U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Sundry Print Report

02/18/2021

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Notice of Intent

Type of Submission: Notice of Intent

Type of Action APD Change

Date Sundry Submitted: 01/28/2021

Time Sundry Submitted: 02:47

Date proposed operation will begin: 02/13/2021

Procedure Description: Cimarex Energy respectfully requests approval to change BHL, casing design, and perform offline cementing for the Vaca Draw 20-17 Federal 29H well. Proposed BHL: 100' FNL & 440' FWL Sec. 17, 25S, 33E Offline Cmt Procedure: 7" Intermediate Casing 1. Land casing on solid body mandrel hanger 2. Engage pack-off and lock-ring 3. Install BPV 4. Skid rig 5. Check for pressure and remove BPV 6. Circulate down casing, taking returns through casing valves 7. Pump lead and tail cement 8. Displace cement and bump the plug 9. Ensure floats are holding pressure 10. RD cement crew 11. Install BPV and TA cap Please see attached previously approved detailed plan and diagram for review. Additional Attachments C102, BOP, Directional Plan, Drilling Plan

Application

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Section 1 - General

APD ID: 10400034279

Tie to previous NOS?

Submission Date:

BLM Office: CARLSBAD

User:

Title:

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM26394

Lease Acres:

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? Y

Permitting Agent? NO

APD Operator: CIMAREX ENERGY COMPANY

Operator letter of designation:

Operator Info

Operator Organization Name: CIMAREX ENERGY COMPANY

Operator Address: 600 N MARIENFELD STREET ST SUITE 600

Zip: 79701

Operator PO Box:

Operator City: MIDLAND

State: TX

Operator Phone: (432)571-7800

Operator Internet Address: tstathem@cimarex.com

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: VACA DRAW 20-17 FEDERAL

Well Number: 29H

Well API Number: 3002546113

Field/Pool or Exploratory? Field and Pool

Field Name: WOLFCAMP

Pool Name: WC-025 G-06 S253329D

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Is the proposed well in a Helium production area? N

Use Existing Well Pad? Y

New surface disturbance? Y

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: VACA DRAW 20-17 FEDERAL

Number: E2W2 PAD

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

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Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 24 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 331 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Vaca_Draw_20_17_Fed_29H_C102_Plat_20180924085303.pdf

Well work start Date: 02/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	331	FSL	1251	FWL	25S	33E	20	Aliquot SWSW	32.109741	-103.598809	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	3421	0	0	Y
KOP Leg #1	331	FSL	795	FWL	25S	33E	20	Aliquot SWSW	32.109161	-103.601428	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-7152	10640	10573	Y
PPP Leg #1-1	331	FSL	795	FWL	25S	33E	20	Aliquot SWSW	32.10975	-103.600281	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-5611	9099	9032	Y
EXIT Leg #1	100	FNL	440	FWL	25S	33E	17	Aliquot NWNW	32.137582	-103.601417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-7629	21253	11050	Y

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Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
BHL Leg #1	100	FNL	440	FWL	25S	33E	17	Aliquot NWNW	32.137582	-103.601417	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 026394	-7629	21253	11050	Y

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1514473	RUSTLER	3421	935	935		USEABLE WATER	N
1514474	SALADO	2123	1298	1298		NONE	N
1514472	CASTILE	-1293	4714	4714		NONE	N
1514476	LAMAR	-1488	4909	4909		NONE	N
1514469	BELL CANYON	-1516	4937	4937		NONE	N
1514470	CHERRY CANYON	-2569	5990	5990		NONE	N
1514471	BRUSHY CANYON	-4115	7536	7536		NATURAL GAS, OIL	N
1514467	BONE SPRING	-5611	9032	9032		NATURAL GAS, OIL	Y
1514475	BONE SPRING 1ST	-6590	10011	10011		NATURAL GAS, OIL	N
1514465	BONE SPRING 2ND	-7162	10583	10583		NATURAL GAS, OIL	N
1514468	BONE SPRING 3RD	-8301	11722	11722		OIL	N
1514466	WOLFCAMP	-8768	12189	12189		NATURAL GAS, OIL	N

Section 2 - Blowout Prevention

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Pressure Rating (PSI): 2M **Rating Depth:** 4917

Equipment: A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.
Testing Procedure: A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.
Choke Diagram Attachment:

BOP Diagram Attachment:

Pressure Rating (PSI): 3M **Rating Depth:** 19883

Equipment: A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.
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BOP Diagram Attachment:

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Unit or CA Number:

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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	
1	SURFACE	17.5	13.375	NEW	NON API	N	0	985	0	985	0	985	985	H-40	48	ST&C	1.64	3.84	BUOY	6.81	BUOY	6.
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	4917	0	4917	0	4917	4917	J-55	40	LT&C	1.46	1.51	BUOY	2.64	BUOY	2.
3	PRODUCTION	8.75	5.5	NEW	API	N	0	9485	0	9485	0	9485	9485	L-80	20	LT&C	1.99	2.07	BUOY	2.09	BUOY	2.
4	PRODUCTION	8.75	5.0	NEW	API	N	9485	19883	9485	9940	9485		10398	L-80	20	BUTT	1.9	1.93	BUOY	51.21	BUOY	51 1

Casing Attachments

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

Inspection Document:

Spec Document:

Vaca_Draw_20_17_Fed_29H_Surf_Casing_Spec_Sheet_20180924090504.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_29H_Casing_Assumptions_20180924090517.pdf

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Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_29H_Casing_Assumptions_20180924090654.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_29H_Casing_Assumptions_20180924090821.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_29H_Surf_Casing_Spec_Sheet_20180924091032.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives

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Type of Well: OIL WELL

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Unit or CA Name:

Unit or CA Number:

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String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	985	415	1.72	13.5	713	50	Class C	Bentonite
SURFACE	Tail		0	985	195	1.34	14.8	260	25	Class C	LCM
INTERMEDIATE	Lead		0	4917	935	1.88	12.9	1756	50	35:65 (Poz:C)	Salt, Bentonite
INTERMEDIATE	Tail		0	4917	288	1.34	14.8	385	25	Class C	LCM
PRODUCTION	Lead		0	9485	411	3.64	10.3	1495	25	Tuned Light	LCM
PRODUCTION	Tail		0	9485	2224	1.3	14.2	2890	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		9485	19883	411	3.64	10.3	1495	25	Tuned Light	LCM
PRODUCTION	Tail		9485	19883	2224	1.3	14.2	2890	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS

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: Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.
Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

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
0	985	SPUD MUD	8.3	8.8							
985	4917	SALT SATURATED	9.7	10.2							

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4917	19883	OTHER : FW/Cut Brine	8.5	9							

Section 6 - Test, Logging, Coring

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

No DST Planned

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

CNL,DS,GR

Coring operation description for the well:

n/a

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4651

Anticipated Surface Pressure: 2219

Anticipated Bottom Hole Temperature(F): 169

Anticipated abnormal pressures, temperatures, or potential geologic hazards? YES

Describe:

Lost circulation may be encountered in the Delaware mountain group. Abnormal pressure as well as hole stability issues may be encountered in the Wolfcamp.

Contingency Plans geoharzards description:

Lost circulation material will be available, as well as additional drilling fluid along with the fluid volume in the drilling rig pit system. Drilling fluid can be mixed on location or mixed in vendor mud plant and trucked to location if needed. Sufficient barite will be available to maintain appropriate mud weight for the Wolfcamp interval.

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Vaca_Draw_20_17_Fed_29H_H2S_Plan_20180924091659.pdf

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Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_20_17_Fed_29H_AC_Report_20180924091717.pdf
Vaca_Draw_20_17_Fed_29H_Directional_Plan_20180924091718.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Vaca_Draw_20_17_Fed_29H_Drilling_Plan_20180924091803.pdf
Vaca_Draw_20_17_Fed_29H_Gas_Capture_Plan_20180924091817.pdf
Vaca_Draw_20_17_Fed_29H_Flex_Hose_20180924091811.pdf

Other Variance attachment:

Vaca_Draw_20_17_Fed_29H_Multibowl_Procedure_20180924091736.pdf
Vaca_Draw_20_17_Fed_29H_Multibowl_Wellhead_20180924091740.pdf

SUPO

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Vaca_Draw_20_17_Fed_Existing_Road_ROW_Approved_9_6_13_20190204074412.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? YES

ROW ID(s)

ID: NM-130688

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Vaca_Draw_20_17_Fed_E2W2_Pad_Road_ROW_20190301065926.pdf

New road type: COLLECTOR

Length: 127 Feet **Width (ft.):** 30

Max slope (%): 20 **Max grade (%):** 6

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 18

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New road access erosion control: The side slopes of any drainage channels or swales that are crossed will be re-contoured to original grade and compacted and mulched as necessary to avoid erosion. Where steeper slopes cannot be avoided, water bars or silt fence will be constructed, mulch/rip-rap applied, or other measures employed as necessary to control erosion. Hay bales, straw waddles or silt fence may also be installed to control erosion as needed. All disturbed areas will be seeded with a mix appropriate for the area unless specified otherwise by the landowner.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Turnout? N

Access surfacing type: GRAVEL

Access topsoil source: ONSITE

Access surfacing type description:

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Push off and stockpile alongside the location.

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: CULVERT,LOW WATER,OTHER

Drainage Control comments: To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

Road Drainage Control Structures (DCS) description: N/A

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

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Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Vaca_Draw_20_17_Fed_E2W2_Pad_Road_ROW_20190301065926.pdf

New road type:

Length:

Width (ft.):

Max slope (%):

Max grade (%):

Army Corp of Engineers (ACOE) permit required?

ACOE Permit Number(s):

New road travel width:

New road access erosion control:

New road access plan or profile prepared?

New road access plan attachment:

Access road engineering design?

Access road engineering design attachment:

Turnout?

Access surfacing type:

Access topsoil source:

Access surfacing type description:

Access onsite topsoil source depth:

Offsite topsoil source description:

Onsite topsoil removal process:

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing:

Drainage Control comments:

Road Drainage Control Structures (DCS) description:

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New Road Map:

Vaca_Draw_20_17_Fed_E2W2_Pad_Road_ROW_20190301065926.pdf

New road type:

Length:

Width (ft.):

Max slope (%):

Max grade (%):

Army Corp of Engineers (ACOE) permit required?

ACOE Permit Number(s):

New road travel width:

New road access erosion control:

New road access plan or profile prepared?

New road access plan attachment:

Access road engineering design?

Access road engineering design attachment:

Turnout?

Access surfacing type:

Access topsoil source:

Access surfacing type description:

Access onsite topsoil source depth:

Offsite topsoil source description:

Onsite topsoil removal process:

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing:

Drainage Control comments:

Road Drainage Control Structures (DCS) description:

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Vaca_Draw_20_17_Fed_E2W2_Pad_Mile_Radius_Existing_Wells_20180924094226.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Approved Existing batteries will be utilized for this project. Vaca Draw 20-17 Federal CTB was approved in the Vaca Draw 20-17 Fed 8H APD. Vaca Draw 20-17 Federal West CTB was approved in the Vaca Draw 20-17 Fed 5H Sundry.

Production Facilities map:

Vaca_Draw_20_17_Fed_CTB_and_West_CTB_Exisitng_CTB_Layouts_20180924094244.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: MUNICIPAL

Water source use type: SURFACE CASING

INTERMEDIATE/PRODUCTION CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: WATER RIGHT

Permit Number:

Water source transport method: PIPELINE

TRUCKING

Source land ownership: STATE

Source transportation land ownership: STATE

Water source volume (barrels): 5000

Source volume (acre-feet): 0.6444655

Source volume (gal): 210000

Water source and transportation map:

Vaca_Draw_20_17_Fed_E2W2_Pad_Drilling_Water_Route_20180924094539.pdf

Water source comments:

New water well? NO

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: The drilling and testing operations will be conducted on a watered and compacted native soil grade. Soft spots will be covered with caliche, free of large rocks (3" diameter). Upon completion as a commercial producer the location will be covered with caliche, free of large rocks (3" dia.) from an existing privately owned gravel pit.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations

Amount of waste: 32500 pounds

Waste disposal frequency : Weekly

Safe containment description: n/a

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY

Disposal location ownership: COMMERCIAL

Disposal type description:

Disposal location description: Windmill Spraying Service hauls trash to Lea County Landfill

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Waste type: DRILLING

Waste content description: Drilling Fluids, drill cuttings, water and other waste produced from the well during drilling operations.

Amount of waste: 15000 barrels

Waste disposal frequency : Weekly

Safe containment description: n/a

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY

Disposal location ownership: COMMERCIAL

Disposal type description:

Disposal location description: Haul to R360 commercial Disposal

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.)

Reserve pit width (ft.)

Reserve pit depth (ft.)

Reserve pit volume (cu. yd.)

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Vaca_Draw_20_17_Fed_29H_Wellsite_Layout_20180924094358.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: VACA DRAW 20-17 FEDERAL

Multiple Well Pad Number: E2W2 PAD

Recontouring attachment:

Vaca_Draw_20_17_Fed_E2W2_Pad_Interim_Reclaim_20180919124236.pdf

Drainage/Erosion control construction: To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

Drainage/Erosion control reclamation: All disturbed and re-contoured areas would be reseeded according to specifications. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Well pad proposed disturbance (acres): 6.91
Road proposed disturbance (acres): 0.087
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 2.119
Other proposed disturbance (acres): 3.4
Total proposed disturbance: 12.516

Well pad interim reclamation (acres): 3.63
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 3.4
Total interim reclamation: 7.03

Well pad long term disturbance (acres): 3.36
Road long term disturbance (acres): 0.087
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 2.119
Other long term disturbance (acres): 0
Total long term disturbance: 5.566

Disturbance Comments: Flowline: 1538 Gas lift: 1538 Access Road: 127' Temp fresh water line: 14,855'

Reconstruction method: After well plugging, all disturbed areas would be returned to the original contour or a contour that blends with the surrounding landform including roads unless the surface owner requests that they be left intact. In consultation with the surface owners it will be determined if any gravel or similar materials used to reinforce an area are to be removed, buried, or left in place during final reclamation. Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated. As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching, or fertilizing. Reclamation, Re-vegetation, and Drainage: All disturbed and re-contoured areas would be reseeded using techniques outlined under Phase I and II of this plan or as specified by the land owner. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

Topsoil redistribution: Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated.

Soil treatment: As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching or fertilizing.

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Amithy

Last Name: Crawford

Phone: (432)620-1909

Email: acrawford@cimarex.com

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Section 12 - Other Information

Right of Way needed? YES

Use APD as ROW? YES

ROW Type(s): 281001 ROW - ROADS,288100 ROW – O&G Pipeline,289001 ROW- O&G Well Pad,FLPMA (Powerline),Other

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Onsite with BLM (Jeff Robertson) and Cimarex (Barry Hunt) on July 24, 2018.

Other SUPO Attachment

Vaca_Draw_20_17_Fed_E2W2_Pad_Public_Access_20180924094510.pdf
Vaca_Draw_20_17_Fed_Temp_Water_Route_20180924094520.pdf
Vaca_Draw_20_17_Fed_29H_Packet_for_Jeff_20190301071901.pdf
Vaca_Draw_20_17_Fed_E2W2_Pad_Road_Description_20180924094513.pdf
Vaca_Draw_20_17_Fed_E2W2_Pad_Flow_Gas_lift_ROW_20190301071904.pdf
Vaca_Draw_20_17_Fed_29H_SUPO_20190301071902.pdf

PWD

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? NO

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

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:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe 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? NO

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:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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? NO

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? NO

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

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? NO

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:

Operator Certification

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME:

Signed on: 01/28/2021

Title:

Street Address:

City:

State:

Zip:

Phone:

Email address:

Field Representative

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

NOI Attachments

Procedure Description

Vaca_Draw_20_17_Federal_29H__C102_BHL_FINAL_Signed_20210128144148.pdf

Vaca_Draw_20_17_Federal_29H__Prelims_20210128144131.pdf

Vaca_Draw_20_17_Fed_29H_BOPS___Multibowl_20210128144110.pdf

Vaca_Draw_20_17_29H_Drill_Plan_20210128144048.pdf

Vaca_Draw_20_17_Offline_cmt_7_in_csg_20210125094216.pdf

Well Name: VACA DRAW 20-17 FEDERAL

Well Location: T25S / R33E / SEC 20 / SWSW / 32.109741 / -103.598809

County or Parish/State: LEA / NM

Well Number: 29H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394

Unit or CA Name:

Unit or CA Number:

US Well Number: 300254611300X1

Well Status: Approved Application for Permit to Drill

Operator: CIMAREX ENERGY COMPANY

Operator Certification

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: STATHEM

Signed on: JAN 28, 2021 02:38 PM

Name: CIMAREX ENERGY COMPANY

Title: Mngr Regulatory Compliance

Street Address: 600 N MARIENFELD STREET ST SUITE 600

City: MIDLAND **State:** TX

Phone: (432) 571-7800

Email address: tstathem@cimarex.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5752342234

BLM POC Email Address: cwalls@blm.gov

Disposition: Approved

Disposition Date: 02/18/2021

Signature: Chris Walls

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

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-025-46113	97994	WC-025 G-06 S253329D; UPR BONE SPRING

[4] Property Code	[5] Property Name	[6] Well Number
319775	VACA DRAW 20-17 FEDERAL	29H

[7] OGRID No.	[8] Operator Name	[9] Elevation
215099	CIMAREX ENERGY CO.	3420.7'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	20	25S	33E		331	SOUTH	1251	WEST	LEA

[11] Bottom 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
D	17	25S	33E		100	NORTH	440	WEST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640			

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.

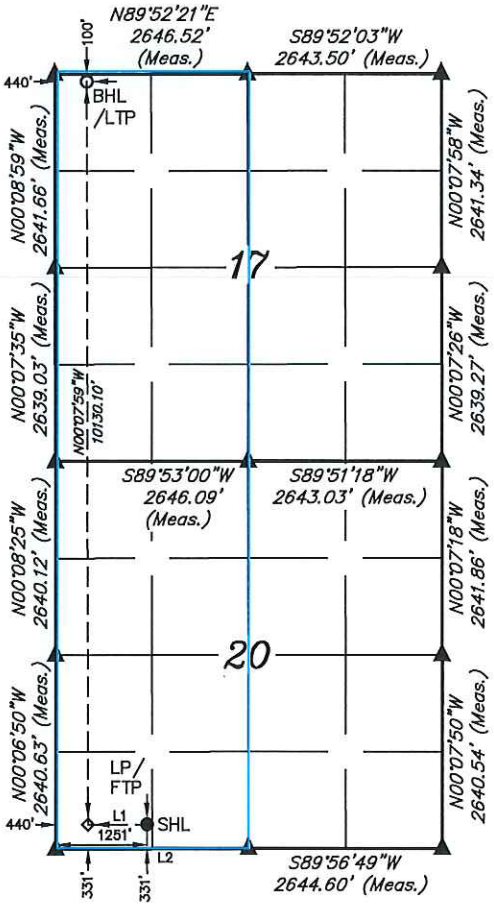
[16]

● = SURFACE HOLE LOCATION
◇ = LANDING POINT/FIRST TAKE POINT
○ = BOTTOM HOLE LOCATION/ LAST TAKE POINT
▲ = SECTION CORNER LOCATED

2000' 1000' 0' 2000'
SCALE

REV: 2 02-13-20 S.S. (LP/FTP & BHL CHANGE)

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	S89°51'15"W	810.72'
L2	S89°49'36"W	2644.44'



NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°06'35.07" (32.109741°)
LONGITUDE = 103°35'55.71" (103.598809°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°06'34.62" (32.109617°)
LONGITUDE = 103°35'54.01" (103.598337°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404435.19' E: 768762.42'
STATE PLANE NAD 27 (N.M. EAST)
N: 404377.40' E: 727576.26'

NAD 83 (LP/FTP)
LATITUDE = 32°06'35.07" (32.109742°)
LONGITUDE = 103°36'05.14" (103.601427°)
NAD 27 (LP/FTP)
LATITUDE = 32°06'34.62" (32.109617°)
LONGITUDE = 103°36'03.44" (103.600955°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404429.74' E: 767951.85'
STATE PLANE NAD 27 (N.M. EAST)
N: 404371.95' E: 726765.70'

NAD 83 (BHL/LTP)
LATITUDE = 32°08'15.30" (32.137582°)
LONGITUDE = 103°36'05.10" (103.601417°)
NAD 27 (BHL/LTP)
LATITUDE = 32°08'14.85" (32.137458°)
LONGITUDE = 103°36'03.40" (103.600943°)
STATE PLANE NAD 83 (N.M. EAST)
N: 414557.88' E: 767886.04'
STATE PLANE NAD 27 (N.M. EAST)
N: 414499.84' E: 726700.35'

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

[17] OPERATOR 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.

Signature 2/24/20 Date

Amithy Crawford
Printed Name

acrawford@cimarex.com
E-mail Address

[18] SURVEYOR 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 and correct to the best of my belief.

July 27, 2018
Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE NEW MEXICO 23782 PROFESSIONAL SURVEYOR 02-13-20

Certificate Number:

1. Geological Formations

TVD of target 11,050
MD at TD 21,253

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	935	Usable water	
Top of Salt	1298	N/A	
Base of Salt	4714	N/A	
Lamar	4909	N/A	
Bell Canyon	4937	N/A	
Cherry Canyon	5990	N/A	
Brushy Canyon	7536	Hydrocarbons	
Bone Spring	9032	Hydrocarbons	
Bone Spring Target	9940	Hydrocarbons	
1st Bone Spring Sand	10011	Hydrocarbons	
2nd Bone Spring Sand	10583	Hydrocarbons	
3rd Bone Spring Sand	11722	Hydrocarbons	
Wolfcamp	12189	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	985	985	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.74	4.07	6.81
12 1/4	0	4800	4800	9-5/8"	40.00	J-55	LT&C		1.55	2.71
8 3/4	0	9740	9740	7"	29.00	L-80	LT&C	1.54	1.79	1.88
8 3/4	9740	11210	10780	7"	29.00	L-80	BT&C	1.39	1.62	22.41
6	9640	21253	11050	4-1/2"	13.50	P-110	BT&C	2.07	2.40	22.17
					BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N
Is AC Report included?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	639	14.80	1.34	9.15	9.5	Tail: Class C + LCM
Intermediate	912	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	281	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	375	10.30	3.64	22.18		Lead: Tuned Light + LCM
	100	14.50	1.30	5.79	20	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Expanding Agent + Retarder + Antifoam
Completion System	746	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0	25
Intermediate	0	44
Production	4600	51
Completion System	11000	10

Cimarex request the ability to perform casing integrity tests after plug bump of cement job.

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	N	Are anchors required by manufacturer?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 985'	FW Spud Mud	7.80 - 8.30	30-32	N/C
985' to 4800'	Brine Water	9.70 - 10.20	30-32	N/C
				N/C
	Cut Brine or OBM	8.50 - 9.00	27-70	N/C
11390' to 21253'	OBM	8.50 - 9.00	50-70	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

	Logging, Coring and Testing
X	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	5171 psi
Abnormal Temperature	No

	Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.
X	H2S is present
X	H2S plan is attached

8. Other Facets of Operation

9. Wellhead

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

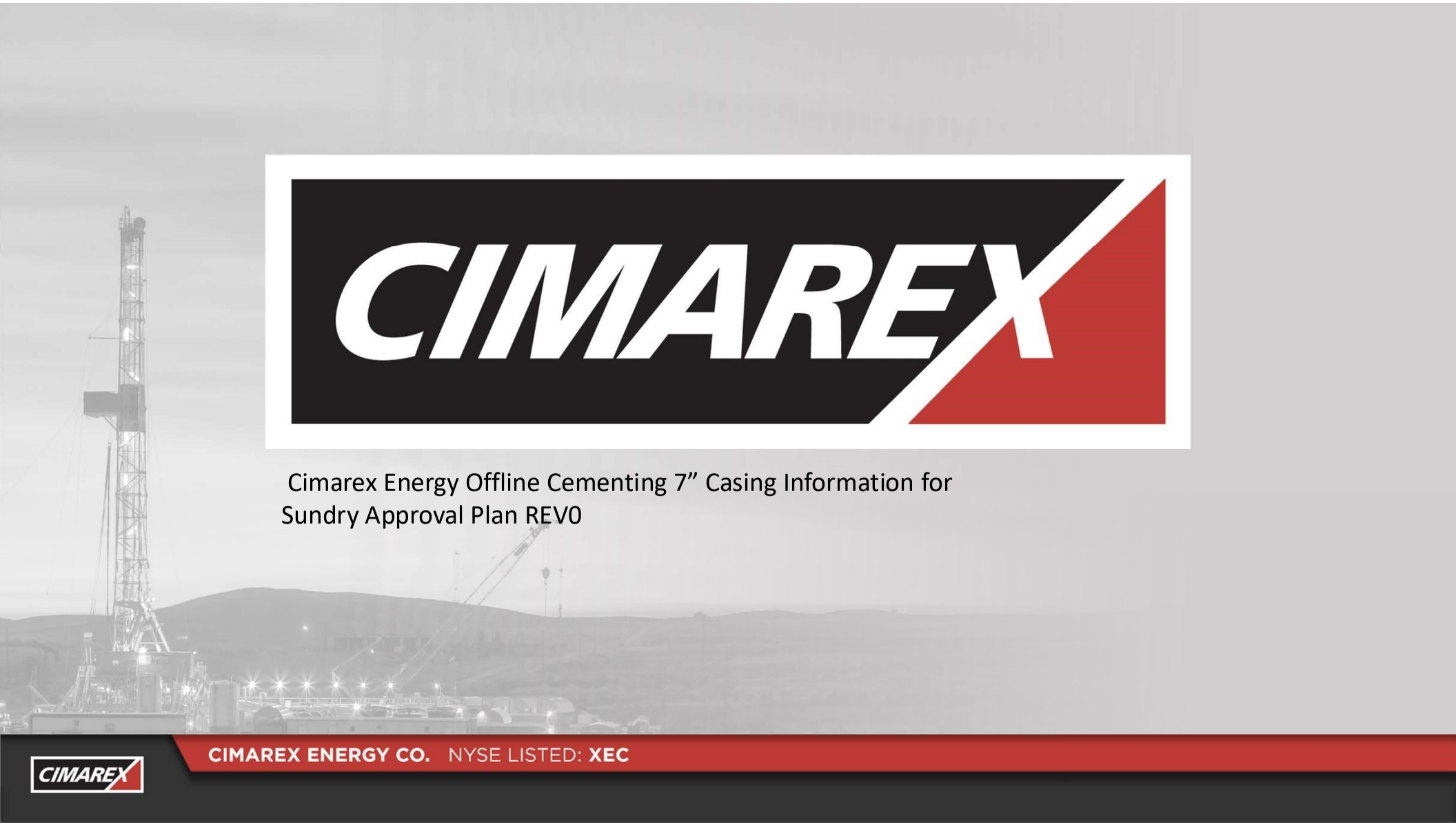
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

All casing strings will be tested as per Onshore Order No.2 to atleast 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.


CIMAREX
Cimarex Energy Offline Cementing 7” Casing Information for
Sundry Approval Plan REV0
CIMAREX
CIMAREX ENERGY CO. NYSE LISTED: XEC

Cementing Operational Workflow

Conventional Cementing

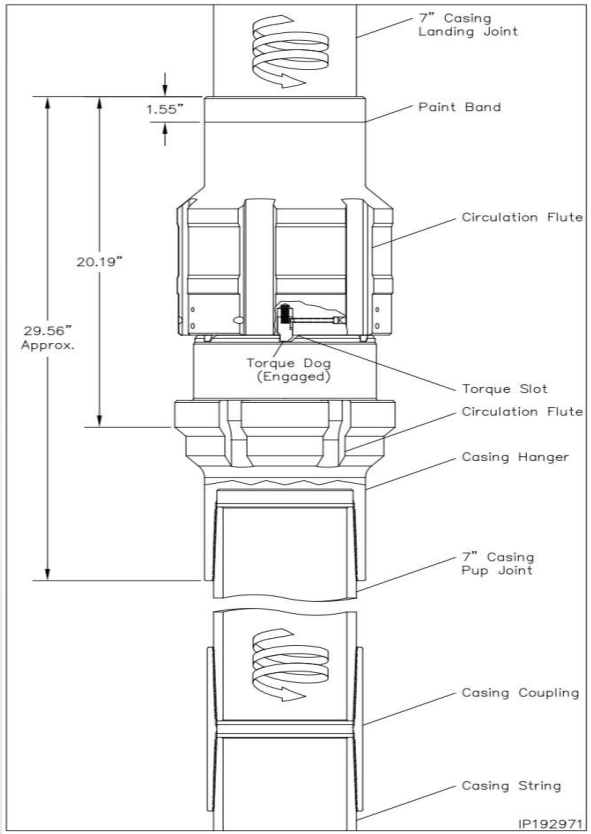
1. Land casing on fluted mandrel hanger
2. Circulate down casing, taking returns through BOP stack
3. Pump lead and tail cement
4. Displace cement and bump the plug
5. Ensure floats are holding pressure
6. RD cement crew
7. Install packoff to isolate pressure
8. Install BPV and skid rig

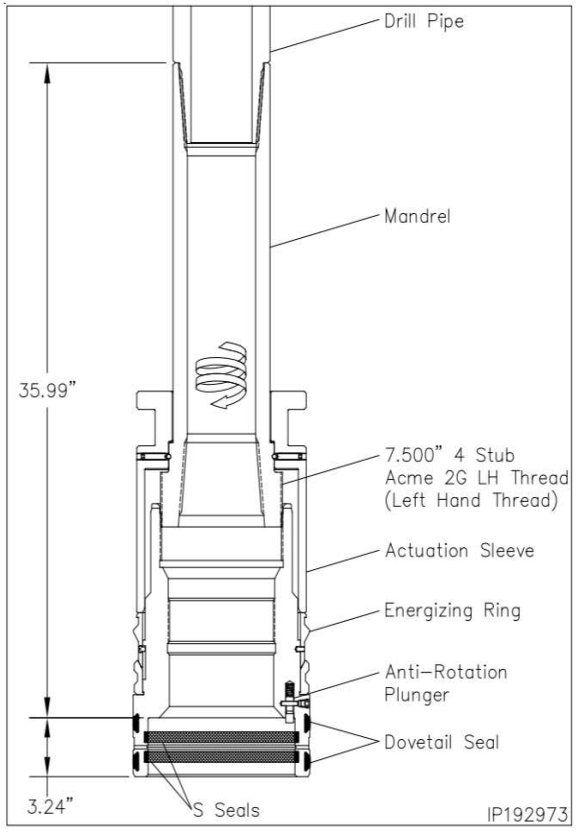
Offline Cementing

1. Land casing on **solid body** mandrel hanger
   a) Engage packoff and lockring
2. Install BPV
3. Skid rig
4. Check for pressure and remove BPV
5. Circulate down casing, taking returns through casing valves
6. Pump lead and tail cement
7. Displace cement and bump the plug
8. Ensure floats are holding pressure
9. RD cement crew
10. Install BPV and TA cap

Conventional Cementing Equipment-Fluted Mandrel

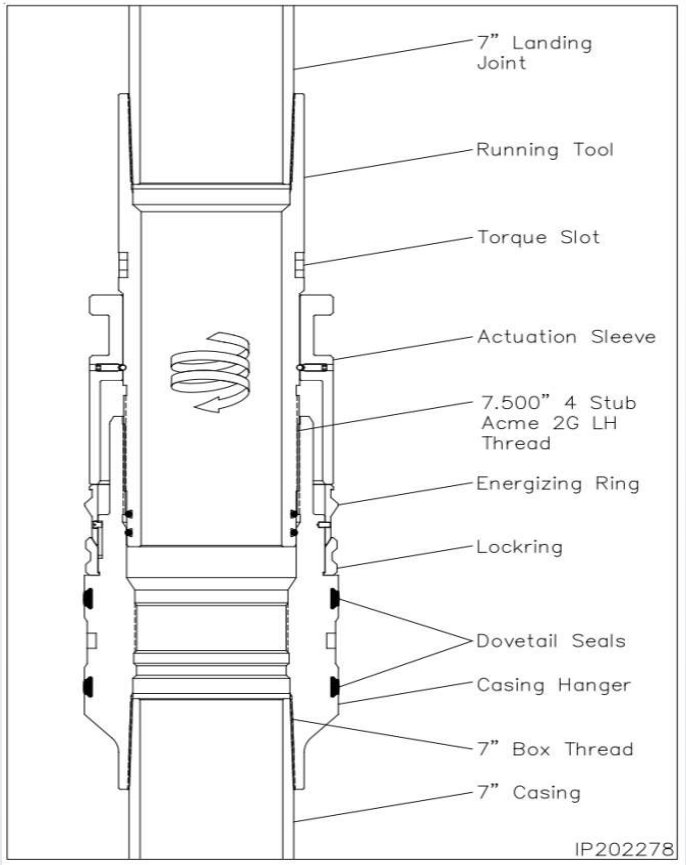
- Fluted Hanger allows returns up past the hanger body
- Returns throughout cement job flow up through BOP stack and into flowline
- Packoff is installed **after** cement job to isolate pressure above and below hanger
- Lockring engaged during packoff installation



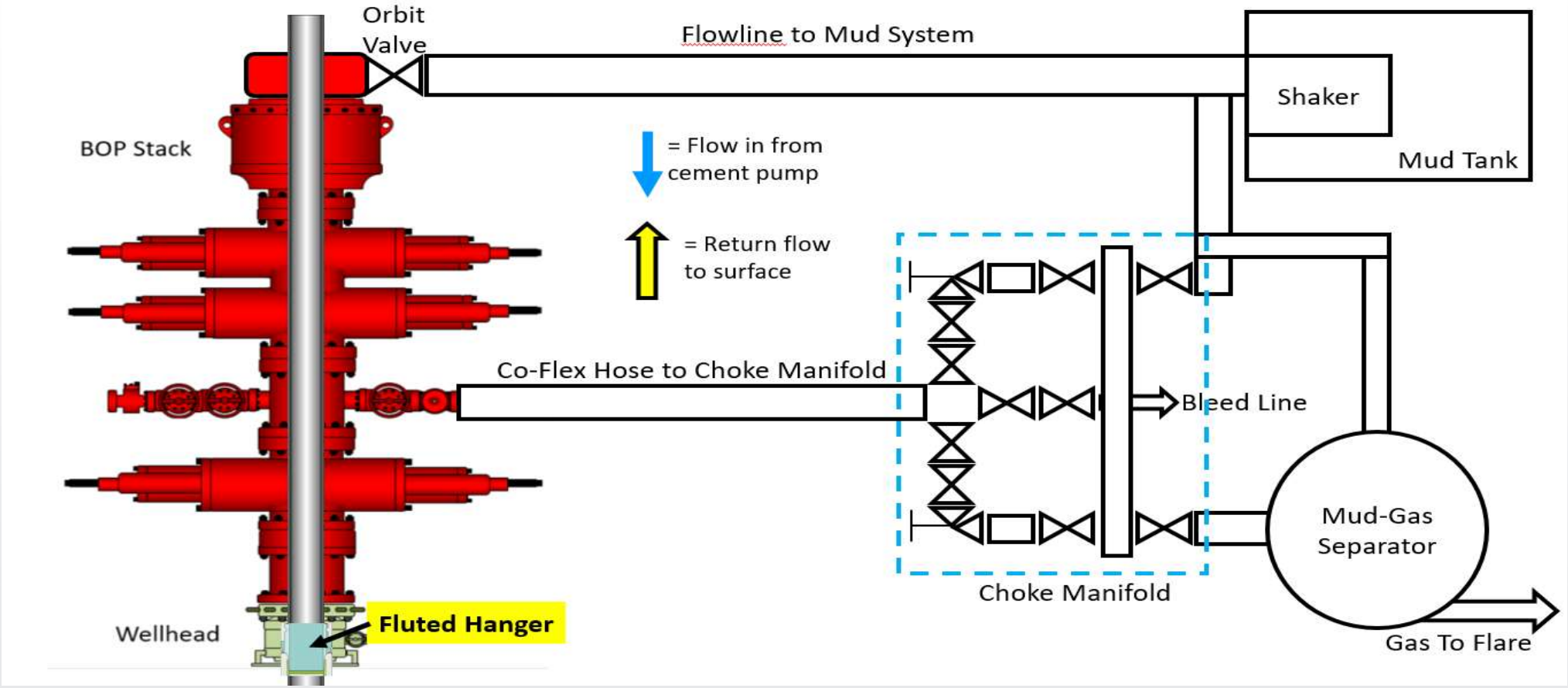


Offline Cementing Equipment-Solid Body Mandrel Hanger

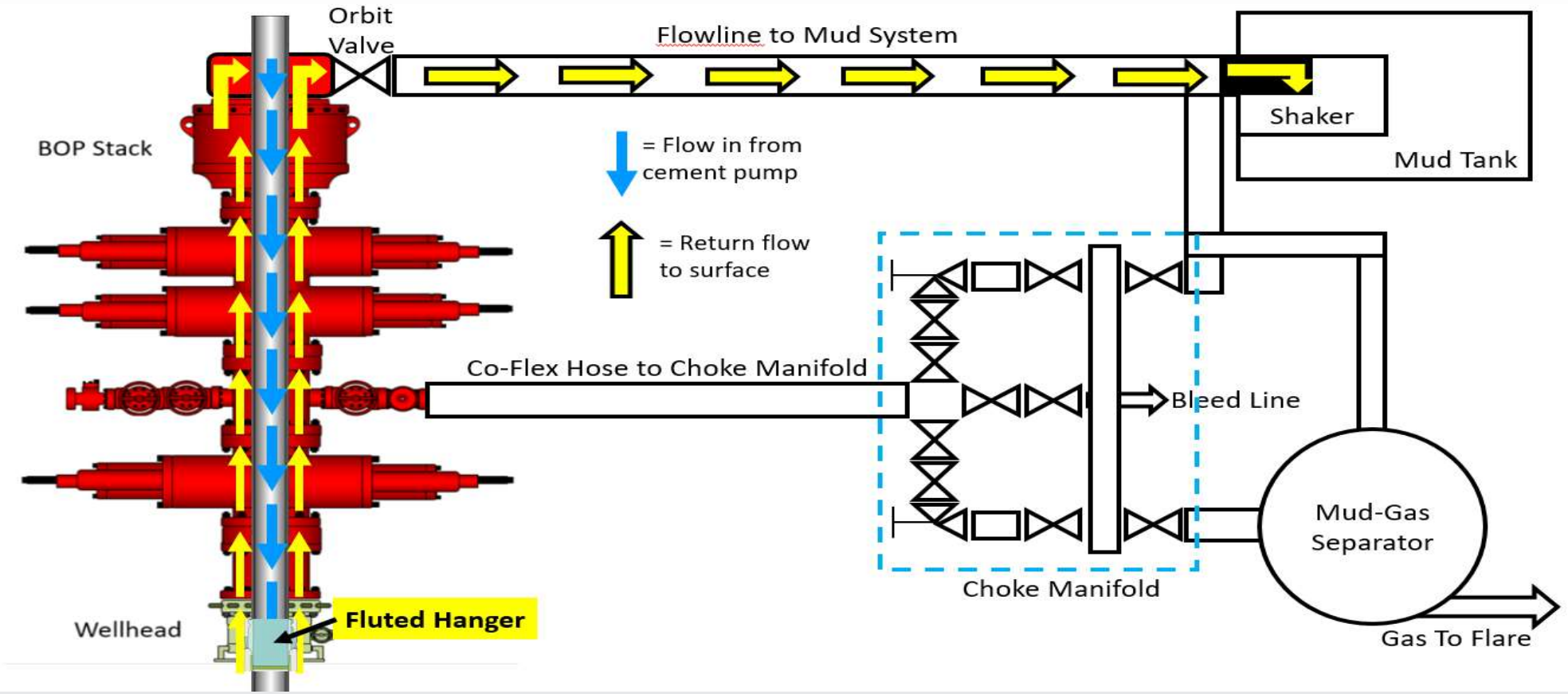
- Solid Body Mandrel Hanger allows for casing to be landed and pressure isolated in one step, **prior** to cementing
- Lockring is engaged to lock casing in place
- Casing is isolated and returns throughout cement job flow through the casing valves and through flowback iron independent of rig



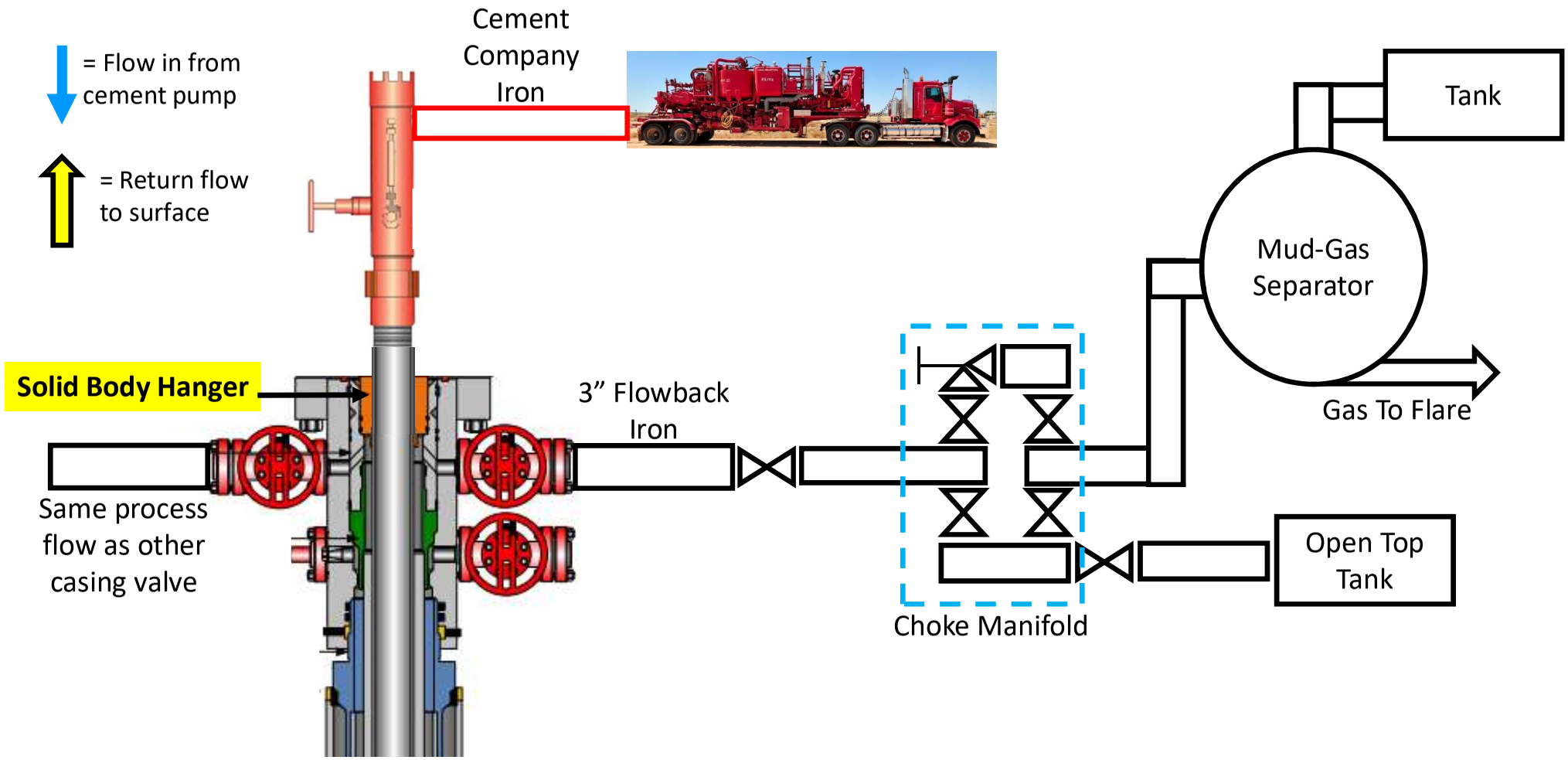
Conventional Cementing Flow Diagram



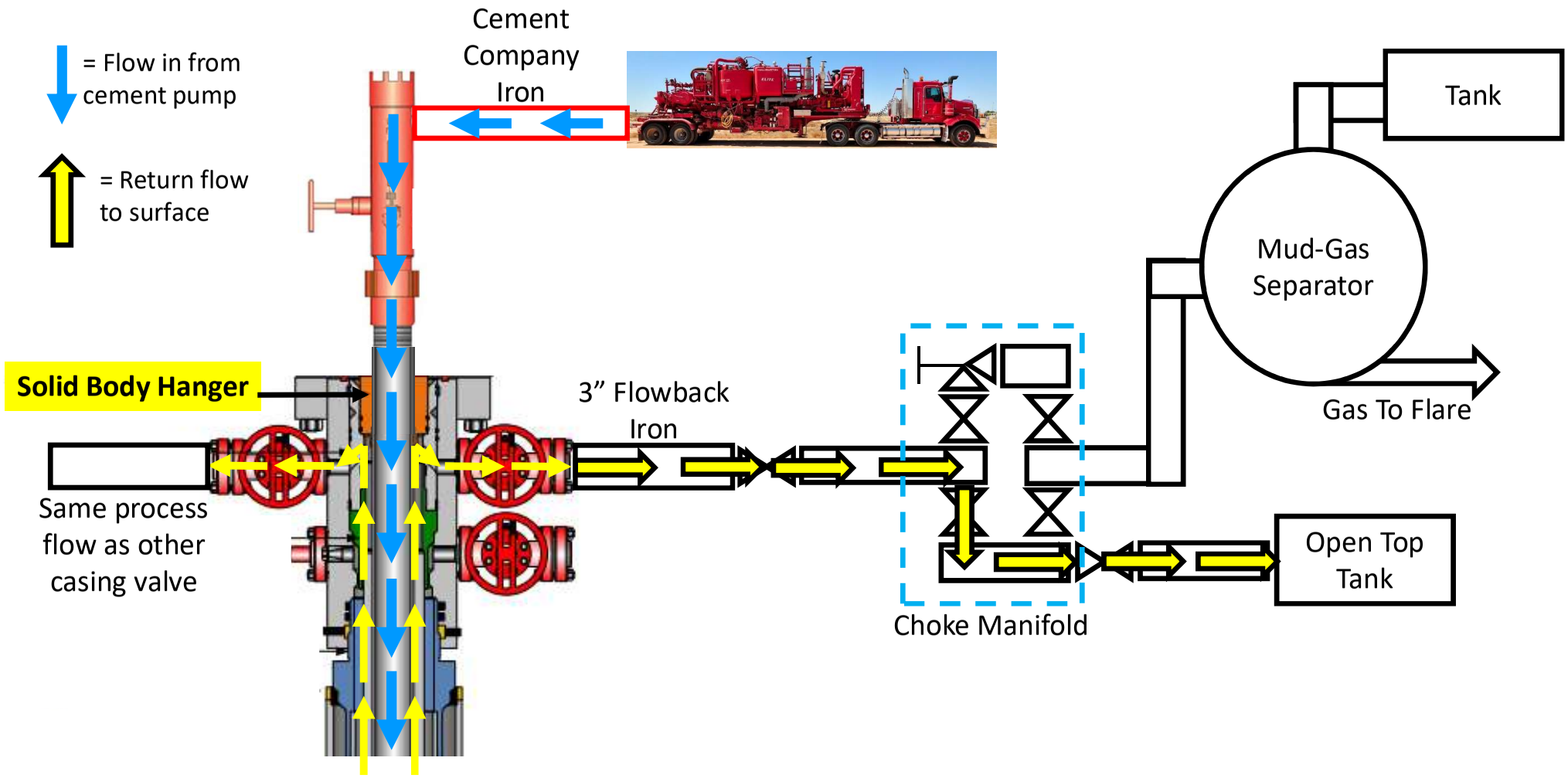
Conventional Cementing Flow Diagram



Offline Cementing -- Intermediate Casing

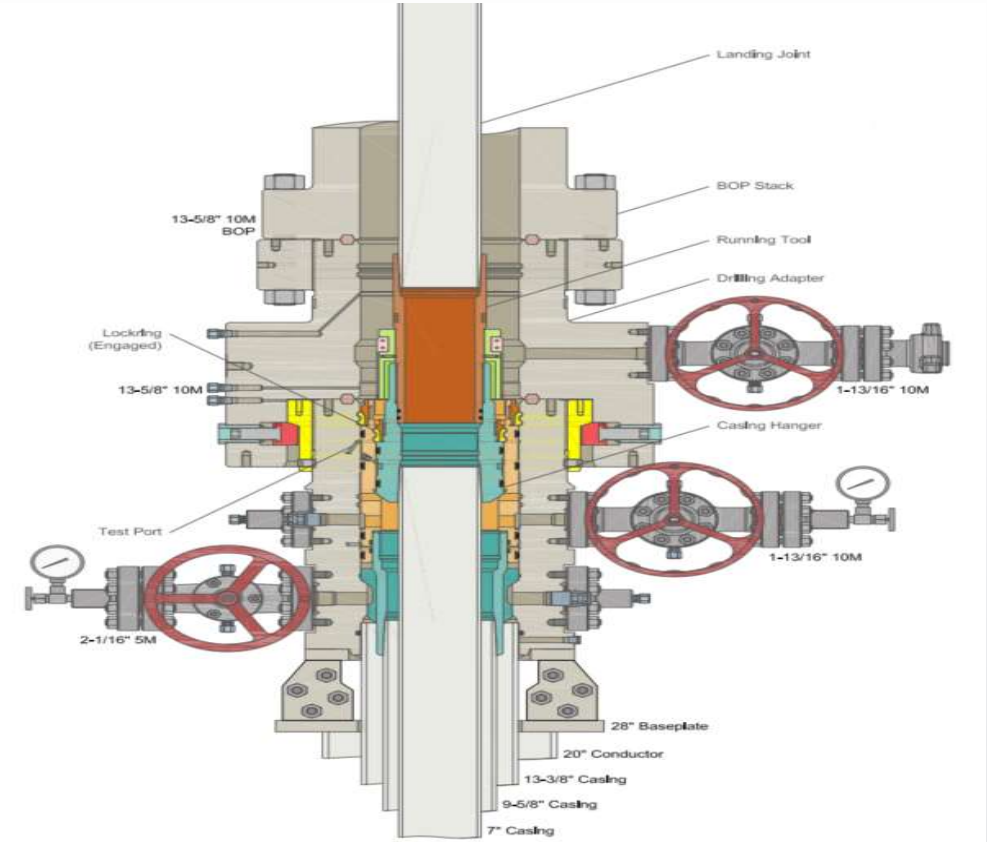


Offline Cementing -- Intermediate Casing



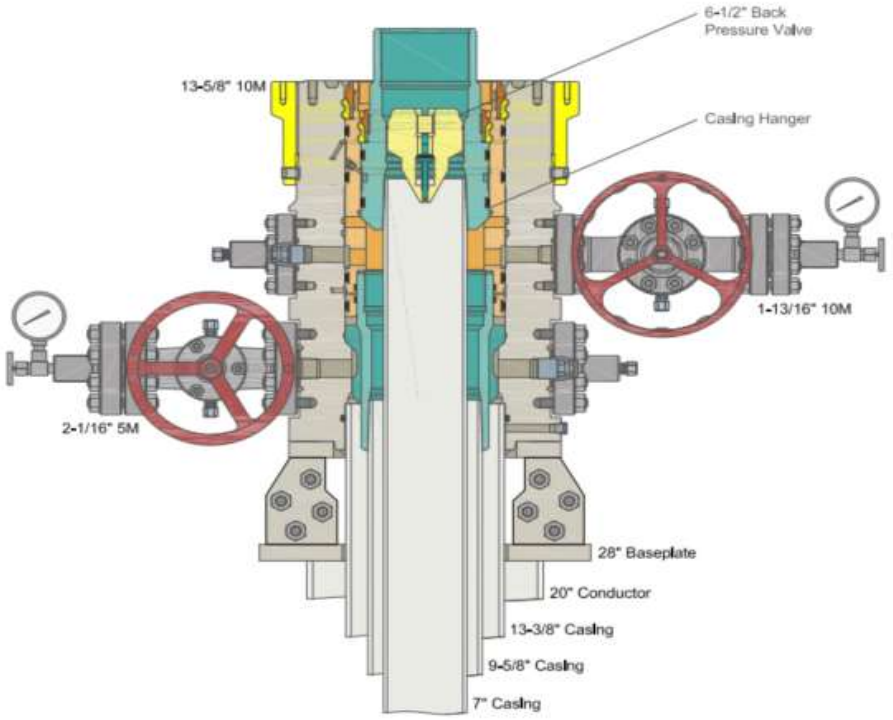
Offline Cementing Progression

- Run 7” casing
- Land 11” nominal x 7” hanger
- Test casing hanger
- Energize 11” nom x 7” hanger lock ring and pull test
- Re-test casing hanger
- Barriers & Procedures after landing casing before setting packoff
  - 10K BOP & 5K Annular-Internal and Annular barrier
  - Kill Weight Fluid in annulus and casing (ensure well is static before setting solid body packoff) Internal and Annular barrier
    - **If well is not static we <u>WILL NOT</u> set solid body packoff.**
  - 10K float collar-Internal Barrier
  - 10k float Shoe-Internal Barrier
    - **<u>After circulating a 1.5 casing capacities to ensure full column of mud and no entrained gas pumps will be shut off and floats checked for flow</u>**



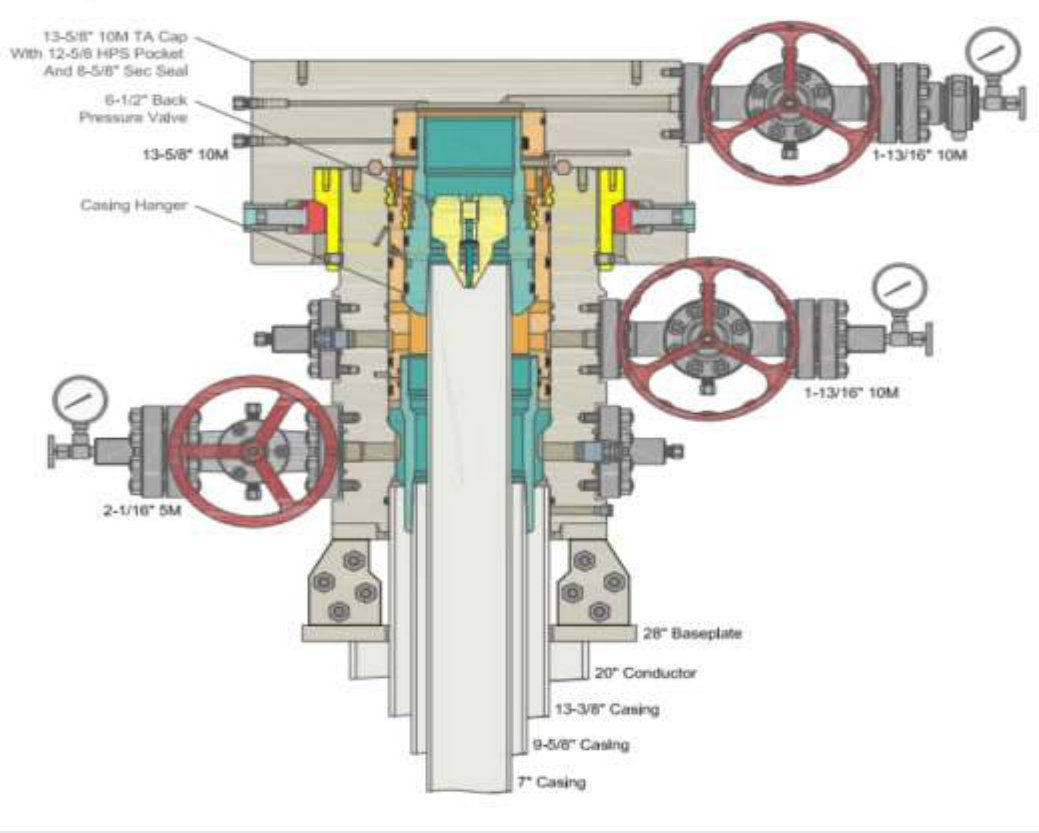
Offline Cementing Progression

- Pick up running tool with 6-1/2" nominal Back Pressure valve run into well and set
- Barriers and procedures **BEFORE** removing BOP's
  - Kill weight Fluid in annulus-Annular Barrier
  - Solid Body Packoff-Annular Barrier
  - 10K Float Equipment-Internal Barrier
  - 10K Back pressure valve installed with BOP still on well-Internal Barrier
    - BPV will be tested before it arrives on location by Cactus



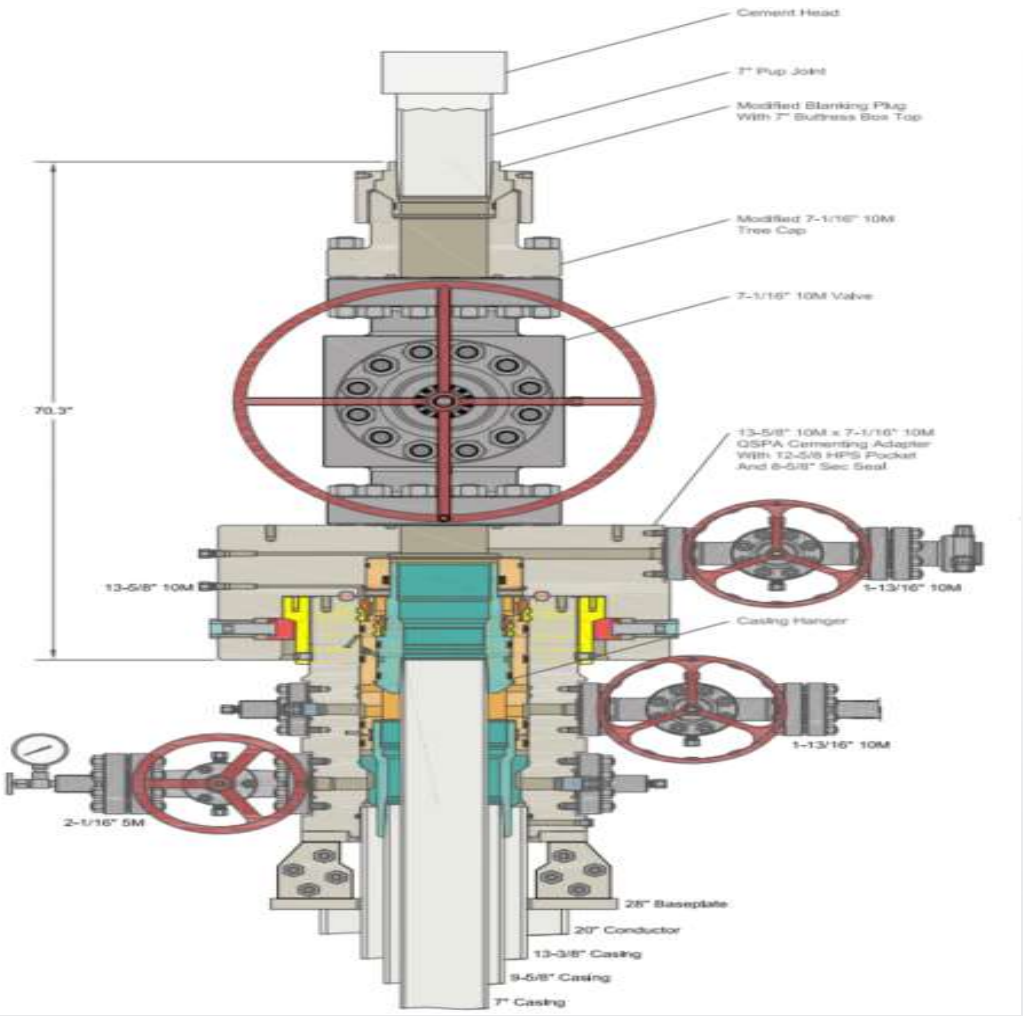
Offline Cementing Progression

- Nipple down BOP
- Nipple up TA Cap and test
- Skid Drilling Rig
- Barriers and procedures **AFTER** removing BOP's
  - Kill weight Fluid in annulus-Annular Barrier
  - Solid Body Packoff-Annular Barrier
  - 10K Float Equipment-Internal Barrier
  - 10K Back pressure valve-Internal Barrier
  - 10K rated TA cap with Valve-Internal Barrier



Offline Cementing Progression

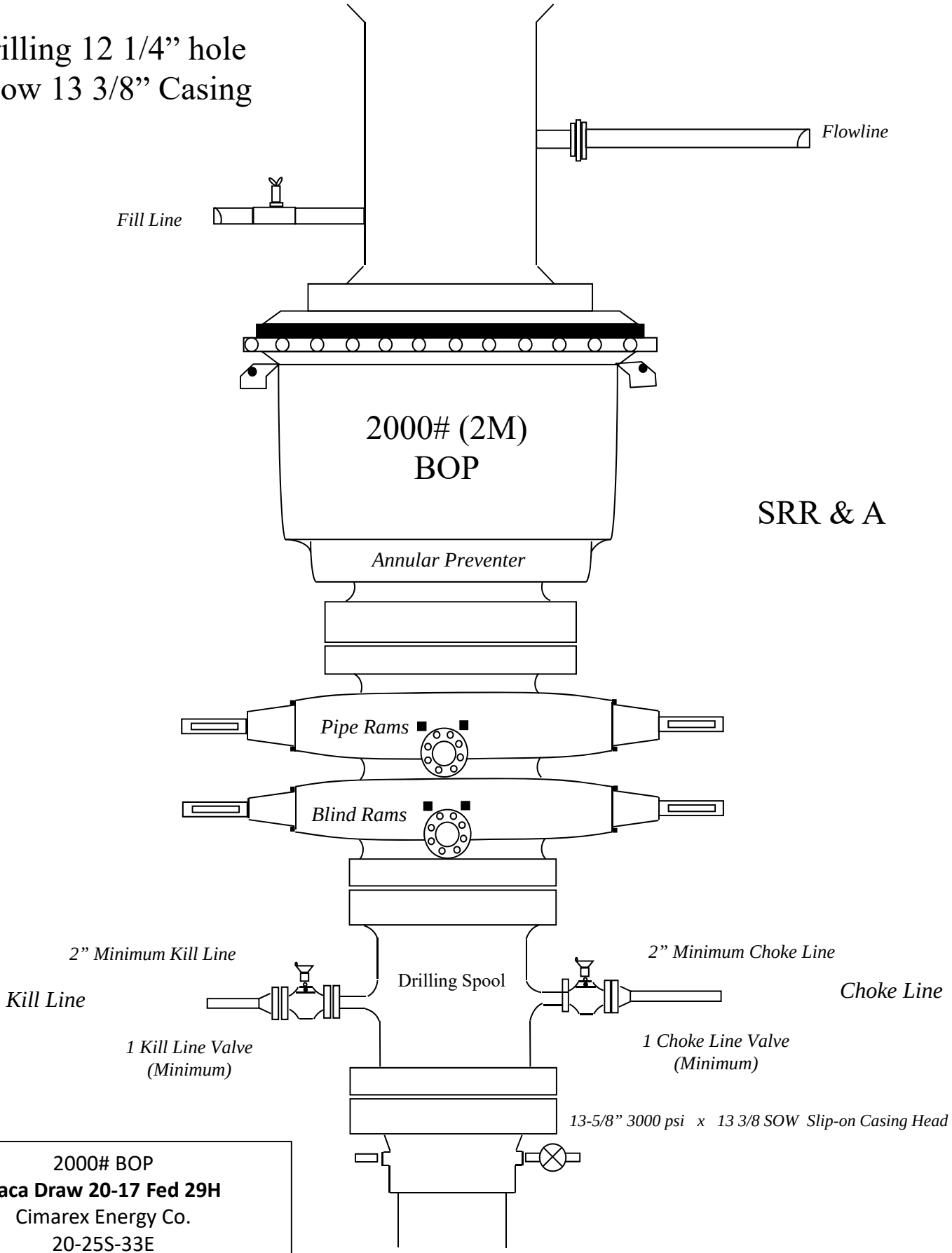
- Check Pressure on TA Cap and remove
- Install adaptor with Gate valve for off line cementing and test
- Rig up flowback iron independent of rig
- Retrieve Back Pressure Valve
- Shut in well
- Rig up to cement and pump job
- NU 10K TA cap after cement job
- Barriers and procedures before **rigging up cementing equipment**
  - **Address well and ensure no pressure on TA cap**
    - **Ability to pump into well through casing valves on backside to kill if needed**
  - Kill weight Fluid in annulus-Annular barrier
  - Solid Body Packoff-Annular barrier
  - 10K Float Equipment-Internal Barrier
  - 10K Back pressure valve-Internal Barrier



Offline Cementing Risk and COA Compliance

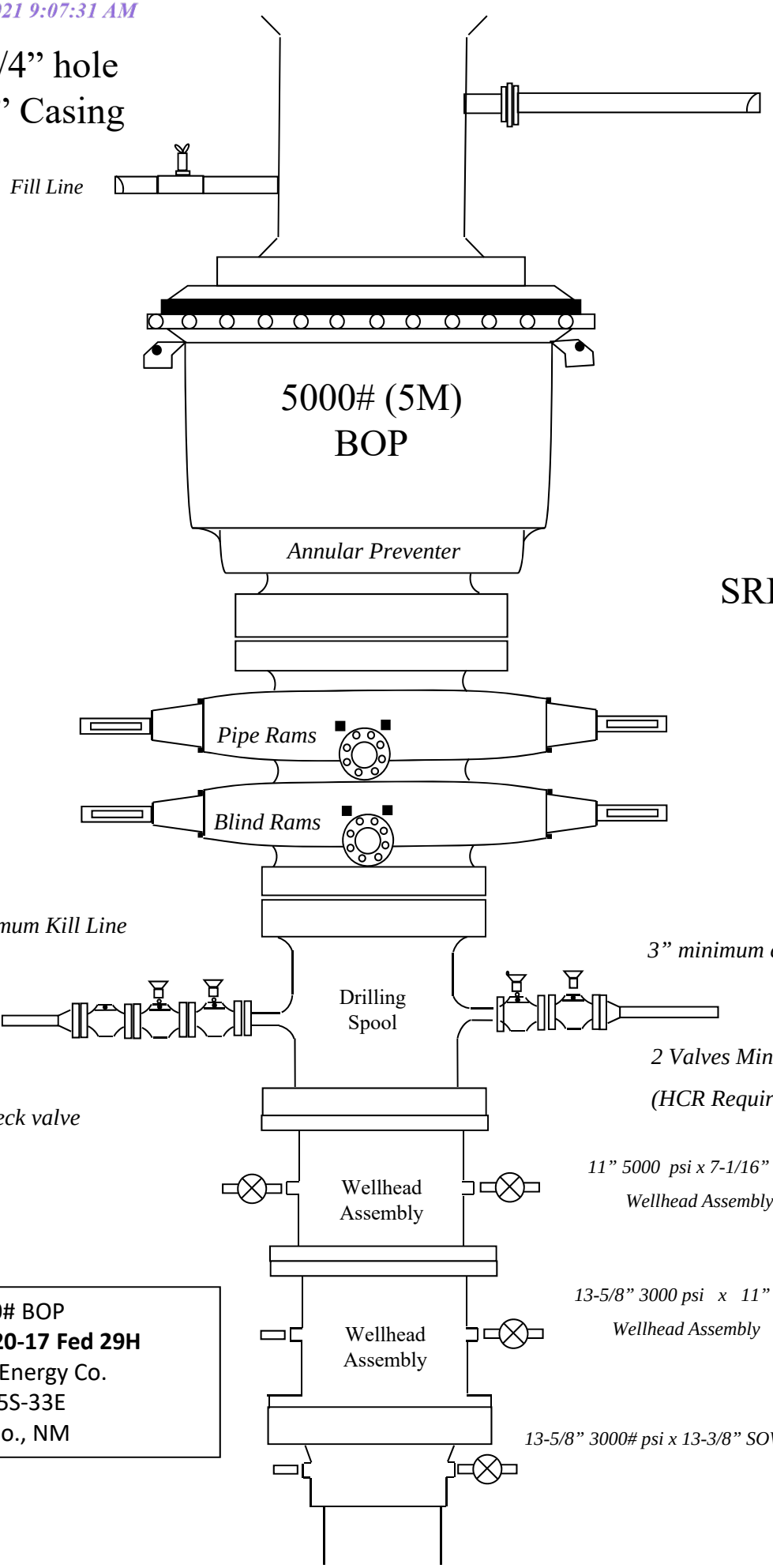
- All testing and breaks tested in accordance with Onshore Order # 2 and COA's
- If no cement to surface, bradenhead squeeze still possible with offline cementing equipment
- Time from skid rig to offline cementing ops typically 24 hours
- Conditions where we would not Offline Cement
  - Well is flowing
- All wellhead equipment equipment rated to 10K maintaining APD compliant
  - 10K flowback iron independent of rig circulating system
  - 10K Back Pressure Valve
  - 10K Gate Valve & TA combo for second barrier during operations
  - 10K 1-13/16 Valve coming off TA cap
  - 10K TA Cap

Drilling 12 1/4" hole
below 13 3/8" Casing



2000# BOP
Vaca Draw 20-17 Fed 29H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM

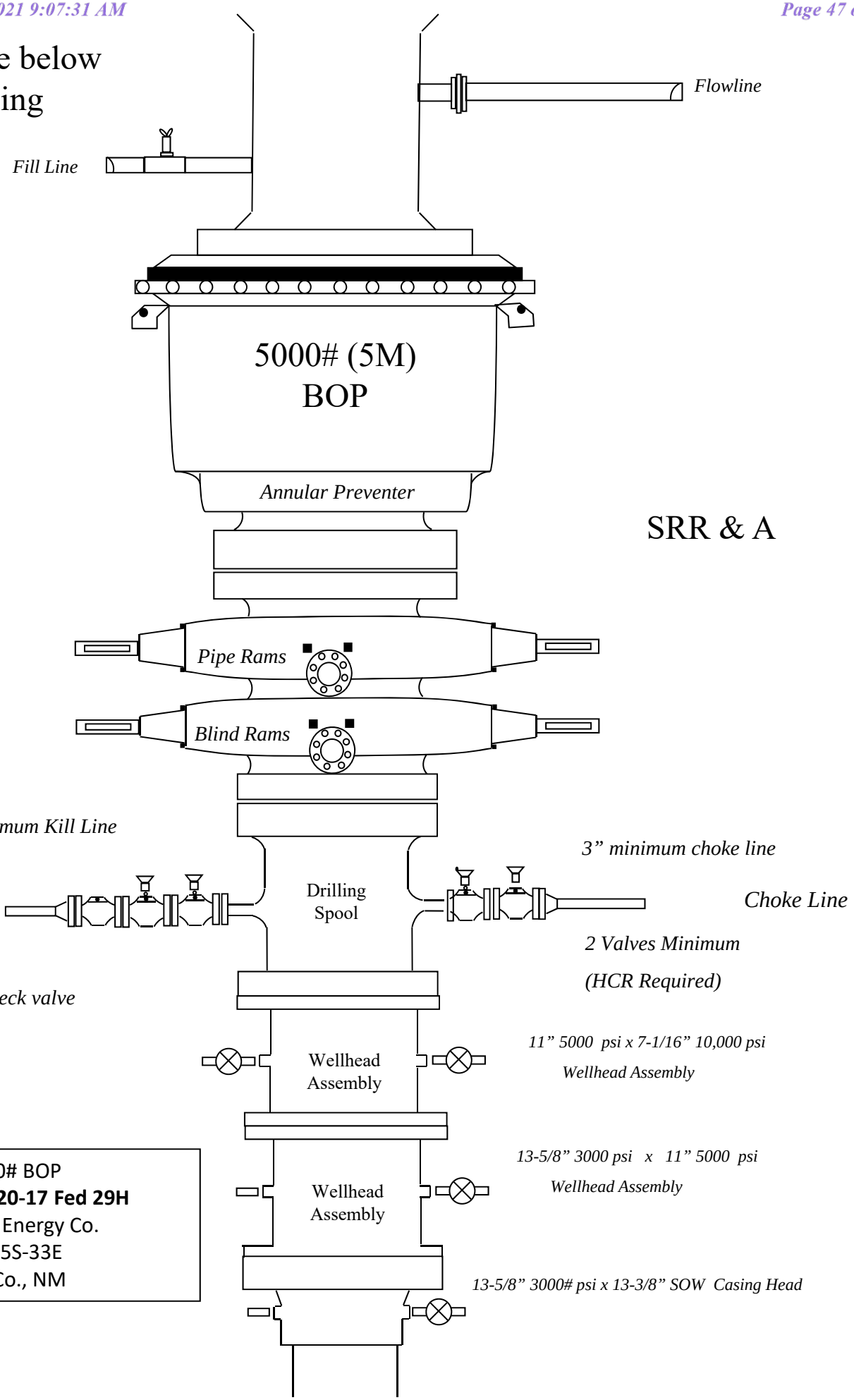
Drilling 8 1/4" hole below 9 5/8" Casing



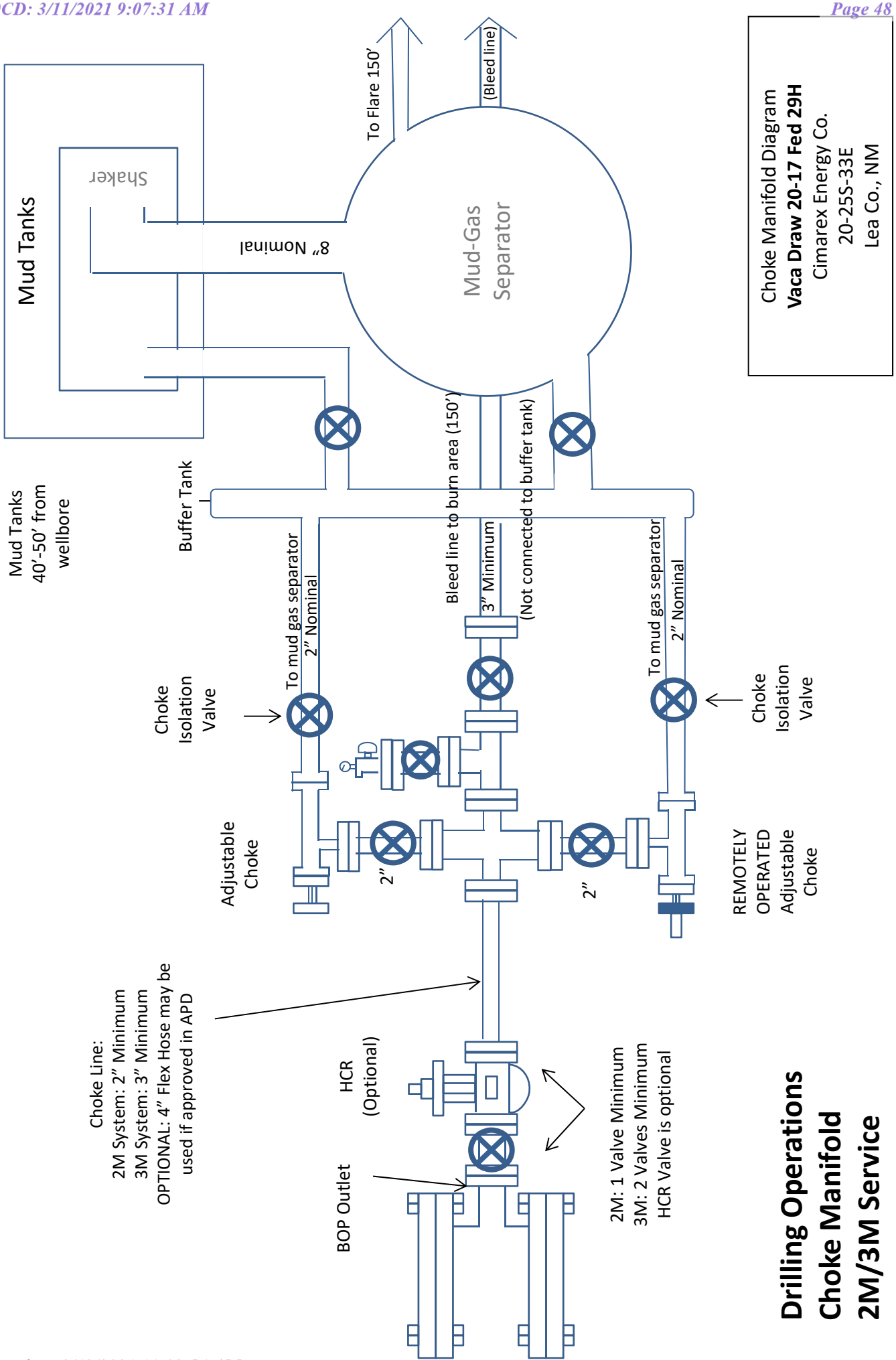
SRR & A

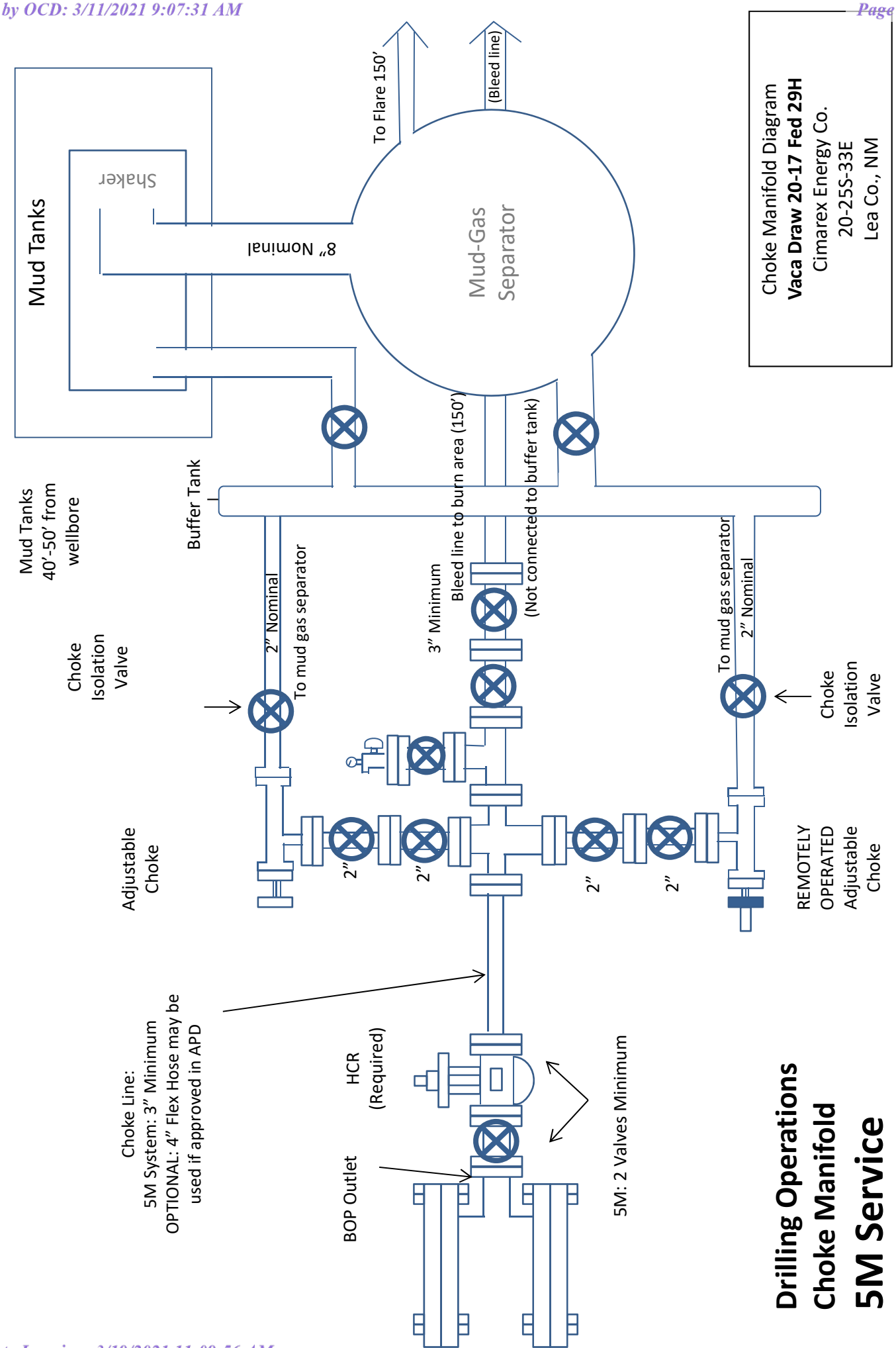
5000# BOP
Vaca Draw 20-17 Fed 29H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM

Drilling 6” hole below 7” Casing



5000# BOP
Vaca Draw 20-17 Fed 29H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM


Mud Tanks
Shaker
8" Nominal
Mud-Gas Separator
To Flare 150'
(Bleed line)
Choke Manifold Diagram
Vaca Draw 20-17 Fed 29H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM
Mud Tanks 40'-50' from wellbore
Buffer Tank
To mud gas separator 2" Nominal
Bleed line to burn area (150')
3" Minimum
(Not connected to buffer tank)
To mud gas separator 2" Nominal
Choke Isolation Valve
Choke Isolation Valve
Adjustable Choke
2"
2"
REMOTELY OPERATED Adjustable Choke
Choke Line:
2M System: 2" Minimum
3M System: 3" Minimum
OPTIONAL: 4" Flex Hose may be used if approved in APD
HCR (Optional)
BOP Outlet
2M: 1 Valve Minimum
3M: 2 Valves Minimum
HCR Valve is optional
Drilling Operations
Choke Manifold
2M/3M Service


Mud Tanks
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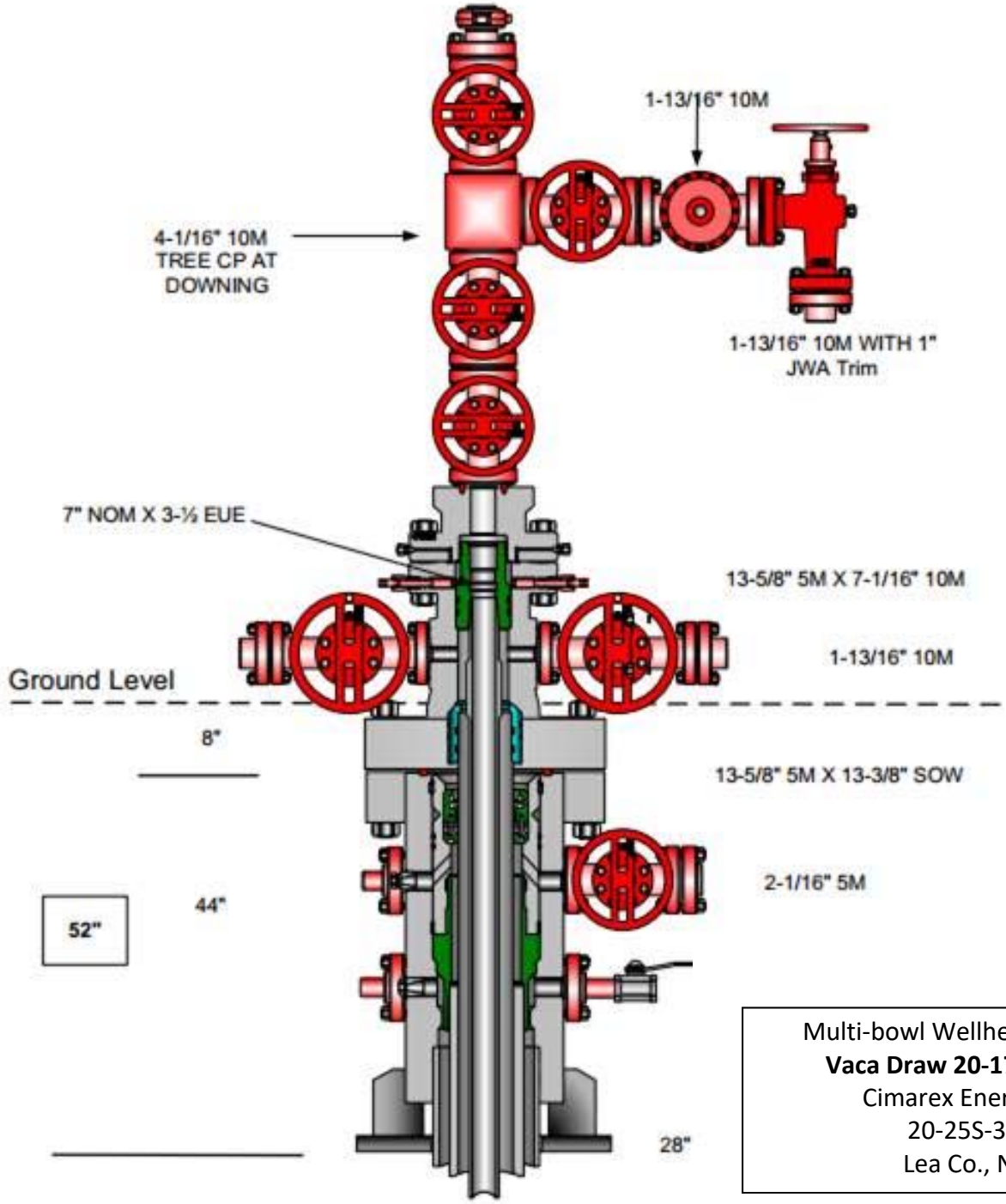
Vaca Draw 20-17 Fed 29H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM
Mud Tanks 40'-50' from wellbore
Buffer Tank
Choke Isolation Valve
2" Nominal
To mud gas separator
3" Minimum
Bleed line to burn area (150')
(Not connected to buffer tank)
To mud gas separator
2" Nominal
Choke Isolation Valve
Adjustable Choke
2"
2"
2"
2"
REMOTELY OPERATED Adjustable Choke
Choke Line:
5M System: 3" Minimum
OPTIONAL: 4" Flex Hose may be used if approved in APD
HCR (Required)
BOP Outlet
5M: 2 Valves Minimum
Drilling Operations
Choke Manifold
5M Service

Multi-bowl Wellhead Diagram



Multi-bowl Wellhead Diagram
Vaca Draw 20-17 Fed 29H
Cimarex Energy Co.
20-25S-33E
Lea Co., NM

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	985	985	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.74	4.07	6.81
12 1/4	0	4800	4800	9-5/8"	40.00	J-55	LT&C		1.55	2.71
8 3/4	0	9740	9740	7"	29.00	L-80	LT&C	1.54	1.79	1.88
8 3/4	9740	11210	10780	7"	29.00	L-80	BT&C	1.39	1.62	22.41
6	9640	21253	11050	4-1/2"	13.50	P-110	BT&C	2.07	2.40	22.17
					BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

Schlumberger

Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20 Proposal
Geodetic Report
(Def Plan)

CIMAREX

Report Date:	February 20, 2020 - 05:42 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	359.628 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Vaca Draw 20-17 Federal #29H / New Slot	**TVD Reference Datum:**	RKB
Well:	Vaca Draw 20-17 Federal #29H	**TVD Reference Elevation:**	3446.700 ft above MSL
Borehole:	Vaca Draw 20-17 Federal #29H	**Seabed / Ground Elevation:**	3420.700 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.574 °
Survey Name:	Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20	**Total Gravity Field Strength:**	998.4296mgn (9.80665 Based)
Survey Date:	September 19, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	109.037 ° / 11177.915 ft / 6.370 / 1.012	**Total Magnetic Field Strength:**	47698.260 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.691 °
Location Lat / Long:	N 32° 6' 35.06902", W 103° 35' 55.71207"	**Declination Date:**	February 20, 2020
Location Grid N/E Y/X:	N 404435.190 ftUS, E 768762.420 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3904 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996833	**Grid Convergence Used:**	0.3904 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.1831 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [331' FSL, 1251' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	100.00	0.00	255.00	100.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	200.00	0.00	255.00	200.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	300.00	0.00	255.00	300.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	400.00	0.00	255.00	400.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	500.00	0.00	255.00	500.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	600.00	0.00	255.00	600.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	700.00	0.00	255.00	700.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	800.00	0.00	255.00	800.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	900.00	0.00	255.00	900.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
Rustler	*935.00*	*0.00*	*255.00*	*935.00*	*0.00*	*0.00*	*0.00*	*0.00*	*404435.19*	*768762.42*	*N 32 6 35.07*	*W 103 35 55.71*
	1000.00	0.00	255.00	1000.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	1100.00	0.00	255.00	1100.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	1200.00	0.00	255.00	1200.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
Top of Salt	*1298.00*	*0.00*	*255.00*	*1298.00*	*0.00*	*0.00*	*0.00*	*0.00*	*404435.19*	*768762.42*	*N 32 6 35.07*	*W 103 35 55.71*
	1300.00	0.00	255.00	1300.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	1400.00	0.00	255.00	1400.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
Nudge 2°/100' DLS	1500.00	0.00	255.00	1500.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
	1600.00	2.00	255.00	1599.98	-0.44	-0.45	-1.69	2.00	404434.74	768760.73	N 32 6 35.06	W 103 35 55.73
	1700.00	4.00	255.00	1699.84	-1.76	-1.81	-6.74	2.00	404433.38	768755.68	N 32 6 35.05	W 103 35 55.79
	1800.00	6.00	255.00	1799.45	-3.96	-4.06	-15.16	2.00	404431.13	768747.26	N 32 6 35.03	W 103 35 55.89
	1900.00	8.00	255.00	1898.70	-7.04	-7.22	-26.93	2.00	404427.97	768735.49	N 32 6 35.00	W 103 35 56.03
Hold Nudge	1975.93	9.52	255.00	1973.74	-9.96	-10.21	-38.10	2.00	404424.98	768724.32	N 32 6 34.97	W 103 35 56.16
	2000.00	9.52	255.00	1997.48	-10.97	-11.24	-41.94	0.00	404423.95	768720.48	N 32 6 34.96	W 103 35 56.20
	2100.00	9.52	255.00	2096.11	-15.14	-15.52	-57.92	0.00	404419.67	768704.51	N 32 6 34.92	W 103 35 56.39
	2200.00	9.52	255.00	2194.73	-19.32	-19.80	-73.89	0.00	404415.39	768688.53	N 32 6 34.88	W 103 35 56.57
	2300.00	9.52	255.00	2293.35	-23.49	-24.08	-89.86	0.00	404411.11	768672.56	N 32 6 34.84	W 103 35 56.76
	2400.00	9.52	255.00	2391.98	-27.67	-28.36	-105.84	0.00	404406.83	768656.59	N 32 6 34.80	W 103 35 56.94
	2500.00	9.52	255.00	2490.60	-31.85	-32.64	-121.81	0.00	404402.55	768640.62	N 32 6 34.75	W 103 35 57.13
	2600.00	9.52	255.00	2589.22	-36.02	-36.92	-137.78	0.00	404398.27	768624.64	N 32 6 34.71	W 103 35 57.32
	2700.00	9.52	255.00	2687.84	-40.20	-41.20	-153.76	0.00	404393.99	768608.67	N 32 6 34.67	W 103 35 57.50
	2800.00	9.52	255.00	2786.47	-44.38	-45.48	-169.73	0.00	404389.71	768592.70	N 32 6 34.63	W 103 35 57.69
	2900.00	9.52	255.00	2885.09	-48.55	-49.76	-185.70	0.00	404385.43	768576.72	N 32 6 34.59	W 103 35 57.87
	3000.00	9.52	255.00	2983.71	-52.73	-54.04	-201.67	0.00	404381.15	768560.75	N 32 6 34.55	W 103 35 58.06
	3100.00	9.52	255.00	3082.34	-56.90	-58.32	-217.65	0.00	404376.87	768544.78	N 32 6 34.51	W 103 35 58.25
	3200.00	9.52	255.00	3180.96	-61.08	-62.60	-233.62	0.00	404372.59	768528.81	N 32 6 34.47	W 103 35 58.43
	3300.00	9.52	255.00	3279.58	-65.26	-66.88	-249.59	0.00	404368.31	768512.83	N 32 6 34.42	W 103 35 58.62
	3400.00	9.52	255.00	3378.21	-69.43	-71.16	-265.57	0.00	404364.03	768496.86	N 32 6 34.38	W 103 35 58.81
	3500.00	9.52	255.00	3476.83	-73.61	-75.44	-281.54	0.00	404359.75	768480.89	N 32 6 34.34	W 103 35 58.99
	3600.00	9.52	255.00	3575.45	-77.79	-79.72	-297.51	0.00	404355.47	768464.92	N 32 6 34.30	W 103 35 59.18
	3700.00	9.52	255.00	3674.08	-81.96	-84.00	-313.49	0.00	404351.19	768448.94	N 32 6 34.26	W 103 35 59.36
	3800.00	9.52	255.00	3772.70	-86.14	-88.28	-329.46	0.00	404346.91	768432.97	N 32 6 34.22	W 103 35 59.55
	3900.00	9.52	255.00	3871.32	-90.31	-92.56	-345.43	0.00	404342.63	768417.00	N 32 6 34.18	W 103 35 59.74
	4000.00	9.52	255.00	3969.95	-94.49	-96.84	-361.41	0.00	404338.35	768401.03	N 32 6 34.14	W 103 35 59.92
	4100.00	9.52	255.00	4068.57	-98.67	-101.12	-377.38	0.00	404334.07	768385.05	N 32 6 34.09	W 103 36 0.11
	4200.00	9.52	255.00	4167.19	-102.84	-105.40	-393.35	0.00	404329.80	768369.08	N 32 6 34.05	W 103 36 0.29
	4300.00	9.52	255.00	4265.82	-107.02	-109.68	-409.33	0.00	404325.52	768353.11	N 32 6 34.01	W 103 36 0.48
	4400.00	9.52	255.00	4364.44	-111.19	-113.96	-425.30	0.00	404321.24	768337.14	N 32 6 33.97	W 103 36 0.67
	4500.00	9.52	255.00	4463.06	-115.37	-118.24	-441.27	0.00	404316.96	768321.16	N 32 6 33.93	W 103 36 0.85
	4600.00	9.52	255.00	4561.69	-119.55	-122.52	-457.24	0.00	404312.68	768305.19	N 32 6 33.89	W 103 36 1.04
	4700.00	9.52	255.00	4660.31	-123.72	-126.80	-473.22	0.00	404308.40	768289.22	N 32 6 33.85	W 103 36 1.22
Base of Salt	*4754.44*	*9.52*	*255.00*	*4714.00*	*-126.00*	*-129.13*	*-481.91*	*0.00*	*404306.07*	*768280.52*	*N 32 6 33.82*	*W 103 36 1.32*
	4800.00	9.52	255.00	4758.93	-127.90	-131.08	-489.19	0.00	404304.12	768273.25	N 32 6 33.80	W 103 36 1.41
	4900.00	9.52	255.00	4857.56	-132.08	-135.36	-505.16	0.00	404299.84	768257.27	N 32 6 33.76	W 103 36 1.60
Lamar	*4952.16*	*9.52*	*255.00*	*4909.00*	*-134.25*	*-137.59*	*-513.50*	*0.00*	*404297.60*	*768248.94*	*N 32 6 33.74*	*W 103 36 1.69*
Bell Canyon	*4980.55*	*9.52*	*255.00*	*4937.00*	*-135.44*	*-138.81*	*-518.03*	*0.00*	*404296.39*	*768244.41*	*N 32 6 33.73*	*W 103 36 1.75*
	5000.00	9.52	255.00	4956.18	-136.25	-139.64	-521.14	0.00	404295.56	768241.30	N 32 6 33.72	W 103 36 1.78
	5100.00	9.52	255.00	5054.80	-140.43	-143.92	-537.11	0.00	404291.28	768225.33	N 32 6 33.68	W 103 36 1.97
	5200.00	9.52	255.00	5153.43	-144.60	-148.20	-553.08	0.00	404287.00	768209.36	N 32 6 33.64	W 103 36 2.15
	5300.00	9.52	255.00	5252.05	-148.78	-152.48	-569.06	0.00	404282.72	768193.38	N 32 6 33.60	W 103 36 2.34
	5400.00	9.52	255.00	5350.67	-152.96	-156.76	-585.03	0.00	404278.44	768177.41	N 32 6 33.56	W 103 36 2.53
	5500.00	9.52	255.00	5449.30	-157.13	-161.04	-601.00	0.00	404274.16	768161.44	N 32 6 33.52	W 103 36 2.71
	5600.00	9.52	255.00	5547.92	-161.31	-165.32	-616.98	0.00	404269.88	768145.46	N 32 6 33.47	W 103 36 2.90
	5700.00	9.52	255.00	5646.54	-165.49	-169.60	-632.95	0.00	404265.60	768129.49	N 32 6 33.43	W 103 36 3.08
	5800.00	9.52	255.00	5745.16	-169.66	-173.88	-648.92	0.00	404261.32	768113.52	N 32 6 33.39	W 103 36 3.27
	5900.00	9.52	255.00	5843.79	-173.84	-178.16	-664.90	0.00	404257.04	768097.55	N 32 6 33.35	W 103 36 3.46
	6000.00	9.52	255.00	5942.41	-178.01	-182.44	-680.87	0.00	404252.76	768081.57	N 32 6 33.31	W 103 36 3.64
Cherry Canyon	*6048.25*	*9.52*	*255.00*	*5990.00*	*-180.03*	*-184.50*	*-688.58*	*0.00*	*404250.69*	*768073.87*	*N 32 6 33.29*	*W 103 36 3.73*
	6100.00	9.52	255.00	6041.03	-182.19	-186.72	-696.84	0.00	404248.48	768065.60	N 32 6 33.27	W 103 36 3.83
	6200.00	9.52	255.00	6139.66	-186.37	-191.00	-712.81	0.00	404244.20	768049.63	N 32 6 33.23	W 103 36 4.01
	6300.00	9.52	255.00	6238.28	-190.54	-195.28	-728.79	0.00	404239.92	768033.66	N 32 6 33.19	W 103 36 4.20
	6400.00	9.52	255.00	6336.90	-194.72	-199.56	-744.76	0.00	404235.64	768017.68	N 32 6 33.14	W 103 36 4.39
	6500.00	9.52	255.00	6435.53	-198.89	-203.84	-760.73	0.00	404231.36	768001.71	N 32 6 33.10	W 103 36 4.57
Drop to Vertical	6565.37	9.52	255.00	6500.00	-201.62	-206.64	-771.18	0.00	404228.56	767991.27	N 32 6 33.08	W 103 36 4.69
	6600.00	8.83	255.00	6534.18	-203.02	-208.06	-776.51	2.00	404227.13	767985.94	N 32 6 33.06	W 103 36 4.76
	6700.00	6.83	255.00	6633.25	-206.46	-211.59	-789.66	2.00	404223.61	767972.79	N 32 6 33.03	W 103 36 4.91

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6800.00	4.83	255.00	6732.73	-209.02	-214.22	-799.46	2.00	404220.98	767962.98	N 32 6 33.00	W 103 36 5.02
	6900.00	2.83	255.00	6832.50	-210.71	-215.94	-805.91	2.00	404219.25	767956.54	N 32 6 32.99	W 103 36 5.10
	7000.00	0.83	255.00	6932.44	-211.51	-216.77	-808.99	2.00	404218.43	767953.46	N 32 6 32.98	W 103 36 5.13
Hold Vertical	7041.30	0.00	255.00	6973.74	-211.59	-216.84	-809.27	2.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7100.00	0.00	255.00	7032.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7200.00	0.00	255.00	7132.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7300.00	0.00	255.00	7232.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7400.00	0.00	255.00	7332.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7500.00	0.00	255.00	7432.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7600.00	0.00	255.00	7532.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
Brushy Canyon	*7603.56*	*0.00*	*255.00*	*7536.00*	*-211.59*	*-216.84*	*-809.27*	*0.00*	*404218.35*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	7700.00	0.00	255.00	7632.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7800.00	0.00	255.00	7732.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	7900.00	0.00	255.00	7832.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8000.00	0.00	255.00	7932.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8100.00	0.00	255.00	8032.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8200.00	0.00	255.00	8132.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8300.00	0.00	255.00	8232.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8400.00	0.00	255.00	8332.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8500.00	0.00	255.00	8432.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8600.00	0.00	255.00	8532.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8700.00	0.00	255.00	8632.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8800.00	0.00	255.00	8732.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	8900.00	0.00	255.00	8832.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9000.00	0.00	255.00	8932.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
Bone Spring	*9099.56*	*0.00*	*255.00*	*9032.00*	*-211.59*	*-216.84*	*-809.27*	*0.00*	*404218.35*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	9100.00	0.00	255.00	9032.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
Leonard Shale	*9154.56*	*0.00*	*255.00*	*9087.00*	*-211.59*	*-216.84*	*-809.27*	*0.00*	*404218.35*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	9200.00	0.00	255.00	9132.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9300.00	0.00	255.00	9232.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
Avalon Shale	*9379.56*	*0.00*	*255.00*	*9312.00*	*-211.59*	*-216.84*	*-809.27*	*0.00*	*404218.35*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	9400.00	0.00	255.00	9332.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9500.00	0.00	255.00	9432.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9600.00	0.00	255.00	9532.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9700.00	0.00	255.00	9632.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9800.00	0.00	255.00	9732.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	9900.00	0.00	255.00	9832.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	10000.00	0.00	255.00	9932.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
1st Bone Spring Sand	*10078.56*	*0.00*	*255.00*	*10011.00*	*-211.59*	*-216.84*	*-809.27*	*0.00*	*404218.35*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	10100.00	0.00	255.00	10032.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	10200.00	0.00	255.00	10132.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
2nd Bone Spring Carb	*10290.56*	*0.00*	*255.00*	*10223.00*	*-211.59*	*-216.84*	*-809.27*	*0.00*	*404218.35*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	10300.00	0.00	255.00	10232.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	10400.00	0.00	255.00	10332.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	10500.00	0.00	255.00	10432.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
	10600.00	0.00	255.00	10532.44	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
KOP - Build 12°/100' DLS	10640.09	0.00	255.00	10572.54	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
2nd Bone Spring Sand	*10650.56*	*1.26*	*359.63*	*10583.00*	*-211.47*	*-216.73*	*-809.27*	*12.00*	*404218.47*	*767953.17*	*N 32 6 32.98*	*W 103 36 5.14*
	10700.00	7.19	359.63	10632.28	-207.83	-213.09	-809.30	12.00	404222.11	767953.15	N 32 6 33.01	W 103 36 5.14
	10800.00	19.19	359.63	10729.47	-185.06	-190.32	-809.45	12.00	404244.88	767953.00	N 32 6 33.24	W 103 36 5.14
	10900.00	31.19	359.63	10819.79	-142.58	-147.84	-809.72	12.00	404287.36	767952.73	N 32 6 33.66	W 103 36 5.14
	11000.00	43.19	359.63	10899.31	-82.24	-87.50	-810.11	12.00	404347.69	767952.33	N 32 6 34.26	W 103 36 5.14
	11100.00	55.19	359.63	10964.55	-6.69	-11.96	-810.60	12.00	404423.23	767951.84	N 32 6 35.01	W 103 36 5.14
	11200.00	67.19	359.63	11012.66	80.77	75.50	-811.17	12.00	404510.69	767951.28	N 32 6 35.87	W 103 36 5.14
	11300.00	79.19	359.63	11041.53	176.32	171.05	-811.79	12.00	404606.24	767950.65	N 32 6 36.82	W 103 36 5.14
Landing Point	11390.09	90.00	359.63	11050.00	265.88	260.61	-812.37	12.00	404695.79	767950.07	N 32 6 37.70	W 103 36 5.14
	11400.00	90.00	359.63	11050.00	275.79	270.52	-812.44	0.00	404705.70	767950.01	N 32 6 37.80	W 103 36 5.14
	11500.00	90.00	359.63	11050.00	375.79	370.51	-813.09	0.00	404805.69	767949.36	N 32 6 38.79	W 103 36 5.14
	11600.00	90.00	359.63	11050.00	475.79	470.51	-813.74	0.00	404905.69	767948.71	N 32 6 39.78	W 103 36 5.14
	11700.00	90.00	359.63	11050.00	575.79	570.51	-814.39	0.00	405005.68	767948.06	N 32 6 40.77	W 103 36 5.13
	11800.00	90.00	359.63	11050.00	675.79	670.51	-815.04	0.00	405105.68	767947.41	N 32 6 41.76	W 103 36 5.13
	11900.00	90.00	359.63	11050.00	775.79	770.51	-815.68	0.00	405205.67	767946.76	N 32 6 42.75	W 103 36 5.13
	12000.00	90.00	359.63	11050.00	875.79	870.50	-816.33	0.00	405305.66	767946.11	N 32 6 43.74	W 103 36 5.13
	12100.00	90.00	359.63	11050.00	975.79	970.50	-816.98	0.00	405405.66	767945.46	N 32 6 44.73	W 103 36 5.13
	12200.00	90.00	359.63	11050.00	1075.79	1070.50	-817.63	0.00	405505.65	767944.81	N 32 6 45.72	W 103 36 5.13
	12300.00	90.00	359.63	11050.00	1175.79	1170.50	-818.28	0.00	405605.65	767944.17	N 32 6 46.71	W 103 36 5.13
	12400.00	90.00	359.63	11050.00	1275.79	1270.50	-818.93	0.00	405705.64	767943.52	N 32 6 47.70	W 103 36 5.13
	12500.00	90.00	359.63	11050.00	1375.79	1370.49	-819.58	0.00	405805.64	767942.87	N 32 6 48.69	W 103 36 5.13
	12600.00	90.00	359.63	11050.00	1475.79	1470.49	-820.23	0.00	405905.63	767942.22	N 32 6 49.67	W 103 36 5.13
	12700.00	90.00	359.63	11050.00	1575.79	1570.49	-820.88	0.00	406005.63	767941.57	N 32 6 50.66	W 103 36 5.13
	12800.00	90.00	359.63	11050.00	1675.79	1670.49	-821.53	0.00	406105.62	767940.92	N 32 6 51.65	W 103 36 5.13
	12900.00	90.00	359.63	11050.00	1775.79	1770.48	-822.18	0.00	406205.62	767940.27	N 32 6 52.64	W 103 36 5.13
	13000.00	90.00	359.63	11050.00	1875.79	1870.48	-822.83	0.00	406305.61	767939.62	N 32 6 53.63	W 103 36 5.13
	13100.00	90.00	359.63	11050.00	1975.79	1970.48	-823.48	0.00	406405.60	767938.97	N 32 6 54.62	W 103 36 5.13
	13200.00	90.00	359.63	11050.00	2075.79	2070.48	-824.13	0.00	406505.60	767938.32	N 32 6 55.61	W 103 36 5.13
	13300.00	90.00	359.63	11050.00	2175.79	2170.48	-824.77	0.00	406605.59	767937.67	N 32 6 56.60	W 103 36 5.13
	13400.00	90.00	359.63	11050.00	2275.79	2270.47	-825.42	0.00	406705.59	767937.02	N 32 6 57.59	W 103 36 5.13
	13500.00	90.00	359.63	11050.00	2375.79	2370.47	-826.07	0.00	406805.58	767936.37	N 32 6 58.58	W 103 36 5.13
	13600.00	90.00	359.63	11050.00	2475.79	2470.47	-826.72	0.00	406905.58	767935.73	N 32 6 59.57	W 103 36 5.13
	13700.00	90.00	359.63	11050.00	2575.79	2570.47	-827.37	0.00	407005.57	767935.08	N 32 7 0.56	W 103 36 5.13
	13800.00	90.00	359.63	11050.00	2675.79	2670.47	-828.02	0.00	407105.57	767934.43	N 32 7 1.55	W 103 36 5.13
	13900.00	90.00	359.63	11050.00	2775.79	2770.46	-828.67	0.00	407205.56	767933.78	N 32 7 2.54	W 103 36 5.13
	14000.00	90.00	359.63	11050.00	2875.79	2870.46	-829.32	0.00	407305.55	767933.13	N 32 7 3.53	W 103 36 5.13
	14100.00	90.00	359.63	11050.00	2975.79	2970.46	-829.97	0.00	407405.55	767932.48	N 32 7 4.52	W 103 36 5.13
	14200.00	90.00	359.63	11050.00	3075.79	3070.46	-830.62	0.00	407505.54	767931.83	N 32 7 5.51	W 103 36 5.13
	14300.00	90.00	359.63	11050.00	3175.79	3170.46	-831.27	0.00	407605.54	767931.18	N 32 7 6.50	W 103 36 5.13
	14400.00	90.00	359.63	11050.00	3275.79	3270.45	-831.92	0.00	407705.53	767930.53	N 32 7 7.49	W 103 36 5.13
	14500.00	90.00	359.63	11050.00	3375.79	3370.45	-832.57	0.00	407805.53	767929.88	N 32 7 8.48	W 103 36 5.13
	14600.00	90.00	359.63	11050.00	3475.79	3470.45	-833.22	0.00	407905.52	767929.23	N 32 7 9.47	W 103 36 5.12
	14700.00	90.00	359.63	11050.00	3575.79	3570.45	-833.86	0.00	408005.52	767928.58	N 32 7 10.46	W 103 36 5.12
	14800.00	90.00	359.63	11050.00	3675.79	3670.44	-834.51	0.00	408105.51	767927.93	N 32 7 11.44	W 103 36 5.12
	14900.00	90.00	359.63	11050.00	3775.79	3770.44	-835.16	0.00	408205.51	767927.29	N 32 7 12.43	W 103 36 5.12
	15000.00	90.00	359.63	11050.00	3875.79	3870.44	-835.81	0.00	408305.50	767926.64	N 32 7 13.42	W 103 36 5.12
	15100.00	90.00	359.63	11050.00	3975.79	3970.44	-836.46	0.00	408405.49	767925.99	N 32 7 14.41	W 103 36 5.12
	15200.00	90.00	359.63	11050.00	4075.79	4070.44	-837.11	0.00	408505.49	767925.34	N 32 7 15.40	W 103 36 5.12
	15300.00	90.00	359.63	11050.00	4175.79	4170.43	-837.76	0.00	408605.48	767924.69	N 32 7 16.39	W 103 36 5.12
	15400.00	90.00	359.63	11050.00	4275.79	4270.43	-838.41	0.00	408705.48	767924.04	N 32 7 17.38	W 103 36 5.12
	15500.00	90.00	359.63	11050.00	4375.79	4370.43	-839.06	0.00	408805.47	767923.39	N 32 7 18.37	W 103 36 5.12
	15600.00	90.00	359.63	11050.00	4475.79	4470.43	-839.71	0.00	408905.47	767922.74	N 32 7 19.36	W 103 36 5.12
	15700.00	90.00	359.63	11050.00	4575.79	4570.43	-840.36	0.00	409005.46	767922.09	N 32 7 20.35	W 103 36 5.12
	15800.00	90.00	359.63	11050.00	4675.79	4670.42	-841.01	0.00	409105.46	767921.44	N 32 7 21.34	W 103 36 5.12
	15900.00	90.00	359.63	11050.00	4775.79	4770.42	-841.66	0.00	409205.45	767920.79	N 32 7 22.33	W 103 36 5.12
	16000.00	90.00	359.63	11050.00	4875.79	4870.42	-842.31	0.00	409305.45	767920.14	N 32 7 23.32	W 103 36 5.12
	16100.00	90.00	359.63	11050.00	4975.79	4970.42	-842.95	0.00	409405.44	767919.49	N 32 7 24.31	W 103 36 5.12
	16200.00	90.00	359.63	11050.00	5075.79	5070.42	-843.60	0.00	409505.43	767918.84	N 32 7 25.30	W 103 36 5.12

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	16300.00	90.00	359.63	11050.00	5175.79	5170.41	-844.25	0.00	409605.43	767918.20	N 32 7 26.29	W 103 36 5.12
	16400.00	90.00	359.63	11050.00	5275.79	5270.41	-844.90	0.00	409705.42	767917.55	N 32 7 27.28	W 103 36 5.12
	16500.00	90.00	359.63	11050.00	5375.79	5370.41	-845.55	0.00	409805.42	767916.90	N 32 7 28.27	W 103 36 5.12
	16600.00	90.00	359.63	11050.00	5475.79	5470.41	-846.20	0.00	409905.41	767916.25	N 32 7 29.26	W 103 36 5.12
	16700.00	90.00	359.63	11050.00	5575.79	5570.40	-846.85	0.00	410005.41	767915.60	N 32 7 30.25	W 103 36 5.12
	16800.00	90.00	359.63	11050.00	5675.79	5670.40	-847.50	0.00	410105.40	767914.95	N 32 7 31.24	W 103 36 5.12
	16900.00	90.00	359.63	11050.00	5775.79	5770.40	-848.15	0.00	410205.40	767914.30	N 32 7 32.22	W 103 36 5.12
	17000.00	90.00	359.63	11050.00	5875.79	5870.40	-848.80	0.00	410305.39	767913.65	N 32 7 33.21	W 103 36 5.12
	17100.00	90.00	359.63	11050.00	5975.79	5970.40	-849.45	0.00	410405.39	767913.00	N 32 7 34.20	W 103 36 5.12
	17200.00	90.00	359.63	11050.00	6075.79	6070.39	-850.10	0.00	410505.38	767912.35	N 32 7 35.19	W 103 36 5.12
	17300.00	90.00	359.63	11050.00	6175.79	6170.39	-850.75	0.00	410605.37	767911.70	N 32 7 36.18	W 103 36 5.12
	17400.00	90.00	359.63	11050.00	6275.79	6270.39	-851.39	0.00	410705.37	767911.05	N 32 7 37.17	W 103 36 5.12
	17500.00	90.00	359.63	11050.00	6375.79	6370.39	-852.04	0.00	410805.36	767910.40	N 32 7 38.16	W 103 36 5.11
	17600.00	90.00	359.63	11050.00	6475.79	6470.39	-852.69	0.00	410905.36	767909.76	N 32 7 39.15	W 103 36 5.11
	17700.00	90.00	359.63	11050.00	6575.79	6570.38	-853.34	0.00	411005.35	767909.11	N 32 7 40.14	W 103 36 5.11
	17800.00	90.00	359.63	11050.00	6675.79	6670.38	-853.99	0.00	411105.35	767908.46	N 32 7 41.13	W 103 36 5.11
	17900.00	90.00	359.63	11050.00	6775.79	6770.38	-854.64	0.00	411205.34	767907.81	N 32 7 42.12	W 103 36 5.11
	18000.00	90.00	359.63	11050.00	6875.79	6870.38	-855.29	0.00	411305.34	767907.16	N 32 7 43.11	W 103 36 5.11
	18100.00	90.00	359.63	11050.00	6975.79	6970.38	-855.94	0.00	411405.33	767906.51	N 32 7 44.10	W 103 36 5.11
	18200.00	90.00	359.63	11050.00	7075.79	7070.37	-856.59	0.00	411505.33	767905.86	N 32 7 45.09	W 103 36 5.11
	18300.00	90.00	359.63	11050.00	7175.79	7170.37	-857.24	0.00	411605.32	767905.21	N 32 7 46.08	W 103 36 5.11
	18400.00	90.00	359.63	11050.00	7275.79	7270.37	-857.89	0.00	411705.31	767904.56	N 32 7 47.07	W 103 36 5.11
	18500.00	90.00	359.63	11050.00	7375.79	7370.37	-858.54	0.00	411805.31	767903.91	N 32 7 48.06	W 103 36 5.11
	18600.00	90.00	359.63	11050.00	7475.79	7470.36	-859.19	0.00	411905.30	767903.26	N 32 7 49.05	W 103 36 5.11
	18700.00	90.00	359.63	11050.00	7575.79	7570.36	-859.84	0.00	412005.30	767902.61	N 32 7 50.04	W 103 36 5.11
	18800.00	90.00	359.63	11050.00	7675.79	7670.36	-860.48	0.00	412105.29	767901.96	N 32 7 51.03	W 103 36 5.11
	18900.00	90.00	359.63	11050.00	7775.79	7770.36	-861.13	0.00	412205.29	767901.32	N 32 7 52.02	W 103 36 5.11
	19000.00	90.00	359.63	11050.00	7875.79	7870.36	-861.78	0.00	412305.28	767900.67	N 32 7 53.00	W 103 36 5.11
	19100.00	90.00	359.63	11050.00	7975.79	7970.35	-862.43	0.00	412405.28	767900.02	N 32 7 53.99	W 103 36 5.11
	19200.00	90.00	359.63	11050.00	8075.79	8070.35	-863.08	0.00	412505.27	767899.37	N 32 7 54.98	W 103 36 5.11
	19300.00	90.00	359.63	11050.00	8175.79	8170.35	-863.73	0.00	412605.26	767898.72	N 32 7 55.97	W 103 36 5.11
	19400.00	90.00	359.63	11050.00	8275.79	8270.35	-864.38	0.00	412705.26	767898.07	N 32 7 56.96	W 103 36 5.11
	19500.00	90.00	359.63	11050.00	8375.79	8370.35	-865.03	0.00	412805.25	767897.42	N 32 7 57.95	W 103 36 5.11
	19600.00	90.00	359.63	11050.00	8475.79	8470.34	-865.68	0.00	412905.25	767896.77	N 32 7 58.94	W 103 36 5.11
	19700.00	90.00	359.63	11050.00	8575.79	8570.34	-866.33	0.00	413005.24	767896.12	N 32 7 59.93	W 103 36 5.11
	19800.00	90.00	359.63	11050.00	8675.79	8670.34	-866.98	0.00	413105.24	767895.47	N 32 8 0.92	W 103 36 5.11
	19900.00	90.00	359.63	11050.00	8775.79	8770.34	-867.63	0.00	413205.23	767894.82	N 32 8 1.91	W 103 36 5.11
	20000.00	90.00	359.63	11050.00	8875.79	8870.34	-868.28	0.00	413305.23	767894.17	N 32 8 2.90	W 103 36 5.11
	20100.00	90.00	359.63	11050.00	8975.79	8970.33	-868.93	0.00	413405.22	767893.52	N 32 8 3.89	W 103 36 5.11
	20200.00	90.00	359.63	11050.00	9075.79	9070.33	-869.57	0.00	413505.22	767892.87	N 32 8 4.88	W 103 36 5.11
	20300.00	90.00	359.63	11050.00	9175.79	9170.33	-870.22	0.00	413605.21	767892.23	N 32 8 5.87	W 103 36 5.10
	20400.00	90.00	359.63	11050.00	9275.79	9270.33	-870.87	0.00	413705.20	767891.58	N 32 8 6.86	W 103 36 5.10
	20500.00	90.00	359.63	11050.00	9375.79	9370.32	-871.52	0.00	413805.20	767890.93	N 32 8 7.85	W 103 36 5.10
	20600.00	90.00	359.63	11050.00	9475.79	9470.32	-872.17	0.00	413905.19	767890.28	N 32 8 8.84	W 103 36 5.10
	20700.00	90.00	359.63	11050.00	9575.79	9570.32	-872.82	0.00	414005.19	767889.63	N 32 8 9.83	W 103 36 5.10
	20800.00	90.00	359.63	11050.00	9675.79	9670.32	-873.47	0.00	414105.18	767888.98	N 32 8 10.82	W 103 36 5.10
	20900.00	90.00	359.63	11050.00	9775.79	9770.32	-874.12	0.00	414205.18	767888.33	N 32 8 11.81	W 103 36 5.10
	21000.00	90.00	359.63	11050.00	9875.79	9870.31	-874.77	0.00	414305.17	767887.68	N 32 8 12.80	W 103 36 5.10
	21100.00	90.00	359.63	11050.00	9975.79	9970.31	-875.42	0.00	414405.17	767887.03	N 32 8 13.78	W 103 36 5.10
	21200.00	90.00	359.63	11050.00	10075.79	10070.31	-876.07	0.00	414505.16	767886.38	N 32 8 14.77	W 103 36 5.10
Cimarex Vaca Draw 20-17 Federal #29H - PBHL [100' FNL, 440' FWL]	21252.72	90.00	359.63	11050.00	10128.51	10123.03	-876.41	0.00	414557.88	767886.04	N 32 8 15.30	W 103 36 5.10

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #29H / Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20
	1	26.000	21252.722	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #29H / Cimarex Vaca Draw 20-17 Federal

Schlumberger

Cimarex Energy

Rev 1

CIMAREX

Borehole:	Well:	Field:	Structure:
Vaca Draw 20-17 Federal #29H	Vaca Draw 20-17 Federal #29H	NM Lea County (NAD 83)	Cimarex Vaca Draw 20-17 Federal #29H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous			
Model:	HDGM 2019	Dip:	59.691°	Date:	20-Feb-2020	Lat:	N 32 6 35.07	Northing:	404435.19ftUS	Grid Conv:	0.3904°	Slot:	New Slot	TVD Ref:	RKB(3446.7ft above MSL)
MagDec:	6.574°	FS:	47698.26nT	Gravity FS:	998.43mgn (9.80665 Based)	Lon:	W 103 35 55.71	Easting:	768762.42ftUS	Scale Fact:	0.99996833	Plan:	Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20		

Critical Points

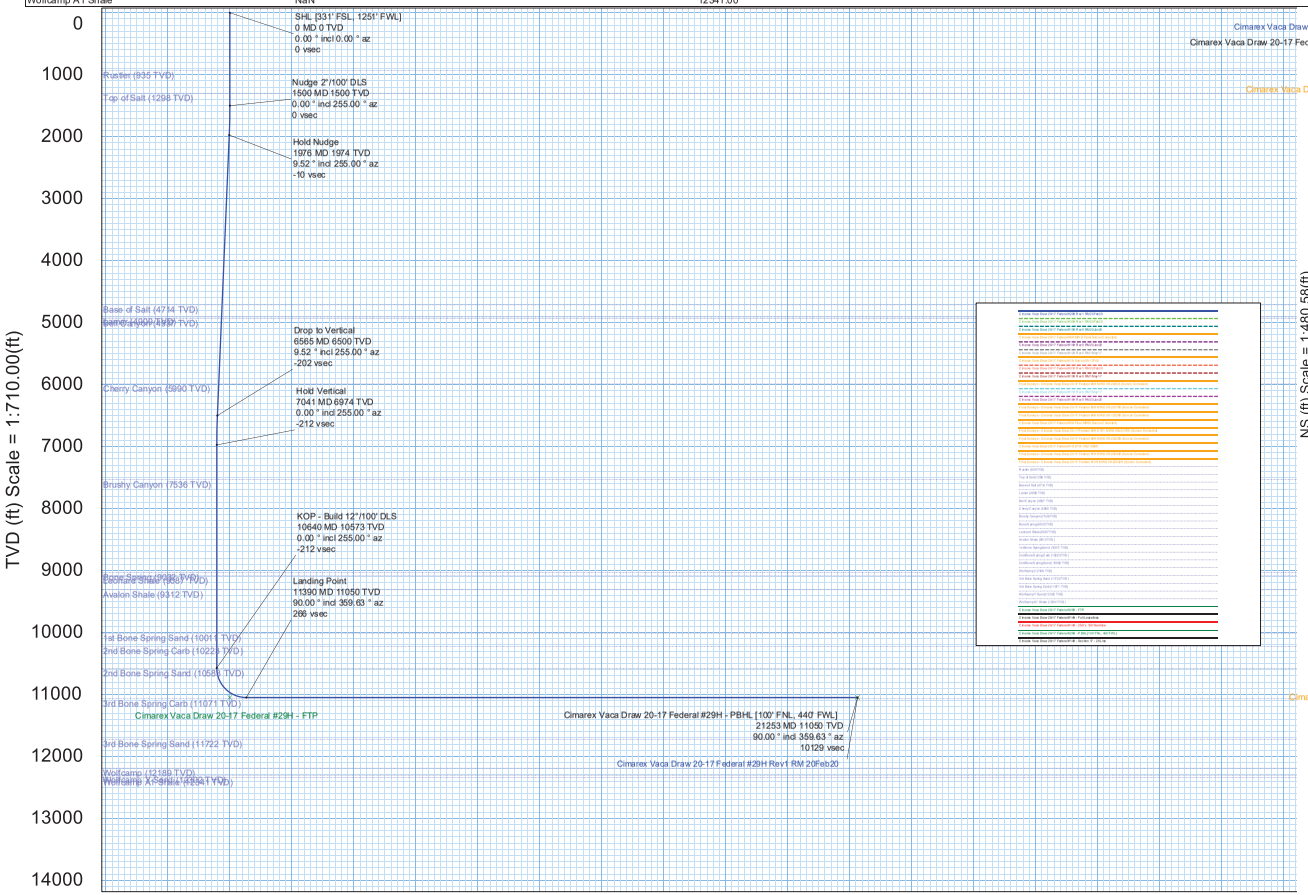
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [331' FSL, 1251' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	935.00	0.00	255.00	935.00	0.00	0.00	0.00	0.00
Top of Salt	1298.00	0.00	255.00	1298.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	1500.00	0.00	255.00	1500.00	0.00	0.00	0.00	0.00
Hold Nudge	1975.93	9.52	255.00	1973.74	-9.96	-10.21	-38.10	2.00
Base of Salt	4754.44	9.52	255.00	4714.00	-126.00	-129.13	-481.91	0.00
Lamar	4952.16	9.52	255.00	4909.00	-134.25	-137.59	-513.50	0.00
Bell Canyon	4980.55	9.52	255.00	4937.00	-135.44	-138.81	-518.03	0.00
Cherry Canyon	6048.25	9.52	255.00	5990.00	-180.03	-184.50	-688.58	0.00
Drop to Vertical	6565.37	9.52	255.00	6500.00	-201.62	-206.64	-771.18	0.00
Hold Vertical	7041.30	0.00	255.00	6973.74	-211.59	-216.84	-809.27	2.00
Brushy Canyon	7603.56	0.00	255.00	7536.00	-211.59	-216.84	-809.27	0.00
Bone Spring	9099.56	0.00	255.00	9032.00	-211.59	-216.84	-809.27	0.00
Leonard Shale	9154.56	0.00	255.00	9087.00	-211.59	-216.84	-809.27	0.00
Avalon Shale	9379.56	0.00	255.00	9312.00	-211.59	-216.84	-809.27	0.00
1st Bone Spring Sand	10078.56	0.00	255.00	10011.00	-211.59	-216.84	-809.27	0.00
2nd Bone Spring Carb	10290.56	0.00	255.00	10223.00	-211.59	-216.84	-809.27	0.00
KOP - Build 12°/100' DLS	10640.09	0.00	255.00	10572.54	-211.59	-216.84	-809.27	0.00
2nd Bone Spring Sand	10650.56	1.26	359.63	10583.00	-211.47	-216.73	-809.27	12.00
Landing Point	11390.09	90.00	359.63	11050.00	265.88	260.61	-812.37	12.00
Cimarex Vaca Draw 20-17 Federal #29H - PBHL [100' FNL, 440' FWL]	21252.72	90.00	359.63	11050.00	10128.51	10123.03	-876.41	0.00
Wolfcamp	NaN			12189.00				
3rd Bone Spring Sand	NaN			11722.00				
3rd Bone Spring Carb	NaN			11071.00				
Wolfcamp Y Sand	NaN			12302.00				
Wolfcamp A1 Shale	NaN			12341.00				

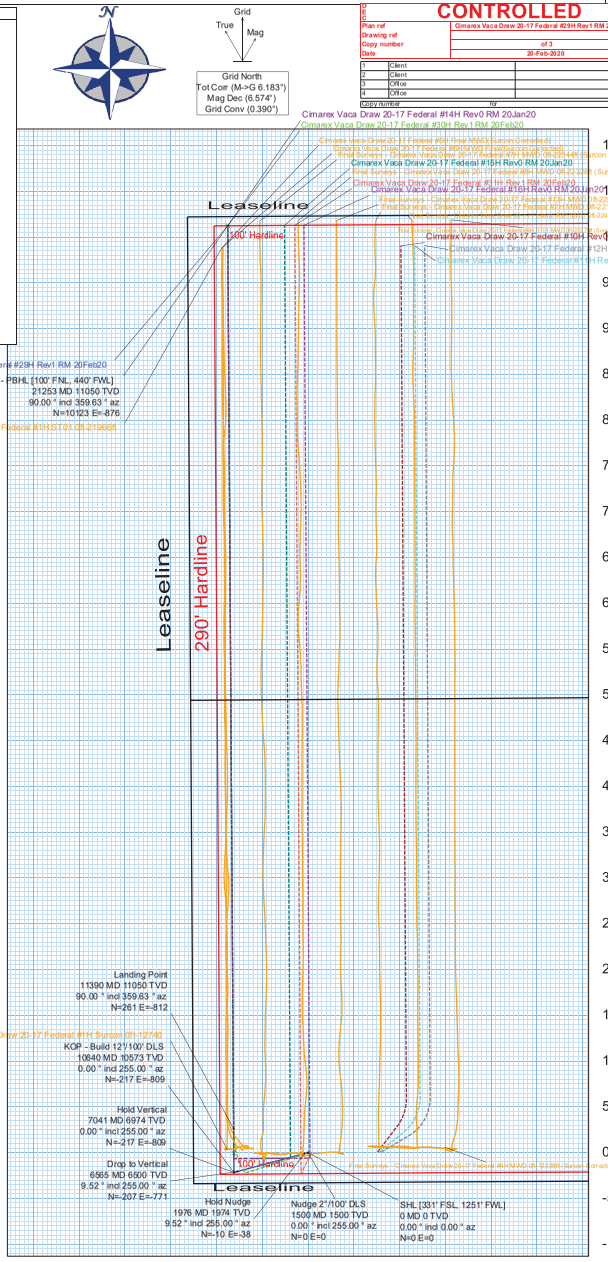
CONTROLLED

Plan ref	Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20
Drawing ref	
Copy number	of 3
Date	20-Feb-2020

1	Client
2	Client
3	Office
4	Office

Copy number for





Schlumberger

Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20 Proposal
Geodetic Report
(Def Plan)

CIMAREX

Report Date:	February 20, 2020 - 05:42 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	359.628 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Vaca Draw 20-17 Federal #29H / New Slot	**TVD Reference Datum:**	RKB
Well:	Vaca Draw 20-17 Federal #29H	**TVD Reference Elevation:**	3446.700 ft above MSL
Borehole:	Vaca Draw 20-17 Federal #29H	**Seabed / Ground Elevation:**	3420.700 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.574 °
Survey Name:	Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20	**Total Gravity Field Strength:**	998.4296mgn (9.80665 Based)
Survey Date:	September 19, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	109.037 ° / 11177.915 ft / 6.370 / 1.012	**Total Magnetic Field Strength:**	47698.260 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.691 °
Location Lat / Long:	N 32° 6' 35.06902", W 103° 35' 55.71207"	**Declination Date:**	February 20, 2020
Location Grid N/E Y/X:	N 404435.190 ftUS, E 768762.420 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3904 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996833	**Grid Convergence Used:**	0.3904 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.1831 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [331' FSL, 1251' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
Nudge 2°/100' DLS	1500.00	0.00	255.00	1500.00	0.00	0.00	0.00	0.00	404435.19	768762.42	N 32 6 35.07	W 103 35 55.71
Hold Nudge	1975.93	9.52	255.00	1973.74	-9.96	-10.21	-38.10	2.00	404424.98	768724.32	N 32 6 34.97	W 103 35 56.16
Drop to Vertical	6565.37	9.52	255.00	6500.00	-201.62	-206.64	-771.18	0.00	404228.56	767991.27	N 32 6 33.08	W 103 36 4.69
Hold Vertical	7041.30	0.00	255.00	6973.74	-211.59	-216.84	-809.27	2.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
KOP - Build 12°/100' DLS	10640.09	0.00	255.00	10572.54	-211.59	-216.84	-809.27	0.00	404218.35	767953.17	N 32 6 32.98	W 103 36 5.14
Landing Point	11390.09	90.00	359.63	11050.00	265.88	260.61	-812.37	12.00	404695.79	767950.07	N 32 6 37.70	W 103 36 5.14
Cimarex Vaca Draw 20-17 Federal #29H - PBHL [100' FNL, 440' FWL]	21252.72	90.00	359.63	11050.00	10128.51	10123.03	-876.41	0.00	414557.88	767886.04	N 32 8 15.30	W 103 36 5.10

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #29H / Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20
	1	26.000	21252.722	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #29H / Cimarex Vaca Draw 20-17 Federal

Schlumberger CIMAREX

Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20 Anti-Collision Summary Report

Analysis Date-24hr Time:	February 20, 2020 - 17:42	**Analysis Method:**	3D Least Distance
Client:	Cimarex Energy	**Reference Trajectory:**	Cimarex Vaca Draw 20-17 Federal #29H Rev1 RM 20Feb20 (Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Vaca Draw 20-17 Federal #29H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	New Slot	**Min Pts:**	All local minima indicated.
Well:	Vaca Draw 20-17 Federal #29H	**Version / Patch:**	2.10.787.0
Borehole:	Vaca Draw 20-17 Federal #29H	**Database \ Project:**	us1153APP452.DIR.SLB.COM\DRILLING-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 21252.72ft		

Trajectory Error Model: ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan: Not performed!

Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Results highlighted: Sep-Factor separation <= 1.50 ft													
Cimarex Vaca Draw 20-17 Federal #30H Rev1 RM 20Feb20 (Def Plan)													Warning Alert
	20.02	16.27	18.73	3.75	N/A	MAS = 4.96 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.02	16.27	18.73	3.75	21080.04	MAS = 4.96 (m)	26.00	26.00				WRP	
	20.02	16.27	9.70	3.75	2.07	MAS = 4.96 (m)	1500.00	1500.00				MinPts	
	20.04	16.27	9.68	3.76	2.07	MAS = 4.96 (m)	1510.00	1510.00				MINPT-O-EOU	
	20.17	16.27	9.72	3.90	2.06	MAS = 4.96 (m)	1530.00	1530.00				MinPt-O-SF	
	53.33	17.09	41.51	36.25	4.94	OSF1.50	1940.00	1938.27	OSF>5.00			Exit Alert	
	89.93	27.93	70.88	62.00	4.99	OSF1.50	4180.00	4147.47	OSF<5.00			Enter Alert	
	79.04	48.26	46.44	30.79	2.48	OSF1.50	6260.00	6198.83				MinPt-CtCt	
	79.09	48.39	46.40	30.71	2.48	OSF1.50	6280.00	6218.56				MinPts	
	79.16	48.45	46.43	30.71	2.48	OSF1.50	6290.00	6228.42				MinPt-O-SF	
	103.59	58.97	63.85	44.62	2.66	OSF1.50	10210.00	10142.44				MinPts	
	171.91	52.53	136.46	119.37	4.99	OSF1.50	10420.00	10352.44	OSF>5.00			Exit Alert	
	650.40	196.10	519.24	454.30	5.00	OSF1.50	17110.00	11050.00	OSF<5.00			Enter Alert	
	650.40	322.97	434.66	327.43	3.03	OSF1.50	21252.72	11050.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #16H Rev0 RM 20Jan20 (Non-Def Plan)													Warning Alert
	623.51	32.81	622.22	590.70	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	623.51	32.81	622.22	590.70	127295.16	MAS = 10.00 (m)	26.00	26.00				WRP	
	80.98	32.81	62.92	48.17	4.84	MAS = 10.00 (m)	3760.00	3733.25	OSF<5.00			Enter Alert	
	34.00	32.81	14.50	1.20	1.80	MAS = 10.00 (m)	4000.00	3969.95				MinPts	
	34.02	32.81	14.46	1.21	1.79	MAS = 10.00 (m)	4010.00	3979.81				MinPts	
	97.92	32.81	77.22	65.11	4.98	MAS = 10.00 (m)	4310.00	4275.68	OSF>5.00			Exit Alert	
	845.42	55.96	807.68	789.46	23.16	OSF1.50	8940.00	8872.44				MinPts	
	849.31	56.50	811.21	792.80	23.04	OSF1.50	9090.00	9022.44				MinPt-O-SF	
	1904.11	37.97	1878.37	1866.15	77.81	OSF1.50	11490.00	11050.00				MinPt-O-SF	
	1903.59	38.15	1877.72	1865.44	77.41	OSF1.50	11550.00	11050.00				MinPt-CtCt	
	1903.59	323.66	1687.38	1579.92	8.85	OSF1.50	21252.72	11050.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #31H Rev1 RM 20Feb20 (Def Plan)													Warning Alert
	40.00	32.26	38.72	7.74	N/A	MAS = 9.83 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	40.00	32.26	38.72	7.74	N/A	MAS = 9.83 (m)	26.00	26.00				WRP	
	40.00	32.26	29.69	7.74	4.29	MAS = 9.83 (m)	1500.00	1500.00				MinPts	
	40.02	32.26	29.66	7.76	4.27	MAS = 9.83 (m)	1510.00	1510.00				MINPT-O-EOU	
	40.43	32.26	29.89	8.17	4.23	MAS = 9.83 (m)	1550.00	1550.00				MinPt-O-SF	
	50.63	32.26	39.46	18.37	4.99	MAS = 9.83 (m)	1750.00	1749.68	OSF>5.00			Exit Alert	
	732.90	61.38	691.55	671.52	18.26	OSF1.50	10450.00	10382.44				MinPt-CtCt	
	732.93	61.49	691.50	671.43	18.23	OSF1.50	10470.00	10402.44				MINPT-O-EOU	
	732.96	61.55	691.50	671.42	18.21	OSF1.50	10480.00	10412.44				MinPt-O-ADP	
	735.14	62.04	693.35	673.10	18.12	OSF1.50	10590.00	10522.44				MinPt-O-SF	
	801.72	241.58	640.24	560.14	5.00	OSF1.50	18250.00	11050.00	OSF<5.00			Enter Alert	
	801.72	336.20	577.15	465.51	3.58	OSF1.50	21250.00	11050.00				MinPt-CtCt	
	801.72	336.29	577.10	465.43	3.58	OSF1.50	21252.72	11050.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #13H MWD 0ft-22542ft (Surcon Corrected) (Def Survey)													Warning Alert
	520.59	32.81	518.61	487.78	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	520.59	32.81	518.61	487.78	N/A	MAS = 10.00 (m)	10.00	10.00				MINPT-O-EOU	
	520.59	32.81	518.61	487.78	90173.74	MAS = 10.00 (m)	26.00	26.00				WRP	
	520.86	32.81	518.21	488.05	770.98	MAS = 10.00 (m)	190.00	190.00				MINPT-O-EOU	
	521.46	32.81	518.71	488.65	321.68	MAS = 10.00 (m)	390.00	390.00				MINPT-O-EOU	
	53.74	32.81	41.72	20.93	4.89	MAS = 10.00 (m)	3280.00	3259.86	OSF<5.00			Enter Alert	
	46.98	32.81	34.68	14.17	4.11	MAS = 10.00 (m)	3380.00	3358.48				MinPts	
	47.04	32.81	34.72	14.23	4.11	MAS = 10.00 (m)	3390.00	3368.35				MinPt-O-SF	
	57.75	32.81	45.10	24.94	4.92	MAS = 10.00 (m)	3510.00	3486.69	OSF>5.00			Exit Alert	
	1148.85	40.50	1121.47	1108.34	43.73	OSF1.50	8430.00	8362.44				MinPt-O-SF	
	1166.74	50.02	1133.02	1116.72	35.76	OSF1.50	11120.00	10975.62				MinPts	
	1173.26	50.59	1139.16	1122.67	35.55	OSF1.50	11250.00	11029.59				MinPt-O-SF	
	1875.58	66.11	1831.18	1809.47	43.18	OSF1.50	12590.00	11050.00				MinPts	
	1890.34	79.56	1836.97	1810.78	36.07	OSF1.50	13090.00	11050.00				MinPt-CtCt	
	1890.68	80.69	1836.56	1809.99	35.56	OSF1.50	13140.00	11050.00				MINPT-O-EOU	
	1891.22	81.37	1836.65	1809.85	35.27	OSF1.50	13170.00	11050.00				MinPt-O-ADP	
	1893.37	84.92	1836.43	1808.45	33.82	OSF1.50	13290.00	11050.00				MinPt-CtCt	
	1893.96	86.86	1835.72	1807.10	33.06	OSF1.50	13370.00	11050.00				MINPT-O-EOU	
	1897.85	96.35	1833.28	1801.49	29.83	OSF1.50	13720.00	11050.00				MINPT-O-EOU	
	1899.26	98.16	1833.49	1801.10	29.30	OSF1.50	13790.00	11050.00				MinPt-O-ADP	
	1914.89	112.84	1839.34	1802.06	25.67	OSF1.50	14300.00	11050.00				MinPt-CtCt	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1915.68	115.37	1838.44	1800.31	25.11	OSF1.50	14400.00	11050.00				MINPT-O-EOU	
	1923.74	127.39	1838.49	1796.36	22.82	OSF1.50	14820.00	11050.00				MINPT-O-EOU	
	1910.28	152.88	1808.04	1757.40	18.85	OSF1.50	15690.00	11050.00				MinPt-CtCt	
	1907.06	165.12	1796.65	1741.94	17.42	OSF1.50	16110.00	11050.00				MinPt-CtCt	
	1907.79	167.12	1796.04	1740.66	17.22	OSF1.50	16190.00	11050.00				MINPT-O-EOU	
	1908.86	177.04	1790.51	1731.82	16.26	OSF1.50	16510.00	11050.00				MinPt-CtCt	
	1908.20	196.63	1776.78	1711.57	14.62	OSF1.50	17170.00	11050.00				MinPt-CtCt	
	1908.06	201.98	1773.08	1706.08	14.23	OSF1.50	17350.00	11050.00				MinPt-CtCt	
	1905.91	215.90	1761.64	1690.00	13.30	OSF1.50	17820.00	11050.00				MinPt-CtCt	
	1906.46	217.63	1761.04	1688.83	13.19	OSF1.50	17890.00	11050.00				MINPT-O-EOU	
	1903.64	235.89	1746.05	1667.75	12.15	OSF1.50	18490.00	11050.00				MinPt-CtCt	
	1888.93	275.65	1704.83	1613.28	10.31	OSF1.50	19820.00	11050.00				MinPt-CtCt	
	1888.71	281.02	1701.04	1607.69	10.11	OSF1.50	20000.00	11050.00				MinPt-CtCt	
	1887.75	309.55	1681.06	1578.20	9.17	OSF1.50	20950.00	11050.00				MinPt-CtCt	
	1887.84	314.06	1678.14	1573.78	9.04	OSF1.50	21100.00	11050.00				MinPt-CtCt	
	1887.35	318.92	1674.41	1568.43	8.90	OSF1.50	21252.72	11050.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #15H Rev0 RM 20Jan20 (Non-Def Plan)													Warning Alert
	643.44	32.81	642.16	610.64	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	643.44	32.81	642.15	610.64	120425.84	MAS = 10.00 (m)	26.00	26.00				WRP	
	93.63	32.81	73.28	60.82	4.92	MAS = 10.00 (m)	4170.00	4137.61	OSF<5.00			Enter Alert	
	53.03	32.81	31.20	20.22	2.52	MAS = 10.00 (m)	4450.00	4413.75				MinPts	
	53.06	32.81	31.17	20.25	2.51	MAS = 10.00 (m)	4460.00	4423.61				MinPts	
	110.73	34.20	87.50	76.53	4.99	OSF1.50	4810.00	4768.80	OSF>5.00			Exit Alert	
	637.98	59.58	597.83	578.40	16.38	OSF1.50	9600.00	9532.44				MinPts	
	639.96	59.97	599.55	579.99	16.33	OSF1.50	9690.00	9622.44				MinPt-O-SF	
	1221.41	323.63	1005.23	897.78	5.68	OSF1.50	21250.00	11050.00				MinPt-CtCt	
	1221.41	323.71	1005.17	897.69	5.68	OSF1.50	21252.72	11050.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #1H Surcon 0ft-12740 (Def Survey)													Warning Alert
	663.24	32.81	661.26	630.43	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	663.21	32.81	661.21	630.40	39107.42	MAS = 10.00 (m)	26.00	26.00				WRP	
	661.49	32.81	658.30	628.68	546.27	MAS = 10.00 (m)	300.00	300.00				MinPts	
	661.96	32.81	658.11	629.15	352.91	MAS = 10.00 (m)	420.00	420.00				MINPT-O-EOU	
	679.18	32.81	670.04	646.38	94.48	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	261.19	39.43	234.22	221.76	10.40	OSF1.50	6470.00	6405.94				MinPt-CtCt	
	261.30	39.86	234.05	221.44	10.28	OSF1.50	6530.00	6465.11				MINPT-O-EOU	
	261.50	40.11	234.09	221.39	10.22	OSF1.50	6565.37	6500.00				MinPt-O-ADP	
	261.80	40.15	234.37	221.66	10.22	OSF1.50	6600.00	6534.18				MinPt-O-SF	
	279.21	40.48	251.57	238.74	10.80	OSF1.50	8390.00	8322.44				MinPt-O-ADP	
	280.31	41.43	252.02	238.88	10.58	OSF1.50	8950.00	8882.44				MinPt-CtCt	
	280.33	41.49	252.01	238.84	10.57	OSF1.50	8970.00	8902.44				MINPT-O-EOU	
	280.35	41.51	252.02	238.84	10.57	OSF1.50	8980.00	8912.44				MinPt-O-ADP	
	281.49	42.82	252.28	238.67	10.27	OSF1.50	9440.00	9372.44				MinPt-CtCt	
	152.06	48.57	118.86	103.50	4.87	OSF1.50	10990.00	10891.95	OSF<5.00			Enter Alert	
	87.22	47.86	54.44	39.36	2.80	OSF1.50	11150.00	10990.90				MinPts	
	157.11	48.98	123.80	108.14	4.95	OSF1.50	11290.00	11039.55	OSF>5.00			Exit Alert	
	10092.03	52.99	10056.05	10039.04	296.71	OSF1.50	21252.72	11050.00				TD	
Cimarex Vaca Draw 20-17 Federal #1H ST01 0ft-21966ft (Def Survey)													Warning Alert
	663.24	32.81	662.11	630.43	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	663.21	32.81	662.06	630.40	39157.42	MAS = 10.00 (m)	26.00	26.00				WRP	
	661.49	32.81	659.15	628.68	546.97	MAS = 10.00 (m)	300.00	300.00				MinPts	
	661.96	32.81	658.96	629.15	353.36	MAS = 10.00 (m)	420.00	420.00				MINPT-O-EOU	
	679.18	32.81	670.89	646.38	94.60	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	261.19	38.58	235.07	222.61	10.43	OSF1.50	6470.00	6405.94				MinPt-CtCt	
	261.30	39.01	234.90	222.29	10.31	OSF1.50	6530.00	6465.11				MINPT-O-EOU	
	261.50	39.26	234.94	222.24	10.25	OSF1.50	6565.37	6500.00				MinPt-O-ADP	
	261.80	39.30	235.22	222.51	10.25	OSF1.50	6600.00	6534.18				MinPt-O-SF	
	279.21	39.63	252.42	239.59	10.84	OSF1.50	8390.00	8322.44				MinPt-O-ADP	
	280.31	40.58	252.87	239.72	10.62	OSF1.50	8950.00	8882.44				MinPt-CtCt	
	280.33	40.64	252.86	239.69	10.60	OSF1.50	8970.00	8902.44				MINPT-O-EOU	
	280.35	40.66	252.86	239.69	10.60	OSF1.50	8980.00	8912.44				MinPt-O-ADP	
	281.49	41.98	253.13	239.52	10.30	OSF1.50	9440.00	9372.44				MinPt-CtCt	
	152.06	47.72	119.71	104.35	4.90	OSF1.50	10990.00	10891.95	OSF<5.00			Enter Alert	
	87.22	47.01	55.29	40.21	2.83	OSF1.50	11150.00	10990.90				MinPts	
	157.11	48.13	124.65	108.99	4.98	OSF1.50	11290.00	11039.55	OSF>5.00			Exit Alert	
	1335.04	55.03	1297.98	1280.02	37.12	OSF1.50	12650.00	11050.00				MinPt-CtCt	
	1335.23	62.48	1293.19	1272.74	32.62	OSF1.50	12930.00	11050.00				MinPt-CtCt	
	1335.16	68.83	1288.90	1266.33	29.56	OSF1.50	13160.00	11050.00				MinPt-CtCt	
	1332.79	73.34	1283.53	1259.46	27.66	OSF1.50	13320.00	11050.00				MinPt-CtCt	
	1333.20	74.65	1283.06	1258.55	27.18	OSF1.50	13370.00	11050.00				MINPT-O-EOU	
	1333.63	75.18	1283.13	1258.45	26.99	OSF1.50	13390.00	11050.00				MinPt-O-ADP	
	1338.07	88.43	1278.74	1249.65	22.97	OSF1.50	13850.00	11050.00				MinPt-CtCt	
	1340.80	94.40	1277.49	1246.40	21.55	OSF1.50	14070.00	11050.00				MINPT-O-EOU	
	1343.63	98.04	1277.89	1245.58	20.78	OSF1.50	14200.00	11050.00				MinPt-O-ADP	
	1351.32	106.96	1279.63	1244.36	19.14	OSF1.50	14490.00	11050.00				MinPt-CtCt	
	1352.35	110.38	1278.39	1241.98	18.55	OSF1.50	14610.00	11050.00				MINPT-O-EOU	
	1343.23	124.62	1259.77	1218.60	16.30	OSF1.50	15080.00	11050.00				MinPt-CtCt	
	1343.78	126.26	1259.23	1217.52	16.10	OSF1.50	15140.00	11050.00				MINPT-O-EOU	
	1344.44	127.06	1259.35	1217.38	16.00	OSF1.50	15170.00	11050.00				MinPt-O-ADP	
	1348.49	136.41	1257.17	1212.07	14.94	OSF1.50	15480.00	11050.00				MinPt-CtCt	
	1349.45	139.48	1256.08	1209.97	14.62	OSF1.50	15590.00	11050.00				MINPT-O-EOU	
	1350.82	141.13	1256.36	1209.70	14.46	OSF1.50	15650.00	11050.00				MinPt-O-ADP	
	1356.66	147.22	1258.14	1209.45	13.92	OSF1.50	15860.00	11050.00				MinPt-O-ADP	
	1360.36	162.30	1251.78	1198.05	12.65	OSF1.50	16360.00	11050.00				MinPt-CtCt	
	1359.07	179.48	1239.04	1179.59	11.42	OSF1.50	16940.00	11050.00				MinPt-CtCt	
	1347.62	193.74	1218.09	1153.88	10.49	OSF1.50	17410.00	11050.00				MinPt-CtCt	
	1348.93	198.39	1216.29	1150.54	10.25	OSF1.50	17570.00	11050.00				MINPT-O-EOU	
	1349.14	198.63	1216.34	1150.50	10.24	OSF1.50	17580.00	11050.00				MinPt-O-ADP	
	1375.46	222.19	1226.96	1153.27	9.33	OSF1.50	18370.00	11050.00				MinPt-CtCt	
	1361.74	242.61	1199.62	1119.13	8.45	OSF1.50	19040.00	11050.00				MinPt-CtCt	
	1358.39	262.36	1183.10	1096.02	7.79	OSF1.50	19700.00	11050.00				MinPt-CtCt	
	1345.05	281.11	1157.27	1063.94	7.20	OSF1.50	20330.00	11050.00				MinPt-CtCt	
	1346.17	284.48	1156.14	1061.69	7.12	OSF1.50	20450.00	11050.00				MINPT-O-EOU	
	1347.69	288.55	1154.95	1059.14	7.03	OSF1.50	20580.00	11050.00				MinPt-CtCt	
	1347.99	289.58	1154.56	1058.41	7.00	OSF1.50	20620.00	11050.00				MINPT-O-EOU	
	1348.37	290.07	1154.62	1058.30	6.99	OSF1.50	20640.00	11050.00				MinPt-O-ADP	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1349.18	301.72	1147.65	1047.45	6.73	OSF1.50	21020.00	11050.00				MinPt-CtCt	
	1349.31	302.17	1147.48	1047.14	6.72	OSF1.50	21040.00	11050.00				MINPT-O-EOU	
	1349.48	302.37	1147.53	1047.11	6.71	OSF1.50	21050.00	11050.00				MinPt-O-ADP	
	1350.92	303.01	1148.54	1047.92	6.71	OSF1.50	21090.00	11050.00				MinPt-O-SF	
	1368.88	302.99	1166.51	1065.89	6.80	OSF1.50	21252.72	11050.00				TD	
Cimarex Vaca Draw 20-17 Federal #14H Rev0 RM 20Jan20 (Non-Def Plan)													Warning Alert
	663.35	32.81	662.06	630.54	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	663.35	32.81	662.06	630.54	93118.96	MAS = 10.00 (m)	26.00	26.00				WRP	
	153.52	47.33	121.47	106.19	4.97	OSF1.50	6280.00	6218.56	OSF<5.00			Enter Alert	
	145.62	49.86	111.95	95.76	4.46	OSF1.50	6570.00	6504.56				MinPt-CtCt	
	145.64	49.95	111.91	95.69	4.45	OSF1.50	6590.00	6524.31				MINPT-O-EOU	
	145.67	49.99	111.92	95.68	4.45	OSF1.50	6600.00	6534.18				MinPts	
	150.50	67.47	105.09	83.03	3.38	OSF1.50	9890.00	9822.44				MinPts	
	150.63	67.56	105.16	83.07	3.38	OSF1.50	9900.00	9832.44				MinPt-O-SF	
	211.36	64.81	167.72	146.55	4.96	OSF1.50	10170.00	10102.44	OSF>5.00			Exit Alert	
	753.20	227.01	601.43	526.19	5.00	OSF1.50	18280.00	11050.00	OSF<5.00			Enter Alert	
	753.20	318.10	540.71	435.10	3.56	OSF1.50	21252.72	11050.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #8H MWD 0ft-22328ft (Surcon Corrected) (Def Survey)													Pass
	540.58	32.81	539.45	507.77	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	540.58	32.81	539.45	507.77	N/A	MAS = 10.00 (m)	10.00	10.00				MINPT-O-EOU	
	540.58	32.81	539.45	507.77	93537.12	MAS = 10.00 (m)	26.00	26.00				WRP	
	541.13	32.81	538.78	508.32	444.45	MAS = 10.00 (m)	320.00	320.00				MinPts	
	542.00	32.81	538.30	509.19	210.37	MAS = 10.00 (m)	600.00	600.00				MINPT-O-EOU	
	86.23	32.81	71.45	53.42	6.24	MAS = 10.00 (m)	4070.00	4038.98				MinPts	
	86.24	32.81	71.41	53.43	6.21	MAS = 10.00 (m)	4080.00	4048.85				MINPT-O-EOU	
	86.84	32.81	71.82	54.03	6.17	MAS = 10.00 (m)	4120.00	4088.29				MinPt-O-SF	
	791.46	42.78	762.57	748.68	28.46	OSF1.50	9950.00	9882.44				MinPt-CtCt	
	791.48	42.83	762.55	748.65	28.43	OSF1.50	9970.00	9902.44				MINPT-O-EOU	
	791.50	42.85	762.56	748.65	28.42	OSF1.50	9980.00	9912.44				MinPt-O-ADP	
	793.51	44.53	763.45	748.98	27.39	OSF1.50	10480.00	10412.44				MinPt-CtCt	
	772.09	46.59	740.66	725.50	25.44	OSF1.50	11070.00	10946.66				MinPts	
	775.00	46.93	743.34	728.07	25.35	OSF1.50	11150.00	10990.90				MinPt-O-SF	
	1502.99	63.00	1460.66	1439.99	36.33	OSF1.50	12580.00	11050.00				MinPt-CtCt	
	1503.36	64.14	1460.28	1439.23	35.68	OSF1.50	12630.00	11050.00				MINPT-O-EOU	
	1506.13	69.20	1459.67	1436.93	33.10	OSF1.50	12830.00	11050.00				MINPT-O-EOU	
	1506.93	70.17	1459.82	1436.76	32.65	OSF1.50	12870.00	11050.00				MinPt-O-ADP	
	1514.25	87.27	1455.74	1426.97	26.31	OSF1.50	13490.00	11050.00				MinPt-CtCt	
	1517.07	95.06	1453.37	1422.01	24.17	OSF1.50	13770.00	11050.00				MinPt-CtCt	
	1517.59	105.77	1446.75	1411.82	21.71	OSF1.50	14150.00	11050.00				MinPt-CtCt	
	1516.82	114.64	1440.06	1402.18	20.01	OSF1.50	14460.00	11050.00				MinPt-CtCt	
	1516.36	122.14	1434.61	1394.22	18.76	OSF1.50	14720.00	11050.00				MinPt-CtCt	
	1517.33	127.93	1431.71	1389.40	17.92	OSF1.50	14920.00	11050.00				MinPt-CtCt	
	1516.21	134.08	1426.49	1382.13	17.08	OSF1.50	15130.00	11050.00				MinPt-CtCt	
	1514.91	141.69	1420.12	1373.22	16.14	OSF1.50	15390.00	11050.00				MinPt-CtCt	
	1515.55	143.46	1419.58	1372.09	15.95	OSF1.50	15460.00	11050.00				MINPT-O-EOU	
	1522.81	154.89	1419.22	1367.92	14.83	OSF1.50	15840.00	11050.00				MinPt-CtCt	
	1523.63	157.24	1418.48	1366.39	14.62	OSF1.50	15930.00	11050.00				MINPT-O-EOU	
	1501.92	180.08	1381.54	1321.84	12.57	OSF1.50	16700.00	11050.00				MinPt-CtCt	
	1502.31	181.28	1381.13	1321.03	12.49	OSF1.50	16750.00	11050.00				MINPT-O-EOU	
	1502.88	181.97	1381.23	1320.90	12.45	OSF1.50	16780.00	11050.00				MinPt-O-ADP	
	1542.90	195.19	1412.45	1347.71	11.91	OSF1.50	17240.00	11050.00				MINPT-O-EOU	
	1543.69	196.39	1412.43	1347.30	11.84	OSF1.50	17270.00	11050.00				MINPT-O-EOU	
	1543.93	207.25	1405.43	1336.68	11.22	OSF1.50	17620.00	11050.00				MinPt-CtCt	
	1544.43	208.73	1404.95	1335.70	11.14	OSF1.50	17680.00	11050.00				MINPT-O-EOU	
	1545.03	209.45	1405.07	1335.58	11.11	OSF1.50	17710.00	11050.00				MinPt-O-ADP	
	1548.38	214.07	1405.34	1334.31	10.89	OSF1.50	17860.00	11050.00				MINPT-O-EOU	
	1549.50	215.40	1405.58	1334.11	10.83	OSF1.50	17910.00	11050.00				MinPt-O-ADP	
	1521.33	249.20	1354.87	1272.13	9.19	OSF1.50	19030.00	11050.00				MinPt-CtCt	
	1511.96	260.58	1337.91	1251.38	8.73	OSF1.50	19410.00	11050.00				MinPt-CtCt	
	1512.36	261.76	1337.53	1250.60	8.69	OSF1.50	19460.00	11050.00				MINPT-O-EOU	
	1512.74	262.22	1337.60	1250.52	8.68	OSF1.50	19480.00	11050.00				MinPt-O-ADP	
	1517.86	271.48	1336.55	1246.39	8.41	OSF1.50	19770.00	11050.00				MinPt-CtCt	
	1518.44	273.24	1335.95	1245.20	8.36	OSF1.50	19840.00	11050.00				MINPT-O-EOU	
	1519.05	273.98	1336.07	1245.07	8.34	OSF1.50	19870.00	11050.00				MinPt-O-ADP	
	1520.53	280.53	1333.18	1240.00	8.15	OSF1.50	20070.00	11050.00				MinPt-CtCt	
	1504.78	313.67	1295.34	1191.12	7.21	OSF1.50	21170.00	11050.00				MinPt-CtCt	
	1505.10	315.96	1294.13	1189.14	7.16	OSF1.50	21252.72	11050.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #7H MWD 0ft-22544ft (Surcon Corrected) (Def Survey)													Pass
	560.58	32.81	559.40	527.77	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	560.60	32.81	559.41	527.79	51646.91	MAS = 10.00 (m)	26.00	26.00				WRP	
	560.66	32.81	559.40	527.85	6903.21	MAS = 10.00 (m)	50.00	50.00				MINPT-O-EOU	
	583.48	32.81	575.39	550.67	82.76	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	114.69	32.81	96.78	81.88	6.75	MAS = 10.00 (m)	4830.00	4788.52				MinPts	
	114.69	32.81	96.75	81.88	6.73	MAS = 10.00 (m)	4840.00	4798.38				MINPT-O-EOU	
	115.49	32.81	97.34	82.68	6.69	MAS = 10.00 (m)	4890.00	4847.69				MinPt-O-SF	
	401.48	35.54	377.44	365.94	17.41	OSF1.50	7130.00	7062.44				MinPt-CtCt	
	365.60	40.55	338.22	325.06	13.84	OSF1.50	9670.00	9602.44				MinPt-CtCt	
	365.61	40.57	338.21	325.03	13.83	OSF1.50	9680.00	9612.44				MINPT-O-EOU	
	365.69	40.67	338.23	325.02	13.81	OSF1.50	9710.00	9642.44				MinPt-O-ADP	
	366.78	42.01	338.42	324.77	13.39	OSF1.50	10100.00	10032.44				MinPt-CtCt	
	366.88	42.31	338.32	324.57	13.30	OSF1.50	10180.00	10112.44				MINPT-O-EOU	
	366.98	42.43	338.34	324.55	13.26	OSF1.50	10210.00	10142.44				MinPt-O-ADP	
	367.79	43.46	338.46	324.32	12.97	OSF1.50	10450.00	10382.44				MinPt-CtCt	
	367.90	43.80	338.35	324.10	12.87	OSF1.50	10530.00	10462.44				MINPT-O-EOU	
	328.44	45.77	297.58	282.67	10.98	OSF1.50	11050.00	10933.91				MinPts	
	328.62	45.81	297.73	282.81	10.98	OSF1.50	11060.00	10940.37				MinPt-O-SF	
	1504.16	55.71	1466.69	1448.45	41.20	OSF1.50	12550.00	11050.00				MinPts	
	1511.19	62.79	1469.00	1448.39	36.65	OSF1.50	12810.00	11050.00				MINPT-O-EOU	
	1513.41	65.48	1469.43	1447.93	35.17	OSF1.50	12910.00	11050.00				MinPt-O-ADP	
	1508.04	72.98	1459.05	1435.06	31.40	OSF1.50	13170.00	11050.00				MinPt-CtCt	
	1508.64	75.02	1458.31	1433.63	30.55	OSF1.50	13250.00	11050.00				MINPT-O-EOU	
	1509.46	76.03	1458.45	1433.43	30.15	OSF1.50	13290.00	11050.00				MinPt-O-ADP	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1515.36	93.60	1452.63	1421.76	24.53	OSF1.50	13910.00	11050.00				MinPt-CtCt	
	1514.27	98.42	1448.33	1415.85	23.30	OSF1.50	14080.00	11050.00				MinPt-CtCt	
	1514.24	106.57	1442.87	1407.67	21.50	OSF1.50	14360.00	11050.00				MinPt-CtCt	
	1514.89	108.70	1442.10	1406.19	21.08	OSF1.50	14440.00	11050.00				MINPT-O-EOU	
	1515.75	109.73	1442.26	1406.01	20.89	OSF1.50	14480.00	11050.00				MinPt-O-ADP	
	1518.41	113.40	1442.48	1405.01	20.25	OSF1.50	14590.00	11050.00				MinPt-CtCt	
	1518.69	114.37	1442.12	1404.32	20.08	OSF1.50	14630.00	11050.00				MINPT-O-EOU	
	1519.06	114.85	1442.17	1404.21	20.00	OSF1.50	14650.00	11050.00				MinPt-O-ADP	
	1526.91	119.53	1446.90	1407.38	19.31	OSF1.50	14810.00	11050.00				MINPT-O-EOU	
	1527.19	119.83	1446.97	1407.35	19.26	OSF1.50	14820.00	11050.00				MinPt-O-ADP	
	1531.94	139.44	1438.65	1392.50	16.59	OSF1.50	15470.00	11050.00				MinPt-CtCt	
	1532.43	140.94	1438.14	1391.49	16.41	OSF1.50	15530.00	11050.00				MINPT-O-EOU	
	1537.20	147.33	1438.65	1389.87	15.75	OSF1.50	15760.00	11050.00				MinPt-O-ADP	
	1554.51	172.81	1438.97	1381.70	13.56	OSF1.50	16610.00	11050.00				MinPt-CtCt	
	1557.37	188.16	1431.60	1369.21	12.47	OSF1.50	17120.00	11050.00				MinPt-CtCt	
	1560.47	204.67	1423.70	1355.80	11.48	OSF1.50	17670.00	11050.00				MinPt-CtCt	
	1554.10	220.66	1406.67	1333.44	10.60	OSF1.50	18210.00	11050.00				MinPt-CtCt	
	1554.11	230.89	1399.85	1323.21	10.13	OSF1.50	18550.00	11050.00				MinPt-CtCt	
	1546.61	266.71	1368.47	1279.90	8.72	OSF1.50	19750.00	11050.00				MinPt-CtCt	
	1547.69	287.82	1355.49	1259.87	8.09	OSF1.50	20450.00	11050.00				MinPt-CtCt	
	1543.79	303.02	1341.44	1240.76	7.66	OSF1.50	20960.00	11050.00				MinPt-CtCt	
	1543.45	307.82	1337.91	1235.64	7.54	OSF1.50	21120.00	11050.00				MinPt-CtCt	
	1543.95	311.73	1335.81	1232.22	7.45	OSF1.50	21252.72	11050.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #6H MWD Final(Surcon Corrected) (Def Survey)													Pass
	623.42	32.81	621.44	590.61	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	623.40	32.81	621.41	590.59	46108.23	MAS = 10.00 (m)	26.00	26.00				WRP	
	619.43	32.81	614.29	586.62	195.48	MAS = 10.00 (m)	740.00	740.00				MinPts	
	620.24	32.81	613.98	587.43	144.66	MAS = 10.00 (m)	1000.00	1000.00				MINPT-O-EOU	
	620.30	32.81	611.77	587.50	94.29	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	199.56	32.81	179.37	166.75	10.89	MAS = 10.00 (m)	5110.00	5064.66				MinPts	
	199.66	32.81	179.27	166.85	10.76	MAS = 10.00 (m)	5160.00	5113.98				MINPT-O-EOU	
	209.72	32.81	187.54	176.92	10.28	MAS = 10.00 (m)	5580.00	5528.19				MinPt-O-SF	
	303.88	36.64	278.79	267.24	13.06	OSF1.50	7130.00	7062.44				MinPt-O-SF	
	304.03	36.76	278.86	267.26	13.03	OSF1.50	7390.00	7322.44				MinPt-CtCt	
	291.84	39.25	265.02	252.60	11.67	OSF1.50	8790.00	8722.44				MinPt-CtCt	
	291.84	39.27	265.00	252.57	11.66	OSF1.50	8800.00	8732.44				MinPts	
	292.29	39.39	265.37	252.90	11.64	OSF1.50	8840.00	8772.44				MinPt-O-SF	
	1781.94	38.43	1755.66	1743.51	73.24	OSF1.50	11930.00	11050.00				MinPt-CtCt	
	1783.36	45.09	1752.64	1738.27	61.98	OSF1.50	12210.00	11050.00				MINPT-O-EOU	
	1784.06	45.96	1752.76	1738.10	60.79	OSF1.50	12250.00	11050.00				MinPt-O-ADP	
	1794.76	54.98	1757.45	1739.78	50.74	OSF1.50	12590.00	11050.00				MINPT-O-EOU	
	1796.35	57.43	1757.41	1738.92	48.54	OSF1.50	12680.00	11050.00				MINPT-O-EOU	
	1798.37	72.17	1749.60	1726.20	38.39	OSF1.50	13190.00	11050.00				MinPt-CtCt	
	1788.83	97.26	1723.33	1691.57	28.13	OSF1.50	14070.00	11050.00				MinPt-CtCt	
	1782.28	143.65	1685.86	1638.64	18.85	OSF1.50	15630.00	11050.00				MinPt-CtCt	
	1781.93	152.31	1679.73	1629.62	17.76	OSF1.50	15920.00	11050.00				MinPt-CtCt	
	1781.66	157.65	1675.90	1624.01	17.15	OSF1.50	16100.00	11050.00				MinPt-CtCt	
	1780.77	167.19	1668.64	1613.57	16.15	OSF1.50	16420.00	11050.00				MinPt-CtCt	
	1783.25	233.71	1626.78	1549.54	11.53	OSF1.50	18650.00	11050.00				MinPt-CtCt	
	1782.90	239.15	1622.80	1543.75	11.26	OSF1.50	18830.00	11050.00				MinPt-CtCt	
	1782.58	243.98	1619.27	1538.61	11.04	OSF1.50	18990.00	11050.00				MinPt-CtCt	
	1782.32	250.63	1614.57	1531.69	10.74	OSF1.50	19210.00	11050.00				MinPt-CtCt	
	1780.87	261.20	1606.07	1519.67	10.29	OSF1.50	19560.00	11050.00				MinPt-CtCt	
	1778.68	280.03	1591.33	1498.65	9.58	OSF1.50	20190.00	11050.00				MinPt-CtCt	
	1781.74	303.05	1579.05	1478.70	8.87	OSF1.50	20960.00	11050.00				MinPt-CtCt	
	1782.01	305.11	1577.95	1476.90	8.81	OSF1.50	21040.00	11050.00				MinPts	
	1782.84	305.42	1578.57	1477.42	8.80	OSF1.50	21080.00	11050.00				MinPt-O-SF	
	1796.68	305.11	1592.61	1491.57	8.88	OSF1.50	21252.72	11050.00				TD	
Cimarex Vaca Draw 20-17 Federal #5H Final MWD(Surcon Corrected) (Def Survey)													Pass
	643.33	32.81	641.36	610.53	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	643.32	32.81	641.33	610.51	66733.38	MAS = 10.00 (m)	26.00	26.00				WRP	
	641.51	32.81	637.29	608.70	285.58	MAS = 10.00 (m)	550.00	550.00				MinPts	
	641.60	32.81	636.50	608.79	205.06	MAS = 10.00 (m)	760.00	760.00				MinPts	
	641.81	32.81	636.18	609.00	175.33	MAS = 10.00 (m)	870.00	870.00				MINPT-O-EOU	
	642.56	32.81	633.91	609.75	96.02	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	238.50	32.83	215.92	205.68	11.54	OSF1.50	5610.00	5557.78				MinPt-CtCt	
	238.59	33.11	215.82	205.48	11.43	OSF1.50	5650.00	5597.23				MINPT-O-EOU	
	238.71	33.25	215.85	205.46	11.39	OSF1.50	5670.00	5616.95				MinPt-O-ADP	
	242.14	35.49	217.82	206.65	10.75	OSF1.50	6000.00	5942.41				MinPt-O-ADP	
	249.44	37.28	223.92	212.15	10.51	OSF1.50	6270.00	6208.69				MinPt-O-SF	
	285.67	37.15	260.24	248.51	12.10	OSF1.50	7210.00	7142.44				MinPt-CtCt	
	284.09	37.65	258.33	246.44	11.86	OSF1.50	7680.00	7612.44				MinPt-CtCt	
	273.91	41.85	245.35	232.06	10.23	OSF1.50	9480.00	9412.44				MinPt-CtCt	
	273.92	41.89	245.33	232.03	10.22	OSF1.50	9490.00	9422.44				MinPts	
	274.68	42.11	245.94	232.57	10.19	OSF1.50	9550.00	9482.44				MinPt-O-SF	
	1079.20	37.47	1053.56	1041.73	45.53	OSF1.50	11860.00	11050.00				MinPt-CtCt	
	1079.40	38.15	1053.31	1041.25	44.69	OSF1.50	11900.00	11050.00				MINPT-O-EOU	
	1079.84	38.67	1053.40	1041.17	44.06	OSF1.50	11930.00	11050.00				MinPt-O-ADP	
	1074.63	57.21	1035.83	1017.42	29.13	OSF1.50	12650.00	11050.00				MinPt-CtCt	
	1070.74	70.53	1023.06	1000.21	23.39	OSF1.50	13130.00	11050.00				MinPt-CtCt	
	1064.37	86.96	1005.73	977.41	18.75	OSF1.50	13700.00	11050.00				MinPt-CtCt	
	1065.08	88.89	1005.17	976.20	18.35	OSF1.50	13780.00	11050.00				MINPT-O-EOU	
	1065.91	89.86	1005.34	976.05	18.16	OSF1.50	13820.00	11050.00				MinPt-O-ADP	
	1059.03	105.39	988.12	953.65	15.33	OSF1.50	14340.00	11050.00				MinPt-CtCt	
	1058.47	121.11	977.07	937.36	13.30	OSF1.50	14870.00	11050.00				MinPt-CtCt	
	1059.24	123.42	976.30	935.82	13.06	OSF1.50	14960.00	11050.00				MINPT-O-EOU	
	1061.00	162.87	951.77	898.14	9.87	OSF1.50	16280.00	11050.00				MinPt-CtCt	
	1060.99	171.79	945.80	889.19	9.35	OSF1.50	16580.00	11050.00				MinPt-CtCt	
	1059.98	182.17	937.88	877.81	8.81	OSF1.50	16930.00	11050.00				MinPt-CtCt	
	1061.75	207.55	922.73	854.20	7.73	OSF1.50	17780.00	11050.00				MinPt-CtCt	
	1061.84	223.00	912.52	838.84	7.19	OSF1.50	18290.00	11050.00				MinPt-CtCt	
	1062.40	224.70	911.94	837.70	7.14	OSF1.50	18360.00	11050.00				MINPT-O-EOU	
	1062.99	225.40	912.06	837.58	7.12	OSF1.50	18390.00	11050.00				MinPt-O-ADP	
	1064.44	237.49	905.46	826.96	6.77	OSF1.50	18770.00	11050.00				MinPt-CtCt	
	1064.44	249.07	897.73	815.36	6.45	OSF1.50	19160.00	11050.00				MinPt-CtCt	
	1063.24	258.86	890.01	804.38	6.20	OSF1.50	19490.00	11050.00				MinPt-CtCt	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1074.14	304.81	870.28	769.34	5.31	OSF1.50	21020.00	11050.00				MinPt-CtCt	
	1074.17	304.88	870.25	769.29	5.31	OSF1.50	21030.00	11050.00				MinPts	
	1074.29	304.94	870.34	769.35	5.31	OSF1.50	21040.00	11050.00				MinPt-O-SF	
	1098.61	300.19	897.82	798.42	5.52	OSF1.50	21252.72	11050.00				TD	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #2H MWD 0ft-22179ft (Surcon Corrected) (Def Survey)													Pass
	661.93	32.81	660.91	629.12	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	661.91	32.81	660.88	629.10	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	661.91	32.81	660.89	629.10	607122.49	MAS = 10.00 (m)	26.00	26.00				WRP	
	662.39	32.81	656.18	629.58	127.36	MAS = 10.00 (m)	1230.00	1230.00				MinPts	
	662.30	32.81	654.80	629.49	102.04	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	662.31	32.81	654.78	629.50	101.67	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	663.97	32.81	656.22	631.17	98.53	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	669.76	32.81	661.98	636.95	98.93	MAS = 10.00 (m)	1710.00	1709.81				MinPt-O-SF	
	681.81	32.81	673.91	649.00	98.98	MAS = 10.00 (m)	1840.00	1839.20				MinPt-O-SF	
	702.98	32.81	694.86	670.18	98.84	MAS = 10.00 (m)	1990.00	1987.62				MinPt-O-SF	
	734.39	32.81	725.96	701.58	99.04	MAS = 10.00 (m)	2180.00	2175.00				MinPt-O-SF	
	900.26	32.81	888.84	867.46	86.42	MAS = 10.00 (m)	3080.00	3062.61				MinPt-O-SF	
	1532.32	37.91	1506.70	1494.41	62.26	OSF1.50	6565.37	6500.00				MinPt-O-SF	
	1582.41	36.44	1557.78	1545.97	66.97	OSF1.50	7260.00	7192.44				MinPt-O-SF	
	1587.10	36.76	1562.25	1550.33	66.56	OSF1.50	7490.00	7422.44				MinPt-O-SF	
	1598.94	37.06	1573.89	1561.88	66.50	OSF1.50	7970.00	7902.44				MinPt-O-SF	
	1620.25	40.21	1593.10	1580.03	61.97	OSF1.50	9350.00	9282.44				MinPt-O-ADP	
	1620.66	40.66	1593.22	1580.01	61.29	OSF1.50	9540.00	9472.44				MinPt-O-ADP	
	1599.81	46.98	1568.14	1552.82	52.18	OSF1.50	11180.00	11004.52				MinPt-CtCt	
	1599.83	47.03	1568.14	1552.80	52.12	OSF1.50	11190.00	11008.68				MinPts	
	1620.15	48.28	1587.62	1571.87	51.39	OSF1.50	11440.00	11050.00				MinPt-O-SF	
	2072.80	66.83	2027.92	2005.97	47.20	OSF1.50	12510.00	11050.00				MINPT-O-EOU	
	2073.85	68.56	2027.81	2005.29	46.01	OSF1.50	12580.00	11050.00				MINPT-O-EOU	
	2073.26	83.16	2017.50	1990.10	37.83	OSF1.50	13160.00	11050.00				MinPt-CtCt	
	2072.19	90.03	2011.84	1982.16	34.89	OSF1.50	13420.00	11050.00				MinPt-CtCt	
	2070.35	99.69	2003.56	1970.65	31.45	OSF1.50	13780.00	11050.00				MinPt-CtCt	
	2070.74	101.01	2003.07	1969.73	31.04	OSF1.50	13840.00	11050.00				MINPT-O-EOU	
	2071.26	101.67	2003.15	1969.59	30.84	OSF1.50	13870.00	11050.00				MinPt-O-ADP	
	2075.95	107.09	2004.23	1968.86	29.33	OSF1.50	14070.00	11050.00				MinPt-O-ADP	
	2081.09	134.88	1990.84	1946.20	23.30	OSF1.50	15030.00	11050.00				MinPt-CtCt	
	2085.91	148.54	1986.55	1937.36	21.19	OSF1.50	15520.00	11050.00				MINPT-O-EOU	
	2091.35	158.96	1985.05	1932.39	19.85	OSF1.50	15880.00	11050.00				MINPT-O-EOU	
	2083.39	172.89	1967.81	1910.50	18.17	OSF1.50	16340.00	11050.00				MinPt-CtCt	
	2083.78	173.92	1967.50	1909.86	18.07	OSF1.50	16390.00	11050.00				MINPT-O-EOU	
	2084.13	174.33	1967.59	1909.81	18.03	OSF1.50	16410.00	11050.00				MinPt-O-ADP	
	2079.83	204.13	1943.42	1875.70	15.35	OSF1.50	17400.00	11050.00				MinPt-CtCt	
	2080.33	205.76	1942.83	1874.57	15.23	OSF1.50	17470.00	11050.00				MINPT-O-EOU	
	2080.88	206.40	1942.95	1874.47	15.19	OSF1.50	17500.00	11050.00				MinPt-O-ADP	
	2092.77	221.34	1944.88	1871.43	14.24	OSF1.50	17980.00	11050.00				MinPt-CtCt	
	2094.37	226.98	1942.72	1867.39	13.89	OSF1.50	18190.00	11050.00				MINPT-O-EOU	
	2090.43	242.43	1928.49	1848.00	12.98	OSF1.50	18690.00	11050.00				MinPt-CtCt	
	2090.90	244.02	1927.89	1846.88	12.90	OSF1.50	18760.00	11050.00				MINPT-O-EOU	
	2091.64	244.91	1928.03	1846.72	12.86	OSF1.50	18800.00	11050.00				MinPt-O-ADP	
	2086.32	256.98	1914.67	1829.34	12.22	OSF1.50	19180.00	11050.00				MinPt-CtCt	
	2086.90	258.59	1914.18	1828.32	12.15	OSF1.50	19250.00	11050.00				MINPT-O-EOU	
	2092.60	264.97	1915.63	1827.63	11.88	OSF1.50	19480.00	11050.00				MinPt-O-ADP	
	2072.81	294.71	1876.00	1778.09	10.58	OSF1.50	20440.00	11050.00				MinPt-CtCt	
	2073.04	295.53	1875.70	1777.52	10.55	OSF1.50	20480.00	11050.00				MINPT-O-EOU	
	2073.53	296.11	1875.79	1777.42	10.53	OSF1.50	20510.00	11050.00				MinPt-O-ADP	
	2072.60	311.56	1864.56	1761.04	10.01	OSF1.50	21000.00	11050.00				MinPt-CtCt	
	2073.03	312.87	1864.13	1760.17	9.97	OSF1.50	21060.00	11050.00				MINPT-O-EOU	
	2073.79	313.75	1864.29	1760.04	9.94	OSF1.50	21100.00	11050.00				MinPt-O-ADP	
	2079.28	318.21	1866.81	1761.06	9.83	OSF1.50	21252.72	11050.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #3H MWD 0ft-22454' (Surcon Corrected) (Def Survey)													Pass
	681.87	32.81	680.74	649.06	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	681.85	32.81	680.72	649.04	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	681.86	32.81	680.72	649.05	115056.55	MAS = 10.00 (m)	26.00	26.00				WRP	
	681.94	32.81	680.70	649.13	6636.65	MAS = 10.00 (m)	60.00	60.00				MINPT-O-EOU	
	678.49	32.81	674.72	645.68	246.35	MAS = 10.00 (m)	650.00	650.00				MinPts	
	678.54	32.81	674.69	645.73	239.84	MAS = 10.00 (m)	670.00	670.00				MINPT-O-EOU	
	685.82	32.81	678.30	653.01	105.37	MAS = 10.00 (m)	1500.00	1500.00				MINPT-O-EOU	
	687.43	32.81	679.73	654.63	102.74	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	1808.32	37.46	1783.01	1770.86	74.39	OSF1.50	6565.37	6500.00				MinPt-O-SF	
	1919.51	36.18	1895.04	1883.32	81.84	OSF1.50	7410.00	7342.44				MinPt-O-SF	
	2018.79	45.06	1988.41	1973.73	68.73	OSF1.50	10470.00	10402.44				MinPt-CtCt	
	2018.80	45.08	1988.40	1973.71	68.69	OSF1.50	10480.00	10412.44				MINPT-O-EOU	
	2018.82	45.11	1988.40	1973.71	68.65	OSF1.50	10490.00	10422.44				MinPt-O-ADP	
	2010.16	47.38	1978.23	1962.78	65.01	OSF1.50	11150.00	10990.90				MinPt-CtCt	
	2010.16	47.41	1978.21	1962.75	64.96	OSF1.50	11160.00	10995.62				MinPts	
	2046.95	49.14	2013.85	1997.81	63.77	OSF1.50	11560.00	11050.00				MinPt-O-SF	
	2056.89	49.36	2023.64	2007.53	63.80	OSF1.50	11610.00	11050.00				MinPt-O-SF	
	2513.83	71.30	2465.97	2442.53	53.60	OSF1.50	12690.00	11050.00				MINPT-O-EOU	
	2514.03	71.51	2466.03	2442.52	53.45	OSF1.50	12700.00	11050.00				MinPt-O-ADP	
	2518.64	75.35	2468.09	2443.30	50.79	OSF1.50	12860.00	11050.00				MinPt-O-ADP	
	2520.52	83.19	2464.74	2437.34	45.97	OSF1.50	13150.00	11050.00				MinPt-CtCt	
	2516.28	102.27	2447.77	2414.01	37.25	OSF1.50	13860.00	11050.00				MinPt-CtCt	
	2517.61	105.66	2446.84	2411.95	36.06	OSF1.50	14000.00	11050.00				MINPT-O-EOU	
	2520.89	109.54	2447.53	2411.35	34.82	OSF1.50	14150.00	11050.00				MinPt-O-ADP	
	2526.81	131.25	2438.98	2395.55	29.08	OSF1.50	14890.00	11050.00				MinPt-CtCt	
	2527.51	133.36	2438.28	2394.15	28.63	OSF1.50	14980.00	11050.00				MINPT-O-EOU	
	2528.27	134.29	2438.42	2393.98	28.44	OSF1.50	15020.00	11050.00				MinPt-O-ADP	
	2531.99	138.47	2439.35	2393.52	27.61	OSF1.50	15170.00	11050.00				MinPt-O-ADP	
	2538.39	149.47	2438.42	2388.92	25.63	OSF1.50	15540.00	11050.00				MINPT-O-EOU	
	2529.76	184.90	2406.17	2344.86	20.62	OSF1.50	16730.00	11050.00				MinPt-CtCt	
	2530.07	196.43	2398.79	2333.64	19.41	OSF1.50	17120.00	11050.00				MinPt-CtCt	
	2529.99	201.48	2395.34	2328.51	18.92	OSF1.50	17290.00	11050.00				MinPt-CtCt	
	2530.79	209.49	2390.80	2321.30	18.20	OSF1.50	17560.00	11050.00				MinPt-CtCt	
	2525.77	271.88	2344.19	2253.89	13.98	OSF1.50	19650.00	11050.00				MinPt-CtCt	
	2526.36	273.74	2343.54	2252.62	13.89	OSF1.50	19730.00	11050.00				MINPT-O-EOU	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	2527.09	274.65	2343.67	2252.45	13.85	OSF1.50	19770.00	11050.00				MinPt-O-ADP	
	2532.10	288.92	2339.16	2243.18	13.19	OSF1.50	20220.00	11050.00				MinPt-CtCt	
	2523.58	320.51	2309.59	2203.08	11.84	OSF1.50	21252.72	11050.00				MinPts	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #4H MWD 0ft-12228ft (Surcon Corrected) (Def Survey)													Pass
	701.76	32.81	699.78	668.95	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	701.73	32.81	699.74	668.92	160037.86	MAS = 10.00 (m)	26.00	26.00				WRP	
	700.19	32.81	696.57	667.38	426.81	MAS = 10.00 (m)	420.00	420.00				MinPts	
	700.25	32.81	696.50	667.44	394.56	MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
	726.11	32.81	717.42	693.30	107.95	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	872.99	32.81	863.36	840.18	113.89	MAS = 10.00 (m)	2210.00	2204.59				MinPt-O-SF	
	1013.33	32.81	1002.67	980.52	116.52	MAS = 10.00 (m)	2690.00	2677.98				MinPt-O-SF	
	2112.31	39.90	2085.05	2072.41	83.47	OSF1.50	6565.37	6500.00				MinPt-O-SF	
	2288.76	40.06	2261.40	2248.70	90.08	OSF1.50	7690.00	7622.44				MinPt-O-SF	
	2330.01	40.78	2302.16	2289.23	89.99	OSF1.50	8050.00	7982.44				MinPt-O-SF	
	2438.64	45.79	2407.46	2392.85	83.42	OSF1.50	9730.00	9662.44				MinPt-CtCt	
	2438.65	45.82	2407.44	2392.83	83.37	OSF1.50	9740.00	9672.44				MINPT-O-EOU	
	2438.67	45.84	2407.45	2392.83	83.32	OSF1.50	9750.00	9682.44				MinPt-O-ADP	
	2419.77	50.71	2385.30	2369.05	74.42	OSF1.50	11200.00	11012.66				MinPt-CtCt	
	2419.80	50.76	2385.30	2369.03	74.34	OSF1.50	11210.00	11016.44				MinPts	
	2497.02	53.74	2460.53	2443.28	72.31	OSF1.50	11780.00	11050.00				MinPt-O-SF	
	2510.02	54.01	2473.35	2456.01	72.30	OSF1.50	11830.00	11050.00				MinPt-O-SF	
	10383.29	64.09	10339.90	10319.19	250.71	OSF1.50	21252.72	11050.00				TD	
Final Surveys - Cimarex Vaca Draw 20-17 Federal #4H ST01 MWD 0ft-22279ft (Surcon Corrected) (Def Survey)													Pass
	701.76	32.81	700.59	668.95	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	701.73	32.81	700.55	668.92	160221.30	MAS = 10.00 (m)	26.00	26.00				WRP	
	700.19	32.81	697.37	667.38	427.30	MAS = 10.00 (m)	420.00	420.00				MinPts	
	700.25	32.81	697.30	667.44	395.02	MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
	726.11	32.81	718.29	693.30	107.09	MAS = 10.00 (m)	1600.00	1599.98				MinPt-O-SF	
	872.99	32.81	864.22	840.18	112.89	MAS = 10.00 (m)	2210.00	2204.59				MinPt-O-SF	
	1013.33	32.81	1003.53	980.52	115.71	MAS = 10.00 (m)	2690.00	2677.98				MinPt-O-SF	
	2112.31	38.99	2085.97	2073.32	83.47	OSF1.50	6565.37	6500.00				MinPt-O-SF	
	2288.76	39.12	2262.33	2249.64	90.13	OSF1.50	7690.00	7622.44				MinPt-O-SF	
	2330.01	39.85	2303.10	2290.16	90.04	OSF1.50	8050.00	7982.44				MinPt-O-SF	
	2438.64	44.89	2408.37	2393.75	83.40	OSF1.50	9730.00	9662.44				MinPt-CtCt	
	2438.65	44.92	2408.36	2393.73	83.35	OSF1.50	9740.00	9672.44				MINPT-O-EOU	
	2438.67	44.94	2408.36	2393.73	83.30	OSF1.50	9750.00	9682.44				MinPt-O-ADP	
	2419.77	49.81	2386.21	2369.95	74.40	OSF1.50	11200.00	11012.66				MinPt-CtCt	
	2419.80	49.86	2386.21	2369.94	74.32	OSF1.50	11210.00	11016.44				MinPts	
	2497.02	52.83	2461.45	2444.19	72.30	OSF1.50	11780.00	11050.00				MinPt-O-SF	
	2510.02	53.10	2474.27	2456.91	72.29	OSF1.50	11830.00	11050.00				MinPt-O-SF	
	2775.24	84.58	2718.53	2690.66	49.78	OSF1.50	13130.00	11050.00				MinPt-CtCt	
	2779.81	101.30	2711.95	2678.51	41.55	OSF1.50	13770.00	11050.00				MinPt-CtCt	
	2782.48	117.52	2703.81	2664.96	35.80	OSF1.50	14360.00	11050.00				MinPt-CtCt	
	2789.77	146.73	2691.63	2643.05	28.70	OSF1.50	15390.00	11050.00				MinPt-CtCt	
	2790.02	155.55	2685.99	2634.47	27.07	OSF1.50	15690.00	11050.00				MinPt-CtCt	
	2789.92	160.17	2682.82	2629.75	26.28	OSF1.50	15850.00	11050.00				MinPt-CtCt	
	2789.28	170.35	2675.39	2618.93	24.69	OSF1.50	16200.00	11050.00				MinPt-CtCt	
	2790.19	173.26	2674.36	2616.93	24.29	OSF1.50	16320.00	11050.00				MINPT-O-EOU	
	2754.44	221.74	2606.28	2532.69	18.71	OSF1.50	17950.00	11050.00				MinPt-CtCt	
	2754.90	223.00	2605.90	2531.89	18.61	OSF1.50	18010.00	11050.00				MINPT-O-EOU	
	2755.23	223.41	2605.96	2531.82	18.57	OSF1.50	18030.00	11050.00				MinPt-O-ADP	
	2759.61	227.44	2607.65	2532.16	18.27	OSF1.50	18180.00	11050.00				MinPt-O-ADP	
	2765.77	233.41	2609.84	2532.36	17.84	OSF1.50	18380.00	11050.00				MinPt-O-ADP	
	2769.59	238.05	2610.55	2531.53	17.52	OSF1.50	18520.00	11050.00				MINPT-O-EOU	
	2769.96	238.47	2610.65	2531.49	17.49	OSF1.50	18540.00	11050.00				MinPt-O-ADP	
	2788.14	247.86	2622.57	2540.28	16.93	OSF1.50	18870.00	11050.00				MINPT-O-EOU	
	2770.58	275.36	2586.68	2495.22	15.14	OSF1.50	19750.00	11050.00				MinPt-CtCt	
	2771.52	278.04	2585.83	2493.48	15.00	OSF1.50	19860.00	11050.00				MINPT-O-EOU	
	2772.75	279.50	2586.09	2493.26	14.93	OSF1.50	19920.00	11050.00				MinPt-O-ADP	
	2775.43	284.64	2585.34	2490.79	14.67	OSF1.50	20080.00	11050.00				MINPT-O-EOU	
	2776.18	285.55	2585.48	2490.63	14.63	OSF1.50	20120.00	11050.00				MinPt-O-ADP	
	2772.90	307.08	2567.86	2465.82	13.58	OSF1.50	20810.00	11050.00				MinPt-CtCt	
	2778.35	319.68	2564.90	2458.67	13.07	OSF1.50	21252.72	11050.00				MinPts	
Cimarex Vaca Draw 20-17 Federal #10H Rev0 RM 1May17 (Non-Def Plan)													Pass
	759.25	32.81	757.27	726.44	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	759.23	32.81	757.25	726.42	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	759.23	32.81	748.24	726.42	83.99	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	759.25	32.81	748.21	726.44	83.59	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	1550.42	58.26	1510.92	1492.16	41.27	OSF1.50	6600.00	6534.18				MinPt-O-SF	
	1569.90	87.05	1511.21	1482.85	27.65	OSF1.50	11110.00	10970.17				MinPt-CtCt	
	1569.93	87.10	1511.20	1482.83	27.63	OSF1.50	11120.00	10975.62				MinPts	
	1575.09	87.69	1515.97	1487.40	27.53	OSF1.50	11250.00	11029.59				MinPt-O-SF	
	2309.10	438.83	2015.89	1870.27	7.92	OSF1.50	21050.00	11050.00				MINPT-O-EOU	
	2309.24	438.98	2015.93	1870.27	7.92	OSF1.50	21060.00	11050.00				MinPt-O-ADP	
	2311.44	439.79	2017.58	1871.65	7.91	OSF1.50	21130.00	11050.00				MinPt-O-SF	
	2320.38	440.29	2026.19	1880.09	7.93	OSF1.50	21252.72	11050.00				TD	
Cimarex Vaca Draw 20-17 Federal #11H Rev0 RM 1May17 (Non-Def Plan)													Pass
	779.25	32.81	777.27	746.44	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	779.23	32.81	777.25	746.42	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	779.23	32.81	768.24	746.42	86.21	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	779.25	32.81	768.21	746.44	85.80	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	1570.25	58.26	1530.75	1511.99	41.80	OSF1.50	6600.00	6534.18				MinPt-O-SF	
	1589.90	87.04	1531.21	1502.85	28.00	OSF1.50	11110.00	10970.17				MinPt-CtCt	
	1589.93	87.10	1531.20	1502.83	27.98	OSF1.50	11120.00	10975.62				MinPts	
	1595.03	87.69	1535.91	1507.33	27.88	OSF1.50	11250.00	11029.59				MinPt-O-SF	
	2433.43	443.49	2137.11	1989.94	8.26	OSF1.50	21050.00	11050.00				MINPT-O-EOU	
	2433.56	443.64	2137.14	1989.92	8.26	OSF1.50	21060.00	11050.00				MinPt-O-ADP	
	2436.61	444.75	2139.45	1991.86	8.25	OSF1.50	21150.00	11050.00				MinPt-O-SF	
	2444.14	445.31	2146.60	1998.83	8.26	OSF1.50	21252.72	11050.00				TD	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Vaca Draw 20-17 Federal #12H Rev0 RM 1May17 (Non-Def Plan)													Pass
	799.23	32.81	797.25	766.43	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	799.21	32.81	797.23	766.41	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	799.21	32.81	788.22	766.41	88.43	MAS = 10.00 (m)	1500.00	1500.00				MinPts	
	799.23	32.81	788.19	766.42	88.01	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	1590.06	58.26	1550.56	1531.80	42.33	OSF1.50	6600.00	6534.18				MinPt-O-SF	
	1609.88	87.04	1551.19	1522.83	28.35	OSF1.50	11110.00	10970.17				MinPt-CtCt	
	1609.91	87.10	1551.19	1522.81	28.34	OSF1.50	11120.00	10975.62				MinPts	
	1614.95	87.69	1555.82	1527.25	28.23	OSF1.50	11250.00	11029.59				MinPt-O-SF	
	2526.33	446.46	2228.04	2079.88	8.52	OSF1.50	21050.00	11050.00				MINPT-O-EOU	
	2526.46	446.62	2228.05	2079.84	8.52	OSF1.50	21060.00	11050.00				MinPt-O-ADP	
	2529.92	447.91	2230.65	2082.01	8.50	OSF1.50	21160.00	11050.00				MinPt-O-SF	
	2536.65	448.51	2236.98	2088.14	8.51	OSF1.50	21252.72	11050.00				TD	

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
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CONDITIONS

Action 20506

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
CIMAREX ENERGY CO. 600 N. Marienfeld Street Suite 600 Midland, TX79701	215099	20506	C-103A

OCD Reviewer	Condition
pkautz	None