5,000.0	6.00	221.00	4,984.7	-455.4	1,454.5	32° 4' 42.001 N	103° 17' 27.547 W
5,100.0	6.00	221.00	5,084.1	-463.3	1,447.7	32° 4' 41.924 N	103° 17' 27.628 W
5,200.0	6.00	221.00	5,183.6	-471.2	1,440.8	32° 4' 41.846 N	103° 17' 27.708 W
5,300.0	6.00	221.00	5,283.0	-479.1	1,434.0	32° 4' 41.769 N	103° 17' 27.789 W
5,400.0	6.00	221.00	5,382.5	-487.0	1,427.1	32° 4' 41.691 N	103° 17' 27.870 W
5,500.0	6.00	221.00	5,481.9	-494.9	1,420.3	32° 4' 41.614 N	103° 17' 27.950 W

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
5,600.0	6.00	221.00	5,581.4	-502.8	1,413.4	32° 4' 41.537 N	103° 17' 28.031 W
5,700.0	6.00	221.00	5,680.8	-510.6	1,406.5	32° 4' 41.459 N	103° 17' 28.111 W
5,800.0	6.00	221.00	5,780.3	-518.5	1,399.7	32° 4' 41.382 N	103° 17' 28.192 W
5,900.0	6.00	221.00	5,879.7	-526.4	1,392.8	32° 4' 41.304 N	103° 17' 28.273 W
6,000.0	6.00	221.00	5,979.2	-534.3	1,386.0	32° 4' 41.227 N	103° 17' 28.353 W
6,100.0	6.00	221.00	6,078.6	-542.2	1,379.1	32° 4' 41.150 N	103° 17' 28.434 W
6,200.0	6.00	221.00	6,178.1	-550.1	1,372.3	32° 4' 41.072 N	103° 17' 28.514 W
6,300.0	6.00	221.00	6,277.5	-558.0	1,365.4	32° 4' 40.995 N	103° 17' 28.595 W
6,400.0	6.00	221.00	6,377.0	-565.9	1,358.5	32° 4' 40.917 N	103° 17' 28.675 W
6,500.0	6.00	221.00	6,476.4	-573.8	1,351.7	32° 4' 40.840 N	103° 17' 28.756 W
6,600.0	6.00	221.00	6,575.9	-581.6	1,344.8	32° 4' 40.763 N	103° 17' 28.837 W
6,700.0	6.00	221.00	6,675.3	-589.5	1,338.0	32° 4' 40.685 N	103° 17' 28.917 W
6,724.8	6.00	221.00	6,700.0	-591.5	1,336.3	32° 4' 40.666 N	103° 17' 28.937 W
6,800.0	4.50	221.00	6,774.9	-596.7	1,331.8	32° 4' 40.615 N	103° 17' 28.990 W
6,900.0	2.50	221.00	6,874.7	-601.3	1,327.8	32° 4' 40.570 N	103° 17' 29.037 W
7,000.0	0.50	221.00	6,974.7	-603.3	1,326.0	32° 4' 40.551 N	103° 17' 29.057 W
7,024.8	0.00	0.00	6,999.5	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,100.0	0.00	0.00	7,074.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,200.0	0.00	0.00	7,174.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,300.0	0.00	0.00	7,274.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,400.0	0.00	0.00	7,374.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,500.0	0.00	0.00	7,474.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,600.0	0.00	0.00	7,574.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,700.0	0.00	0.00	7,674.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,800.0	0.00	0.00	7,774.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
7,900.0	0.00	0.00	7,874.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,000.0	0.00	0.00	7,974.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,100.0	0.00	0.00	8,074.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,200.0	0.00	0.00	8,174.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,300.0	0.00	0.00	8,274.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,400.0	0.00	0.00	8,374.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,500.0	0.00	0.00	8,474.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,600.0	0.00	0.00	8,574.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,700.0	0.00	0.00	8,674.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,800.0	0.00	0.00	8,774.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
8,900.0	0.00	0.00	8,874.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,000.0	0.00	0.00	8,974.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,100.0	0.00	0.00	9,074.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,200.0	0.00	0.00	9,174.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,300.0	0.00	0.00	9,274.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,400.0	0.00	0.00	9,374.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,500.0	0.00	0.00	9,474.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,600.0	0.00	0.00	9,574.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,700.0	0.00	0.00	9,674.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
9,800.0	0.00	0.00	9,774.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
9,900.0	0.00	0.00	9,874.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,000.0	0.00	0.00	9,974.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,100.0	0.00	0.00	10,074.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,200.0	0.00	0.00	10,174.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,300.0	0.00	0.00	10,274.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,400.0	0.00	0.00	10,374.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,500.0	0.00	0.00	10,474.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,600.0	0.00	0.00	10,574.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,700.0	0.00	0.00	10,674.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,800.0	0.00	0.00	10,774.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
10,900.0	0.00	0.00	10,874.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
11,000.0	0.00	0.00	10,974.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
11,100.0	0.00	0.00	11,074.7	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
11,175.3	0.00	0.00	11,150.0	-603.3	1,326.0	32° 4' 40.550 N	103° 17' 29.058 W
RB103 KOP							
11,200.0	2.96	24.84	11,174.7	-602.8	1,326.2	32° 4' 40.555 N	103° 17' 29.055 W
11,300.0	14.96	24.84	11,273.3	-588.6	1,332.8	32° 4' 40.694 N	103° 17' 28.978 W
11,400.0	26.96	24.84	11,366.5	-556.2	1,347.8	32° 4' 41.014 N	103° 17' 28.800 W
11,500.0	38.96	24.84	11,450.2	-507.0	1,370.6	32° 4' 41.499 N	103° 17' 28.529 W
11,600.0	50.96	24.84	11,520.8	-443.0	1,400.2	32° 4' 42.130 N	103° 17' 28.177 W
11,700.0	62.96	24.84	11,575.3	-367.0	1,435.4	32° 4' 42.878 N	103° 17' 27.760 W
11,800.0	74.96	24.84	11,611.1	-282.5	1,474.5	32° 4' 43.710 N	103° 17' 27.296 W
11,871.6	83.55	24.84	11,624.4	-218.7	1,504.0	32° 4' 44.339 N	103° 17' 26.946 W
11,900.0	83.55	24.84	11,627.6	-193.1	1,515.9	32° 4' 44.591 N	103° 17' 26.805 W
12,000.0	83.55	24.84	11,638.9	-102.9	1,557.6	32° 4' 45.479 N	103° 17' 26.310 W
12,100.0	83.55	24.84	11,650.1	-12.7	1,599.3	32° 4' 46.367 N	103° 17' 25.815 W
12,157.4	83.55	24.84	11,656.5	39.0	1,623.3	32° 4' 46.877 N	103° 17' 25.531 W
12,200.0	84.75	19.84	11,660.9	78.2	1,639.4	32° 4' 47.263 N	103° 17' 25.339 W
12,228.3	85.57	16.53	11,663.3	105.0	1,648.2	32° 4' 47.528 N	103° 17' 25.234 W
RB103 FTP							
12,300.0	87.70	8.18	11,667.5	174.9	1,663.5	32° 4' 48.217 N	103° 17' 25.048 W
12,375.4	90.00	359.43	11,669.0	250.0	1,668.5	32° 4' 48.960 N	103° 17' 24.982 W
RB103 FTP2							
12,400.0	90.00	359.43	11,669.0	274.6	1,668.2	32° 4' 49.204 N	103° 17' 24.982 W
12,500.0	90.00	359.43	11,669.0	374.6	1,667.3	32° 4' 50.193 N	103° 17' 24.982 W
12,600.0	90.00	359.43	11,669.0	474.6	1,666.3	32° 4' 51.183 N	103° 17' 24.982 W
12,700.0	90.00	359.43	11,669.0	574.6	1,665.3	32° 4' 52.172 N	103° 17' 24.983 W
12,800.0	90.00	359.43	11,669.0	674.6	1,664.3	32° 4' 53.162 N	103° 17' 24.983 W
12,900.0	90.00	359.43	11,669.0	774.6	1,663.3	32° 4' 54.151 N	103° 17' 24.983 W
13,000.0	90.00	359.43	11,669.0	874.6	1,662.3	32° 4' 55.141 N	103° 17' 24.984 W
13,100.0	90.00	359.43	11,669.0	974.6	1,661.3	32° 4' 56.130 N	103° 17' 24.984 W
13,200.0	90.00	359.43	11,669.0	1,074.6	1,660.3	32° 4' 57.120 N	103° 17' 24.984 W
13,300.0	90.00	359.43	11,669.0	1,174.5	1,659.3	32° 4' 58.109 N	103° 17' 24.985 W
13,400.0	90.00	359.43	11,669.0	1,274.5	1,658.3	32° 4' 59.099 N	103° 17' 24.985 W

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
13,500.0	90.00	359.43	11,669.0	1,374.5	1,657.3	32° 5' 0.088 N	103° 17' 24.985 W
13,600.0	90.00	359.43	11,669.0	1,474.5	1,656.3	32° 5' 1.078 N	103° 17' 24.986 W
13,700.0	90.00	359.43	11,669.0	1,574.5	1,655.3	32° 5' 2.067 N	103° 17' 24.986 W
13,800.0	90.00	359.43	11,669.0	1,674.5	1,654.3	32° 5' 3.057 N	103° 17' 24.986 W
13,900.0	90.00	359.43	11,669.0	1,774.5	1,653.3	32° 5' 4.046 N	103° 17' 24.987 W
14,000.0	90.00	359.43	11,669.0	1,874.5	1,652.3	32° 5' 5.036 N	103° 17' 24.987 W
14,100.0	90.00	359.43	11,669.0	1,974.5	1,651.3	32° 5' 6.025 N	103° 17' 24.987 W
14,200.0	90.00	359.43	11,669.0	2,074.5	1,650.3	32° 5' 7.015 N	103° 17' 24.988 W
14,300.0	90.00	359.43	11,669.0	2,174.5	1,649.3	32° 5' 8.004 N	103° 17' 24.988 W
14,400.0	90.00	359.43	11,669.0	2,274.5	1,648.3	32° 5' 8.994 N	103° 17' 24.988 W
14,500.0	90.00	359.43	11,669.0	2,374.5	1,647.3	32° 5' 9.984 N	103° 17' 24.989 W
14,600.0	90.00	359.43	11,669.0	2,474.5	1,646.3	32° 5' 10.973 N	103° 17' 24.989 W
14,700.0	90.00	359.43	11,669.0	2,574.5	1,645.3	32° 5' 11.963 N	103° 17' 24.989 W
14,800.0	90.00	359.43	11,669.0	2,674.5	1,644.4	32° 5' 12.952 N	103° 17' 24.990 W
14,900.0	90.00	359.43	11,669.0	2,774.5	1,643.4	32° 5' 13.942 N	103° 17' 24.990 W
15,000.0	90.00	359.43	11,669.0	2,874.5	1,642.4	32° 5' 14.931 N	103° 17' 24.990 W
15,100.0	90.00	359.43	11,669.0	2,974.5	1,641.4	32° 5' 15.921 N	103° 17' 24.991 W
15,200.0	90.00	359.43	11,669.0	3,074.5	1,640.4	32° 5' 16.910 N	103° 17' 24.991 W
15,300.0	90.00	359.43	11,669.0	3,174.4	1,639.4	32° 5' 17.900 N	103° 17' 24.991 W
15,400.0	90.00	359.43	11,669.0	3,274.4	1,638.4	32° 5' 18.889 N	103° 17' 24.992 W
15,500.0	90.00	359.43	11,669.0	3,374.4	1,637.4	32° 5' 19.879 N	103° 17' 24.992 W
15,600.0	90.00	359.43	11,669.0	3,474.4	1,636.4	32° 5' 20.868 N	103° 17' 24.992 W
15,700.0	90.00	359.43	11,669.0	3,574.4	1,635.4	32° 5' 21.858 N	103° 17' 24.993 W
15,800.0	90.00	359.43	11,669.0	3,674.4	1,634.4	32° 5' 22.847 N	103° 17' 24.993 W
15,900.0	90.00	359.43	11,669.0	3,774.4	1,633.4	32° 5' 23.837 N	103° 17' 24.993 W
16,000.0	90.00	359.43	11,669.0	3,874.4	1,632.4	32° 5' 24.826 N	103° 17' 24.994 W
16,100.0	90.00	359.43	11,669.0	3,974.4	1,631.4	32° 5' 25.816 N	103° 17' 24.994 W
16,200.0	90.00	359.43	11,669.0	4,074.4	1,630.4	32° 5' 26.805 N	103° 17' 24.994 W
16,300.0	90.00	359.43	11,669.0	4,174.4	1,629.4	32° 5' 27.795 N	103° 17' 24.995 W
16,400.0	90.00	359.43	11,669.0	4,274.4	1,628.4	32° 5' 28.784 N	103° 17' 24.995 W
16,500.0	90.00	359.43	11,669.0	4,374.4	1,627.4	32° 5' 29.774 N	103° 17' 24.995 W
16,600.0	90.00	359.43	11,669.0	4,474.4	1,626.4	32° 5' 30.763 N	103° 17' 24.996 W
16,700.0	90.00	359.43	11,669.0	4,574.4	1,625.4	32° 5' 31.753 N	103° 17' 24.996 W
16,800.0	90.00	359.43	11,669.0	4,674.4	1,624.4	32° 5' 32.742 N	103° 17' 24.996 W
16,900.0	90.00	359.43	11,669.0	4,774.4	1,623.4	32° 5' 33.732 N	103° 17' 24.997 W
17,000.0	90.00	359.43	11,669.0	4,874.4	1,622.4	32° 5' 34.721 N	103° 17' 24.997 W
17,100.0	90.00	359.43	11,669.0	4,974.4	1,621.5	32° 5' 35.711 N	103° 17' 24.997 W
17,200.0	90.00	359.43	11,669.0	5,074.4	1,620.5	32° 5' 36.700 N	103° 17' 24.998 W
17,300.0	90.00	359.43	11,669.0	5,174.3	1,619.5	32° 5' 37.690 N	103° 17' 24.998 W
17,400.0	90.00	359.43	11,669.0	5,274.3	1,618.5	32° 5' 38.679 N	103° 17' 24.998 W
17,406.0	90.00	359.43	11,669.0	5,280.3	1,618.4	32° 5' 38.739 N	103° 17' 24.998 W
RB103 into NMNM138913							
17,500.0	90.00	359.43	11,669.0	5,374.3	1,617.5	32° 5' 39.669 N	103° 17' 24.999 W
17,600.0	90.00	359.43	11,669.0	5,474.3	1,616.5	32° 5' 40.658 N	103° 17' 24.999 W

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
17,700.0	90.00	359.43	11,669.0	5,574.3	1,615.5	32° 5' 41.648 N	103° 17' 24.999 W
17,800.0	90.00	359.43	11,669.0	5,674.3	1,614.5	32° 5' 42.637 N	103° 17' 25.000 W
17,900.0	90.00	359.43	11,669.0	5,774.3	1,613.5	32° 5' 43.627 N	103° 17' 25.000 W
18,000.0	90.00	359.43	11,669.0	5,874.3	1,612.5	32° 5' 44.616 N	103° 17' 25.000 W
18,100.0	90.00	359.43	11,669.0	5,974.3	1,611.5	32° 5' 45.606 N	103° 17' 25.001 W
18,200.0	90.00	359.43	11,669.0	6,074.3	1,610.5	32° 5' 46.595 N	103° 17' 25.001 W
18,300.0	90.00	359.43	11,669.0	6,174.3	1,609.5	32° 5' 47.585 N	103° 17' 25.001 W
18,400.0	90.00	359.43	11,669.0	6,274.3	1,608.5	32° 5' 48.574 N	103° 17' 25.002 W
18,500.0	90.00	359.43	11,669.0	6,374.3	1,607.5	32° 5' 49.564 N	103° 17' 25.002 W
18,600.0	90.00	359.43	11,669.0	6,474.3	1,606.5	32° 5' 50.553 N	103° 17' 25.002 W
18,700.0	90.00	359.43	11,669.0	6,574.3	1,605.5	32° 5' 51.543 N	103° 17' 25.003 W
18,800.0	90.00	359.43	11,669.0	6,674.3	1,604.5	32° 5' 52.532 N	103° 17' 25.003 W
18,900.0	90.00	359.43	11,669.0	6,774.3	1,603.5	32° 5' 53.522 N	103° 17' 25.003 W
19,000.0	90.00	359.43	11,669.0	6,874.3	1,602.5	32° 5' 54.511 N	103° 17' 25.004 W
19,100.0	90.00	359.43	11,669.0	6,974.3	1,601.5	32° 5' 55.501 N	103° 17' 25.004 W
19,200.0	90.00	359.43	11,669.0	7,074.3	1,600.5	32° 5' 56.490 N	103° 17' 25.004 W
19,300.0	90.00	359.43	11,669.0	7,174.2	1,599.5	32° 5' 57.480 N	103° 17' 25.005 W
19,400.0	90.00	359.43	11,669.0	7,274.2	1,598.6	32° 5' 58.469 N	103° 17' 25.005 W
19,500.0	90.00	359.43	11,669.0	7,374.2	1,597.6	32° 5' 59.459 N	103° 17' 25.005 W
19,600.0	90.00	359.43	11,669.0	7,474.2	1,596.6	32° 6' 0.448 N	103° 17' 25.006 W
19,700.0	90.00	359.43	11,669.0	7,574.2	1,595.6	32° 6' 1.438 N	103° 17' 25.006 W
19,800.0	90.00	359.43	11,669.0	7,674.2	1,594.6	32° 6' 2.427 N	103° 17' 25.006 W
19,900.0	90.00	359.43	11,669.0	7,774.2	1,593.6	32° 6' 3.417 N	103° 17' 25.007 W
20,000.0	90.00	359.43	11,669.0	7,874.2	1,592.6	32° 6' 4.406 N	103° 17' 25.007 W
20,100.0	90.00	359.43	11,669.0	7,974.2	1,591.6	32° 6' 5.396 N	103° 17' 25.007 W
20,200.0	90.00	359.43	11,669.0	8,074.2	1,590.6	32° 6' 6.385 N	103° 17' 25.008 W
20,300.0	90.00	359.43	11,669.0	8,174.2	1,589.6	32° 6' 7.375 N	103° 17' 25.008 W
20,400.0	90.00	359.43	11,669.0	8,274.2	1,588.6	32° 6' 8.365 N	103° 17' 25.008 W
20,500.0	90.00	359.43	11,669.0	8,374.2	1,587.6	32° 6' 9.354 N	103° 17' 25.009 W
20,600.0	90.00	359.43	11,669.0	8,474.2	1,586.6	32° 6' 10.344 N	103° 17' 25.009 W
20,700.0	90.00	359.43	11,669.0	8,574.2	1,585.6	32° 6' 11.333 N	103° 17' 25.009 W
20,800.0	90.00	359.43	11,669.0	8,674.2	1,584.6	32° 6' 12.323 N	103° 17' 25.010 W
20,900.0	90.00	359.43	11,669.0	8,774.2	1,583.6	32° 6' 13.312 N	103° 17' 25.010 W
21,000.0	90.00	359.43	11,669.0	8,874.2	1,582.6	32° 6' 14.302 N	103° 17' 25.010 W
21,100.0	90.00	359.43	11,669.0	8,974.2	1,581.6	32° 6' 15.291 N	103° 17' 25.011 W
21,200.0	90.00	359.43	11,669.0	9,074.2	1,580.6	32° 6' 16.281 N	103° 17' 25.011 W
21,300.0	90.00	359.43	11,669.0	9,174.2	1,579.6	32° 6' 17.270 N	103° 17' 25.011 W
21,400.0	90.00	359.43	11,669.0	9,274.1	1,578.6	32° 6' 18.260 N	103° 17' 25.012 W
21,500.0	90.00	359.43	11,669.0	9,374.1	1,577.6	32° 6' 19.249 N	103° 17' 25.012 W
21,600.0	90.00	359.43	11,669.0	9,474.1	1,576.6	32° 6' 20.239 N	103° 17' 25.012 W
21,700.0	90.00	359.43	11,669.0	9,574.1	1,575.7	32° 6' 21.228 N	103° 17' 25.013 W
21,800.0	90.00	359.43	11,669.0	9,674.1	1,574.7	32° 6' 22.218 N	103° 17' 25.013 W
21,900.0	90.00	359.43	11,669.0	9,774.1	1,573.7	32° 6' 23.207 N	103° 17' 25.013 W
22,000.0	90.00	359.43	11,669.0	9,874.1	1,572.7	32° 6' 24.197 N	103° 17' 25.013 W
22,100.0	90.00	359.43	11,669.0	9,974.1	1,571.7	32° 6' 25.186 N	103° 17' 25.014 W



Ameredev Operating, LLC
Lease Penetration Section Line Footages

Company:	Ameredev Operating, LLC.	Local Co-ordinate Reference:	Well Redbud 103H
Project:	RB/HOL	TVD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	MD Reference:	KB @ 3028.0usft
Well:	Redbud 103H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM5000

Planned Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	+FSL/-FNL (usft)	+FWL/-FEL (usft)	Latitude	Longitude
22,200.0	90.00	359.43	11,669.0	10,074.1	1,570.7	32° 6' 26.176 N	103° 17' 25.014 W
22,300.0	90.00	359.43	11,669.0	10,174.1	1,569.7	32° 6' 27.165 N	103° 17' 25.014 W
22,400.0	90.00	359.43	11,669.0	10,274.1	1,568.7	32° 6' 28.155 N	103° 17' 25.015 W
22,500.0	90.00	359.43	11,669.0	10,374.1	1,567.7	32° 6' 29.144 N	103° 17' 25.015 W
22,585.8	90.00	359.43	11,669.0	10,459.9	1,566.8	32° 6' 29.993 N	103° 17' 25.015 W
RB103 LTP							
22,600.0	90.00	359.43	11,669.0	10,474.1	1,566.7	32° 6' 30.134 N	103° 17' 25.015 W
22,635.8	90.00	359.43	11,669.0	10,509.9	1,566.3	32° 6' 30.488 N	103° 17' 25.016 W
RB103 BHL							

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
17,406.0	11,669.0	5,510.9	-31.6	RB103 into NMNM138913

Checked By: _____	Approved By: _____	Date: _____
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Ameredev Operating, LLC.

RB/HOL

RB/HOL #4S

Redbud 103H

Wellbore #1

Plan: Design #1

Standard Planning Report

21 February, 2019



Ameredev Operating, LLC

Planning Report

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	RB/HOL		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		RB/HOL #4S			
Site Position:		Northing:	394,020.11 usft	Latitude:	32° 4' 44.207 N
From:	Lat/Long	Easting:	864,441.19 usft	Longitude:	103° 17' 24.553 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55

Well	Redbud 103H					
Well Position	+N/-S	-0.6 usft	Northing:	394,019.53 usft	Latitude:	32° 4' 44.207 N
	+E/-W	-60.0 usft	Easting:	864,381.20 usft	Longitude:	103° 17' 25.251 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,001.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/13/2018	6.65	59.95	47,730.99246493

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.55

Plan Survey Tool Program	Date	2/21/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	22,635.8	Design #1 (Wellbore #1)	MWD
				OWSG MWD - Standard



Ameredev Operating, LLC

Planning Report

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,300.0	6.00	221.00	2,299.5	-11.8	-10.3	2.00	2.00	0.00	221.00	
6,724.8	6.00	221.00	6,700.0	-360.9	-313.7	0.00	0.00	0.00	0.00	
7,024.8	0.00	0.00	6,999.5	-372.8	-324.0	2.00	-2.00	0.00	180.00	
11,175.3	0.00	0.00	11,150.0	-372.8	-324.0	0.00	0.00	0.00	0.00	
11,871.6	83.55	24.84	11,624.4	11.9	-146.0	12.00	12.00	0.00	24.84	
12,157.4	83.55	24.84	11,656.5	269.6	-26.7	0.00	0.00	0.00	0.00	
12,375.4	90.00	359.43	11,669.0	480.6	18.5	12.00	2.96	-11.65	-76.70	RB103 FTP2
22,635.8	90.00	359.43	11,669.0	10,740.4	-83.7	0.00	0.00	0.00	0.00	RB103 BHL

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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	2.00	221.00	2,100.0	-1.3	-1.1	-1.3	2.00	2.00	0.00
2,200.0	4.00	221.00	2,199.8	-5.3	-4.6	-5.2	2.00	2.00	0.00
2,300.0	6.00	221.00	2,299.5	-11.8	-10.3	-11.8	2.00	2.00	0.00
2,400.0	6.00	221.00	2,398.9	-19.7	-17.2	-19.6	0.00	0.00	0.00
2,500.0	6.00	221.00	2,498.4	-27.6	-24.0	-27.4	0.00	0.00	0.00
2,600.0	6.00	221.00	2,597.8	-35.5	-30.9	-35.3	0.00	0.00	0.00
2,700.0	6.00	221.00	2,697.3	-43.4	-37.7	-43.1	0.00	0.00	0.00
2,800.0	6.00	221.00	2,796.7	-51.3	-44.6	-50.9	0.00	0.00	0.00
2,900.0	6.00	221.00	2,896.2	-59.2	-51.4	-58.8	0.00	0.00	0.00
3,000.0	6.00	221.00	2,995.6	-67.1	-58.3	-66.6	0.00	0.00	0.00
3,100.0	6.00	221.00	3,095.1	-75.0	-65.2	-74.4	0.00	0.00	0.00
3,200.0	6.00	221.00	3,194.5	-82.8	-72.0	-82.3	0.00	0.00	0.00
3,300.0	6.00	221.00	3,294.0	-90.7	-78.9	-90.1	0.00	0.00	0.00
3,400.0	6.00	221.00	3,393.4	-98.6	-85.7	-98.0	0.00	0.00	0.00
3,500.0	6.00	221.00	3,492.9	-106.5	-92.6	-105.8	0.00	0.00	0.00
3,600.0	6.00	221.00	3,592.3	-114.4	-99.4	-113.6	0.00	0.00	0.00
3,700.0	6.00	221.00	3,691.8	-122.3	-106.3	-121.5	0.00	0.00	0.00
3,800.0	6.00	221.00	3,791.2	-130.2	-113.2	-129.3	0.00	0.00	0.00
3,900.0	6.00	221.00	3,890.7	-138.1	-120.0	-137.1	0.00	0.00	0.00
4,000.0	6.00	221.00	3,990.1	-146.0	-126.9	-145.0	0.00	0.00	0.00
4,100.0	6.00	221.00	4,089.6	-153.8	-133.7	-152.8	0.00	0.00	0.00
4,200.0	6.00	221.00	4,189.0	-161.7	-140.6	-160.6	0.00	0.00	0.00
4,300.0	6.00	221.00	4,288.5	-169.6	-147.4	-168.5	0.00	0.00	0.00
4,400.0	6.00	221.00	4,387.9	-177.5	-154.3	-176.3	0.00	0.00	0.00
4,500.0	6.00	221.00	4,487.4	-185.4	-161.2	-184.1	0.00	0.00	0.00
4,600.0	6.00	221.00	4,586.9	-193.3	-168.0	-192.0	0.00	0.00	0.00
4,700.0	6.00	221.00	4,686.3	-201.2	-174.9	-199.8	0.00	0.00	0.00
4,800.0	6.00	221.00	4,785.8	-209.1	-181.7	-207.6	0.00	0.00	0.00
4,900.0	6.00	221.00	4,885.2	-217.0	-188.6	-215.5	0.00	0.00	0.00
5,000.0	6.00	221.00	4,984.7	-224.8	-195.5	-223.3	0.00	0.00	0.00
5,100.0	6.00	221.00	5,084.1	-232.7	-202.3	-231.1	0.00	0.00	0.00
5,200.0	6.00	221.00	5,183.6	-240.6	-209.2	-239.0	0.00	0.00	0.00
5,300.0	6.00	221.00	5,283.0	-248.5	-216.0	-246.8	0.00	0.00	0.00

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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	6.00	221.00	5,382.5	-256.4	-222.9	-254.7	0.00	0.00	0.00
5,500.0	6.00	221.00	5,481.9	-264.3	-229.7	-262.5	0.00	0.00	0.00
5,600.0	6.00	221.00	5,581.4	-272.2	-236.6	-270.3	0.00	0.00	0.00
5,700.0	6.00	221.00	5,680.8	-280.1	-243.5	-278.2	0.00	0.00	0.00
5,800.0	6.00	221.00	5,780.3	-288.0	-250.3	-286.0	0.00	0.00	0.00
5,900.0	6.00	221.00	5,879.7	-295.8	-257.2	-293.8	0.00	0.00	0.00
6,000.0	6.00	221.00	5,979.2	-303.7	-264.0	-301.7	0.00	0.00	0.00
6,100.0	6.00	221.00	6,078.6	-311.6	-270.9	-309.5	0.00	0.00	0.00
6,200.0	6.00	221.00	6,178.1	-319.5	-277.7	-317.3	0.00	0.00	0.00
6,300.0	6.00	221.00	6,277.5	-327.4	-284.6	-325.2	0.00	0.00	0.00
6,400.0	6.00	221.00	6,377.0	-335.3	-291.5	-333.0	0.00	0.00	0.00
6,500.0	6.00	221.00	6,476.4	-343.2	-298.3	-340.8	0.00	0.00	0.00
6,600.0	6.00	221.00	6,575.9	-351.1	-305.2	-348.7	0.00	0.00	0.00
6,700.0	6.00	221.00	6,675.3	-359.0	-312.0	-356.5	0.00	0.00	0.00
6,724.8	6.00	221.00	6,700.0	-360.9	-313.7	-358.5	0.00	0.00	0.00
6,800.0	4.50	221.00	6,774.9	-366.1	-318.2	-363.6	2.00	-2.00	0.00
6,900.0	2.50	221.00	6,874.7	-370.7	-322.2	-368.2	2.00	-2.00	0.00
7,000.0	0.50	221.00	6,974.7	-372.7	-324.0	-370.1	2.00	-2.00	0.00
7,024.8	0.00	0.00	6,999.5	-372.8	-324.0	-370.2	2.00	-2.00	0.00
7,100.0	0.00	0.00	7,074.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,200.0	0.00	0.00	7,174.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,300.0	0.00	0.00	7,274.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,400.0	0.00	0.00	7,374.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,500.0	0.00	0.00	7,474.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,600.0	0.00	0.00	7,574.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,700.0	0.00	0.00	7,674.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,800.0	0.00	0.00	7,774.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
7,900.0	0.00	0.00	7,874.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,000.0	0.00	0.00	7,974.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,100.0	0.00	0.00	8,074.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,200.0	0.00	0.00	8,174.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,300.0	0.00	0.00	8,274.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,400.0	0.00	0.00	8,374.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,500.0	0.00	0.00	8,474.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,600.0	0.00	0.00	8,574.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,700.0	0.00	0.00	8,674.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,800.0	0.00	0.00	8,774.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
8,900.0	0.00	0.00	8,874.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,000.0	0.00	0.00	8,974.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,100.0	0.00	0.00	9,074.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,200.0	0.00	0.00	9,174.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,300.0	0.00	0.00	9,274.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,400.0	0.00	0.00	9,374.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,500.0	0.00	0.00	9,474.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,600.0	0.00	0.00	9,574.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,700.0	0.00	0.00	9,674.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,800.0	0.00	0.00	9,774.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
9,900.0	0.00	0.00	9,874.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,000.0	0.00	0.00	9,974.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,100.0	0.00	0.00	10,074.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,200.0	0.00	0.00	10,174.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,300.0	0.00	0.00	10,274.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,400.0	0.00	0.00	10,374.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,500.0	0.00	0.00	10,474.7	-372.8	-324.0	-370.2	0.00	0.00	0.00

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
10,600.0	0.00	0.00	10,574.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,700.0	0.00	0.00	10,674.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,800.0	0.00	0.00	10,774.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
10,900.0	0.00	0.00	10,874.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
11,000.0	0.00	0.00	10,974.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
11,100.0	0.00	0.00	11,074.7	-372.8	-324.0	-370.2	0.00	0.00	0.00
11,175.3	0.00	0.00	11,150.0	-372.8	-324.0	-370.2	0.00	0.00	0.00
RB103 KOP									
11,200.0	2.96	24.84	11,174.7	-372.2	-323.8	-369.6	12.00	12.00	0.00
11,300.0	14.96	24.84	11,273.3	-358.1	-317.2	-355.6	12.00	12.00	0.00
11,400.0	26.96	24.84	11,366.5	-325.7	-302.2	-323.3	12.00	12.00	0.00
11,500.0	38.96	24.84	11,450.2	-276.4	-279.4	-274.2	12.00	12.00	0.00
11,600.0	50.96	24.84	11,520.8	-212.4	-249.8	-210.4	12.00	12.00	0.00
11,700.0	62.96	24.84	11,575.3	-136.4	-214.6	-134.8	12.00	12.00	0.00
11,800.0	74.96	24.84	11,611.1	-51.9	-175.5	-50.5	12.00	12.00	0.00
11,871.6	83.55	24.84	11,624.4	11.9	-146.0	13.0	12.00	12.00	0.00
11,900.0	83.55	24.84	11,627.6	37.5	-134.1	38.5	0.00	0.00	0.00
12,000.0	83.55	24.84	11,638.9	127.7	-92.4	128.4	0.00	0.00	0.00
12,100.0	83.55	24.84	11,650.1	217.8	-50.7	218.2	0.00	0.00	0.00
12,157.4	83.55	24.84	11,656.5	269.6	-26.7	269.8	0.00	0.00	0.00
12,200.0	84.75	19.84	11,660.9	308.8	-10.6	308.9	12.00	2.81	-11.73
12,228.3	85.57	16.53	11,663.3	335.6	-1.8	335.6	12.00	2.89	-11.69
RB103 FTP									
12,300.0	87.70	8.18	11,667.5	405.4	13.5	405.3	12.00	2.98	-11.65
12,375.4	90.00	359.43	11,669.0	480.6	18.5	480.4	12.00	3.04	-11.61
RB103 FTP2									
12,400.0	90.00	359.43	11,669.0	505.2	18.2	505.0	0.00	0.00	0.00
12,500.0	90.00	359.43	11,669.0	605.2	17.3	605.0	0.00	0.00	0.00
12,600.0	90.00	359.43	11,669.0	705.2	16.3	705.0	0.00	0.00	0.00
12,700.0	90.00	359.43	11,669.0	805.2	15.3	805.0	0.00	0.00	0.00
12,800.0	90.00	359.43	11,669.0	905.2	14.3	905.0	0.00	0.00	0.00
12,900.0	90.00	359.43	11,669.0	1,005.1	13.3	1,005.0	0.00	0.00	0.00
13,000.0	90.00	359.43	11,669.0	1,105.1	12.3	1,105.0	0.00	0.00	0.00
13,100.0	90.00	359.43	11,669.0	1,205.1	11.3	1,205.0	0.00	0.00	0.00
13,200.0	90.00	359.43	11,669.0	1,305.1	10.3	1,305.0	0.00	0.00	0.00
13,300.0	90.00	359.43	11,669.0	1,405.1	9.3	1,405.0	0.00	0.00	0.00
13,400.0	90.00	359.43	11,669.0	1,505.1	8.3	1,505.0	0.00	0.00	0.00
13,500.0	90.00	359.43	11,669.0	1,605.1	7.3	1,605.0	0.00	0.00	0.00
13,600.0	90.00	359.43	11,669.0	1,705.1	6.3	1,705.0	0.00	0.00	0.00
13,700.0	90.00	359.43	11,669.0	1,805.1	5.3	1,805.0	0.00	0.00	0.00
13,800.0	90.00	359.43	11,669.0	1,905.1	4.3	1,905.0	0.00	0.00	0.00
13,900.0	90.00	359.43	11,669.0	2,005.1	3.3	2,005.0	0.00	0.00	0.00
14,000.0	90.00	359.43	11,669.0	2,105.1	2.3	2,105.0	0.00	0.00	0.00
14,100.0	90.00	359.43	11,669.0	2,205.1	1.3	2,205.0	0.00	0.00	0.00
14,200.0	90.00	359.43	11,669.0	2,305.1	0.3	2,305.0	0.00	0.00	0.00
14,300.0	90.00	359.43	11,669.0	2,405.1	-0.7	2,405.0	0.00	0.00	0.00
14,400.0	90.00	359.43	11,669.0	2,505.1	-1.7	2,505.0	0.00	0.00	0.00
14,500.0	90.00	359.43	11,669.0	2,605.1	-2.7	2,605.0	0.00	0.00	0.00
14,600.0	90.00	359.43	11,669.0	2,705.1	-3.7	2,705.0	0.00	0.00	0.00
14,700.0	90.00	359.43	11,669.0	2,805.1	-4.7	2,805.0	0.00	0.00	0.00
14,800.0	90.00	359.43	11,669.0	2,905.1	-5.6	2,905.0	0.00	0.00	0.00
14,900.0	90.00	359.43	11,669.0	3,005.0	-6.6	3,005.0	0.00	0.00	0.00
15,000.0	90.00	359.43	11,669.0	3,105.0	-7.6	3,105.0	0.00	0.00	0.00

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)
15,100.0	90.00	359.43	11,669.0	3,205.0	-8.6	3,205.0	0.00	0.00	0.00
15,200.0	90.00	359.43	11,669.0	3,305.0	-9.6	3,305.0	0.00	0.00	0.00
15,300.0	90.00	359.43	11,669.0	3,405.0	-10.6	3,405.0	0.00	0.00	0.00
15,400.0	90.00	359.43	11,669.0	3,505.0	-11.6	3,505.0	0.00	0.00	0.00
15,500.0	90.00	359.43	11,669.0	3,605.0	-12.6	3,605.0	0.00	0.00	0.00
15,600.0	90.00	359.43	11,669.0	3,705.0	-13.6	3,705.0	0.00	0.00	0.00
15,700.0	90.00	359.43	11,669.0	3,805.0	-14.6	3,805.0	0.00	0.00	0.00
15,800.0	90.00	359.43	11,669.0	3,905.0	-15.6	3,905.0	0.00	0.00	0.00
15,900.0	90.00	359.43	11,669.0	4,005.0	-16.6	4,005.0	0.00	0.00	0.00
16,000.0	90.00	359.43	11,669.0	4,105.0	-17.6	4,105.0	0.00	0.00	0.00
16,100.0	90.00	359.43	11,669.0	4,205.0	-18.6	4,205.0	0.00	0.00	0.00
16,200.0	90.00	359.43	11,669.0	4,305.0	-19.6	4,305.0	0.00	0.00	0.00
16,300.0	90.00	359.43	11,669.0	4,405.0	-20.6	4,405.0	0.00	0.00	0.00
16,400.0	90.00	359.43	11,669.0	4,505.0	-21.6	4,505.0	0.00	0.00	0.00
16,500.0	90.00	359.43	11,669.0	4,605.0	-22.6	4,605.0	0.00	0.00	0.00
16,600.0	90.00	359.43	11,669.0	4,705.0	-23.6	4,705.0	0.00	0.00	0.00
16,700.0	90.00	359.43	11,669.0	4,805.0	-24.6	4,805.0	0.00	0.00	0.00
16,800.0	90.00	359.43	11,669.0	4,905.0	-25.6	4,905.0	0.00	0.00	0.00
16,900.0	90.00	359.43	11,669.0	5,004.9	-26.6	5,005.0	0.00	0.00	0.00
17,000.0	90.00	359.43	11,669.0	5,104.9	-27.6	5,105.0	0.00	0.00	0.00
17,100.0	90.00	359.43	11,669.0	5,204.9	-28.5	5,205.0	0.00	0.00	0.00
17,200.0	90.00	359.43	11,669.0	5,304.9	-29.5	5,305.0	0.00	0.00	0.00
17,300.0	90.00	359.43	11,669.0	5,404.9	-30.5	5,405.0	0.00	0.00	0.00
17,400.0	90.00	359.43	11,669.0	5,504.9	-31.5	5,505.0	0.00	0.00	0.00
17,406.0	90.00	359.43	11,669.0	5,510.9	-31.6	5,511.0	0.00	0.00	0.00
RB103 into NMNM138913									
17,500.0	90.00	359.43	11,669.0	5,604.9	-32.5	5,605.0	0.00	0.00	0.00
17,600.0	90.00	359.43	11,669.0	5,704.9	-33.5	5,705.0	0.00	0.00	0.00
17,700.0	90.00	359.43	11,669.0	5,804.9	-34.5	5,805.0	0.00	0.00	0.00
17,800.0	90.00	359.43	11,669.0	5,904.9	-35.5	5,905.0	0.00	0.00	0.00
17,900.0	90.00	359.43	11,669.0	6,004.9	-36.5	6,005.0	0.00	0.00	0.00
18,000.0	90.00	359.43	11,669.0	6,104.9	-37.5	6,105.0	0.00	0.00	0.00
18,100.0	90.00	359.43	11,669.0	6,204.9	-38.5	6,205.0	0.00	0.00	0.00
18,200.0	90.00	359.43	11,669.0	6,304.9	-39.5	6,305.0	0.00	0.00	0.00
18,300.0	90.00	359.43	11,669.0	6,404.9	-40.5	6,405.0	0.00	0.00	0.00
18,400.0	90.00	359.43	11,669.0	6,504.9	-41.5	6,505.0	0.00	0.00	0.00
18,500.0	90.00	359.43	11,669.0	6,604.9	-42.5	6,605.0	0.00	0.00	0.00
18,600.0	90.00	359.43	11,669.0	6,704.9	-43.5	6,705.0	0.00	0.00	0.00
18,700.0	90.00	359.43	11,669.0	6,804.9	-44.5	6,805.0	0.00	0.00	0.00
18,800.0	90.00	359.43	11,669.0	6,904.9	-45.5	6,905.0	0.00	0.00	0.00
18,900.0	90.00	359.43	11,669.0	7,004.8	-46.5	7,005.0	0.00	0.00	0.00
19,000.0	90.00	359.43	11,669.0	7,104.8	-47.5	7,105.0	0.00	0.00	0.00
19,100.0	90.00	359.43	11,669.0	7,204.8	-48.5	7,205.0	0.00	0.00	0.00
19,200.0	90.00	359.43	11,669.0	7,304.8	-49.5	7,305.0	0.00	0.00	0.00
19,300.0	90.00	359.43	11,669.0	7,404.8	-50.5	7,405.0	0.00	0.00	0.00
19,400.0	90.00	359.43	11,669.0	7,504.8	-51.5	7,505.0	0.00	0.00	0.00
19,500.0	90.00	359.43	11,669.0	7,604.8	-52.4	7,605.0	0.00	0.00	0.00
19,600.0	90.00	359.43	11,669.0	7,704.8	-53.4	7,705.0	0.00	0.00	0.00
19,700.0	90.00	359.43	11,669.0	7,804.8	-54.4	7,805.0	0.00	0.00	0.00
19,800.0	90.00	359.43	11,669.0	7,904.8	-55.4	7,905.0	0.00	0.00	0.00
19,900.0	90.00	359.43	11,669.0	8,004.8	-56.4	8,005.0	0.00	0.00	0.00
20,000.0	90.00	359.43	11,669.0	8,104.8	-57.4	8,105.0	0.00	0.00	0.00
20,100.0	90.00	359.43	11,669.0	8,204.8	-58.4	8,205.0	0.00	0.00	0.00

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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)	
20,200.0	90.00	359.43	11,669.0	8,304.8	-59.4	8,305.0	0.00	0.00	0.00	
20,300.0	90.00	359.43	11,669.0	8,404.8	-60.4	8,405.0	0.00	0.00	0.00	
20,400.0	90.00	359.43	11,669.0	8,504.8	-61.4	8,505.0	0.00	0.00	0.00	
20,500.0	90.00	359.43	11,669.0	8,604.8	-62.4	8,605.0	0.00	0.00	0.00	
20,600.0	90.00	359.43	11,669.0	8,704.8	-63.4	8,705.0	0.00	0.00	0.00	
20,700.0	90.00	359.43	11,669.0	8,804.8	-64.4	8,805.0	0.00	0.00	0.00	
20,800.0	90.00	359.43	11,669.0	8,904.8	-65.4	8,905.0	0.00	0.00	0.00	
20,900.0	90.00	359.43	11,669.0	9,004.8	-66.4	9,005.0	0.00	0.00	0.00	
21,000.0	90.00	359.43	11,669.0	9,104.7	-67.4	9,105.0	0.00	0.00	0.00	
21,100.0	90.00	359.43	11,669.0	9,204.7	-68.4	9,205.0	0.00	0.00	0.00	
21,200.0	90.00	359.43	11,669.0	9,304.7	-69.4	9,305.0	0.00	0.00	0.00	
21,300.0	90.00	359.43	11,669.0	9,404.7	-70.4	9,405.0	0.00	0.00	0.00	
21,400.0	90.00	359.43	11,669.0	9,504.7	-71.4	9,505.0	0.00	0.00	0.00	
21,500.0	90.00	359.43	11,669.0	9,604.7	-72.4	9,605.0	0.00	0.00	0.00	
21,600.0	90.00	359.43	11,669.0	9,704.7	-73.4	9,705.0	0.00	0.00	0.00	
21,700.0	90.00	359.43	11,669.0	9,804.7	-74.4	9,805.0	0.00	0.00	0.00	
21,800.0	90.00	359.43	11,669.0	9,904.7	-75.3	9,905.0	0.00	0.00	0.00	
21,900.0	90.00	359.43	11,669.0	10,004.7	-76.3	10,005.0	0.00	0.00	0.00	
22,000.0	90.00	359.43	11,669.0	10,104.7	-77.3	10,105.0	0.00	0.00	0.00	
22,100.0	90.00	359.43	11,669.0	10,204.7	-78.3	10,205.0	0.00	0.00	0.00	
22,200.0	90.00	359.43	11,669.0	10,304.7	-79.3	10,305.0	0.00	0.00	0.00	
22,300.0	90.00	359.43	11,669.0	10,404.7	-80.3	10,405.0	0.00	0.00	0.00	
22,400.0	90.00	359.43	11,669.0	10,504.7	-81.3	10,505.0	0.00	0.00	0.00	
22,500.0	90.00	359.43	11,669.0	10,604.7	-82.3	10,605.0	0.00	0.00	0.00	
22,585.8	90.00	359.43	11,669.0	10,690.5	-83.2	10,690.8	0.00	0.00	0.00	
RB103 LTP										
22,600.0	90.00	359.43	11,669.0	10,704.7	-83.3	10,705.0	0.00	0.00	0.00	
22,635.8	90.00	359.43	11,669.0	10,740.4	-83.7	10,740.8	0.00	0.00	0.00	
RB103 BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
RB103 KOP	0.00	0.00	11,150.0	-372.8	-324.0	393,646.78	864,057.17	32° 4' 40.550 N	103° 17' 29.058 W	
- plan hits target center										
- Point										
RB103 LTP	0.00	0.00	11,669.0	10,690.5	-83.2	404,709.99	864,298.01	32° 6' 29.993 N	103° 17' 25.016 W	
- plan hits target center										
- Point										
RB103 FTP	0.00	0.00	11,669.0	330.2	18.5	394,349.71	864,399.69	32° 4' 47.472 N	103° 17' 24.999 W	
- plan misses target center by 21.8usft at 12228.3usft MD (11663.3 TVD, 335.6 N, -1.8 E)										
- Point										
RB103 BHL	0.00	0.00	11,669.0	10,740.4	-83.7	404,759.98	864,297.53	32° 6' 30.488 N	103° 17' 25.016 W	
- plan hits target center										
- Point										
RB103 FTP2	0.00	0.00	11,669.0	480.6	18.5	394,500.11	864,399.69	32° 4' 48.960 N	103° 17' 24.982 W	
- plan hits target center										
- Point										



Ameredev Operating, LLC
Planning Report

Database:	EDM5000	Local Co-ordinate Reference:	Well Redbud 103H
Company:	Ameredev Operating, LLC.	TVD Reference:	KB @ 3028.0usft
Project:	RB/HOL	MD Reference:	KB @ 3028.0usft
Site:	RB/HOL #4S	North Reference:	Grid
Well:	Redbud 103H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
17,406.0	11,669.0	5,510.9	-31.6	RB103 into NMNM138913



APD ID: 10400045411

Submission Date: 08/05/2019

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres):

PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Operator Name: AMEREDEV OPERATING LLC

Well Name: RED BUD FED COM 25 36 32

Well Number: 103H

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Section 6 - Other

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources
Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

FORM C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

OCD - HOBBS
10/27/2020
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☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-47940	² Pool Code 33813	³ Pool Name Jal; Wolfcamp, West
⁴ Property Code 320762	⁵ Property Name REDBUD FED COM 25 36 32	
⁷ OGRID No. 372224	⁸ Operator Name AMEREDEV OPERATING, LLC.	⁶ Well Number 103H
		⁹ Elevation 3001'

¹⁰Surface Location

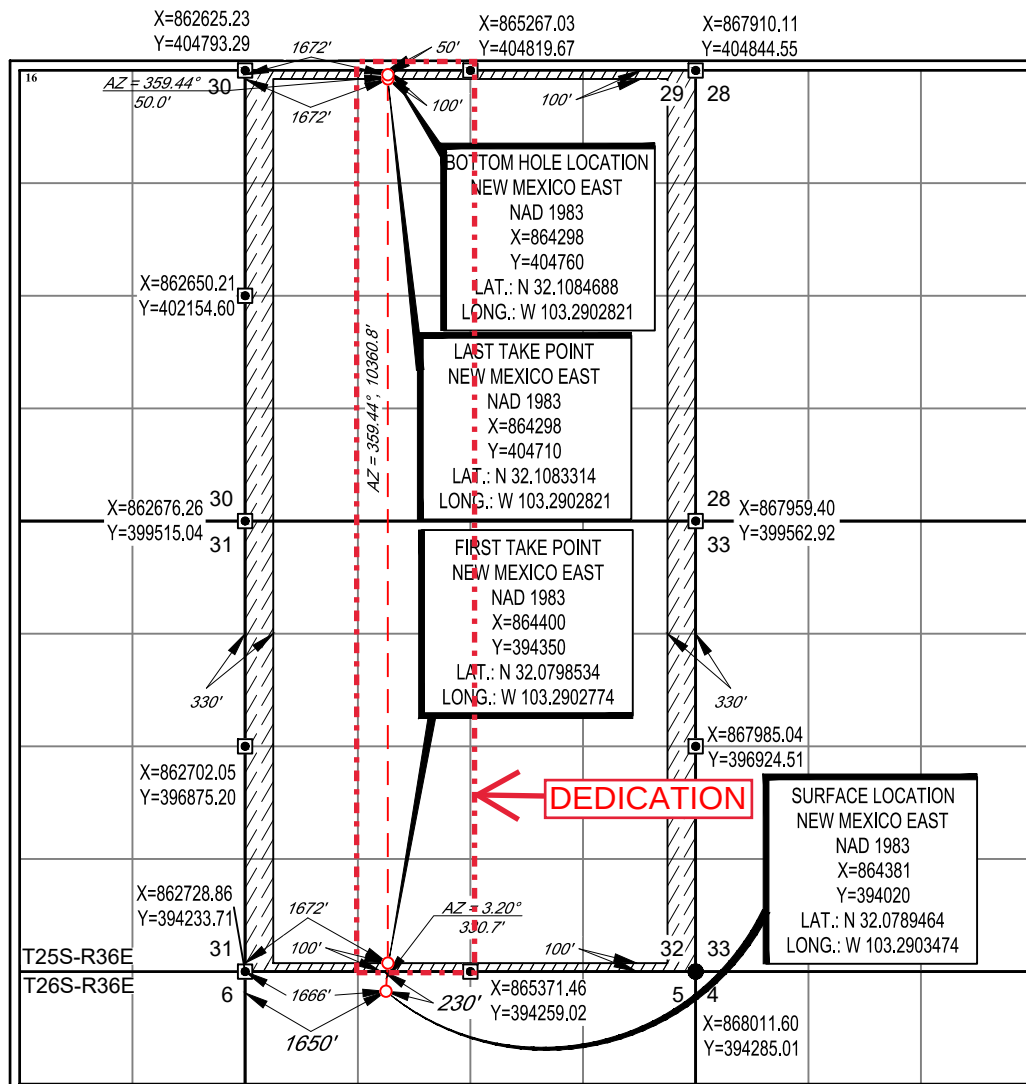
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	5	26-S	36-E	-	230'	NORTH	1650'	WEST	LEA

¹¹Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	29	25-S	36-E	-	50'	NORTH	1672'	WEST	LEA

¹² Dedicated Acres 320	¹³ Joint or Infill	¹⁴ Consolidation Code C	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



¹⁷OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Floyd Hammond 7/25/19
Signature Date

Floyd Hammond

Printed Name

fhammond@ameredev.com

E-mail Address

¹⁸SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true to the best of my belief.

05/01/2018

Date of Survey
Signature and Seal of Professional Surveyor

MICHAEL P. BROWN
18329
PROFESSIONAL SURVEYOR

Certificate Number

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

OCD – HOBBS
10/27/2020
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GAS CAPTURE PLAN

Date: 7/25/19

☒ Original

Operator & OGRID No.: Ameredev Operating LLC (372224)

☐ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Red Bud Fed Com 25 36 32 103H	30-025- 30-025-47940	C-5-26S-36E	230' FNL 1650' FWL	1000	<30 days	Flare until well clean, then connect

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. Gas produced from production facility has not yet been dedicated. However, negotiations are underway for a possible connection within 2 miles. Operator will provide (periodically) to Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Operator and Gas Transporter will have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Gas Transporter Processing Plant at an as yet undetermined location. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines