

Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	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: 02/21/2021	Time Sundry Submitted: 01:15
Date proposed operation will begin: 03/14/2021	

Procedure Description: Cimarex Energy respectfully requests approval to change BHL, target formation, casing design, and perform offline cementing for the Vaca Draw 20-17 Federal 57H well. Proposed BHL: 100' FNL & 1724' FEL Sec. 17, 25S, 33E Target formation: Wolfcamp, Classification: Oil well Offline Cmt Procedure: 7-5/8" 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/Ck Manifold, Directional Plan, Drilling Plan, Multibowl WH, & OLC plan.

Application

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Section 1 - General

APD ID: 10400034315	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: NMnm026394	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: 57H	Well API Number: 3002546119
Field/Pool or Exploratory? Field and Pool	Field Name: WC-025 G-09 S253236A; UPR 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 Number: E2E2 PAD 1	
Well Class: HORIZONTAL	DRAW 20-17 FEDERAL 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 MilesDistance to nearest well: 20 FTDistance to lease line: 100 FT

Reservoir well spacing assigned acres Measurement: 640 Acres

Well plat: Vaca_Draw_20_17_Fed_57H_C102_Plat_20180928071332.pdf
Vaca_Draw_2017_Fed_57H_C102_20210218131308.pdf

Well work start Date: 03/16/2020Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83Vertical 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	390	FSL	920	FEL	25S	33E	20	Aliquot SESE	32.109898	-103.58874	LEA	NEW MEXICO	NEW MEXICO	F	NMNM026394	3399	0	0	Y
KOP Leg #1	236	FSL	1724	FEL	25S	33E	20	Aliquot SWSE	32.10975	-103.591336	LEA	NEW MEXICO	NEW MEXICO	F	NMNM026394	-8611	12073	12010	Y
PPP Leg #1-1	392	FSL	1724	FEL	25S	33E	20	Aliquot SWSE	32.1099	-103.5913361	LEA	NEW MEXICO	NEW MEXICO	F	NMNM026394	-8611	12073	12010	Y

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COMPANY

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?
EXIT Leg #1	100	FNL	1724	FEL	25S	33E	17	Aliquot NWNE	32.137579	-103.59132	LEA	NEW MEXICO	NEW MEXICO	F	NMNM026394	-9121	22573	12520	Y
BHL Leg #1	100	FNL	1724	FEL	25S	33E	17	Aliquot NWNE	32.137579	-103.59132	LEA	NEW MEXICO	NEW MEXICO	F	NMNM026394	-9121	22574	12520	Y

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1609215	RUSTLER	3421	935	935		USEABLE WATER	N
1609216	SALADO	2123	1298	1298		NONE	N
1609214	CASTILE	-1293	4714	4714		NONE	N
1609206	LAMAR	-1488	4909	4909		NONE	N
1609211	BELL CANYON	-1516	4937	4937		NONE	N
1609212	CHERRY CANYON	-2569	5990	5990		NONE	N
1609213	BRUSHY CANYON	-4115	7536	7536		NATURAL GAS, OIL	N
1609209	BONE SPRING	-5611	9032	9032		NATURAL GAS, OIL	Y
1609217	BONE SPRING 1ST	-6590	10011	10011		NATURAL GAS, OIL	N
1609207	BONE SPRING 2ND	-7162	10583	10583		NATURAL GAS, OIL	N
1609210	BONE SPRING 3RD	-8301	11722	11722		OIL	N
1609208	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: 19814

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.

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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
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
3	PRODUCTION	8.75	5.5	NEW	API	N	0	9473	0	9473	0	9473	9473	L-80	20	LT&C	1.99	2.07	BUOY	2.09	BUOY
4	PRODUCTION	8.75	5.5	NEW	API	N	9473	19814	9473	9940	9473	19814	10341	L-80	20	BUTT	1.9	1.93	BUOY	49.89	BUOY

Casing Attachments

Casing ID: 1 String Type: SURFACE

Inspection Document:

Spec Document:

Vaca_Draw_20_17_Fed_57H_Surf_Casing_Spec_Sheet_20181002103855.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Vaca_Draw_20_17_Fed_57H_Casing_Assumptions_20181002104236.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_57H_Casing_Assumptions_20181002104222.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_57H_Casing_Assumptions_20181002104213.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_57H_Casing_Assumptions_20181002104156.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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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	9473	410	3.61	10.3	1491	25	Tuned Light	LCM
PRODUCTION	Tail		0	9473	2211	1.3	14.2	2874	10	50:50 (Poz:H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		9473	1981 4	410	3.64	10.3	1491	25	Tuned Light	LCM
PRODUCTION	Tail		9473	1981 4	2211	1.3	14.2	2874	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	1981 4	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: 1896

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_57H_H2S_Plan_20181002104646.pdf

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Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Vaca_Draw_20_17_Fed_57H_AC_Report_20181002104915.pdf

Vaca_Draw_20_17_Fed_57H_Directional_Plan_20181002104700.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Vaca_Draw_20_17_Fed_57H_Gas_Capture_Plan_20181002104725.pdf

Vaca_Draw_20_17_Fed_57H_Flex_Hose_20181002104724.pdf

Vaca_Draw_20_17_Fed_57H_Drilling_Plan_20181002104716.pdf

Other Variance attachment:

Vaca_Draw_20_17_Fed_57H_Multibowl_Wellhead_20181002104739.pdf

Vaca_Draw_20_17_Fed_57H_Multibowl_Procedure_20181002104739.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_20190201102002.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_E2E2_Pad_1_Road_ROW_20190305092634.pdf

Vaca_Draw_20_17_Fed_East_Zone_1_2_CTB_Road_ROW_20190305091849.pdf

New road type: COLLECTOR

Length: 3725 Feet Width (ft.): 30

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

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

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New road travel width: 18

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_E2E2_Pad_1_Road_ROW_20190305092634.pdf

Vaca_Draw_20_17_Fed_East_Zone_1_2_CTB_Road_ROW_20190305091849.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

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Vaca_Draw_20_17_Fed_E2E2_Pad_1_Road_ROW_20190305092634.pdf

Vaca_Draw_20_17_Fed_East_Zone_1_2_CTB_Road_ROW_20190305091849.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

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Well Name: VACA DRAW 20-17
FEDERAL

Well Number: 57H

Lease Number: NMNM26394,
NMnm026394

US Well Number: 3002546119

Well Location: T25S / R33E / SEC 20 /
SESE / 32.109898 / -103.58874

Type of Well: OIL WELL

Unit or CA Name:

Well Status: Approved Application for
Permit to Drill

County or Parish/State: LEA /
NM

Allottee or Tribe Name:

Unit or CA Number:

Operator: CIMAREX ENERGY
COMPANY

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Vaca_Draw_20_17_Fed_E2E2_Pad_1_Mile_Radius_Existing_Wells_20180927113551.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: Production facilities will be the same in the Vaca Draw 20-17 Fed 43H, 44H, 45H, 57H, 58H, 59H, 71H, 72H, & 73H.

Production Facilities map:

Vaca_Draw_20_17_Fed_East_Zone_2_CTB_Battery_Layout_20190305092423.pdf

Vaca_Draw_20_17_Fed_East_Zone_1_CTB_Battery_Layout_20190305092417.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_E2E2_Pad_1_Drilling_Water_Route_20180927113844.pdf

Water source comments:

New water well? NO

Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	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

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	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 Disposal location ownership: COMMERCIAL
FACILITY

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:

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	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_57H_Wellsite_Layout_20180927113909.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: E2E2 PAD 1

Recontouring attachment:

Vaca_Draw_20_17_Fed_E2E2_Pad_1_Interim_Reclaim_20180927113932.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): 6.93	Well pad interim reclamation (acres): 3.55	Well pad long term disturbance (acres): 3.36
Road proposed disturbance (acres): 2.565	Road interim reclamation (acres): 0	Road long term disturbance (acres): 2.565
Powerline proposed disturbance (acres): 0	Powerline interim reclamation (acres): 0	Powerline long term disturbance (acres): 0
Pipeline proposed disturbance (acres): 10.37	Pipeline interim reclamation (acres): 0	Pipeline long term disturbance (acres): 10.37
Other proposed disturbance (acres): 13.908	Other interim reclamation (acres): 6.95	Other long term disturbance (acres): 10.508
Total proposed disturbance: 33.773	Total interim reclamation: 10.5	Total long term disturbance: 26.803

Disturbance Comments: Flowline: 2039 Gas lift: 2039 Access Road: 3725 Sales: 4619 SWD: 3944 Temp fresh water line: 14,855' CTB Zone 1: 5.256 acres, CTB Zone 2: 5.252 acres

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

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

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. **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	
Seed Type	Pounds/Acre

Total 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

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Well Name: VACA DRAW 20-17
FEDERAL

Well Location: T25S / R33E / SEC 20 /
SESE / 32.109898 / -103.58874

County or Parish/State: LEA /
NM

Well Number: 57H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM26394,
NMnm026394

Unit or CA Name:

Unit or CA Number:

US Well Number: 3002546119

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: PRIVATE OWNERSHIP

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:

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

Fee Owner: Hughes Properties LLC (Trey Hughes) Fee Owner Address:

Phone: (575)361-3217 Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: See attached Operator Land Owner agmt

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

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: Batteries, Flow/Gas lift route & SWD route will be the same for Vaca Draw 20-17 Fed 43H, 44H, 45H, 57H, 58H, 59H, 71H, 72H & 73H.
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_E2E2_Pad_1_Public_Access_20180928071141.pdf
- Vaca_Draw_20_17_Fed_Temp_Water_Route_20180928071152.pdf
- Vaca_Draw_20_17_Fed_East_Zone_1_2_CTB_Gas_Sales_ROW_20190305092801.pdf
- Vaca_Draw_57H_Pkt_for_Jeff__2_20190305092826.pdf
- Vaca_Draw_20_17_Fed_East_Zone_1_2_CTB_SWD_ROW_20190305092804.pdf
- Vaca_Draw_20_17_Fed_E2E2_Pad_1_Road_Description_20180928071142.pdf
- Vaca_Draw_20_17_Fed_57H_Operator_Land_Owner_Agmt_20190131125327.pdf
- Vaca_Draw_20_17_Fed_E2E2_Pad_1_Flow_Gas_lift_ROW_20190305092759.pdf
- Vaca_Draw_57H_Pkt_for_Jeff__1_20190305092817.pdf
- Vaca_Draw_20_17_Fed_57H_SUPO_20190305092757.pdf

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

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

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:

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

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:

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

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Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

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

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

Well Name: VACA DRAW 20-17 FEDERAL	Well Location: T25S / R33E / SEC 20 / SESE / 32.109898 / -103.58874	County or Parish/State: LEA / NM
Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY

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: 02/18/2021	
Title:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

Field Representative

Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

NOI Attachments

Procedure Description
VacaDraw_2017_Fed_57H_Sundry_Attachments_All_20210218131135.pdf

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Well Number: 57H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM26394, NMnm026394	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002546119	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: FEB 18, 2021 02:30 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: 03/01/2021
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

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

WC-025 G-09 S253309P;UPR

¹ API Number 30-025-46119	² Pool Code 98180	³ Pool Name Wildcat Wolfcamp WOLFCAMP
⁴ Property Code 319775	⁵ Property Name VACA DRAW 20-17 FEDERAL	⁶ Well Number 57H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3398.5'

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	20	25S	33E		390	SOUTH	920	EAST	LEA

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
B	17	25S	33E		100	NORTH	1724	EAST	LEA
¹² Dedicated Acres 640	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.						

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'

S C A L E

REV: 2 02-08-21 C.D. (WELL BORE CHANGE)

LINE	DIRECTION	LENGTH
L1	S89°56'50"W	804.00'
L2	S89°56'49"W	2644.60'
L3	N89°52'03"E	2643.50'
L4	S89°51'18"W	2643.03'

NAD 83 (SHL)
LATITUDE = 32°06'35.63" (32.109898°)
LONGITUDE = 103°35'19.46" (103.588740°)

NAD 27 (SHL)
LATITUDE = 32°06'35.18" (32.109773°)
LONGITUDE = 103°35'17.77" (103.588268°)

STATE PLANE NAD 83 (N.M. EAST)
N: 404513.40' E: 771879.66'

STATE PLANE NAD 27 (N.M. EAST)
N: 404455.62' E: 730693.48'

NAD 83 (LP/FTP)
LATITUDE = 32°06'35.65" (32.109902°)
LONGITUDE = 103°35'28.81" (103.591336°)

NAD 27 (LP/FTP)
LATITUDE = 32°06'35.20" (32.109777°)
LONGITUDE = 103°35'27.11" (103.590864°)

STATE PLANE NAD 83 (N.M. EAST)
N: 404509.29' E: 771075.80'

STATE PLANE NAD 27 (N.M. EAST)
N: 404451.51' E: 729889.63'

NAD 83 (LTP/BHL)
LATITUDE = 32°08'15.28" (32.137579°)
LONGITUDE = 103°35'28.75" (103.591320°)

NAD 27 (LTP/BHL)
LATITUDE = 32°08'14.84" (32.137454°)
LONGITUDE = 103°35'27.05" (103.590847°)

STATE PLANE NAD 83 (N.M. EAST)
N: 414577.97' E: 771011.42'

STATE PLANE NAD 27 (N.M. EAST)
N: 414519.94' E: 729825.72'

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" (NAD 83)

Diagram showing well location and acreage dedication plat. The diagram includes a grid with section numbers 17 and 20. The well location is marked with a black dot (●) at the intersection of lines L1 and L2. The landing point (LP/FTP) is marked with a diamond (◆) at the intersection of lines L2 and L3. The bottom hole location (BHL/LTP) is marked with a circle (○) at the intersection of lines L3 and L4. The diagram also shows the well bore change (REV: 2 02-08-21 C.D. (WELL BORE CHANGE)).

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.

TerriStathem 2-18-2021

Signature Date

Terri Stathem

Printed Name

TStathem@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
02-08-21
PROFESSIONAL SURVEYOR

Certificate Number:

1. Geological Formations

TVD of target 12,520

Pilot Hole TD N/A

MD at TD 22,573

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	935	N/A	
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
14 3/4	0	985	985	10-3/4"	40.50	J-55	BT&C	3.70	7.34	15.77
9 7/8	0	12697	12471	7-5/8"	29.70	L-80	BT&C	2.45	1.18	1.79
6 3/4	0	12022	12022	5-1/2"	23.00	L-80	LT&C	1.39	1.23	2.17
6 3/4	12022	22573	12520	5"	18.00	P-110	BT&C	1.61	1.63	64.70
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

Request Variance for 5-1/2" x 7-5/8" annular clearance. The portion that does not meet clearance will not be cemented

Cimarex Energy Co., Vaca Draw 20-17 Federal 57H

	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.	Y
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	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	332	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	156	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 1	602	10.30	3.64	22.18		Lead: Tuned Light + LCM
	207	14.50	1.30	5.79	20	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Expanding Agent + Retarder + Antifoam
Intermediate Stage 2	794	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
Production	1360	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 4,900'.

Casing String	TOC	% Excess
Surface	0	42
Intermediate Stage 1	4900	47
Intermediate Stage 2	0	40
Production	12000	25

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
9 7/8	13 5/8	5M	Annular	X	100% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		
6 3/4	13 5/8	10M	Annular	X	50% of working pressure
			Blind Ram		10M
			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.				
	Y	Are anchors required by manufacturer?			

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 985'	FW Spud Mud	7.83 - 8.33	30-32	N/C
985' to 12697'	Brine Diesel Emulsion	8.50 - 9.00	30-35	N/C
12697' to 22573'	OBM	12.30 - 12.80	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.

The Brine Emulsion is completely saturated brine fluid that ties diesel into itself to lower the weight of the fluid. The drilling fluid is completely salt saturated.

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 from TD 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	8333 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	H ₂ S is present
X	H ₂ S plan is attached

8. Other Facets of Operation**9. Wellhead**

A multi-bowl wellhead system will be utilized.

After running the 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 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.

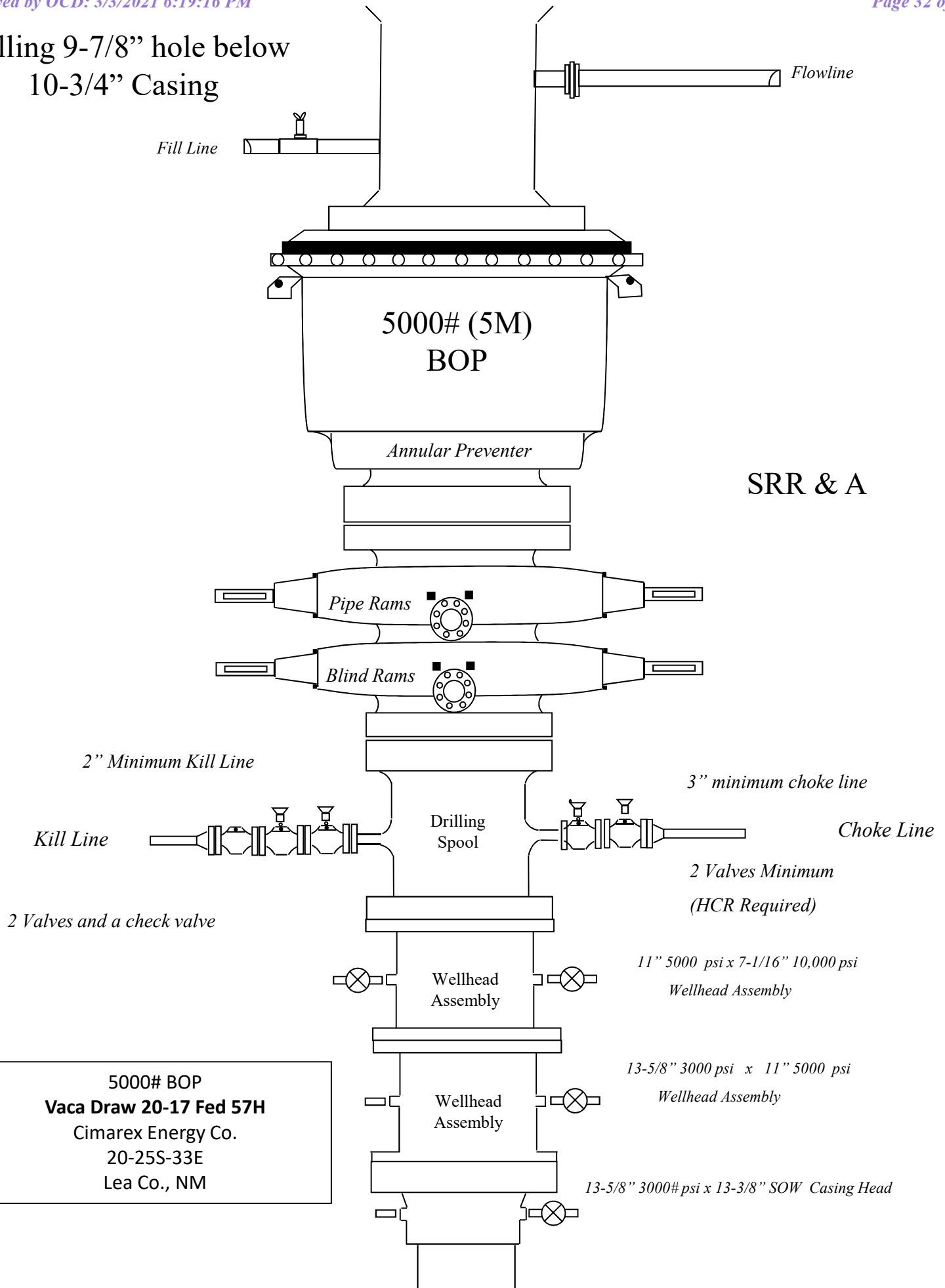
All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

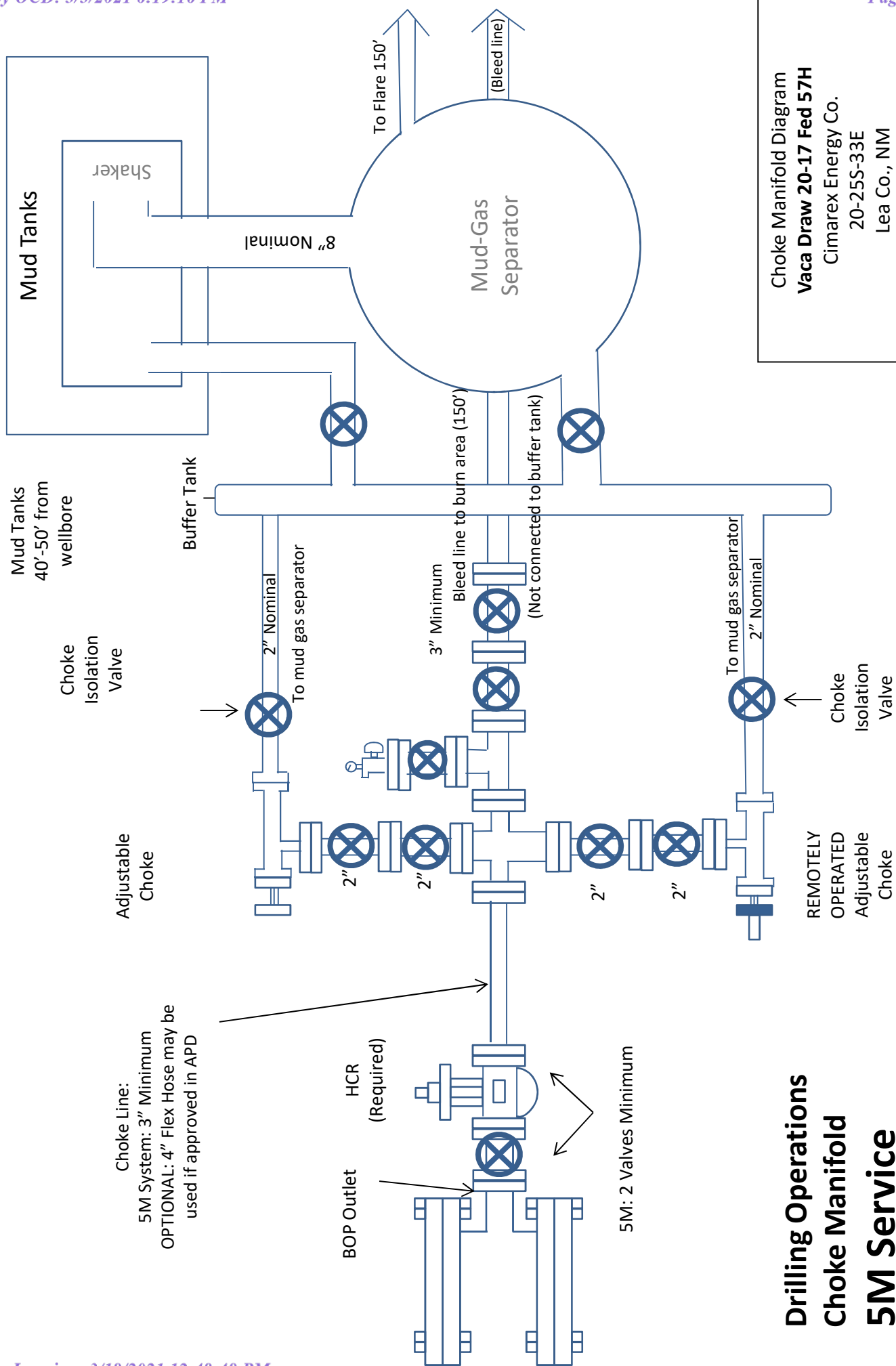
A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 10000 psi.

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

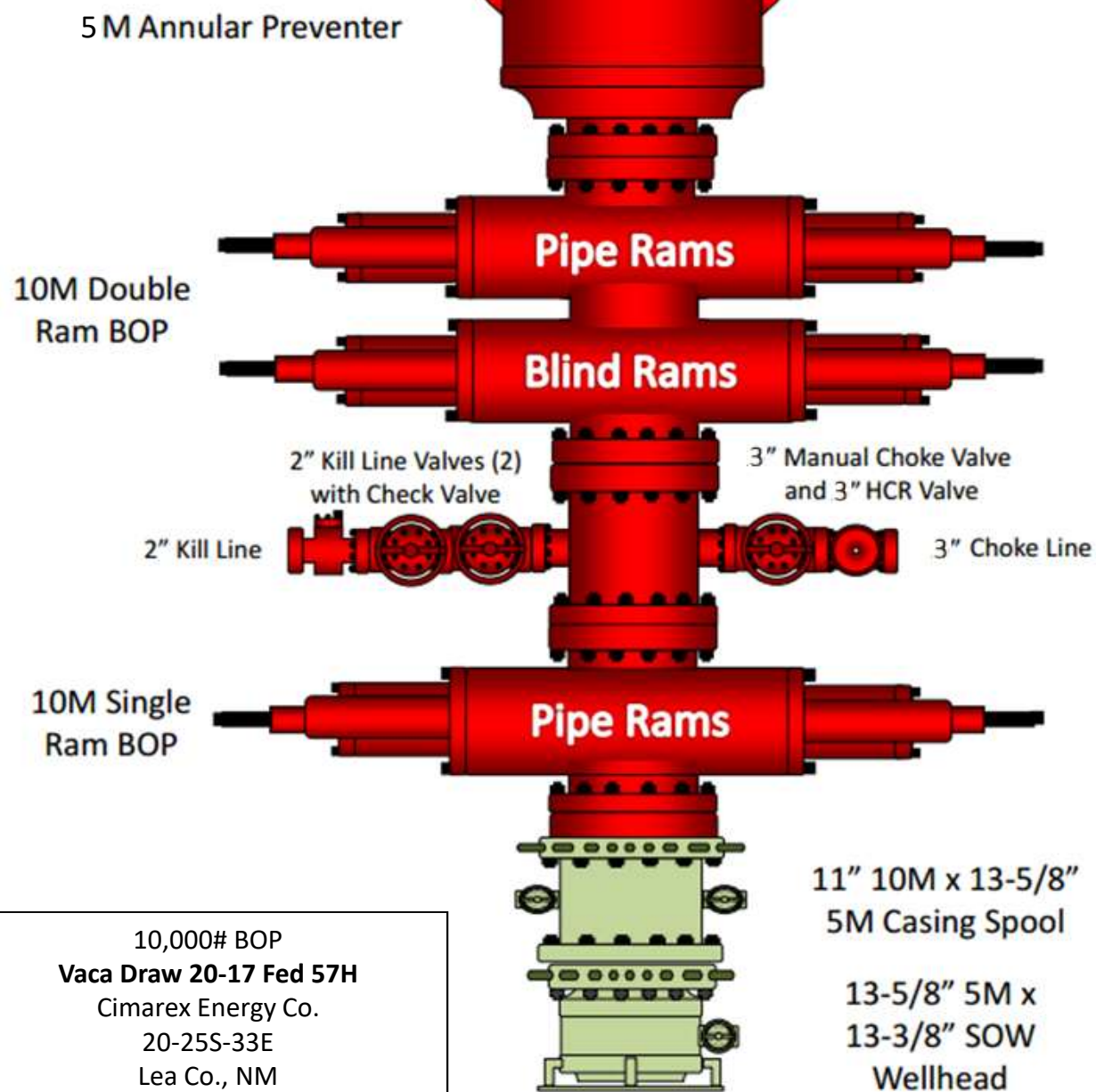
If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Drilling 9-7/8" hole below
10-3/4" Casing





Drilling 6 3/4" Hole below
7-5/8" Casing



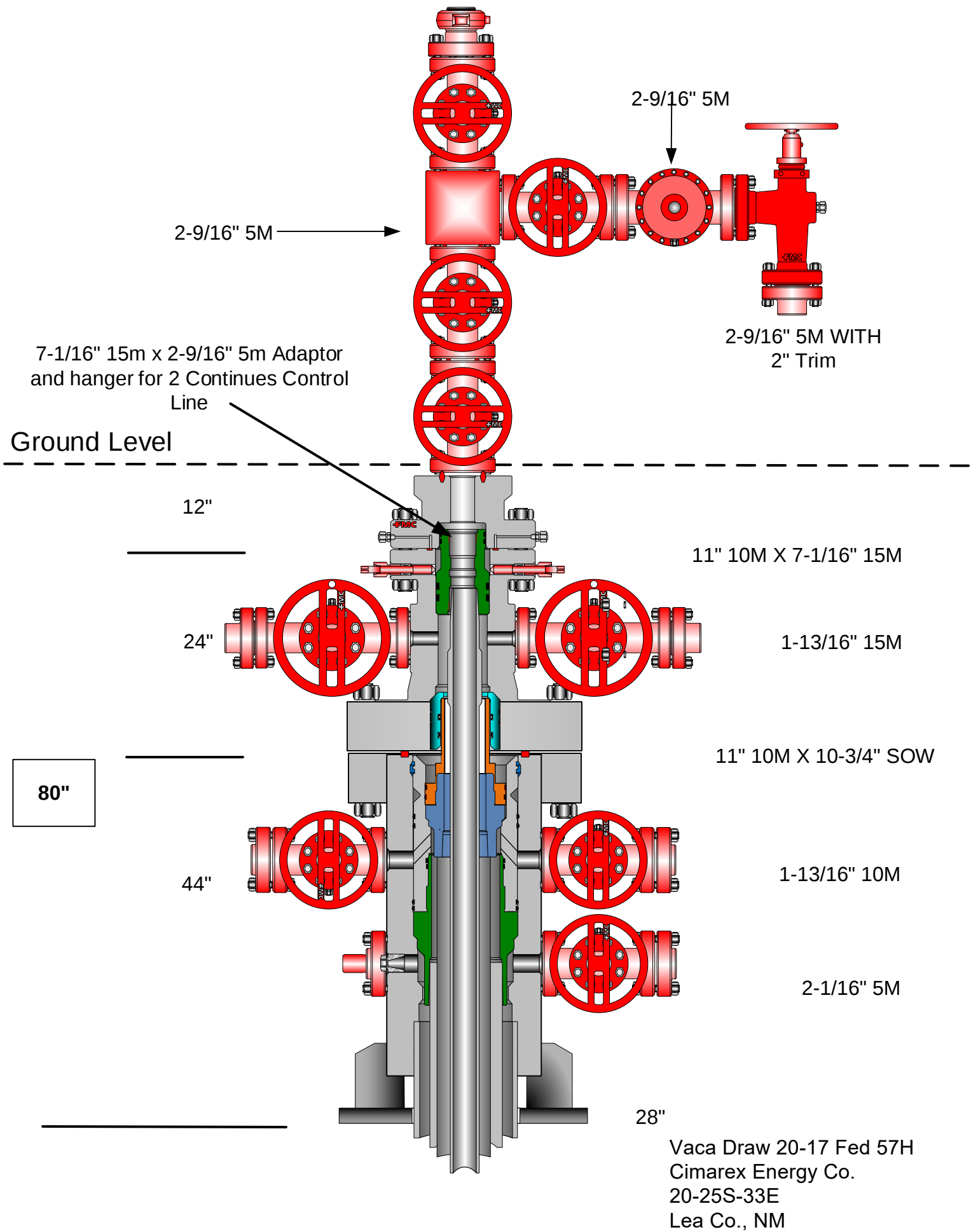




CACTUS FOR SERVICE
WEARBUSHING
IN CASING HEAD &
CASING SPOOL

LEA CO., NM

Multi-bowl Wellhead Diagram





Cimarex Energy Offline Cementing 7-5/8" Casing Information
for Sundry Approval Plan REV0



CIMAREX ENERGY CO. NYSE LISTED: XEC

Cementing Operational Workflow

Conventional Cementing		Offline Cementing	
1.	Land casing on fluted mandrel hanger	1.	Land casing on <u>solid body</u> mandrel hanger
2.	Circulate down casing, taking returns through BOP stack	a)	Engage packoff and locking
3.	Pump lead and tail cement	2.	Install BPV
4.	Displace cement and bump the plug	3.	Skid rig
5.	Ensure floats are holding pressure	4.	Check for pressure and remove BPV
6.	RD cement crew	5.	Circulate down casing, taking returns through casing valves
7.	Install packoff to isolate pressure	6.	Pump lead and tail cement
8.	Install BPV and skid rig	7.	Displace cement and bump the plug
		8.	Ensure floats are holding pressure
		9.	RD cement crew
		10.	Install BPV and TA cap

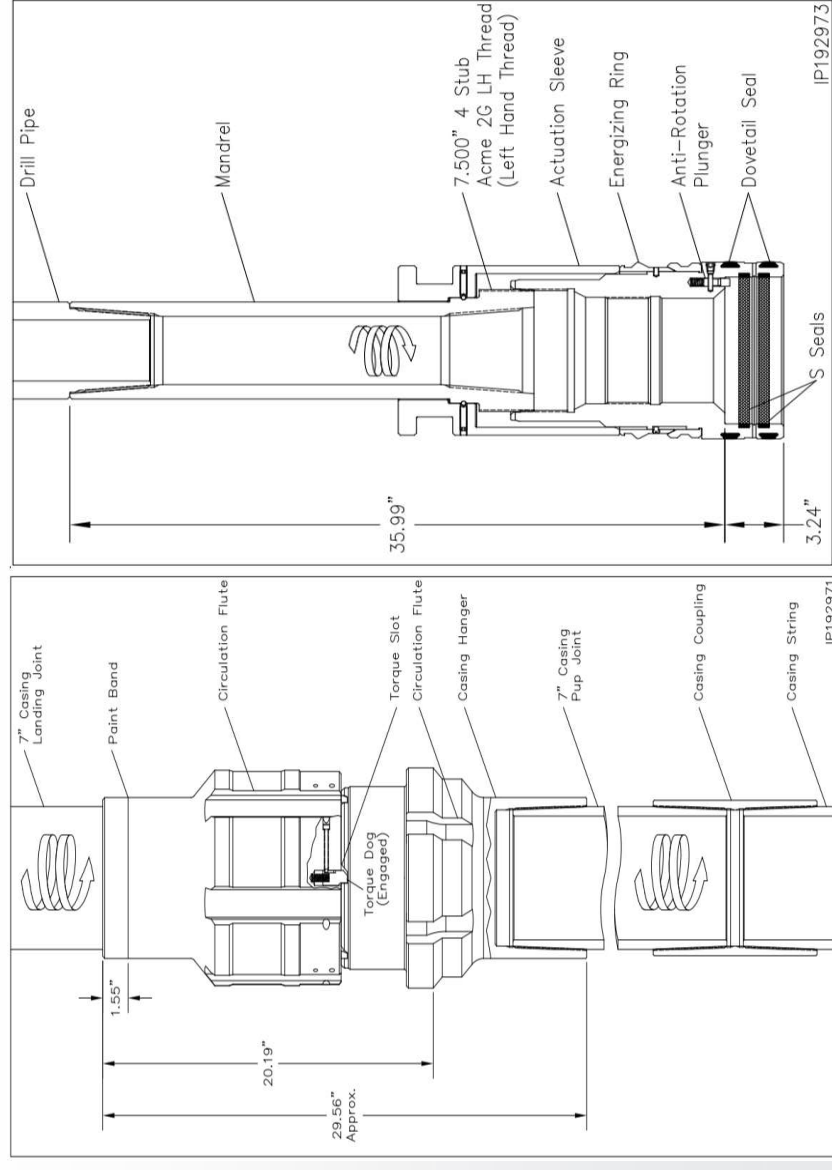


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SLIDE TITLE HERE | 2

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

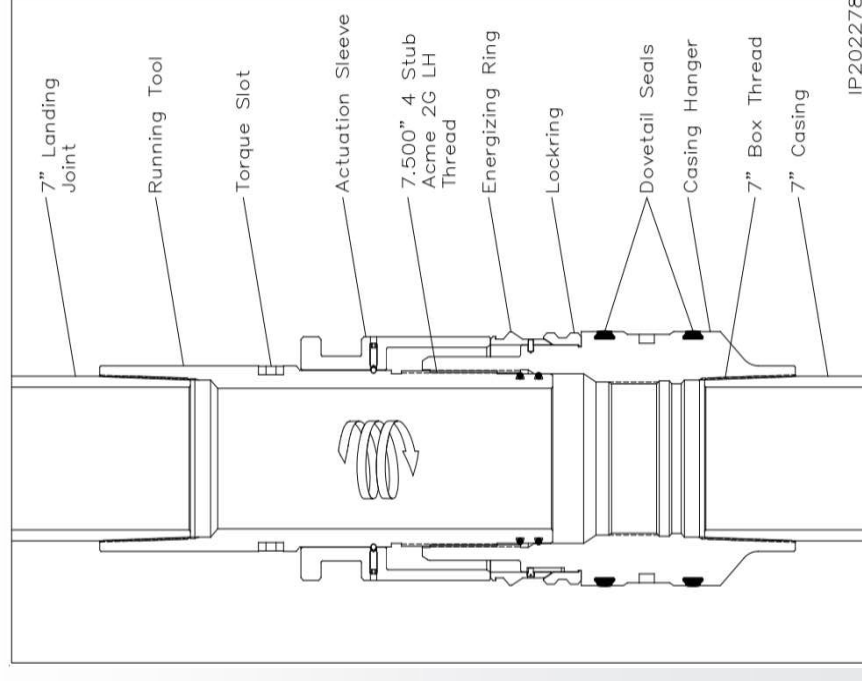


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Offline Cementing Equipment-Solid Body Mandrel Hanger

- 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



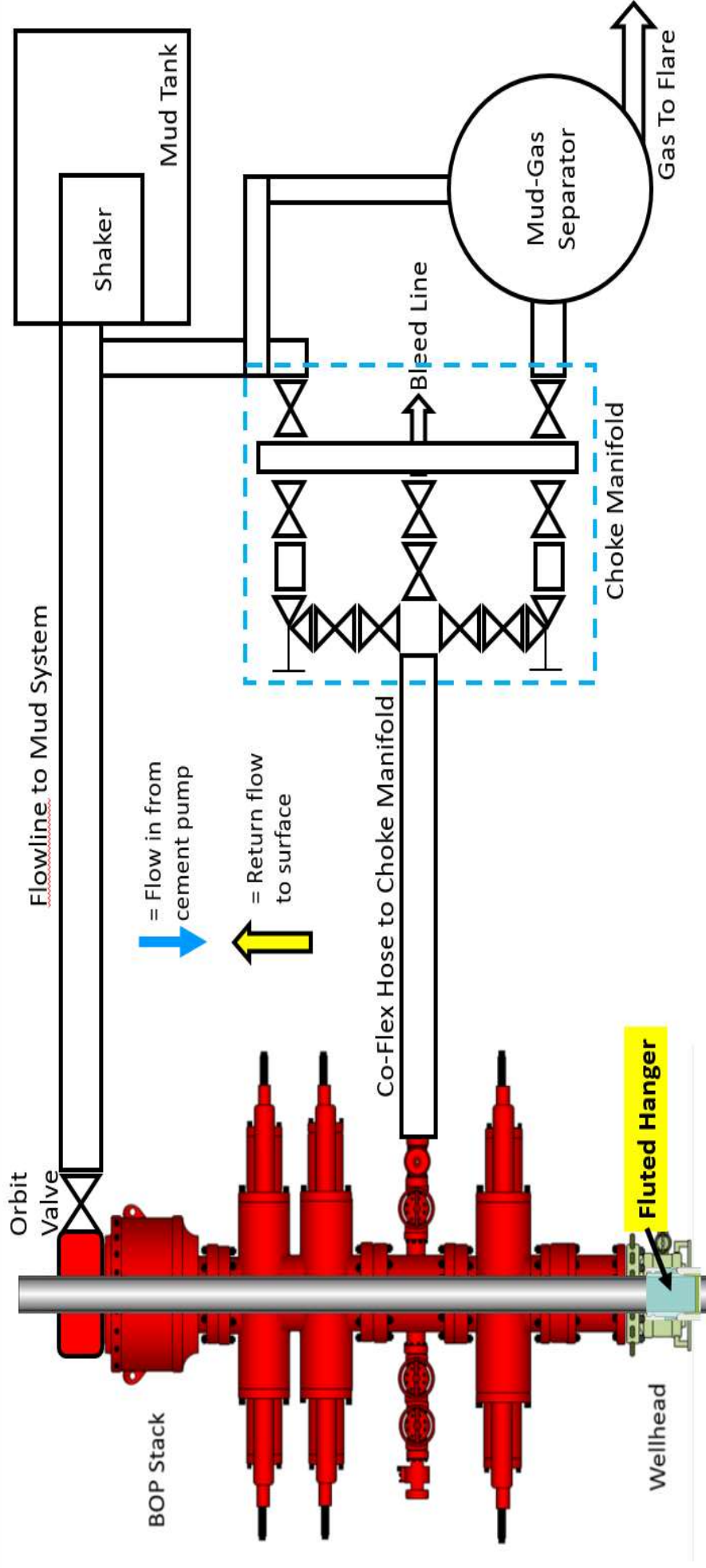
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Conventional Cementing Flow Diagram

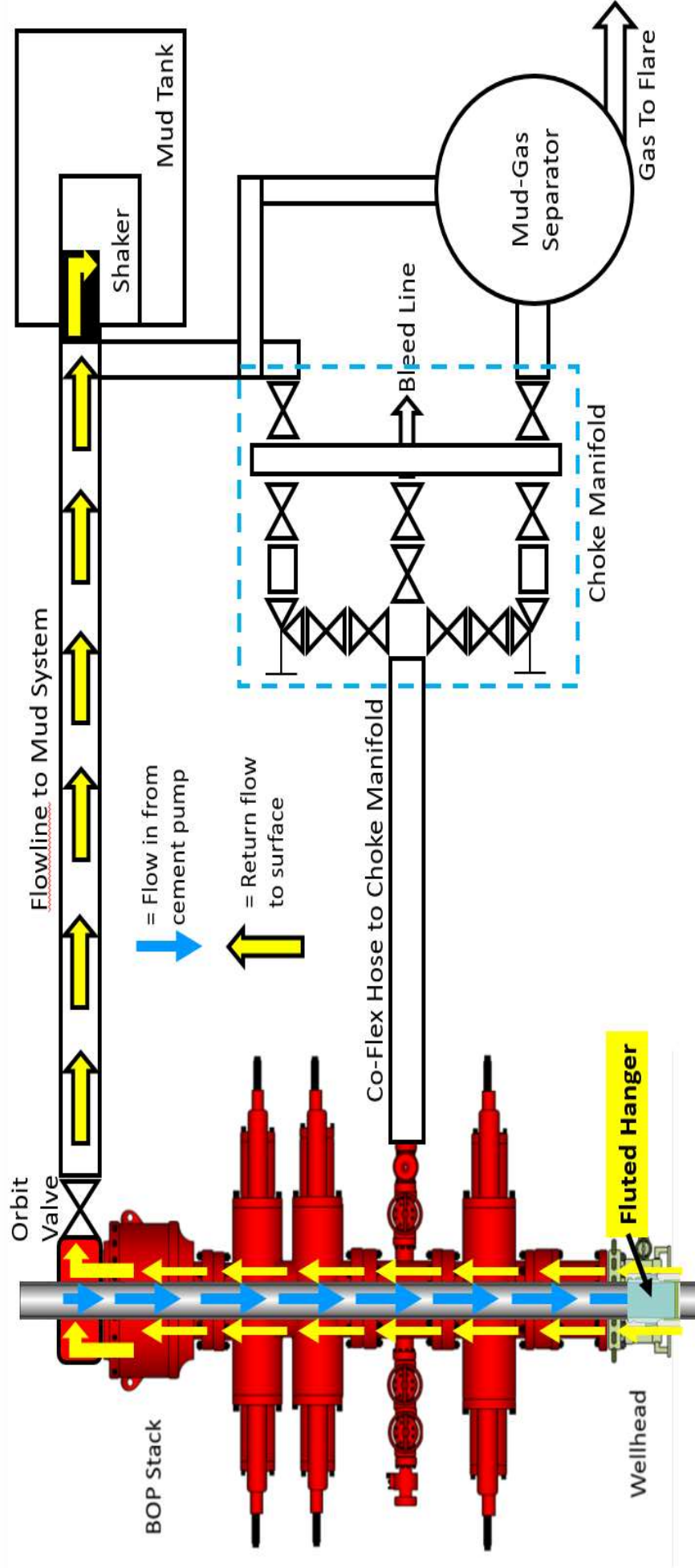


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Conventional Cementing Flow Diagram

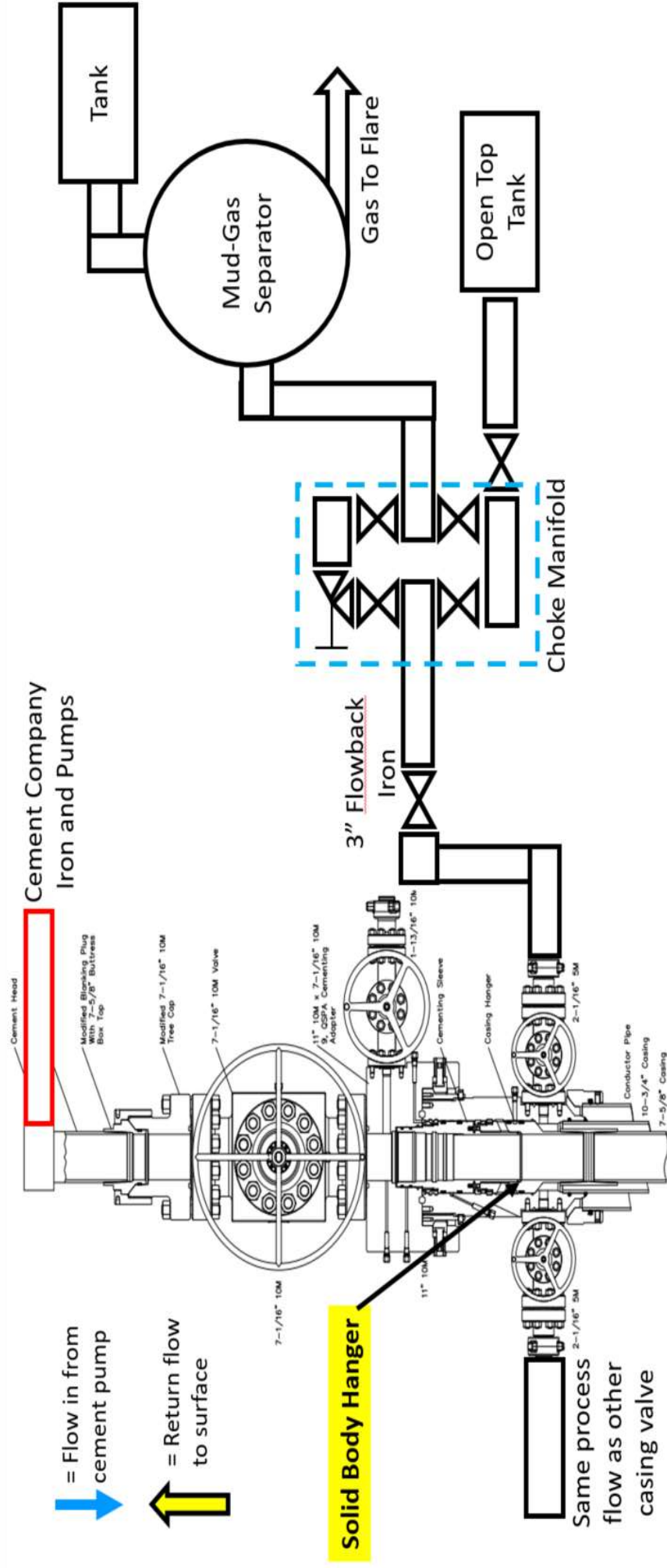


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Offline Cementing Flow Diagram

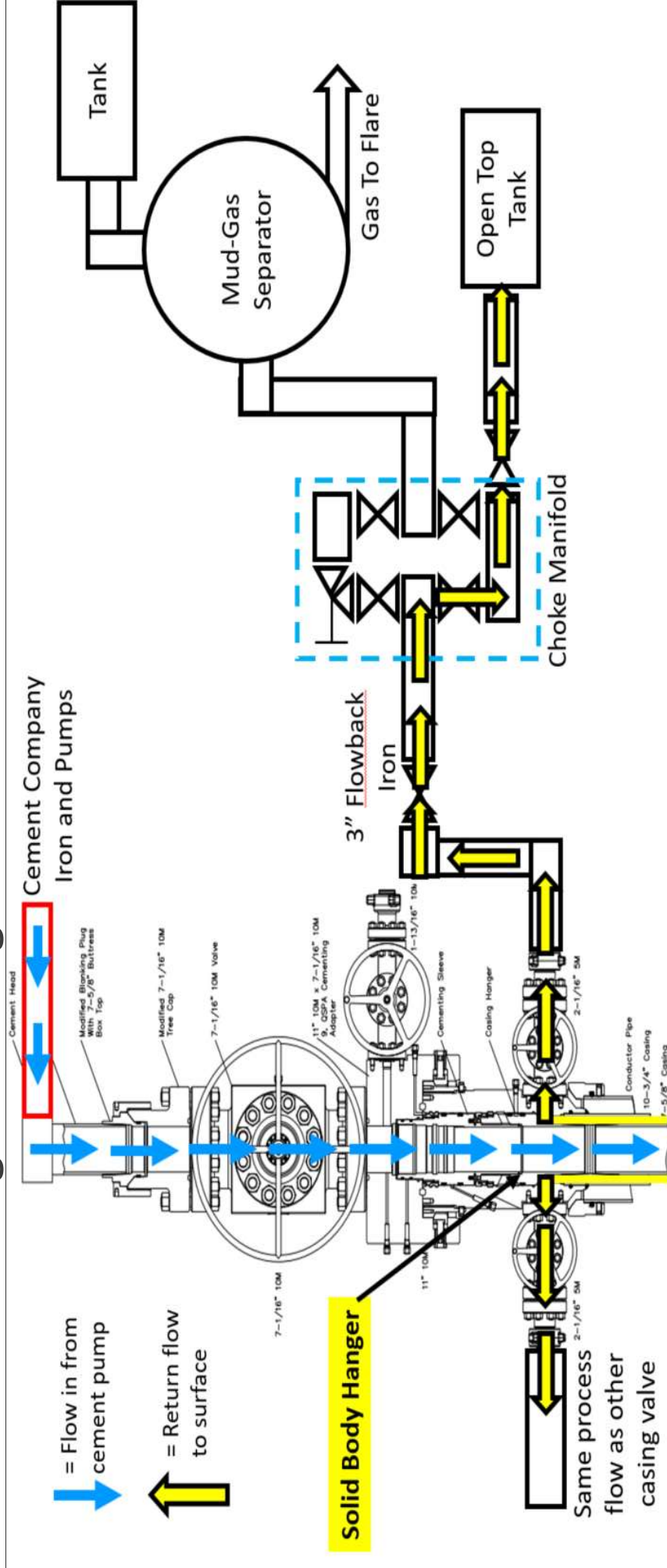


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Offline Cementing Flow Diagram

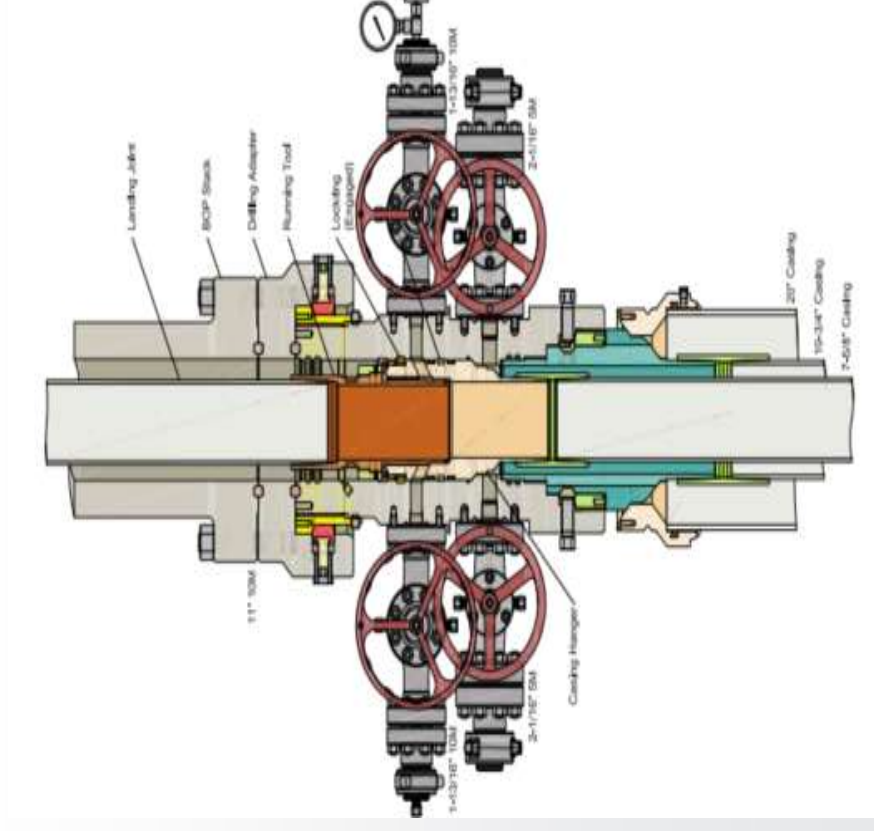


CIMAREX ENERGY CO. NYSE LISTED: XEC



Offline Cementing Progression

- Run 7-5/8 casing
- Land 11" nominal x 7-5/8 hanger
- Test casing hanger
- Energize 11" nom x 7-5/8 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 WILL NOT set solid body packoff.**
 - 10K float collar-Internal Barrier
 - 10k float Shoe-Internal Barrier
- **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**

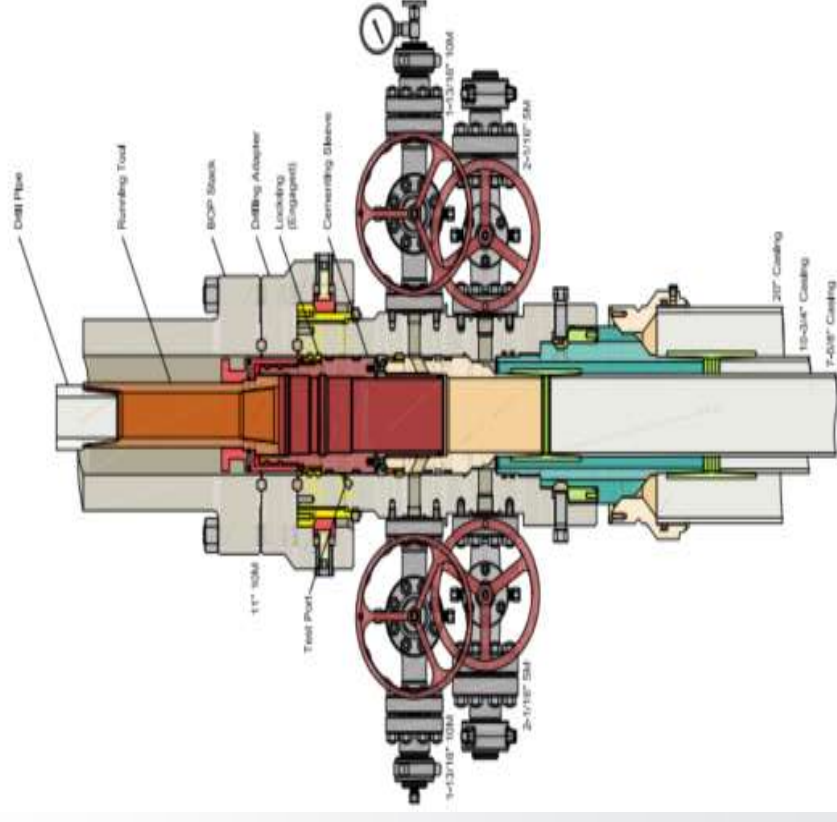


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SLIDE TITLE HERE | 9

Offline Cementing Progression

- Pick up Cementing sleeve and running tool and run into well
- Test cementing sleeve
- Energize cementing sleeve lock ring and pull test
- Remove running tool
- Pick up running tool with 7" 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

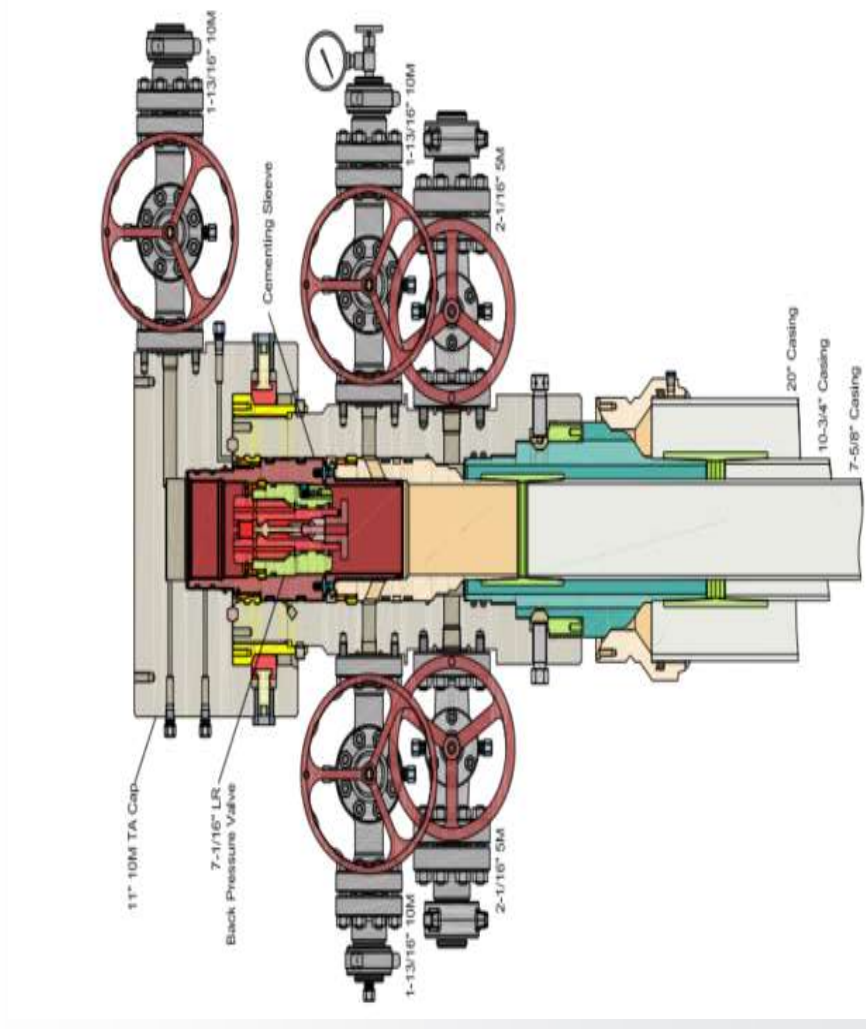


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Offline Cementing Progression

- 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

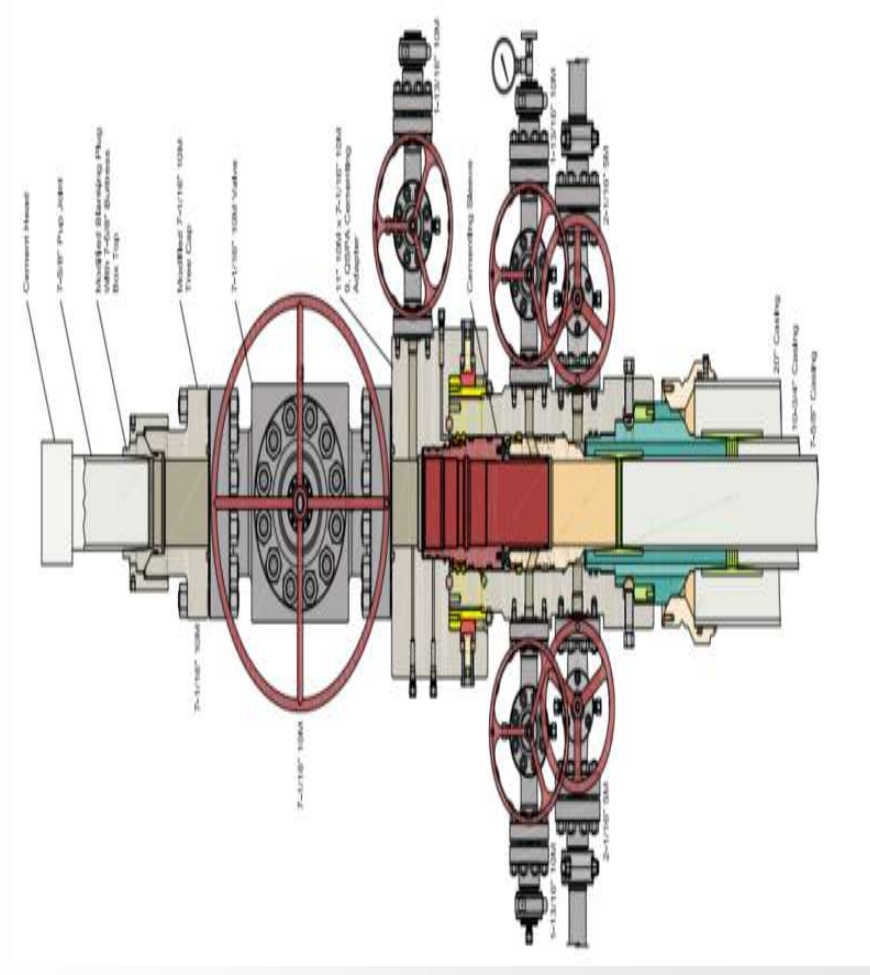


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SLIDE TITLE HERE | 11

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



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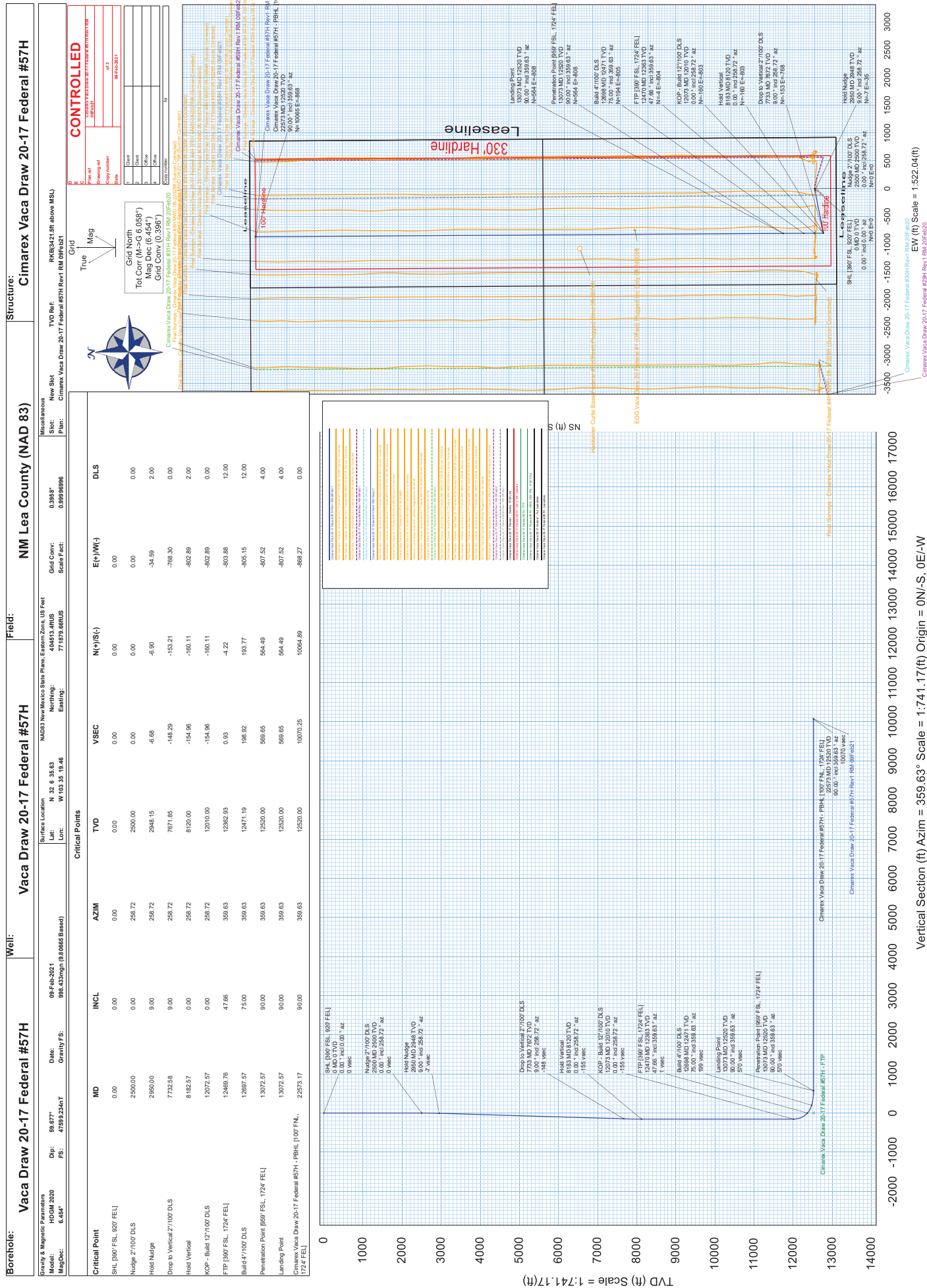
Offline Cementing Risk and COA Compliance

- 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 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



CIMAREX ENERGY CO. NYSE LISTED: XEC

SLIDE TITLE HERE | 13



Schlumberger**Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 Proposal****Geodetic Report**

(Def Plan)

Report Date: February 09, 2021 - 01:04 PM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Vaca Draw 20-17 Federal #57H / New Slot
Well: Vaca Draw 20-17 Federal #57H
Borehole: Vaca Draw 20-17 Federal #57H
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21
Survey Date: September 24, 2018
Tort / AHD / DDI / ERD Ratio: 108.000 ° / 11043.908 ft / 6.333 / 0.882
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 6' 35.63129", W 103° 35' 19.46399"
Location Grid N/E Y/X: N 404513.400 ftUS, E 771879.660 ftUS
CRS Grid Convergence Angle: 0.3958 °
Grid Scale Factor: 0.99996996
Version / Patch: 2.10.824.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.633 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3421.500 ft above MSL
Seabed / Ground Elevation: 3398.500 ft above MSL
Magnetic Declination: 6.454 °
Total Gravity Field Strength: 998.4330mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47599.234 nT
Magnetic Dip Angle: 59.677 °
Declination Date: February 09, 2021
Magnetic Declination Model: HDGM 2020
North Reference: Grid North
Grid Convergence Used: 0.3958 °
Total Corr Mag North->Grid North: 6.0578 °

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 [390' FSL, 920' FEL] Nudge 2' / 100'	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
DLS	2500.00	0.00	258.72	2500.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
Hold Nudge	2950.00	9.00	258.72	2948.15	-6.68	-6.90	-34.59	2.00	404506.50	771845.07	N 32 6 35.57	W 103 35 19.87
Drop to Vertical	7732.58	9.00	258.72	7671.85	-148.29	-153.21	-768.30	0.00	404360.19	771111.39	N 32 6 34.17	W 103 35 28.41
2°/100' DLS	8182.57	0.00	258.72	8120.00	-154.96	-160.11	-802.89	2.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
Hold Vertical	12072.57	0.00	258.72	12010.00	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
KOP - Build	12697.57	75.00	359.63	12471.19	198.92	193.77	-805.15	12.00	404707.16	771074.53	N 32 6 37.60	W 103 35 28.81
12°/100' DLS	13072.57	90.00	359.63	12520.00	569.65	564.49	-807.52	4.00	405077.88	771072.16	N 32 6 41.27	W 103 35 28.81
Build 4' / 100'	22573.17	90.00	359.63	12520.00	10070.25	10064.89	-868.27	0.00	414577.97	771011.42	N 32 8 15.28	W 103 35 28.75
DLS												
Landing Point												
Cimarex Vaca												
Draw 20-17												
Federal #57H -												
PBHL [100' FNL, 1724' FEL]												

Survey Type: Def Plan

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

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 ° ' ")
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	23.000		1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #57H / Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21		
	1	23.000	22573.167		1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #57H / Cimarex Vaca Draw 20-17		

Schlumberger

Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 Proposal Geodetic Report



(Def Plan)

Report Date: February 09, 2021 - 01:04 PM Client: Cimarex Energy Field: NM Lea County (NAD 83) Structure / Slot: Cimarex Vaca Draw 20-17 Federal #57H / New Slot Well: Vaca Draw 20-17 Federal #57H Borehole: Unknown / Unknown UWI / API#: Survey Name: Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 Survey Date: September 24, 2018 Tort / AHD / DDI / ERD Ratio: 108.000 ° / 11043.908 ft / 6.333 / 0.882 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet Location Lat / Long: N 32° 6' 35.63129", W 103° 35' 19.46399" Location Grid N/E Y/X: N 404513.400 ftUS, E 771879.660 ftUS CRS Grid Convergence Angle: 0.3958 ° Grid Scale Factor: 0.99996996 Version / Patch: 2.10.824.0	Survey / DLS Computation: Minimum Curvature / Lubinski Vertical Section Azimuth: 359.633 ° (Grid North) Vertical Section Origin: 0.000 ft, 0.000 ft TVD Reference Datum: RKB TVD Reference Elevation: 3421.500 ft above MSL Seabed / Ground Elevation: 3398.500 ft above MSL Magnetic Declination: 6.454 ° Total Gravity Field Strength: 998.4330mgn (9.80665 Based) Gravity Model: GARM Total Magnetic Field Strength: 47599.234 nT Magnetic Dip Angle: 59.677 ° Declination Date: February 09, 2021 Magnetic Declination Model: HDGM 2020 North Reference: Grid North Grid Convergence Used: 0.3958 ° Total Corr Mag North->Grid North: 6.0578 °
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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 [390' FSL, 920' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	100.00	0.00	258.72	100.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	200.00	0.00	258.72	200.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	300.00	0.00	258.72	300.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	400.00	0.00	258.72	400.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	500.00	0.00	258.72	500.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	600.00	0.00	258.72	600.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	700.00	0.00	258.72	700.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	800.00	0.00	258.72	800.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	900.00	0.00	258.72	900.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1000.00	0.00	258.72	1000.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1100.00	0.00	258.72	1100.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1200.00	0.00	258.72	1200.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1300.00	0.00	258.72	1300.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1400.00	0.00	258.72	1400.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1500.00	0.00	258.72	1500.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1600.00	0.00	258.72	1600.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1700.00	0.00	258.72	1700.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1800.00	0.00	258.72	1800.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	1900.00	0.00	258.72	1900.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	2000.00	0.00	258.72	2000.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	2100.00	0.00	258.72	2100.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	2200.00	0.00	258.72	2200.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	2300.00	0.00	258.72	2300.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	2400.00	0.00	258.72	2400.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46

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 ° ' ")
Nudge 2°/100' DLS	2500.00	0.00	258.72	2500.00	0.00	0.00	0.00	0.00	404513.40	771879.66	N 32 6 35.63	W 103 35 19.46
	2600.00	2.00	258.72	2599.98	-0.33	-0.34	-1.71	2.00	404513.06	771877.95	N 32 6 35.63	W 103 35 19.48
Hold Nudge	2700.00	4.00	258.72	2699.84	-1.32	-1.36	-6.84	2.00	404512.04	771872.82	N 32 6 35.62	W 103 35 19.54
	2800.00	6.00	258.72	2799.45	-2.97	-3.07	-27.99	2.00	404510.33	771864.27	N 32 6 35.60	W 103 35 19.64
	2900.00	8.00	258.72	2898.70	-5.28	-5.45	-27.34	2.00	404507.95	771852.32	N 32 6 35.58	W 103 35 19.78
	2950.00	9.00	258.72	2948.15	-6.68	-6.90	-34.59	2.00	404506.50	771845.07	N 32 6 35.57	W 103 35 19.87
	3000.00	9.00	258.72	2997.54	-8.16	-8.43	-42.26	0.00	404504.97	771837.40	N 32 6 35.55	W 103 35 19.96
	3100.00	9.00	258.72	3096.30	-11.12	-11.49	-57.60	0.00	404501.91	771822.06	N 32 6 35.52	W 103 35 20.13
	3200.00	9.00	258.72	3195.07	-14.08	-14.55	-72.94	0.00	404498.85	771806.72	N 32 6 35.49	W 103 35 20.31
	3300.00	9.00	258.72	3293.84	-17.04	-17.61	-88.28	0.00	404495.80	771791.38	N 32 6 35.46	W 103 35 20.49
	3400.00	9.00	258.72	3392.61	-20.00	-20.66	-103.63	0.00	404492.74	771776.04	N 32 6 35.43	W 103 35 20.67
	3500.00	9.00	258.72	3491.38	-22.96	-23.72	-118.97	0.00	404489.68	771760.70	N 32 6 35.40	W 103 35 20.85
	3600.00	9.00	258.72	3590.15	-25.92	-26.78	-134.31	0.00	404486.62	771745.36	N 32 6 35.38	W 103 35 21.03
	3700.00	9.00	258.72	3688.92	-28.88	-29.84	-149.65	0.00	404483.56	771730.02	N 32 6 35.35	W 103 35 21.21
	3800.00	9.00	258.72	3787.69	-31.84	-32.90	-164.99	0.00	404480.50	771714.67	N 32 6 35.32	W 103 35 21.38
	3900.00	9.00	258.72	3886.46	-34.81	-35.96	-180.33	0.00	404477.44	771699.33	N 32 6 35.29	W 103 35 21.56
	4000.00	9.00	258.72	3985.22	-37.77	-39.02	-195.67	0.00	404474.38	771683.99	N 32 6 35.26	W 103 35 21.74
	4100.00	9.00	258.72	4083.99	-40.73	-42.08	-211.01	0.00	404471.32	771668.65	N 32 6 35.23	W 103 35 21.92
	4200.00	9.00	258.72	4182.76	-43.69	-45.14	-226.36	0.00	404468.26	771653.31	N 32 6 35.20	W 103 35 22.10
	4300.00	9.00	258.72	4281.53	-46.65	-48.20	-241.70	0.00	404465.20	771637.97	N 32 6 35.17	W 103 35 22.28
	4400.00	9.00	258.72	4380.30	-49.61	-51.26	-257.04	0.00	404462.14	771622.63	N 32 6 35.14	W 103 35 22.46
	4500.00	9.00	258.72	4479.07	-52.57	-54.32	-272.38	0.00	404459.08	771607.29	N 32 6 35.11	W 103 35 22.64
	4600.00	9.00	258.72	4577.84	-55.53	-57.38	-287.72	0.00	404456.03	771591.95	N 32 6 35.08	W 103 35 22.81
	4700.00	9.00	258.72	4676.61	-58.49	-60.44	-303.06	0.00	404452.97	771576.61	N 32 6 35.05	W 103 35 22.99
	4800.00	9.00	258.72	4775.38	-61.45	-63.50	-318.40	0.00	404449.91	771561.27	N 32 6 35.02	W 103 35 23.17
	4900.00	9.00	258.72	4874.14	-64.42	-66.55	-333.74	0.00	404446.85	771545.93	N 32 6 35.00	W 103 35 23.35
	5000.00	9.00	258.72	4972.91	-67.38	-69.61	-349.09	0.00	404443.79	771530.59	N 32 6 34.97	W 103 35 23.53
	5100.00	9.00	258.72	5071.68	-70.34	-72.67	-364.43	0.00	404440.73	771515.24	N 32 6 34.94	W 103 35 23.71
	5200.00	9.00	258.72	5170.45	-73.30	-75.73	-379.77	0.00	404437.67	771499.90	N 32 6 34.91	W 103 35 23.89
	5300.00	9.00	258.72	5269.22	-76.26	-78.79	-395.11	0.00	404434.61	771484.56	N 32 6 34.88	W 103 35 24.06
	5400.00	9.00	258.72	5367.99	-79.22	-81.85	-410.45	0.00	404431.55	771469.22	N 32 6 34.85	W 103 35 24.24
	5500.00	9.00	258.72	5466.76	-82.18	-84.91	-425.79	0.00	404428.49	771453.88	N 32 6 34.82	W 103 35 24.42
	5600.00	9.00	258.72	5565.53	-85.14	-87.97	-441.13	0.00	404425.43	771438.54	N 32 6 34.79	W 103 35 24.60
	5700.00	9.00	258.72	5664.29	-88.10	-91.03	-456.48	0.00	404422.37	771423.20	N 32 6 34.76	W 103 35 24.78
	5800.00	9.00	258.72	5763.06	-91.06	-94.09	-471.82	0.00	404419.31	771407.86	N 32 6 34.73	W 103 35 24.96
	5900.00	9.00	258.72	5861.83	-94.03	-97.15	-487.16	0.00	404416.26	771392.52	N 32 6 34.70	W 103 35 25.14
	6000.00	9.00	258.72	5960.60	-96.99	-100.21	-502.50	0.00	404413.20	771377.18	N 32 6 34.67	W 103 35 25.31
	6100.00	9.00	258.72	6059.37	-99.95	-103.27	-517.84	0.00	404410.14	771361.84	N 32 6 34.64	W 103 35 25.49
	6200.00	9.00	258.72	6158.14	-102.91	-106.33	-533.18	0.00	404407.08	771346.50	N 32 6 34.62	W 103 35 25.67
	6300.00	9.00	258.72	6256.91	-105.87	-109.39	-548.52	0.00	404404.02	771331.15	N 32 6 34.59	W 103 35 25.85
	6400.00	9.00	258.72	6355.68	-108.83	-112.44	-563.86	0.00	404400.96	771315.81	N 32 6 34.56	W 103 35 26.03
	6500.00	9.00	258.72	6454.45	-111.79	-115.50	-579.21	0.00	404397.90	771300.47	N 32 6 34.53	W 103 35 26.21
	6600.00	9.00	258.72	6553.21	-114.75	-118.56	-594.55	0.00	404394.84	771285.13	N 32 6 34.50	W 103 35 26.39
	6700.00	9.00	258.72	6651.98	-117.71	-121.62	-609.89	0.00	404391.78	771269.79	N 32 6 34.47	W 103 35 26.56
	6800.00	9.00	258.72	6750.75	-120.67	-124.68	-625.23	0.00	404388.72	771254.45	N 32 6 34.44	W 103 35 26.74
	6900.00	9.00	258.72	6849.52	-123.64	-127.74	-640.57	0.00	404385.66	771239.11	N 32 6 34.41	W 103 35 26.92
	7000.00	9.00	258.72	6948.29	-126.60	-130.80	-655.91	0.00	404382.60	771223.77	N 32 6 34.38	W 103 35 27.10
	7100.00	9.00	258.72	7047.06	-129.56	-133.86	-671.25	0.00	404379.54	771208.43	N 32 6 34.35	W 103 35 27.28
	7200.00	9.00	258.72	7145.83	-132.52	-136.92	-686.59	0.00	404376.49	771193.09	N 32 6 34.32	W 103 35 27.46
	7300.00	9.00	258.72	7244.60	-135.48	-139.98	-701.94	0.00	404373.43	771177.75	N 32 6 34.29	W 103 35 27.64
	7400.00	9.00	258.72	7343.37	-138.44	-143.04	-717.28	0.00	404370.37	771162.41	N 32 6 34.26	W 103 35 27.81
	7500.00	9.00	258.72	7442.13	-141.40	-146.10	-732.62	0.00	404367.31	771147.06	N 32 6 34.24	W 103 35 27.99
	7600.00	9.00	258.72	7540.90	-144.36	-149.16	-747.96	0.00	404364.25	771131.72	N 32 6 34.21	W 103 35 28.17
	7700.00	9.00	258.72	7639.67	-147.32	-152.22	-763.30	0.00	404361.19	771116.38	N 32 6 34.18	W 103 35 28.35

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 ° ' ")
Drop to Vertical 2°/100' DLS	7732.58	9.00	258.72	7671.85	-148.29	-153.21	-768.30	0.00	404360.19	771111.39	N 32 6 34.17	W 103 35 28.41
	7800.00	7.65	258.72	7738.56	-150.14	-155.12	-777.87	2.00	404358.28	771101.81	N 32 6 34.15	W 103 35 28.52
	7900.00	5.65	258.72	7837.88	-152.33	-157.39	-789.23	2.00	404356.02	771090.45	N 32 6 34.13	W 103 35 28.65
Hold Vertical	8000.00	3.65	258.72	7937.55	-153.86	-158.97	-797.18	2.00	404354.43	771082.50	N 32 6 34.11	W 103 35 28.74
	8100.00	1.65	258.72	8037.43	-154.74	-159.88	-801.72	2.00	404353.53	771077.96	N 32 6 34.10	W 103 35 28.80
	8182.57	0.00	258.72	8120.00	-154.96	-160.11	-802.89	2.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8200.00	0.00	258.72	8137.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8300.00	0.00	258.72	8237.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8400.00	0.00	258.72	8337.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8500.00	0.00	258.72	8437.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8600.00	0.00	258.72	8537.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8700.00	0.00	258.72	8637.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8800.00	0.00	258.72	8737.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	8900.00	0.00	258.72	8837.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9000.00	0.00	258.72	8937.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9100.00	0.00	258.72	9037.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9200.00	0.00	258.72	9137.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9300.00	0.00	258.72	9237.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9400.00	0.00	258.72	9337.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9500.00	0.00	258.72	9437.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9600.00	0.00	258.72	9537.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9700.00	0.00	258.72	9637.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	9800.00	0.00	258.72	9737.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
KOP - Build 12°/100' DLS	9900.00	0.00	258.72	9837.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10000.00	0.00	258.72	9937.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10100.00	0.00	258.72	10037.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10200.00	0.00	258.72	10137.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10300.00	0.00	258.72	10237.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10400.00	0.00	258.72	10337.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10500.00	0.00	258.72	10437.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10600.00	0.00	258.72	10537.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10700.00	0.00	258.72	10637.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10800.00	0.00	258.72	10737.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	10900.00	0.00	258.72	10837.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11000.00	0.00	258.72	10937.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11100.00	0.00	258.72	11037.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11200.00	0.00	258.72	11137.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11300.00	0.00	258.72	11237.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11400.00	0.00	258.72	11337.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11500.00	0.00	258.72	11437.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11600.00	0.00	258.72	11537.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11700.00	0.00	258.72	11637.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11800.00	0.00	258.72	11737.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	11900.00	0.00	258.72	11837.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
FTP [390° FSL, 1724° FEL]	12000.00	0.00	258.72	11937.42	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	12072.57	0.00	258.72	12010.00	-154.96	-160.11	-802.89	0.00	404353.30	771076.80	N 32 6 34.10	W 103 35 28.81
	12100.00	3.29	359.63	12037.41	-154.18	-159.32	-802.89	12.00	404354.08	771076.79	N 32 6 34.11	W 103 35 28.81
	12200.00	15.29	359.63	12135.92	-138.06	-143.21	-803.00	12.00	404370.20	771076.69	N 32 6 34.27	W 103 35 28.81
FTP [390° FSL, 1724° FEL]	12300.00	27.29	359.63	12228.92	-101.82	-106.96	-803.23	12.00	404406.44	771076.46	N 32 6 34.63	W 103 35 28.81
	12400.00	39.29	359.63	12312.36	-47.03	-52.18	-803.58	12.00	404461.23	771076.11	N 32 6 35.17	W 103 35 28.81
	12469.76	47.66	359.63	12362.93	0.93	-4.22	-803.88	12.00	404509.18	771075.80	N 32 6 35.64	W 103 35 28.81
	12500.00	51.29	359.63	12382.58	23.91	18.76	-804.03	12.00	404532.16	771075.65	N 32 6 35.87	W 103 35 28.81
	12600.00	63.29	359.63	12436.52	107.90	102.75	-804.57	12.00	404616.15	771075.12	N 32 6 36.70	W 103 35 28.81

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 ° ' ")
Build 4"/100' DLS	12697.57	75.00	359.63	12471.19	198.92	193.77	-805.15	12.00	404707.16	771074.53	N 32 6 37.60	W 103 35 28.81
	12700.00	75.10	359.63	12471.82	201.27	196.11	-805.17	4.00	404709.51	771074.52	N 32 6 37.63	W 103 35 28.81
	12800.00	79.10	359.63	12494.14	298.72	293.57	-805.79	4.00	404806.96	771073.90	N 32 6 38.59	W 103 35 28.81
	12900.00	83.10	359.63	12509.62	397.50	392.34	-806.42	4.00	404905.73	771073.27	N 32 6 39.57	W 103 35 28.81
	13000.00	87.10	359.63	12518.16	497.11	491.95	-807.06	4.00	405005.34	771072.63	N 32 6 40.55	W 103 35 28.81
Penetration Point [959' FSL, 1724' FEL] Landing Point	13072.57	90.00	359.63	12520.00	569.65	564.49	-807.52	4.00	405077.88	771072.16	N 32 6 41.27	W 103 35 28.81
	13100.00	90.00	359.63	12520.00	597.08	591.92	-807.70	0.00	405105.30	771071.99	N 32 6 41.54	W 103 35 28.81
	13200.00	90.00	359.63	12520.00	697.08	691.92	-808.34	0.00	405205.30	771071.35	N 32 6 42.53	W 103 35 28.81
	13300.00	90.00	359.63	12520.00	797.08	791.92	-808.98	0.00	405305.29	771070.71	N 32 6 43.52	W 103 35 28.81
	13400.00	90.00	359.63	12520.00	897.08	891.91	-809.61	0.00	405405.28	771070.07	N 32 6 44.51	W 103 35 28.81
	13500.00	90.00	359.63	12520.00	997.08	991.91	-810.25	0.00	405505.28	771069.43	N 32 6 45.50	W 103 35 28.80
	13600.00	90.00	359.63	12520.00	1097.08	1091.91	-810.89	0.00	405605.27	771068.79	N 32 6 46.49	W 103 35 28.80
	13700.00	90.00	359.63	12520.00	1197.08	1191.91	-811.53	0.00	405705.27	771068.15	N 32 6 47.48	W 103 35 28.80
	13800.00	90.00	359.63	12520.00	1297.08	1291.90	-812.17	0.00	405805.26	771067.51	N 32 6 48.47	W 103 35 28.80
	13900.00	90.00	359.63	12520.00	1397.08	1391.90	-812.81	0.00	405905.26	771066.87	N 32 6 49.46	W 103 35 28.80
	14000.00	90.00	359.63	12520.00	1497.08	1491.90	-813.45	0.00	406005.25	771066.23	N 32 6 50.45	W 103 35 28.80
	14100.00	90.00	359.63	12520.00	1597.08	1591.90	-814.09	0.00	406105.25	771065.60	N 32 6 51.44	W 103 35 28.80
	14200.00	90.00	359.63	12520.00	1697.08	1691.90	-814.73	0.00	406205.24	771064.96	N 32 6 52.43	W 103 35 28.80
	14300.00	90.00	359.63	12520.00	1797.08	1791.89	-815.37	0.00	406305.24	771064.32	N 32 6 53.42	W 103 35 28.80
	14400.00	90.00	359.63	12520.00	1897.08	1891.89	-816.01	0.00	406405.23	771063.68	N 32 6 54.41	W 103 35 28.80
	14500.00	90.00	359.63	12520.00	1997.08	1991.89	-816.65	0.00	406505.23	771063.04	N 32 6 55.40	W 103 35 28.80
	14600.00	90.00	359.63	12520.00	2097.08	2091.89	-817.29	0.00	406605.22	771062.40	N 32 6 56.39	W 103 35 28.80
	14700.00	90.00	359.63	12520.00	2197.08	2191.89	-817.93	0.00	406705.22	771061.76	N 32 6 57.38	W 103 35 28.80
	14800.00	90.00	359.63	12520.00	2297.08	2291.88	-818.57	0.00	406805.21	771061.12	N 32 6 58.37	W 103 35 28.80
	14900.00	90.00	359.63	12520.00	2397.08	2391.88	-819.21	0.00	406905.21	771060.48	N 32 6 59.36	W 103 35 28.80
	15000.00	90.00	359.63	12520.00	2497.08	2491.88	-819.85	0.00	407005.20	771059.84	N 32 7 0 34	W 103 35 28.80
	15100.00	90.00	359.63	12520.00	2597.08	2591.88	-820.48	0.00	407105.20	771059.20	N 32 7 1 33	W 103 35 28.80
	15200.00	90.00	359.63	12520.00	2697.08	2691.88	-821.12	0.00	407205.19	771058.56	N 32 7 2 32	W 103 35 28.79
	15300.00	90.00	359.63	12520.00	2797.08	2791.87	-821.76	0.00	407305.18	771057.92	N 32 7 3 31	W 103 35 28.79
	15400.00	90.00	359.63	12520.00	2897.08	2891.87	-822.40	0.00	407405.18	771057.28	N 32 7 4 30	W 103 35 28.79
	15500.00	90.00	359.63	12520.00	2997.08	2991.87	-823.04	0.00	407505.17	771056.64	N 32 7 5 29	W 103 35 28.79
	15600.00	90.00	359.63	12520.00	3097.08	3091.87	-823.68	0.00	407605.17	771056.00	N 32 7 6 28	W 103 35 28.79
	15700.00	90.00	359.63	12520.00	3197.08	3191.87	-824.32	0.00	407705.16	771055.37	N 32 7 7 27	W 103 35 28.79
	15800.00	90.00	359.63	12520.00	3297.08	3291.86	-824.96	0.00	407805.16	771054.73	N 32 7 8 26	W 103 35 28.79
	15900.00	90.00	359.63	12520.00	3397.08	3391.86	-825.60	0.00	407905.15	771054.09	N 32 7 9 25	W 103 35 28.79
	16000.00	90.00	359.63	12520.00	3497.08	3491.86	-826.24	0.00	408005.15	771053.45	N 32 7 10 24	W 103 35 28.79
	16100.00	90.00	359.63	12520.00	3597.08	3591.86	-826.88	0.00	408105.14	771052.81	N 32 7 11 23	W 103 35 28.79
	16200.00	90.00	359.63	12520.00	3697.08	3691.86	-827.52	0.00	408205.14	771052.17	N 32 7 12 22	W 103 35 28.79
	16300.00	90.00	359.63	12520.00	3797.08	3791.85	-828.16	0.00	408305.13	771051.53	N 32 7 13 21	W 103 35 28.79
	16400.00	90.00	359.63	12520.00	3897.08	3891.85	-828.80	0.00	408405.13	771050.89	N 32 7 14 20	W 103 35 28.79
	16500.00	90.00	359.63	12520.00	3997.08	3991.85	-829.44	0.00	408505.12	771050.25	N 32 7 15 19	W 103 35 28.79
	16600.00	90.00	359.63	12520.00	4097.08	4091.85	-830.08	0.00	408605.12	771049.61	N 32 7 16 18	W 103 35 28.79
	16700.00	90.00	359.63	12520.00	4197.08	4191.85	-830.71	0.00	408705.11	771048.97	N 32 7 17 17	W 103 35 28.79
	16800.00	90.00	359.63	12520.00	4297.08	4291.84	-831.35	0.00	408805.11	771048.33	N 32 7 18 16	W 103 35 28.78
	16900.00	90.00	359.63	12520.00	4397.08	4391.84	-831.99	0.00	408905.10	771047.69	N 32 7 19 15	W 103 35 28.79
	17000.00	90.00	359.63	12520.00	4497.08	4491.84	-832.63	0.00	409005.10	771047.05	N 32 7 20 14	W 103 35 28.78
	17100.00	90.00	359.63	12520.00	4597.08	4591.84	-833.27	0.00	409105.09	771046.41	N 32 7 21 12	W 103 35 28.78
	17200.00	90.00	359.63	12520.00	4697.08	4691.84	-833.91	0.00	409205.09	771045.77	N 32 7 22 11	W 103 35 28.78
	17300.00	90.00	359.63	12520.00	4797.08	4791.83	-834.55	0.00	409305.08	771045.14	N 32 7 23 10	W 103 35 28.78
	17400.00	90.00	359.63	12520.00	4897.08	4891.83	-835.19	0.00	409405.07	771044.50	N 32 7 24 09	W 103 35 28.78
	17500.00	90.00	359.63	12520.00	4997.08	4991.83	-835.83	0.00	409505.07	771043.86	N 32 7 25 08	W 103 35 28.78
	17600.00	90.00	359.63	12520.00	5097.08	5091.83	-836.47	0.00	409605.06	771043.22	N 32 7 26 07	W 103 35 28.78

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 ° ' ")
	17700.00	90.00	359.63	12520.00	5197.08	5191.83	-837.11	0.00	409705.06	771042.58	N 32° 7' 27.06"	W 103° 35' 28.78"
	17800.00	90.00	359.63	12520.00	5297.08	5291.82	-837.75	0.00	409805.05	771041.94	N 32° 7' 28.05"	W 103° 35' 28.78"
	17900.00	90.00	359.63	12520.00	5397.08	5391.82	-838.39	0.00	409905.05	771041.30	N 32° 7' 29.04"	W 103° 35' 28.78"
	18000.00	90.00	359.63	12520.00	5497.08	5491.82	-839.03	0.00	410005.04	771040.66	N 32° 7' 30.03"	W 103° 35' 28.78"
	18100.00	90.00	359.63	12520.00	5597.08	5591.82	-839.67	0.00	410105.04	771040.02	N 32° 7' 31.02"	W 103° 35' 28.78"
	18200.00	90.00	359.63	12520.00	5697.08	5691.82	-840.31	0.00	410205.03	771039.38	N 32° 7' 32.01"	W 103° 35' 28.78"
	18300.00	90.00	359.63	12520.00	5797.08	5791.81	-840.95	0.00	410305.03	771038.74	N 32° 7' 33.00"	W 103° 35' 28.78"
	18400.00	90.00	359.63	12520.00	5897.08	5891.81	-841.58	0.00	410405.02	771038.10	N 32° 7' 33.99"	W 103° 35' 28.78"
	18500.00	90.00	359.63	12520.00	5997.08	5991.81	-842.22	0.00	410505.02	771037.46	N 32° 7' 34.98"	W 103° 35' 28.78"
	18600.00	90.00	359.63	12520.00	6097.08	6091.81	-842.86	0.00	410605.01	771036.82	N 32° 7' 35.97"	W 103° 35' 28.78"
	18700.00	90.00	359.63	12520.00	6197.08	6191.80	-843.50	0.00	410705.01	771036.18	N 32° 7' 36.96"	W 103° 35' 28.77"
	18800.00	90.00	359.63	12520.00	6297.08	6291.80	-844.14	0.00	410805.00	771035.54	N 32° 7' 37.95"	W 103° 35' 28.77"
	18900.00	90.00	359.63	12520.00	6397.08	6391.80	-844.78	0.00	410905.00	771034.91	N 32° 7' 38.94"	W 103° 35' 28.77"
	19000.00	90.00	359.63	12520.00	6497.08	6491.80	-845.42	0.00	411004.99	771034.27	N 32° 7' 39.93"	W 103° 35' 28.77"
	19100.00	90.00	359.63	12520.00	6597.08	6591.80	-846.06	0.00	411104.99	771033.63	N 32° 7' 40.92"	W 103° 35' 28.77"
	19200.00	90.00	359.63	12520.00	6697.08	6691.79	-846.70	0.00	411204.98	771032.99	N 32° 7' 41.90"	W 103° 35' 28.77"
	19300.00	90.00	359.63	12520.00	6797.08	6791.79	-847.34	0.00	411304.97	771032.35	N 32° 7' 42.89"	W 103° 35' 28.77"
	19400.00	90.00	359.63	12520.00	6897.08	6891.79	-847.98	0.00	411404.97	771031.71	N 32° 7' 43.88"	W 103° 35' 28.77"
	19500.00	90.00	359.63	12520.00	6997.08	6991.79	-848.62	0.00	411504.96	771031.07	N 32° 7' 44.87"	W 103° 35' 28.77"
	19600.00	90.00	359.63	12520.00	7097.08	7091.79	-849.26	0.00	411604.96	771030.43	N 32° 7' 45.86"	W 103° 35' 28.77"
	19700.00	90.00	359.63	12520.00	7197.08	7191.78	-849.90	0.00	411704.95	771029.79	N 32° 7' 46.85"	W 103° 35' 28.77"
	19800.00	90.00	359.63	12520.00	7297.08	7291.78	-850.54	0.00	411804.95	771029.15	N 32° 7' 47.84"	W 103° 35' 28.77"
	19900.00	90.00	359.63	12520.00	7397.08	7391.78	-851.18	0.00	411904.94	771028.51	N 32° 7' 48.83"	W 103° 35' 28.77"
	20000.00	90.00	359.63	12520.00	7497.08	7491.78	-851.82	0.00	412004.94	771027.87	N 32° 7' 49.82"	W 103° 35' 28.77"
	20100.00	90.00	359.63	12520.00	7597.08	7591.78	-852.45	0.00	412104.93	771027.23	N 32° 7' 50.81"	W 103° 35' 28.77"
	20200.00	90.00	359.63	12520.00	7697.08	7691.77	-853.09	0.00	412204.93	771026.59	N 32° 7' 51.80"	W 103° 35' 28.77"
	20300.00	90.00	359.63	12520.00	7797.08	7791.77	-853.73	0.00	412304.92	771025.95	N 32° 7' 52.79"	W 103° 35' 28.77"
	20400.00	90.00	359.63	12520.00	7897.08	7891.77	-854.37	0.00	412404.92	771025.31	N 32° 7' 53.78"	W 103° 35' 28.77"
	20500.00	90.00	359.63	12520.00	7997.08	7991.77	-855.01	0.00	412504.91	771024.68	N 32° 7' 54.77"	W 103° 35' 28.76"
	20600.00	90.00	359.63	12520.00	8097.08	8091.77	-855.65	0.00	412604.91	771024.04	N 32° 7' 55.76"	W 103° 35' 28.76"
	20700.00	90.00	359.63	12520.00	8197.08	8191.76	-856.29	0.00	412704.90	771023.40	N 32° 7' 56.75"	W 103° 35' 28.76"
	20800.00	90.00	359.63	12520.00	8297.08	8291.76	-856.93	0.00	412804.90	771022.76	N 32° 7' 57.74"	W 103° 35' 28.76"
	20900.00	90.00	359.63	12520.00	8397.08	8391.76	-857.57	0.00	412904.89	771022.12	N 32° 7' 58.73"	W 103° 35' 28.76"
	21000.00	90.00	359.63	12520.00	8497.08	8491.76	-858.21	0.00	413004.89	771021.48	N 32° 8' 0' 0.71"	W 103° 35' 28.76"
	21100.00	90.00	359.63	12520.00	8597.08	8591.76	-858.85	0.00	413104.88	771020.84	N 32° 8' 0' 1.70"	W 103° 35' 28.76"
	21200.00	90.00	359.63	12520.00	8697.08	8691.75	-859.49	0.00	413204.88	771020.20	N 32° 8' 0' 2.69"	W 103° 35' 28.76"
	21300.00	90.00	359.63	12520.00	8797.08	8791.75	-860.13	0.00	413304.87	771019.56	N 32° 8' 0' 3.67"	W 103° 35' 28.76"
	21400.00	90.00	359.63	12520.00	8897.08	8891.75	-860.77	0.00	413404.86	771018.92	N 32° 8' 0' 4.66"	W 103° 35' 28.76"
	21500.00	90.00	359.63	12520.00	8997.08	8991.75	-861.41	0.00	413504.86	771018.28	N 32° 8' 0' 5.65"	W 103° 35' 28.76"
	21600.00	90.00	359.63	12520.00	9097.08	9091.75	-862.05	0.00	413604.85	771017.64	N 32° 8' 0' 6.64"	W 103° 35' 28.76"
	21700.00	90.00	359.63	12520.00	9197.08	9191.74	-862.68	0.00	413704.85	771017.00	N 32° 8' 0' 7.63"	W 103° 35' 28.76"
	21800.00	90.00	359.63	12520.00	9297.08	9291.74	-863.32	0.00	413804.84	771016.36	N 32° 8' 0' 8.62"	W 103° 35' 28.76"
	21900.00	90.00	359.63	12520.00	9397.08	9391.74	-863.96	0.00	413904.84	771015.72	N 32° 8' 0' 9.61"	W 103° 35' 28.76"
	22000.00	90.00	359.63	12520.00	9497.08	9491.74	-864.60	0.00	414004.83	771015.08	N 32° 8' 0' 10.60"	W 103° 35' 28.76"
	22100.00	90.00	359.63	12520.00	9597.08	9591.74	-865.24	0.00	414104.83	771014.45	N 32° 8' 0' 11.59"	W 103° 35' 28.75"
	22200.00	90.00	359.63	12520.00	9697.08	9691.73	-865.88	0.00	414204.82	771013.81	N 32° 8' 0' 12.58"	W 103° 35' 28.75"
	22300.00	90.00	359.63	12520.00	9797.08	9791.73	-866.52	0.00	414304.82	771013.17	N 32° 8' 0' 13.57"	W 103° 35' 28.75"
	22400.00	90.00	359.63	12520.00	9897.08	9891.73	-867.16	0.00	414404.81	771012.53	N 32° 8' 0' 14.56"	W 103° 35' 28.75"
	22500.00	90.00	359.63	12520.00	9997.08	9991.73	-867.80	0.00	414504.81	771011.89	N 32° 8' 0' 15.58"	W 103° 35' 28.75"
Cimarex Vaca Draw 20-17												
Federal #57H - PBHL [100' FNL, 1724' FEL]	22573.17	90.00	359.63	12520.00	10070.25	10064.89	-868.27	0.00	414577.97	771011.42	N 32° 8' 15.28"	W 103° 35' 28.75"

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 ° ' ")
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Survey Type: Def Plan

Survey Error Model: ISWSA 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	23.000	1/100.000	17.500	13.375	NAL_MWD_IFR1+MS-Depth Only	NAL_MWD_IFR1+MS	Vaca Draw 20-17 Federal #57H / Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 Vaca Draw 20-17 Federal #57H / Cimarex Vaca Draw 20-17
	1	23.000	22573.167	1/100.000	17.500	13.375			



Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 Anti-Collision Summary Report

Analysis Date-24hr Time: February 09, 2021 - 13:06

Client: Cimarex Energy

Field: NM Lea County (NAD 83)

Structure: Cimarex Vaca Draw 20-17 Federal #57H

Slot: New Slot

Well: Vaca Draw 20-17 Federal #57H

Borehole: Vaca Draw 20-17 Federal #57H

Scan MD Range: 0.00ft ~ 22573.17ft

Analysis Method:

Reference Trajectory:

Depth Interval:

Rule Set:

Min Pts:

Version / Patch:

Database \ Project:

3D Least Distance

Cimarex Vaca Draw 20-17 Federal #57H Rev1 RM 09Feb21 (Def Plan)

Every 10.00 Measured Depth (ft)

NAL Procedure: D&M AntiCollision Standard S002

All local minima indicated.

2.10.824.0

US1455VSM3115IDRILLING-NM Lea County 2.10

Trajectory Error Model:

ISWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Offset Selection Criteria

Wellhead distance scan:

Selection filters:

Not performed!
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 Trajectories Summary

Offset Trajectory	Separation		Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)				MD (ft)	TVD (ft)	Minor	Major		

Results highlighted: Sep-Factor separation <= 1.50 ft

EOG Vaca Draw 20 Federal #1
(Offset) Plugged Inc Only 0ft-
14200ft (Def Survey)

Fail Major

3322.26	32.81	3320.28	3289.45	N/A	MAS = 10.00 (m)	0.00	0.00				Surface
3322.25	32.81	3319.85	3289.45	7757.40	MAS = 10.00 (m)	23.00	23.00				WRP
3320.04	32.81	3301.43	3287.23	189.60	MAS = 10.00 (m)	540.00	540.00				MinPts
3324.24	129.11	3237.51	3195.14	39.20	OSF1.50	2510.00	2510.00				MinPt-CtCt
3326.16	219.22	3179.35	3106.94	22.95	OSF1.50	4250.00	4232.15				MinPt-CtCt
3383.18	382.71	3127.38	3000.47	13.32	OSF1.50	7460.00	7402.63				MINPT-O-EOU
3397.12	432.41	3108.18	2984.70	11.83	OSF1.50	8420.00	8357.42				MinPt-CtCt
3387.44	552.97	3018.13	2834.46	9.22	OSF1.50	10730.00	10667.42				MinPt-CtCt
3390.07	560.98	3015.42	2829.09	9.09	OSF1.50	10960.00	10897.42				MINPT-O-EOU
3393.45	565.05	3016.06	2828.46	9.03	OSF1.50	11080.00	11017.42				MinPt-CtCt
2150.94	650.28	1715.99	1500.66	4.98	OSF1.50	13580.00	12520.00				MinPt-O-ADP
653.62	654.14	215.29	-0.52	1.50	OSF1.50	15080.00	15220.00	OSF<5.00			Enter Alert
435.43	654.77	-3.42	-219.35	0.99	OSF1.50	15300.00	15220.00	OSF<1.50			Enter Minor
67.60	654.83	-369.62	-587.23	0.15	OSF1.50	15730.00	15220.00	OSF<1.00			Enter Major
425.11	650.00	-8.88	-224.89	0.98	OSF1.50	16150.00	15220.00	OSF>1.00			MinPts
643.23	650.25	209.07	-7.02	1.48	OSF1.50	16370.00	15220.00	OSF>1.50			Exit Major
2160.42	651.99	1725.10	1508.43	4.98	OSF1.50	17890.00	12520.00	OSF<5.00			Exit Minor
6841.54	659.22	6401.39	6182.31	15.61	OSF1.50	22573.17	12520.00				Exit Alert
											TD

Cimarex Vaca Draw 20-17
Federal #58H Rev1 RM
09Feb21 (Def Plan)

Fail Minor

Offset Trajectory	Separation		Allow	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor		
	20.05	16.30	18.76	3.75	N/A	0.00	0.00	CtCt<=15m<15.00		Enter Alert	
	20.05	16.30	18.76	3.75	MAS = 4.97 (m)	23.00	23.00			WRP	
	20.05	20.13	6.20	-0.08	OSF1.50	2060.00	2060.00		OSF<1.50	Enter Minor	
	20.05	24.27	3.44	-4.22	OSF1.50	2500.00	2500.00			MinPt-CtCt	
	20.07	24.34	3.41	-4.27	OSF1.50	2510.00	2510.00			MINPT-O-EOU	
	20.12	24.41	3.42	-4.29	OSF1.50	2520.00	2520.00			MinPts	
	25.02	25.23	7.77	-0.21	OSF1.50	2670.00	2669.90		OSF>1.50	Exit Minor	
	84.62	26.63	66.44	57.99	OSF1.50	3160.00	3155.57			Exit Alert	
	683.92	77.86	631.58	606.06	OSF1.50	11940.00	11877.42			MinPt-CtCt	
	684.01	78.29	631.39	605.72	OSF1.50	12000.00	11937.42			MINPT-O-EOU	
	684.12	78.43	631.41	605.69	OSF1.50	12020.00	11957.42			MinPt-O-ADP	
	687.16	79.18	633.94	607.98	OSF1.50	12160.00	12096.93			MinPt-O-SF	
	711.25	214.43	567.87	496.82	OSF1.50	18400.00	12520.00		OSF<5.00	Enter Alert	
	711.25	343.91	481.55	367.34	OSF1.50	22573.17	12520.00			MinPts	

Cimarex Vaca Draw 20-17
Federal #59H Rev1 RM
09Feb21 (Def Plan)

	40.05	32.44	38.07	7.61	N/A	0.00	0.00	CtCt<=15m<15.00		Enter Alert	Warning Alert
	40.05	32.44	38.07	7.61	MAS = 9.89 (m)	23.00	23.00			WRP	
	40.05	32.44	22.81	7.61	MAS = 9.89 (m)	2490.00	2490.00			MinPts	
	40.05	32.44	22.75	7.61	MAS = 9.89 (m)	2500.00	2500.00			MINPT-O-EOU	
	40.09	32.44	22.76	7.65	MAS = 9.89 (m)	2510.00	2510.00			MinPt-O-SF	
	76.42	32.44	59.17	43.98	MAS = 9.89 (m)	2830.00	2829.27		OSF>5.00	Exit Alert	
	1334.24	50.78	1299.73	1283.46	OSF1.50	7732.58	7671.85			MinPt-O-SF	
	1368.81	80.95	1314.18	1287.86	OSF1.50	13000.00	12518.16			MinPt-CtCt	
	1368.81	348.87	1135.57	1019.95	OSF1.50	22573.17	12520.00			MinPts	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #45H Off-
19226ft (Surcon Corrected)
(Def Survey)

	1179.84	32.81	1178.55	1147.03	N/A	0.00	0.00			MinPts	Warning Alert
	1179.85	32.81	1178.55	1147.04	65431.57	23.00	23.00			WRP	
	1179.99	32.81	1178.49	1147.18	5373.30	90.00	90.00			MINPT-O-EOU	
	1180.19	32.81	1178.46	1147.38	2679.76	140.00	140.00			MINPT-O-EOU	
	1175.74	32.81	1170.09	1142.93	269.17	1040.00	1040.00			MINPT-O-EOU	
	104.09	32.81	81.67	71.28	4.94	6070.00	6029.74		OSF<5.00	Enter Alert	
	90.43	33.91	67.45	56.52	4.08	6240.00	6197.65			MinPts	
	90.43	33.94	67.55	56.49	4.08	OSF1.50	6250.00			MinPt-O-ADP	
	112.44	33.97	67.55	56.57	4.08	OSF1.50	6260.00			MinPt-O-SF	
	513.76	42.56	485.05	471.20	18.52	OSF1.50	6217.40		OSF>5.00	Exit Alert	
	513.77	42.57	485.05	471.37	18.51	OSF1.50	6424.82			MinPts	
	513.99	42.62	485.24	471.37	18.50	OSF1.50	8850.00			MinPt-O-ADP	
	3165.38	138.32	3072.83	3027.06	34.57	OSF1.50	8860.00			MinPt-O-SF	
	3166.24	140.71	3072.09	3025.53	33.99	OSF1.50	8827.42			MinPt-CtCt	
	3167.14	141.80	3072.27	3025.34	33.73	OSF1.50	12520.00			MINPT-O-EOU	
	3168.58	143.30	3072.70	3025.27	33.39	OSF1.50	17050.00			MinPt-O-ADP	
	3178.71	158.76	3072.53	3019.95	30.22	OSF1.50	17100.00			MinPt-O-ADP	
	3181.09	161.55	3073.05	3019.54	29.71	OSF1.50	17660.00			MINPT-O-EOU	
	3188.63	196.35	3067.39	3002.28	24.56	OSF1.50	17770.00			MinPt-O-ADP	
	3199.27	197.11	3067.53	3002.16	24.47	OSF1.50	18910.00			MINPT-O-EOU	
	3202.65	207.91	3063.70	2994.74	23.21	OSF1.50	18950.00			MinPt-O-ADP	
						19270.00	12520.00			MinPt-CtCt	

Offset Trajectory	Separation		Allow	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Minor	Major		
	3200.78	214.13	3057.69	22.52	OSF1.50	19480.00	12520.00			MinPt-CtCt	
	3202.64	217.87	3057.04	22.15	OSF1.50	19640.00	12520.00			MINPT-O-EOU	
	3204.71	221.06	3057.00	21.84	OSF1.50	19750.00	12520.00			MINPT-O-EOU	
	3208.54	229.13	3055.45	21.09	OSF1.50	20010.00	12520.00			MINPT-O-EOU	
	3209.46	230.24	3055.63	21.00	OSF1.50	20080.00	12520.00			MinPt-O-ADP	
	3175.52	265.22	2988.37	18.02	OSF1.50	21180.00	12520.00			MinPt-CtCt	
	3178.72	268.71	2987.24	17.80	OSF1.50	21330.00	12520.00			MINPT-O-EOU	
	3177.82	270.29	2987.28	17.70	OSF1.50	21390.00	12520.00			MINPT-O-EOU	
	3192.34	306.25	2987.84	15.88	OSF1.50	22573.17	12520.00			MinPls	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #4H ST01
MWD 0ft-22279ft (Surcon
Corrected) (Def Survey)

2418.61	32.81	2417.44	2385.81	N/A	MAS = 10.00 (m)	0.00	0.00			MinPls	Warning Alert
2418.64	32.81	2417.43	2385.83	65762.05	MAS = 10.00 (m)	23.00	23.00			WRP	
2418.70	32.81	2417.42	2385.89	22193.33	MAS = 10.00 (m)	50.00	50.00			MINPT-O-EOU	
701.24	47.72	668.30	653.52	23.61	OSF1.50	9230.00	9167.42			MinPt-CtCt	
701.24	47.75	668.28	653.49	23.59	OSF1.50	9240.00	9177.42			MINPT-O-EOU	
701.27	47.78	668.28	653.48	23.58	OSF1.50	9250.00	9187.42			MinPt-O-ADP	
709.10	49.55	674.95	659.55	22.92	OSF1.50	9920.00	9857.42			MINPT-O-EOU	
709.15	49.71	674.90	659.45	22.84	OSF1.50	9970.00	9907.42			MINPT-O-EOU	
709.23	49.80	674.91	659.43	22.80	OSF1.50	10000.00	9937.42			MinPt-O-ADP	
709.69	50.25	675.07	659.44	22.60	OSF1.50	10140.00	10077.42			MINPT-O-EOU	
713.14	52.90	676.75	680.24	21.49	OSF1.50	10900.00	10837.42			MinPt-O-ADP	
713.17	52.99	676.73	680.19	21.45	OSF1.50	10920.00	10857.42			MinPt-CtCt	
723.20	54.31	685.89	688.89	21.18	OSF1.50	11260.00	11197.42			MinPls	
757.46	57.07	718.34	700.38	21.00	OSF1.50	11990.00	11927.42			MinPt-O-SF	
757.49	57.14	718.33	700.35	20.97	OSF1.50	12000.00	11937.42			MinPt-CtCt	
689.50	68.13	643.03	621.37	15.85	OSF1.50	13360.00	12520.00			MinPls	
689.75	68.94	642.74	620.81	15.66	OSF1.50	13410.00	12520.00			MINPT-O-EOU	
690.15	69.43	642.80	620.72	15.55	OSF1.50	13440.00	12520.00			MinPt-O-ADP	
697.29	71.71	644.42	619.58	13.97	OSF1.50	13870.00	12520.00			MINPT-O-EOU	
702.76	84.39	645.43	618.37	12.92	OSF1.50	14180.00	12520.00			MinPt-O-ADP	
705.09	103.53	635.00	601.56	10.49	OSF1.50	14980.00	12520.00			MinPt-CtCt	
705.55	104.71	634.68	600.84	10.38	OSF1.50	15030.00	12520.00			MINPT-O-EOU	
705.95	105.17	634.76	600.78	10.34	OSF1.50	15050.00	12520.00			MinPt-O-ADP	
702.74	118.10	622.94	584.64	9.13	OSF1.50	15540.00	12520.00			MinPt-CtCt	
703.13	119.33	622.51	583.80	9.04	OSF1.50	15590.00	12520.00			MINPT-O-EOU	
703.73	120.06	622.62	583.67	8.99	OSF1.50	15620.00	12520.00			MinPt-O-ADP	
698.33	147.63	598.83	550.69	7.22	OSF1.50	16620.00	12520.00			MinPt-CtCt	
695.43	169.13	581.60	526.30	6.26	OSF1.50	17370.00	12520.00			MinPt-CtCt	
691.68	180.62	570.19	511.06	5.82	OSF1.50	17770.00	12520.00			MinPt-CtCt	
692.96	183.65	569.45	509.30	5.73	OSF1.50	17880.00	12520.00			MINPT-O-EOU	
696.36	191.58	567.57	504.78	5.52	OSF1.50	18150.00	12520.00			MINPT-O-EOU	
699.41	197.18	566.90	502.23	5.38	OSF1.50	18340.00	12520.00			MINPT-O-EOU	
700.31	198.25	567.09	502.06	5.36	OSF1.50	18380.00	12520.00			MinPt-O-ADP	
702.65	200.58	567.88	502.07	5.31	OSF1.50	18460.00	12520.00			MinPt-O-ADP	
709.58	207.09	570.47	502.49	5.20	OSF1.50	18680.00	12520.00			MinPt-O-ADP	
715.87	216.99	570.17	498.88	5.00	OSF1.50	19010.00	12520.00			Enter Alert	
716.67	218.65	569.86	498.02	4.97	OSF1.50	19070.00	12520.00			MINPT-O-EOU	
717.58	219.72	570.06	497.83	4.95	OSF1.50	19110.00	12520.00			MinPt-O-ADP	
689.42	253.05	519.65	436.37	4.12	OSF1.50	20240.00	12520.00			MinPt-CtCt	

OSF<5.00

Offset Trajectory	Separation		Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor	Major	
	680.66	255.83	519.04	4.08	OSF1.50	20340.00	12520.00				MINPT-O-EOU
	691.76	257.22	519.21	4.07	OSF1.50	20390.00	12520.00				MinPt-O-ADP
	709.28	284.68	518.43	3.76	OSF1.50	21310.00	12520.00				MinPt-CtCt
	704.61	295.47	506.57	3.60	OSF1.50	21670.00	12520.00				MinPt-CtCt
	706.19	300.66	504.69	3.54	OSF1.50	21850.00	12520.00				MINPT-O-EOU
	705.14	322.44	489.12	3.30	OSF1.50	22573.17	12520.00				MinPts
Hankamer Curtis Bass-Federal											
#1 (Offset) Plugged Blind Off-											
5074ft (Def Survey)											
	4362.62	32.81	4359.64	4381.36	MAS = 10.00 (m)	0.00	0.00				Surface
	4362.62	32.81	4357.23	4329.81	MAS = 10.00 (m)	23.00	23.00				WRP
	4356.44	1307.37	3484.20	3049.07	OSF1.50	4210.00	4192.64				MinPt-CtCt
	4356.44	1310.47	3482.13	3045.96	OSF1.50	4220.00	4202.52	OSF<5.00			Enter Alert
	4358.68	1581.42	3303.74	2777.25	OSF1.50	5100.00	5071.68				MinPts
	4799.27	1443.53	3836.25	3355.74	OSF1.50	7080.00	7027.31	OSF>5.00			Exit Alert
	7594.85	311.66	7386.41	7283.19	OSF1.50	15310.00	12520.00				MinPt-O-ADP
	7510.98	210.77	7369.81	7300.21	OSF1.50	15860.00	12520.00				MINPT-O-EOU
	7459.65	115.31	7392.11	7344.34	OSF1.50	16740.00	12520.00				MinPt-CtCt
	7514.14	231.22	7359.34	7282.92	OSF1.50	17640.00	12520.00				MINPT-O-EOU
	7596.10	329.87	7375.53	7266.23	OSF1.50	18170.00	12520.00				MinPt-O-ADP
	9471.59	991.45	8809.97	8480.14	OSF1.50	22573.17	12520.00				MinPt-O-SF

Hankamer Curtis Bass-Federal
#1 (Offset) Plugged Blind Off-
5074ft (Def Survey)

Warning Alert

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #44H
MWD Off-19884ft (Surcon
Corrected) (Def Survey)

1199.83	32.81	1198.55	1167.03	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts
1199.84	32.81	1198.53	1167.03	66065.39	MAS = 10.00 (m)	23.00	23.00				WRP
1199.05	32.81	1194.54	1166.24	371.58	MAS = 10.00 (m)	770.00	770.00				MinPts
1199.20	32.81	1193.67	1166.39	282.72	MAS = 10.00 (m)	1010.00	1010.00				MinPts
1199.21	32.81	1193.51	1166.40	271.40	MAS = 10.00 (m)	1050.00	1050.00				MINPT-O-EOU
1199.88	32.81	1193.31	1167.07	220.30	MAS = 10.00 (m)	1270.00	1270.00				MINPT-O-EOU
142.58	38.45	116.58	104.13	5.68	OSF1.50	7100.00	7047.06				MinPt-CtCt
142.59	38.49	116.57	104.10	5.68	OSF1.50	7110.00	7056.94				MINPT-O-EOU
142.63	38.86	117.26	104.64	5.65	OSF1.50	7120.00	7066.81				MinPt-O-ADP
143.50	38.86	117.26	104.64	6.95	OSF1.50	7190.00	7135.95				MinPt-O-SF
196.62	43.22	167.47	153.40	6.95	OSF1.50	9540.00	9477.42				MinPt-CtCt
196.63	43.24	167.46	153.39	6.95	OSF1.50	9550.00	9487.42				MinPts
196.70	43.26	167.53	153.45	6.95	OSF1.50	9560.00	9497.42				MinPt-O-SF
2560.68	32.81	2538.77	2527.88	122.31	MAS = 10.00 (m)	13100.00	12520.00				MinPts
2493.55	156.56	2368.85	2336.99	24.03	OSF1.50	17760.00	12520.00				MinPt-CtCt
2493.59	162.24	2385.10	2331.34	23.19	OSF1.50	17950.00	12520.00				MinPt-CtCt
2494.78	172.01	2379.78	2322.77	21.87	OSF1.50	18280.00	12520.00				MinPt-CtCt
2494.80	177.34	2376.24	2317.46	21.21	OSF1.50	18460.00	12520.00				MinPt-CtCt
2494.73	236.72	2326.58	2248.01	15.80	OSF1.50	20450.00	12520.00				MinPt-CtCt
2485.95	241.02	2324.94	2244.93	15.53	OSF1.50	20620.00	12520.00				MINPT-O-EOU
2492.89	253.74	2323.40	2239.15	14.79	OSF1.50	21050.00	12520.00				MINPT-O-EOU
2507.99	300.27	2307.48	2207.72	12.56	OSF1.50	22573.17	12520.00				MinPts
Final Surveys - Cimarex Vaca											
Draw 20-17 Federal #43H											
MWD Off-19167ft (Surcon											
Corrected) (Def Survey)											
1219.83	32.81	1218.54	1187.02	N/A	MAS = 10.00 (m)	0.00	0.00				Pass
											MinPts

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #43H
MWD Off-19167ft (Surcon
Corrected) (Def Survey)

Pass

Offset Trajectory	Separation		Allow	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Minor	Major		
2567.22	176.57	2449.18	2390.65	21.92	OSF1.50	18480.00	12520.00			MINPT-O-EOU	
2567.70	177.14	2449.28	2390.56	21.86	OSF1.50	18510.00	12520.00			MinPt-O-ADP	
2569.95	184.13	2446.87	2385.82	21.04	OSF1.50	18710.00	12520.00			MinPt-CtCt	
2569.75	194.29	2439.89	2375.46	19.93	OSF1.50	19050.00	12520.00			MinPt-CtCt	
2582.11	248.15	2416.35	2333.96	15.66	OSF1.50	20850.00	12520.00			MinPt-CtCt	
2583.50	264.94	2406.55	2318.56	14.68	OSF1.50	21410.00	12520.00			MinPt-CtCt	
2583.24	299.33	2393.36	2293.91	13.03	OSF1.50	22573.17	12520.00			MinPls	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #72H
Surveys Off to 19073ft (Surcon
Corrected) (Def Survey)

Pass

569.93	32.81	568.64	537.12	N/A	MAS = 10.00 (m)	0.00	0.00			Surface	
569.92	32.81	568.64	537.12	N/A	MAS = 10.00 (m)	23.00	23.00			WRP	
567.29	32.81	561.27	534.48	119.60	MAS = 10.00 (m)	1060.00	1060.00			MINPT-O-EOU	
548.82	32.81	536.07	516.01	47.18	MAS = 10.00 (m)	2540.00	2540.00			MinPls	
548.84	32.81	536.06	516.03	47.07	MAS = 10.00 (m)	2550.00	2550.00			MINPT-O-EOU	
549.71	32.81	536.79	516.90	46.55	MAS = 10.00 (m)	2610.00	2609.97			MinPlO-SF	
838.22	32.81	823.69	805.41	62.46	MAS = 10.00 (m)	4430.00	4409.93			MinPlO-SF	
1278.77	40.08	1251.72	1238.70	49.07	OSF1.50	7732.58	7671.85			MinPlO-SF	
1310.32	40.37	1283.06	1269.95	49.91	OSF1.50	8800.00	8737.42			MinPls	
1312.18	40.49	1284.85	1271.69	49.83	OSF1.50	8920.00	8857.42			MinPlO-SF	
3508.33	33.43	3495.72	3474.90	162.15	OSF1.50	13300.00	12520.00			MinPt-CtCt	
3441.80	86.80	3363.60	3355.00	60.14	OSF1.50	15520.00	12520.00			MinPt-CtCt	
3445.48	95.13	3381.73	3350.34	54.88	OSF1.50	15850.00	12520.00			MINPT-O-EOU	
3460.24	131.99	3371.91	3328.24	39.61	OSF1.50	17080.00	12520.00			MinPt-CtCt	
3459.60	158.64	3353.51	3300.96	32.91	OSF1.50	17980.00	12520.00			MinPt-CtCt	
3452.72	180.04	3332.37	3272.69	28.92	OSF1.50	18700.00	12520.00			MinPt-CtCt	
3453.38	182.11	3331.64	3271.27	28.59	OSF1.50	18800.00	12520.00			MINPT-O-EOU	
3456.51	185.75	3332.35	3270.76	28.05	OSF1.50	18950.00	12520.00			MinPt-O-ADP	
3462.36	193.82	3332.82	3268.54	26.92	OSF1.50	19200.00	12520.00			MINPT-O-EOU	
3463.72	206.23	3325.91	3257.49	25.31	OSF1.50	19580.00	12520.00			MinPt-CtCt	
3460.06	223.85	3310.51	3236.22	23.28	OSF1.50	20170.00	12520.00			MinPt-CtCt	
3461.63	225.74	3308.15	3231.90	22.69	OSF1.50	20400.00	12520.00			MINPT-O-EOU	
3452.23	251.73	3284.09	3200.50	20.65	OSF1.50	21100.00	12520.00			MinPt-CtCt	
3456.49	286.21	3265.36	3170.28	18.17	OSF1.50	22250.00	12520.00			MinPt-CtCt	
3457.14	288.04	3264.79	3169.11	18.06	OSF1.50	22340.00	12520.00			MINPT-O-EOU	
3457.96	289.28	3264.78	3168.68	17.99	OSF1.50	22390.00	12520.00			MINPT-O-EOU	
3460.50	295.15	3263.41	3165.35	17.64	OSF1.50	22573.17	12520.00			MinPls	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #73H
ST01 Off- 19719ft (Surcon
Corrected) (Def Survey)

Pass

589.93	32.81	588.64	557.12	N/A	MAS = 10.00 (m)	0.00	0.00			Surface	
589.92	32.81	588.64	557.12	528073.24	MAS = 10.00 (m)	23.00	23.00			WRP	
589.65	32.81	587.28	556.84	543.83	MAS = 10.00 (m)	290.00	290.00			MinPls	
588.87	32.81	584.22	556.06	174.55	MAS = 10.00 (m)	800.00	800.00			MinPls	
589.04	32.81	584.04	556.23	158.18	MAS = 10.00 (m)	890.00	890.00			MINPT-O-EOU	
607.28	32.81	594.23	574.48	50.85	MAS = 10.00 (m)	2600.00	2599.98			MinPlO-SF	
850.93	32.81	836.60	818.12	64.39	MAS = 10.00 (m)	4000.00	3985.22			MinPlO-SF	
1427.39	40.20	1400.25	1387.19	54.61	OSF1.50	7732.58	7671.85			MinPlO-SF	
1420.91	42.43	1392.29	1378.48	51.39	OSF1.50	9650.00	9587.42			MinPls	
1421.32	42.47	1392.68	1378.85	51.36	OSF1.50	9690.00	9627.42			MinPlO-SF	

Offset Trajectory	Separation		Allow	Sep.	Controlling	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major	
	1511.79	41.89	1483.53	1469.89	OSF1.50	10210.00	10147.42				MinPt-O-SF
	2866.02	36.64	2841.26	2829.38	OSF1.50	12470.00	12363.09				MinPt-O-SF
	2866.86	41.38	2838.95	2825.48	OSF1.50	13600.00	12520.00				MinPt-CtCt
	2867.64	43.41	2838.37	2824.23	OSF1.50	13720.00	12520.00				MINPT-O-EOU
	2868.72	44.71	2838.58	2824.01	OSF1.50	13790.00	12520.00				MinPt-O-ADP
	2867.45	50.80	2833.26	2816.65	OSF1.50	14010.00	12520.00				MinPt-CtCt
	2867.67	51.48	2833.02	2816.18	OSF1.50	14650.00	12520.00				MINPT-O-EOU
	2858.68	67.33	2813.46	2791.34	OSF1.50	14700.00	12520.00				MinPt-CtCt
	2858.90	68.11	2813.17	2790.79	OSF1.50	14700.00	12520.00				MINPT-O-EOU
	2859.29	68.58	2813.24	2790.71	OSF1.50	14730.00	12520.00				MinPt-O-ADP
	2833.94	93.03	2771.60	2740.92	OSF1.50	15570.00	12520.00				MinPt-CtCt
	2834.07	93.39	2771.48	2740.68	OSF1.50	15600.00	12520.00				MINPT-O-EOU
	2834.17	93.51	2771.50	2740.66	OSF1.50	15610.00	12520.00				MinPt-O-ADP
	2834.47	107.42	2762.52	2727.04	OSF1.50	16070.00	12520.00				MinPt-CtCt
	2834.65	108.04	2762.29	2726.61	OSF1.50	16110.00	12520.00				MINPT-O-EOU
	2835.02	108.50	2762.36	2726.53	OSF1.50	16140.00	12520.00				MinPt-O-ADP
	2834.70	123.20	2752.24	2711.50	OSF1.50	16610.00	12520.00				MinPt-CtCt
	2835.07	124.53	2751.72	2710.54	OSF1.50	16680.00	12520.00				MINPT-O-EOU
	2835.69	125.26	2751.85	2710.43	OSF1.50	16720.00	12520.00				MinPt-O-ADP
	2819.46	142.61	2724.05	2676.84	OSF1.50	17270.00	12520.00				MinPt-CtCt
	2819.59	145.89	2722.00	2673.70	OSF1.50	17380.00	12520.00				MinPt-CtCt
	2819.76	155.97	2715.45	2663.79	OSF1.50	17720.00	12520.00				MinPt-CtCt
	2819.75	161.32	2711.88	2658.43	OSF1.50	17900.00	12520.00				MinPt-CtCt
	2821.01	165.10	2710.62	2655.91	OSF1.50	18060.00	12520.00				MINPT-O-EOU
	2823.56	189.63	2686.82	2633.93	OSF1.50	18850.00	12520.00				MinPt-CtCt
	2824.06	191.59	2686.01	2632.47	OSF1.50	18940.00	12520.00				MINPT-O-EOU
	2824.69	192.36	2686.12	2632.33	OSF1.50	18980.00	12520.00				MinPt-O-ADP
	2821.62	212.38	2679.70	2609.23	OSF1.50	19610.00	12520.00				MinPt-CtCt
	2818.29	226.44	2667.01	2591.85	OSF1.50	20080.00	12520.00				MinPt-CtCt
	2814.31	235.38	2657.06	2578.93	OSF1.50	20380.00	12520.00				MinPt-CtCt
	2821.99	257.40	2650.08	2564.59	OSF1.50	21150.00	12520.00				MINPT-O-EOU
	2825.51	273.21	2643.04	2552.30	OSF1.50	21640.00	12520.00				MinPt-CtCt
	2825.79	288.82	2632.91	2536.96	OSF1.50	22160.00	12520.00				MinPt-CtCt
	2825.78	297.83	2626.90	2527.96	OSF1.50	22460.00	12520.00				MinPt-CtCt
	2825.83	301.26	2624.68	2524.57	OSF1.50	22573.17	12520.00				MinPts

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #73H Off-
19583ft (Surcon Corrected)
(Def Survey)

Pass

589.93	32.81	588.64	557.12	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
589.92	32.81	588.64	557.12	528073.24	MAS = 10.00 (m)	23.00	23.00	WRP
589.65	32.81	587.28	556.84	543.83	MAS = 10.00 (m)	290.00	290.00	MinPts
588.87	32.81	584.22	556.06	174.55	MAS = 10.00 (m)	800.00	800.00	MinPts
589.04	32.81	584.04	556.23	158.18	MAS = 10.00 (m)	890.00	890.00	MINPT-O-EOU
607.28	32.81	594.23	574.48	50.85	MAS = 10.00 (m)	2600.00	2599.98	MinPt-O-SF
850.93	32.81	836.60	818.12	64.39	MAS = 10.00 (m)	4000.00	3985.22	MinPt-O-SF
1427.39	40.20	1400.25	1387.19	54.61	OSF1.50	7732.58	7671.85	MinPt-O-SF
1427.01	42.20	1398.53	1384.81	51.94	OSF1.50	9590.00	9527.42	MinPts
1427.72	42.25	1399.21	1385.47	51.90	OSF1.50	9640.00	9577.42	MinPt-O-SF
3023.65	104.80	2953.44	2918.85	43.69	OSF1.50	15920.00	12520.00	MinPt-CtCt
3024.00	105.80	2953.13	2918.20	43.28	OSF1.50	15980.00	12520.00	MINPT-O-EOU
3024.27	106.13	2953.18	2918.14	43.15	OSF1.50	16000.00	12520.00	MinPt-O-ADP
3021.64	114.01	2945.30	2907.64	40.10	OSF1.50	16240.00	12520.00	MinPt-CtCt

Offset Trajectory	Separation		Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor		
3014.28	145.66	2916.81	2868.59	31.25	OSF1.50	17320.00	12520.00			MinPt-CtCt	
3015.02	148.09	2915.95	2866.92	30.74	OSF1.50	17430.00	12520.00			MinPt-O-EOU	
3016.08	149.37	2916.16	2866.71	30.49	OSF1.50	17490.00	12520.00			MinPt-O-ADP	
3017.06	159.64	2910.30	2857.42	28.52	OSF1.50	17790.00	12520.00			MinPt-CtCt	
3002.11	190.05	2875.07	2812.06	23.81	OSF1.50	18810.00	12520.00			MinPt-CtCt	
3002.54	191.36	2874.63	2811.19	23.65	OSF1.50	18880.00	12520.00			MinPt-O-EOU	
3003.00	191.91	2874.72	2811.09	23.59	OSF1.50	18910.00	12520.00			MinPt-O-ADP	
3006.10	219.33	2859.54	2786.77	20.65	OSF1.50	19790.00	12520.00			MinPt-CtCt	
3003.10	228.28	2850.57	2774.82	19.81	OSF1.50	20090.00	12520.00			MinPt-CtCt	
3003.73	239.38	2843.81	2764.36	18.90	OSF1.50	20460.00	12520.00			MinPt-CtCt	
3004.68	242.10	2842.95	2762.59	18.89	OSF1.50	20580.00	12520.00			MinPt-O-EOU	
3005.44	249.89	2838.51	2755.56	18.11	OSF1.50	20810.00	12520.00			MinPt-CtCt	
2980.85	280.30	2773.64	2680.55	15.90	OSF1.50	21820.00	12520.00			MinPt-CtCt	
2981.39	281.86	2773.15	2679.54	15.81	OSF1.50	21900.00	12520.00			MinPt-O-EOU	
2981.88	282.43	2773.25	2679.45	15.78	OSF1.50	21930.00	12520.00			MinPt-O-ADP	
2977.01	291.75	2782.18	2685.27	15.35	OSF1.50	22290.00	12520.00			MinPt-O-ADP	
2994.17	297.78	2795.31	2696.39	15.13	OSF1.50	22573.17	12520.00			MinPt-O-SF	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #4H MWD
0ft-12228ft (Surcon Corrected)
(Def Survey)

2418.61	32.81	2416.63	2385.81	N/A	MAS = 10.00 (m)	0.00	0.00			MinPts	Pass
2418.64	32.81	2416.63	2385.83	65740.23	MAS = 10.00 (m)	23.00	23.00			WRP	
2418.70	32.81	2416.61	2385.89	22185.97	MAS = 10.00 (m)	50.00	50.00			MINPT-O-EOU	
701.24	48.66	667.36	652.58	23.57	OSF1.50	9230.00	9167.42			MinPt-CtCt	
701.24	48.69	667.35	652.55	23.56	OSF1.50	9240.00	9177.42			MINPT-O-EOU	
701.27	48.72	667.35	652.55	23.54	OSF1.50	9250.00	9187.42			MinPt-O-ADP	
709.10	50.49	674.01	658.61	22.89	OSF1.50	9920.00	9857.42			MinPt-CtCt	
709.15	50.64	673.96	658.51	22.81	OSF1.50	9970.00	9907.42			MINPT-O-EOU	
709.23	50.74	673.98	658.49	22.77	OSF1.50	10000.00	9937.42			MinPt-O-ADP	
709.69	51.18	674.14	658.51	22.57	OSF1.50	10140.00	10077.42			MinPt-O-ADP	
713.14	53.81	675.84	659.33	21.47	OSF1.50	10900.00	10837.42			MinPt-CtCt	
713.17	53.90	675.82	659.28	21.43	OSF1.50	10920.00	10857.42			MinPts	
723.20	55.22	684.97	687.95	21.16	OSF1.50	11260.00	11197.42			MinPt-O-SF	
817.10	57.95	777.14	759.15	22.60	OSF1.50	12140.00	12077.20			MinPt-O-SF	
827.84	58.44	787.57	769.40	22.67	OSF1.50	12290.00	12219.99			MinPt-O-SF	
10119.04	68.57	10072.67	10050.47	227.90	OSF1.50	22573.17	12520.00			TD	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #3H MWD
0ft-22454' (Surcon Corrected)
(Def Survey)

2438.56	32.81	2437.42	2405.75	838503.45	MAS = 10.00 (m)	0.00	0.00			Surface	Pass
2438.51	32.81	2437.31	2405.70	38543.54	MAS = 10.00 (m)	23.00	23.00			WRP	
2436.06	32.81	2433.73	2403.25	1864.89	MAS = 10.00 (m)	310.00	310.00			MinPts	
2436.10	32.81	2433.69	2403.29	1753.82	MAS = 10.00 (m)	330.00	330.00			MINPT-O-EOU	
2435.28	32.81	2427.79	2402.47	376.40	MAS = 10.00 (m)	1490.00	1490.00			MinPts	
1170.51	41.72	1141.79	1128.80	44.95	OSF1.50	8080.00	8017.44			MinPt-O-SF	
1162.38	41.51	1133.78	1120.87	44.89	OSF1.50	8170.00	8107.42			MinPt-O-SF	
1113.38	44.80	1082.55	1068.58	39.74	OSF1.50	9270.00	9207.42			MinPt-CtCt	
1113.43	44.97	1082.49	1068.47	39.59	OSF1.50	9320.00	9257.42			MINPT-O-EOU	
1113.49	45.03	1082.50	1068.46	39.53	OSF1.50	9340.00	9277.42			MinPt-O-ADP	
1120.87	52.80	1084.71	1068.07	33.58	OSF1.50	11420.00	11357.42			MinPt-CtCt	
1121.06	53.38	1084.57	1067.75	33.24	OSF1.50	11520.00	11457.42			MINPT-O-EOU	

Offset Trajectory		Separation			Allow Dev. (ft)	Sep. Fact.	Controlling		Reference Trajectory		Risk Level		Alert	Status
Ct-Ct (ft)	MAS (ft)	EOU (ft)		Rule			MD (ft)	TVD (ft)	Alert	Minor	Major			
1121.36	53.68	1084.62		1067.68	33.02	OSF1.50	11590.00	11527.42					MinPt-O-ADP	
1129.90	56.55	1091.26		1073.36	31.48	OSF1.50	12260.00	12192.65					MinPt-O-ADP	
1124.81	58.15	1085.09		1066.66	30.44	OSF1.50	12650.00	12456.61					MinPt-CtCt	
1124.82	58.21	1085.06		1066.61	30.41	OSF1.50	12660.00	12460.05					MINPT-O-EOU	
1124.86	58.26	1085.06		1066.60	30.38	OSF1.50	12670.00	12463.29					MinPt-O-ADP	
1101.87	64.09	1058.19		1037.78	26.93	OSF1.50	13260.00	12520.00					MinPt-CtCt	
1101.99	64.35	1058.13		1037.64	26.82	OSF1.50	13280.00	12520.00					MINPT-O-EOU	
1102.09	64.48	1058.15		1037.61	26.76	OSF1.50	13290.00	12520.00					MinPt-O-ADP	
1103.08	69.12	1056.04		1033.96	24.91	OSF1.50	13590.00	12520.00					MinPt-CtCt	
1099.64	82.77	1043.50		1016.86	20.59	OSF1.50	14280.00	12520.00					MinPt-CtCt	
1100.03	83.83	1043.19		1016.20	20.33	OSF1.50	14330.00	12520.00					MINPT-O-EOU	
1100.76	84.70	1043.34		1016.07	20.13	OSF1.50	14370.00	12520.00					MinPt-O-ADP	
1103.40	91.95	1041.15		1011.45	18.53	OSF1.50	14680.00	12520.00					MinPt-CtCt	
1104.16	94.32	1040.32		1009.84	18.06	OSF1.50	14780.00	12520.00					MINPT-O-EOU	
1104.93	95.27	1040.46		1009.66	17.89	OSF1.50	14820.00	12520.00					MinPt-O-ADP	
1109.08	101.67	1040.35		1007.41	16.79	OSF1.50	15070.00	12520.00					MinPt-CtCt	
1107.72	116.84	1028.87		990.88	14.54	OSF1.50	15660.00	12520.00					MinPt-CtCt	
1110.74	127.88	1024.53		982.86	13.29	OSF1.50	16070.00	12520.00					MinPt-CtCt	
1109.14	141.27	1014.01		967.87	11.99	OSF1.50	16560.00	12520.00					MinPt-CtCt	
1105.22	151.90	1003.00		953.32	11.10	OSF1.50	16940.00	12520.00					MinPt-CtCt	
1106.24	159.06	999.24		947.17	10.60	OSF1.50	17190.00	12520.00					MinPt-CtCt	
1105.29	165.16	994.22		940.12	10.19	OSF1.50	17400.00	12520.00					MinPt-CtCt	
1105.84	173.50	989.22		932.34	9.70	OSF1.50	17690.00	12520.00					MinPt-CtCt	
1105.47	182.04	983.16		923.43	9.23	OSF1.50	17980.00	12520.00					MinPt-CtCt	
1105.44	185.78	980.63		919.66	9.04	OSF1.50	18110.00	12520.00					MinPt-CtCt	
1106.20	188.25	979.74		917.95	8.93	OSF1.50	18200.00	12520.00					MINPT-O-EOU	
1103.29	199.32	969.45		903.97	8.40	OSF1.50	18570.00	12520.00					MinPt-CtCt	
1103.40	207.22	964.29		896.18	8.08	OSF1.50	18840.00	12520.00					MinPt-CtCt	
1101.51	226.63	949.47		874.88	7.36	OSF1.50	19500.00	12520.00					MinPt-CtCt	
1101.56	230.49	946.94		871.07	7.24	OSF1.50	19630.00	12520.00					MinPt-CtCt	
1100.31	253.13	930.59		847.17	6.58	OSF1.50	20390.00	12520.00					MinPt-CtCt	
1101.40	256.25	929.61		845.15	6.50	OSF1.50	20500.00	12520.00					MINPT-O-EOU	
1102.59	257.63	929.88		844.96	6.47	OSF1.50	20550.00	12520.00					MinPt-O-ADP	
1103.85	284.96	912.92		818.89	5.85	OSF1.50	21460.00	12520.00					MinPt-CtCt	
1099.33	303.13	896.28		796.20	5.48	OSF1.50	22070.00	12520.00					MinPt-CtCt	
1100.08	305.38	895.54		794.71	5.44	OSF1.50	22150.00	12520.00					MINPT-O-EOU	
1100.76	306.19	895.68		794.57	5.43	OSF1.50	22180.00	12520.00					MinPt-O-ADP	
1104.27	310.17	896.53		794.10	5.38	OSF1.50	22310.00	12520.00					MINPT-O-EOU	
1106.16	312.48	896.88		793.67	5.35	OSF1.50	22390.00	12520.00					MinPt-O-ADP	
1112.15	317.81	899.33		794.34	5.28	OSF1.50	22573.17	12520.00					MinPt-O-SF	

Final Surveys - Cimarex Vaca
Draw 20-17 Federal #2H MWD
0ft-22179ft (Surcon Corrected)
(Def Survey)

Pass

2458.59	32.81	2457.57	2425.78	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
2458.58	32.81	2457.51	2425.77	51795.18	MAS = 10.00 (m)	23.00	23.00	WRP
2457.54	32.81	2453.35	2424.73	775.46	MAS = 10.00 (m)	760.00	760.00	MinPls
2458.08	32.81	2451.90	2425.27	476.46	MAS = 10.00 (m)	1220.00	1220.00	MinPls
1581.53	42.08	1552.74	1539.45	59.44	OSF1.50	7810.00	7748.47	MinPt-O-SF
1525.88	45.36	1494.86	1480.52	53.13	OSF1.50	10030.00	9967.42	MinPt-CtCt
1525.93	45.50	1494.81	1480.42	52.96	OSF1.50	10060.00	9997.42	MinPt-O-EOU
1526.00	45.60	1494.82	1480.40	52.84	OSF1.50	10080.00	10017.42	MinPt-O-ADP
1528.18	47.16	1495.96	1481.02	51.07	OSF1.50	10470.00	10407.42	MinPt-O-ADP

Offset Trajectory	Separation		Allow	Sep.	Controlling	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Minor	Major		
	1522.45	77.27	1470.20	1445.18	30.39	OSF1.50	13980.00	12520.00		MinPt-CtCt	
	1523.72	80.79	1469.12	1442.94	29.05	OSF1.50	14150.00	12520.00		MINPT-O-EOU	
	1524.21	81.40	1469.20	1442.81	28.84	OSF1.50	14180.00	12520.00		MinPt-O-ADP	
	1529.45	89.99	1468.72	1439.46	26.10	OSF1.50	14550.00	12520.00		MinPt-CtCt	
	1529.50	93.63	1466.34	1435.87	25.06	OSF1.50	14700.00	12520.00		MinPt-CtCt	
	1530.62	96.91	1465.28	1433.71	24.21	OSF1.50	14840.00	12520.00		MINPT-O-EOU	
	1532.01	98.55	1465.57	1433.46	23.82	OSF1.50	14910.00	12520.00		MinPt-O-ADP	
	1520.91	119.58	1440.44	1401.33	19.41	OSF1.50	15710.00	12520.00		MinPt-CtCt	
	1520.32	123.09	1437.51	1397.23	18.84	OSF1.50	15840.00	12520.00		MinPt-CtCt	
	1520.90	124.85	1436.92	1396.05	18.58	OSF1.50	15910.00	12520.00		MINPT-O-EOU	
	1521.52	125.60	1437.04	1395.92	18.47	OSF1.50	15940.00	12520.00		MinPt-O-ADP	
	1528.70	132.38	1439.70	1396.32	17.59	OSF1.50	16190.00	12520.00		MinPt-O-ADP	
	1531.35	144.28	1434.42	1387.06	16.15	OSF1.50	16610.00	12520.00		MinPt-CtCt	
	1521.82	164.93	1411.12	1356.89	14.01	OSF1.50	17340.00	12520.00		MinPt-CtCt	
	1522.34	166.51	1410.59	1355.83	13.88	OSF1.50	17400.00	12520.00		MINPT-O-EOU	
	1522.96	167.29	1410.68	1355.68	13.82	OSF1.50	17430.00	12520.00		MinPt-O-ADP	
	1521.82	187.36	1396.17	1334.46	12.31	OSF1.50	18120.00	12520.00		MinPt-CtCt	
	1522.37	188.95	1395.65	1333.42	12.21	OSF1.50	18180.00	12520.00		MINPT-O-EOU	
	1523.01	189.73	1395.78	1333.28	12.17	OSF1.50	18210.00	12520.00		MinPt-O-ADP	
	1538.54	200.49	1404.15	1338.06	11.62	OSF1.50	18580.00	12520.00		MinPt-O-ADP	
	1527.96	214.47	1384.24	1313.49	10.78	OSF1.50	19050.00	12520.00		MinPt-CtCt	
	1528.88	217.23	1383.31	1311.65	10.65	OSF1.50	19150.00	12520.00		MINPT-O-EOU	
	1528.46	233.21	1372.23	1295.24	9.91	OSF1.50	19690.00	12520.00		MinPt-CtCt	
	1530.46	237.82	1371.17	1292.65	9.73	OSF1.50	19850.00	12520.00		MINPT-O-EOU	
	1532.33	240.07	1371.54	1292.26	9.65	OSF1.50	19930.00	12520.00		MinPt-O-ADP	
	1539.32	252.85	1370.01	1286.47	9.20	OSF1.50	20360.00	12520.00		MINPT-O-EOU	
	1540.21	253.93	1370.18	1286.28	9.17	OSF1.50	20400.00	12520.00		MinPt-O-ADP	
	1528.27	269.37	1347.94	1256.90	8.57	OSF1.50	20910.00	12520.00		MinPt-CtCt	
	1528.65	273.88	1345.32	1254.78	8.43	OSF1.50	21080.00	12520.00		MinPt-CtCt	
	1529.43	276.10	1344.61	1253.33	8.36	OSF1.50	21140.00	12520.00		MINPT-O-EOU	
	1529.11	281.74	1340.54	1247.37	8.19	OSF1.50	21320.00	12520.00		MinPt-CtCt	
	1529.66	283.35	1340.01	1246.31	8.15	OSF1.50	21380.00	12520.00		MINPT-O-EOU	
	1530.08	283.86	1340.09	1246.21	8.14	OSF1.50	21400.00	12520.00		MinPt-O-ADP	
	1525.11	305.24	1320.87	1219.87	7.54	OSF1.50	22100.00	12520.00		MinPt-CtCt	
	1525.62	306.84	1320.32	1218.78	7.50	OSF1.50	22160.00	12520.00		MINPT-O-EOU	
	1526.05	307.34	1320.41	1218.71	7.49	OSF1.50	22180.00	12520.00		MinPt-O-ADP	
	1520.76	319.49	1307.02	1201.27	7.18	OSF1.50	22573.17	12520.00		MinPts	
Final Surveys - Cimarex Vaca											
Draw 20-17 Federal #6H MWD											
0ft-22328ft (Surcon Corrected)											
(Def Survey)											
	3658.84	32.81	3657.71	3626.03	N/A	MAS = 10.00 (m)	0.00	0.00		MinPts	Pass
	3658.85	32.81	3657.67	3626.04	75707.74	MAS = 10.00 (m)	23.00	23.00		WRP	
	3659.38	32.81	3657.15	3626.57	3337.48	MAS = 10.00 (m)	290.00	290.00		MinPts	
	3680.23	32.81	3656.61	3627.42	1474.73	MAS = 10.00 (m)	580.00	580.00		MINPT-O-EOU	
	3655.02	32.81	3647.13	3622.21	541.06	MAS = 10.00 (m)	1540.00	1540.00		MinPts	
	3655.17	32.81	3646.98	3622.36	518.21	MAS = 10.00 (m)	1600.00	1600.00		MINPT-O-EOU	
	3658.20	32.81	3648.92	3625.39	448.52	MAS = 10.00 (m)	1820.00	1820.00		MinPt-O-SF	
	3588.39	32.81	3575.83	3555.58	314.84	MAS = 10.00 (m)	2600.00	2599.98		MinPt-O-SF	
	3305.65	32.81	3291.48	3272.85	258.93	MAS = 10.00 (m)	4000.00	3985.22		MinPt-O-SF	
	2459.11	42.38	2429.94	2416.72	92.93	OSF1.50	7800.00	7738.56		MinPt-O-SF	
	2355.04	43.92	2324.76	2311.11	86.18	OSF1.50	9120.00	9057.42		MinPt-CtCt	
	2355.10	44.10	2324.70	2310.99	85.81	OSF1.50	9180.00	9117.42		MINPT-O-EOU	

Offset Trajectory	Separation		Allow	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor		
2355.17	44.20	2324.71	2310.97	85.62	OSF1.50	9210.00	9147.42			MinPt-O-ADP	
2353.27	50.41	2318.66	2302.86	74.35	OSF1.50	11040.00	10977.42			MinPt-CtCt	
2353.34	50.59	2318.62	2302.75	74.07	OSF1.50	11080.00	11017.42			MINPT-O-EOU	
2353.42	50.68	2318.64	2302.74	73.93	OSF1.50	11100.00	11037.42			MinPt-O-ADP	
2371.79	53.77	2335.00	2318.02	69.75	OSF1.50	11810.00	11747.42			MinPt-O-SF	
2372.03	53.86	2335.18	2318.17	69.64	OSF1.50	11850.00	11787.42			MinPts	
2373.48	54.56	2336.17	2318.92	68.73	OSF1.50	12000.00	11937.42			MinPt-O-SF	
2329.93	64.18	2286.20	2285.75	56.90	OSF1.50	13220.00	12520.00			MinPt-CtCt	
2330.02	64.42	2286.13	2285.60	56.89	OSF1.50	13240.00	12520.00			MINPT-O-EOU	
2330.22	64.66	2286.17	2285.56	56.47	OSF1.50	13260.00	12520.00			MinPt-O-ADP	
2332.33	71.91	2314.47	2291.43	51.23	OSF1.50	13710.00	12520.00			MinPt-O-ADP	
2373.50	79.55	2319.55	2293.95	46.32	OSF1.50	14070.00	12520.00			MinPt-CtCt	
2380.07	92.21	2297.66	2287.86	39.55	OSF1.50	14620.00	12520.00			MinPt-CtCt	
2360.53	102.89	2291.01	2257.64	35.33	OSF1.50	15050.00	12520.00			MinPt-CtCt	
2360.54	109.31	2286.73	2251.23	33.20	OSF1.50	15300.00	12520.00			MinPt-CtCt	
2361.50	117.22	2282.43	2244.28	30.92	OSF1.50	15600.00	12520.00			MinPt-CtCt	
2361.81	125.34	2277.32	2236.47	28.88	OSF1.50	15900.00	12520.00			MinPt-CtCt	
2362.66	128.03	2276.38	2234.63	28.26	OSF1.50	16010.00	12520.00			MINPT-O-EOU	
2363.69	129.23	2276.60	2234.45	28.01	OSF1.50	16080.00	12520.00			MinPt-O-ADP	
2363.04	133.02	2273.43	2230.02	27.19	OSF1.50	16180.00	12520.00			MinPt-CtCt	
2359.79	145.89	2261.60	2213.90	24.71	OSF1.50	16640.00	12520.00			MinPt-CtCt	
2353.95	159.15	2246.91	2194.80	22.56	OSF1.50	17110.00	12520.00			MinPt-CtCt	
2352.62	163.97	2242.37	2188.65	21.87	OSF1.50	17280.00	12520.00			MinPt-CtCt	
2353.03	165.10	2242.03	2187.93	21.72	OSF1.50	17330.00	12520.00			MINPT-O-EOU	
2353.40	165.54	2242.10	2187.85	21.67	OSF1.50	17350.00	12520.00			MinPt-O-ADP	
2358.56	169.70	2244.49	2188.86	21.17	OSF1.50	17500.00	12520.00			MinPt-O-ADP	
2364.43	177.45	2245.20	2186.98	20.28	OSF1.50	17760.00	12520.00			MINPT-O-EOU	
2365.74	179.00	2245.48	2186.74	20.11	OSF1.50	17820.00	12520.00			MinPt-O-ADP	
2360.36	206.98	2221.44	2153.38	17.32	OSF1.50	18770.00	12520.00			MinPt-CtCt	
2360.78	208.41	2220.90	2152.36	17.20	OSF1.50	18830.00	12520.00			MINPT-O-EOU	
2361.33	209.11	2220.98	2152.21	17.15	OSF1.50	18860.00	12520.00			MinPt-O-ADP	
2348.85	228.49	2195.59	2120.37	15.59	OSF1.50	19500.00	12520.00			MinPt-CtCt	
2349.56	230.48	2194.97	2119.08	15.46	OSF1.50	19580.00	12520.00			MINPT-O-EOU	
2350.17	231.21	2195.09	2118.96	15.42	OSF1.50	19610.00	12520.00			MinPt-O-ADP	
2352.72	235.58	2194.73	2117.14	15.14	OSF1.50	19750.00	12520.00			MINPT-O-EOU	
2353.50	236.55	2194.86	2116.95	15.09	OSF1.50	19790.00	12520.00			MinPt-O-ADP	
2384.61	257.57	2211.97	2127.04	14.02	OSF1.50	20480.00	12520.00			MinPt-CtCt	
2385.13	259.28	2211.36	2125.86	13.93	OSF1.50	20550.00	12520.00			MINPT-O-EOU	
2352.81	303.87	2149.29	2048.94	11.71	OSF1.50	22030.00	12520.00			MinPt-CtCt	
2353.46	305.89	2148.60	2047.57	11.63	OSF1.50	22110.00	12520.00			MINPT-O-EOU	
2354.27	306.87	2148.76	2047.40	11.60	OSF1.50	22150.00	12520.00			MinPt-O-ADP	
2365.42	319.87	2151.25	2045.55	11.18	OSF1.50	22573.17	12520.00			MinPts	

Cimarex Vaca Draw 20-17
Federal #31H Rev1 RM
20Feb20 (Def Plan)

Pass

3078.32	32.81	3077.04	3045.51	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
3078.32	32.81	3076.99	3045.51	62383.33	MAS = 10.00 (m)	23.00	23.00	WRP
3078.32	32.81	3061.83	3045.51	202.30	MAS = 10.00 (m)	2470.00	2470.00	MinPts
3078.36	32.81	3061.75	3045.55	200.82	MAS = 10.00 (m)	2500.00	2500.00	MINPT-O-EOU
3077.46	32.81	3060.71	3044.65	198.97	MAS = 10.00 (m)	2600.00	2599.98	MinPtO-SF
2391.64	64.98	2347.55	2326.66	57.19	OSF1.50	10620.00	10557.42	MinPt-CtCt
2391.66	65.04	2347.53	2326.62	57.14	OSF1.50	10630.00	10567.42	MINPT-O-EOU
2391.70	65.10	2347.53	2326.60	57.08	OSF1.50	10640.00	10577.42	MinPt-O-ADP

Offset Trajectory	Separation		Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)				EOU (ft)	MD (ft)	TVD (ft)	Alert		
2411.28	66.59	2366.16	2344.68	56.10	OSF1.50	10990.00	10927.42			MinPt-O-SF	MinPts
	3006.32	346.58	2774.83	2659.74		22573.17	12520.00				
Final Surveys - Cimarex Vaca Draw 20-17 Federal #7H MWD 0ft-22544ft (Surcon Corrected) (Def Survey)											
3678.85	32.81	3677.67	3646.04	N/A	MAS = 10.00 (m)	0.00	0.00			MinPts	Pass
3678.89	32.81	3677.68	3646.09	93142.44	MAS = 10.00 (m)	23.00	23.00			WRP	
3671.56	32.81	3659.15	3638.75	323.43	MAS = 10.00 (m)	2600.00	2599.98			MinPt-O-SF	
2798.08	41.51	2769.65	2756.57	106.90	OSF1.50	7800.00	7738.56			MinPt-O-SF	
2774.83	40.02	2747.37	2734.81	110.33	OSF1.50	8160.00	8097.42			MinPt-O-ADP	
2774.80	39.96	2747.36	2734.81	110.42	OSF1.50	8170.00	8107.42			MinPts	
2799.67	44.40	2769.32	2755.27	99.60	OSF1.50	9890.00	9827.42			MinPt-CtCt	
2799.72	44.60	2769.23	2755.12	99.12	OSF1.50	9950.00	9887.42			MINPT-O-EQU	
2799.77	44.67	2769.23	2755.10	98.98	OSF1.50	9970.00	9907.42			MinPt-O-ADP	
2786.02	51.36	2751.01	2734.66	85.13	OSF1.50	11540.00	11477.42			MinPt-CtCt	
2786.15	51.76	2750.87	2734.39	84.45	OSF1.50	11620.00	11557.42			MinPt-CtCt	
2786.63	52.81	2750.66	2733.83	82.71	OSF1.50	11830.00	11767.42			MINPT-O-EQU	
2786.71	52.90	2750.68	2733.81	82.57	OSF1.50	11850.00	11787.42			MinPt-O-ADP	
2797.83	57.09	2759.04	2740.74	76.40	OSF1.50	12720.00	12476.83			MinPt-CtCt	
2797.85	57.15	2759.02	2740.70	76.31	OSF1.50	12730.00	12479.23			MINPT-O-EQU	
2797.91	57.22	2759.03	2740.69	76.22	OSF1.50	12740.00	12481.56			MinPt-O-ADP	
2771.67	64.67	2727.81	2707.00	66.54	OSF1.50	13360.00	12520.00			MinPt-CtCt	
2771.91	65.35	2727.60	2706.56	65.83	OSF1.50	13410.00	12520.00			MINPT-O-EQU	
2772.15	65.64	2727.64	2706.51	65.54	OSF1.50	13430.00	12520.00			MinPt-O-ADP	
2753.68	85.64	2695.83	2668.04	49.50	OSF1.50	14410.00	12520.00			MinPt-CtCt	
2754.37	87.73	2695.13	2666.64	48.30	OSF1.50	14510.00	12520.00			MINPT-O-EQU	
2756.46	90.80	2695.17	2665.66	46.66	OSF1.50	14640.00	12520.00			MinPt-CtCt	
2757.77	92.35	2695.45	2665.42	45.88	OSF1.50	14710.00	12520.00			MINPT-O-EQU	
2761.46	96.03	2696.69	2665.43	44.14	OSF1.50	14860.00	12520.00			MinPt-O-ADP	
2781.71	108.35	2708.73	2673.35	39.28	OSF1.50	15350.00	12520.00			MinPt-O-ADP	
2754.24	136.95	2662.18	2617.28	30.65	OSF1.50	16380.00	12520.00			MinPt-CtCt	
2753.77	142.60	2657.94	2611.17	29.41	OSF1.50	16580.00	12520.00			MinPt-CtCt	
2754.35	144.25	2657.43	2610.10	29.08	OSF1.50	16650.00	12520.00			MINPT-O-EQU	
2754.93	144.95	2657.54	2609.95	28.94	OSF1.50	16680.00	12520.00			MinPt-O-ADP	
2757.37	148.80	2657.41	2608.57	28.20	OSF1.50	16810.00	12520.00			MINPT-O-EQU	
2757.74	149.25	2657.49	2608.50	28.12	OSF1.50	16830.00	12520.00			MinPt-O-ADP	
2760.40	209.90	2619.71	2550.50	19.92	OSF1.50	18920.00	12520.00			MinPt-CtCt	
2762.03	214.17	2618.50	2547.86	19.53	OSF1.50	19080.00	12520.00			MINPT-O-EQU	
2767.29	221.90	2618.61	2545.40	18.88	OSF1.50	19340.00	12520.00			MinPt-O-ADP	
2768.85	223.73	2618.95	2545.12	18.74	OSF1.50	19410.00	12520.00			MINPT-O-EQU	
2764.41	247.11	2598.92	2517.30	16.92	OSF1.50	20180.00	12520.00			MinPt-CtCt	
2771.20	266.64	2592.70	2504.56	15.71	OSF1.50	20850.00	12520.00			MINPT-O-EQU	
2772.47	268.18	2592.94	2504.30	15.63	OSF1.50	20910.00	12520.00			MinPt-O-ADP	
2774.18	283.69	2584.31	2490.49	14.77	OSF1.50	21410.00	12520.00			MinPt-CtCt	
2766.81	300.17	2565.95	2466.64	13.92	OSF1.50	21960.00	12520.00			MinPt-CtCt	
2767.79	303.34	2564.81	2464.45	13.78	OSF1.50	22080.00	12520.00			MINPT-O-EQU	
2768.63	304.34	2564.98	2464.26	13.74	OSF1.50	22120.00	12520.00			MinPt-O-ADP	
2775.29	318.81	2562.01	2456.48	13.14	OSF1.50	22573.17	12520.00			MinPts	

Offset Trajectory	Separation		Allow	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Major		
3778.40	32.81	3776.42	3745.60	944272.44	MAS = 10.00 (m)	0.00	0.00			Surface	
3778.40	32.81	3776.37	3745.60	68535.90	MAS = 10.00 (m)	23.00	23.00			WRP	
2974.51	100.52	2906.46	2873.99	45.76	OSF1.50	12470.00	12363.09			MinPt-CtCt	
2974.55	100.64	2906.42	2873.92	45.71	OSF1.50	12490.00	12376.24			MINPT-O-EOU	
2974.60	100.69	2906.43	2873.91	45.68	OSF1.50	12500.00	12382.58			MinPt-O-ADP	
3019.03	103.14	2949.31	2915.88	45.12	OSF1.50	13020.00	12519.04			MinPt-O-SF	
10499.83	132.39	10410.91	10367.44	120.75	OSF1.50	22573.17	12520.00			TD	
Cimarex Vaca Draw 20-17											
Federal #6H MWD											
Final(Surcon Corrected) (Def Survey)											
3738.39	32.81	3736.39	3705.58	173467.79	MAS = 10.00 (m)	0.00	0.00			Surface	
3738.33	32.81	3736.27	3705.52	43108.58	MAS = 10.00 (m)	23.00	23.00			WRP	
3735.06	32.81	3730.14	3702.25	1269.17	MAS = 10.00 (m)	690.00	690.00			MinPts	
3735.66	32.81	3729.84	3702.85	973.72	MAS = 10.00 (m)	900.00	900.00			MINPT-O-EOU	
3738.08	32.81	3730.43	3705.27	658.47	MAS = 10.00 (m)	1310.00	1310.00			MINPT-O-EOU	
3715.22	32.81	3701.74	3682.41	323.06	MAS = 10.00 (m)	2600.00	2599.98			MinPt-O-SF	
3002.93	41.98	2973.95	2960.96	115.37	MAS = 10.00 (m)	7800.00	7738.56			MinPt-O-SF	
2982.03	40.50	2954.02	2941.53	119.22	OSF1.50	8140.00	8077.42			MinPt-O-ADP	
2982.00	40.47	2954.01	2941.53	119.33	OSF1.50	8150.00	8087.42			MinPts	
3055.64	43.38	3025.83	3012.27	112.58	OSF1.50	9430.00	9367.42			MinPt-O-SF	
3852.32	46.60	3820.59	3805.72	129.43	OSF1.50	11370.00	11307.42			MinPt-O-SF	
3925.84	47.14	3893.76	3878.70	130.33	OSF1.50	11500.00	11437.42			MinPt-CtCt	
4571.28	56.02	4533.28	4515.26	126.83	OSF1.50	13170.00	12520.00			MINPT-O-EOU	
4571.62	57.08	4532.91	4514.54	124.40	OSF1.50	13240.00	12520.00			MINPT-O-EOU	
4572.00	57.54	4532.98	4514.46	123.38	OSF1.50	13270.00	12520.00			MinPt-O-ADP	
4580.18	62.66	4537.74	4517.51	113.17	OSF1.50	13530.00	12520.00			MinPts	
4585.27	66.14	4539.19	4517.13	103.91	OSF1.50	13740.00	12520.00			MINPT-O-EOU	
4586.07	69.10	4539.34	4516.97	102.44	OSF1.50	13790.00	12520.00			MinPt-O-ADP	
4577.09	81.63	4522.01	4495.46	86.16	OSF1.50	14270.00	12520.00			MinPt-CtCt	
4577.60	83.17	4521.49	4494.43	84.53	OSF1.50	14350.00	12520.00			MINPT-O-EOU	
4578.39	84.14	4521.64	4494.25	83.56	OSF1.50	14400.00	12520.00			MinPt-O-ADP	
4557.05	111.73	4481.91	4445.32	62.25	OSF1.50	15380.00	12520.00			MinPt-CtCt	
4557.56	113.27	4481.41	4444.31	61.40	OSF1.50	15460.00	12520.00			MINPT-O-EOU	
4558.06	113.85	4481.50	4444.21	61.09	OSF1.50	15490.00	12520.00			MinPt-O-ADP	
4573.29	137.60	4480.90	4435.69	50.56	OSF1.50	16290.00	12520.00			MinPt-CtCt	
4571.39	157.04	4466.04	4414.35	44.20	OSF1.50	16960.00	12520.00			MinPt-CtCt	
4572.36	160.04	4465.01	4412.33	43.37	OSF1.50	17090.00	12520.00			MINPT-O-EOU	
4574.35	170.45	4460.06	4403.91	40.71	OSF1.50	17420.00	12520.00			MinPt-CtCt	
4572.36	184.27	4448.85	4388.09	37.61	OSF1.50	17890.00	12520.00			MinPt-CtCt	
4572.91	196.57	4441.20	4376.33	35.23	OSF1.50	18310.00	12520.00			MinPt-CtCt	
4573.12	201.89	4437.87	4371.23	34.30	OSF1.50	18490.00	12520.00			MinPt-CtCt	
4566.62	244.28	4403.10	4322.34	28.26	OSF1.50	19920.00	12520.00			MinPt-CtCt	
4576.69	273.85	4393.47	4302.84	25.24	OSF1.50	20910.00	12520.00			MinPt-CtCt	
4565.87	316.65	4354.11	4249.22	21.76	OSF1.50	22340.00	12520.00			MinPt-CtCt	
4566.11	317.51	4353.78	4248.60	21.70	OSF1.50	22390.00	12520.00			MINPT-O-EOU	
4566.52	318.01	4353.85	4248.50	21.66	OSF1.50	22420.00	12520.00			MinPt-O-ADP	
4571.65	320.37	4357.41	4251.28	21.53	OSF1.50	22573.17	12520.00			MinPt-O-SF	
Cimarex Vaca Draw 20-17											
Federal #50H Rev1 RM											
20Feb20 (Def Plan)											
3098.30	32.81	3097.02	3065.50	N/A	MAS = 10.00 (m)	0.00	0.00			Surface	Pass

Offset Trajectory	Separation		Allow	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Major		
	3098.30	32.81	3096.97	3065.50	61677.12	23.00	23.00			WRP	
	3098.30	32.81	3064.95	3065.50						MinPis	
	3098.36	32.81	3084.88	3065.55	256.60	1970.00	1970.00			MINPT-O-EOU	
	3128.70	32.81	3113.53	3095.89	254.04	2000.00	2000.00			MinPt-O-SF	
	3191.85	46.17	3160.64	3145.68	225.16	2600.00	2599.98			MinPt-O-SF	
	3017.14	51.09	2982.56	2966.05	91.35	6740.00	6691.49			MinPt-O-SF	
	3003.38	50.73	2969.02	2952.63	91.66	7900.00	7837.88			MinPt-O-ADP	
	3003.38	58.66	2963.73	2944.71	78.91	8180.00	8117.42			MinPt-CtCt	
	3003.40	58.76	2963.69	2944.64	78.78	8930.00	8867.42			MinPis	
	3053.38	61.00	3012.26	2992.38	76.77	9950.00	9887.42			MinPt-O-SF	
	3230.57	62.50	3188.47	3168.07	79.13	10570.00	10507.42			MinPt-O-SF	
	3791.13	352.07	3555.98	3439.06	16.21	11290.00	11227.42			MinPis	
						22573.17	12520.00				
Pass											
	3758.40	32.81	3756.41	3725.59	271734.87	0.00	0.00			Surface	
	3758.37	32.81	3756.32	3725.56	51767.08	23.00	23.00			WRP	
	3756.42	32.81	3752.29	3723.62	1739.05	530.00	530.00			MinPis	
	3756.52	32.81	3751.55	3723.71	1254.93	730.00	730.00			MinPis	
	3756.76	32.81	3751.17	3723.95	1039.31	860.00	860.00			MINPT-O-EOU	
	3758.55	32.81	3749.45	3725.74	527.21	1640.00	1640.00			MinPis	
	3758.64	32.81	3749.32	3725.83	511.73	1690.00	1690.00			MINPT-O-EOU	
	3773.48	32.81	3760.40	3740.67	339.64	2600.00	2599.98			MinPt-O-SF	
	3756.53	32.81	3743.60	3723.72	343.07	2880.00	2878.89			MinPt-O-SF	
	3104.15	41.98	3075.19	3062.17	119.08	7800.00	7738.56			MinPt-O-SF	
	3075.22	40.86	3047.00	3034.37	121.66	8400.00	8337.42			MinPt-CtCt	
	3075.24	40.90	3046.98	3034.34	121.53	8420.00	8357.42			MINPT-O-EOU	
	3075.41	41.19	3046.96	3034.22	120.60	8560.00	8497.42			MINPT-O-EOU	
	3075.47	41.26	3046.97	3034.21	120.37	8590.00	8527.42			MinPt-O-ADP	
	3168.67	46.04	3137.14	3122.64	109.19	10290.00	10227.42			MinPt-O-SF	
	3179.38	46.14	3147.79	3133.24	109.18	10340.00	10277.42			MinPt-O-SF	
	3515.38	48.62	3482.31	3466.77	113.01	11340.00	11277.42			MinPt-O-SF	
	3627.50	49.21	3594.03	3578.28	115.13	11600.00	11537.42			MinPt-O-SF	
	4097.70	59.67	4057.26	4038.04	106.50	13240.00	12520.00			MinPt-CtCt	
	4098.15	60.95	4056.86	4037.20	104.19	13320.00	12520.00			MINPT-O-EOU	
	4098.85	61.80	4057.00	4037.06	102.73	13370.00	12520.00			MinPt-O-ADP	
	4089.91	73.93	4039.97	4015.99	85.23	13900.00	12520.00			MinPt-CtCt	
	4090.55	75.65	4039.45	4014.90	83.24	13990.00	12520.00			MINPT-O-EOU	
	4091.39	76.64	4039.64	4014.76	82.16	14040.00	12520.00			MinPt-O-ADP	
	4087.22	95.06	4023.18	3992.15	65.83	14730.00	12520.00			MinPt-CtCt	
	4088.84	101.42	4020.57	3987.42	61.65	14990.00	12520.00			MINPT-O-EOU	
	4078.16	120.00	3997.50	3958.16	51.81	15640.00	12520.00			MinPt-CtCt	
	4078.70	121.69	3996.92	3957.02	51.08	15720.00	12520.00			MINPT-O-EOU	
	4079.57	122.74	3997.09	3956.84	50.65	15770.00	12520.00			MINPT-O-ADP	
	4083.54	132.78	3994.36	3950.76	46.81	16090.00	12520.00			MinPt-CtCt	
	4084.92	138.07	3992.21	3946.85	45.00	16300.00	12520.00			MINPT-O-EOU	
	4086.32	139.75	3992.50	3946.57	44.47	16370.00	12520.00			MinPt-O-ADP	
	4091.47	145.37	3993.90	3946.10	42.78	16570.00	12520.00			MinPt-O-ADP	
	4080.71	164.20	3970.58	3916.51	37.71	17180.00	12520.00			MinPt-CtCt	
	4080.74	170.33	3966.52	3910.40	36.34	17390.00	12520.00			MinPt-CtCt	
	4077.47	196.42	3945.86	3881.05	31.44	18280.00	12520.00			MinPt-CtCt	
	4073.95	206.82	3935.41	3867.13	29.82	18630.00	12520.00			MinPt-CtCt	

Cimarex Vaca Draw 20-17
Federal #SH Final
MWD(Surcon Corrected) (Def
Survey)

Offset Trajectory	Separation		Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)				MD (ft)	TVD (ft)	Alert	Minor		
	4077.32	218.94	3930.70	3856.38	28.18	OSF1.50	19040.00	12520.00		MinPt-CtCt	
	4078.54	222.57	3929.50	3855.97	27.72	OSF1.50	19190.00	12520.00		MINPT-O-EOU	
	4080.99	282.64	3881.90	3798.35	21.80	OSF1.50	21180.00	12520.00		MinPt-CtCt	
	4084.28	290.98	3889.63	3793.30	21.19	OSF1.50	21490.00	12520.00		MINPT-O-EOU	
	4092.48	301.82	3890.61	3790.66	20.46	OSF1.50	21860.00	12520.00		MinPt-O-ADP	
	4088.21	317.34	3875.99	3770.87	19.44	OSF1.50	22340.00	12520.00		MinPt-CtCt	
	4088.48	318.23	3875.67	3770.25	19.38	OSF1.50	22390.00	12520.00		MINPT-O-EOU	
	4088.77	318.58	3875.72	3770.19	19.36	OSF1.50	22410.00	12520.00		MinPt-O-ADP	
	4094.71	321.13	3879.96	3773.58	19.24	OSF1.50	22573.17	12520.00		MinPt-O-SF	

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

3118.32	32.81	3117.03	3085.51	N/A	MAS = 10.00 (m)	0.00	0.00			Surface	Pass
3118.32	32.81	3116.99	3085.51	63194.24	MAS = 10.00 (m)	23.00	23.00			WRP	
3118.32	32.81	3108.11	3085.51	349.20	MAS = 10.00 (m)	1470.00	1470.00			MinPis	
3118.37	32.81	3108.04	3085.56	344.44	MAS = 10.00 (m)	1500.00	1500.00			MINPT-O-EOU	
3218.68	32.81	3204.74	3185.87	254.23	MAS = 10.00 (m)	2600.00	2599.98			MinPt-O-SF	
3270.39	51.33	3235.74	3219.06	97.99	OSF1.50	7020.00	6968.04			MinPis	
3151.85	53.65	3115.60	3098.20	90.53	OSF1.50	7800.00	7738.56			MinPt-O-SF	
3126.64	52.90	3090.87	3073.74	91.21	OSF1.50	8180.00	8117.42			MinPis	
3124.54	64.69	3080.91	3059.85	74.15	OSF1.50	10920.00	10857.42			MinPt-CtCt	
3124.60	64.85	3080.86	3059.75	73.95	OSF1.50	10950.00	10887.42			MINPT-O-EOU	
3124.65	64.91	3080.88	3059.74	73.89	OSF1.50	10960.00	10897.42			MinPt-O-ADP	
3174.01	67.69	3128.46	3106.32	71.67	OSF1.50	11580.00	11517.42			MinPt-O-SF	
3464.77	353.41	3228.74	3111.37	14.75	OSF1.50	22573.17	12520.00			MinPis	

Cimarex Vaca Draw 20-17
Federal #1H ST01 0ft-21966ft
(Def Survey)

3778.36	32.81	3777.19	3745.55	107080.66	MAS = 10.00 (m)	0.00	0.00			Surface	Pass
3778.26	32.81	3777.02	3745.45	34584.67	MAS = 10.00 (m)	23.00	23.00			WRP	
3776.37	32.81	3774.05	3743.56	3173.34	MAS = 10.00 (m)	290.00	290.00			MinPis	
3776.83	32.81	3773.67	3744.03	1856.75	MAS = 10.00 (m)	450.00	450.00			MINPT-O-EOU	
3822.77	32.81	3810.55	3789.96	344.66	MAS = 10.00 (m)	2600.00	2599.98			MinPt-O-SF	
3242.58	41.68	3214.15	3200.89	122.25	OSF1.50	7800.00	7738.56			MinPt-O-SF	
3224.50	40.41	3196.92	3184.10	125.72	OSF1.50	8150.00	8087.42			MinPis	
3224.49	40.38	3196.92	3184.11	125.79	OSF1.50	8160.00	8097.42			MinPt-CtCt	
3225.36	40.80	3197.51	3184.56	124.46	OSF1.50	8350.00	8287.42			MinPt-O-ADP	
3230.65	43.53	3200.99	3187.13	116.46	OSF1.50	9580.00	9517.42			MinPt-CtCt	
3199.39	52.55	3163.68	3146.84	94.94	OSF1.50	11840.00	11777.42			MinPt-CtCt	
3199.44	52.70	3163.63	3146.74	94.67	OSF1.50	11870.00	11807.42			MINPT-O-EOU	
3199.53	52.79	3163.65	3146.73	94.49	OSF1.50	11890.00	11827.42			MinPt-O-ADP	
3194.06	59.82	3153.51	3134.24	82.85	OSF1.50	13020.00	12519.04			MinPt-CtCt	
3193.84	60.84	3152.60	3132.99	81.40	OSF1.50	13100.00	12520.00			MinPt-CtCt	
3194.01	61.44	3152.37	3132.56	80.59	OSF1.50	13150.00	12520.00			MINPT-O-EOU	
3194.31	61.81	3152.43	3132.50	80.11	OSF1.50	13180.00	12520.00			MinPt-O-ADP	
3193.26	67.69	3147.46	3125.57	72.91	OSF1.50	13530.00	12520.00			MinPt-CtCt	
3186.76	73.92	3136.79	3112.84	66.46	OSF1.50	13850.00	12520.00			MinPt-CtCt	
3187.09	74.95	3136.44	3112.13	65.53	OSF1.50	13910.00	12520.00			MINPT-O-EOU	
3187.51	75.48	3136.51	3112.03	65.06	OSF1.50	13940.00	12520.00			MinPt-O-ADP	
3185.52	85.04	3138.16	3110.49	57.71	OSF1.50	14360.00	12520.00			MinPt-CtCt	
3189.62	99.85	3122.37	3089.77	48.88	OSF1.50	14970.00	12520.00			MinPt-CtCt	
3190.55	102.59	3121.49	3087.96	47.57	OSF1.50	15090.00	12520.00			MINPT-O-EOU	

Offset Trajectory	Separation		Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level		Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor	Major	
	3191.51	103.74	3121.67	47.04	OSF1.50	15140.00	12520.00				MinPt-O-ADP
	3169.89	141.46	3074.90	34.09	OSF1.50	16520.00	12520.00				MinPt-CtCt
	3170.81	144.15	3074.01	33.45	OSF1.50	16630.00	12520.00				MINPT-O-EOU
	3172.73	148.68	3072.92	32.44	OSF1.50	16790.00	12520.00				MINPT-O-EOU
	3176.59	153.30	3073.71	31.49	OSF1.50	16980.00	12520.00				MinPt-O-ADP
	3188.30	169.36	3074.71	28.57	OSF1.50	17500.00	12520.00				MinPt-CtCt
	3191.23	177.32	3072.34	27.29	OSF1.50	17790.00	12520.00				MINPT-O-EOU
	3192.93	179.39	3072.66	26.99	OSF1.50	17870.00	12520.00				MinPt-O-ADP
	3173.93	212.13	3031.82	22.65	OSF1.50	18970.00	12520.00				MinPt-CtCt
	3174.56	214.06	3031.17	22.45	OSF1.50	19050.00	12520.00				MINPT-O-EOU
	3175.33	215.01	3031.31	22.35	OSF1.50	19090.00	12520.00				MinPt-O-ADP
	3195.36	227.21	3043.21	21.27	OSF1.50	19510.00	12520.00				MINPT-O-EOU
	3196.78	232.18	3041.32	20.82	OSF1.50	19650.00	12520.00				MinPt-CtCt
	3191.89	241.88	3029.96	19.95	OSF1.50	19980.00	12520.00				MinPt-CtCt
	3180.11	262.92	2986.80	18.44	OSF1.50	20550.00	12520.00				MinPt-CtCt
	3161.23	262.32	2965.65	18.21	OSF1.50	20680.00	12520.00				MINPT-O-EOU
	3162.98	264.43	2986.00	18.07	OSF1.50	20760.00	12520.00				MinPt-O-ADP
	3179.69	277.89	2963.75	17.28	OSF1.50	21210.00	12520.00				MINPT-O-EOU
	3180.76	279.00	2994.07	17.22	OSF1.50	21250.00	12520.00				MinPt-O-ADP
	3183.43	289.11	2994.01	16.62	OSF1.50	21560.00	12520.00				MinPt-CtCt
	3185.87	296.94	2987.23	16.19	OSF1.50	21840.00	12520.00				MINPT-O-EOU
	3187.76	299.92	2967.14	16.04	OSF1.50	21940.00	12520.00				MINPT-O-EOU
	3188.84	301.21	2987.35	15.98	OSF1.50	21990.00	12520.00				MinPt-O-ADP
	3190.57	312.45	2981.59	15.41	OSF1.50	22340.00	12520.00				MinPt-CtCt
	3190.94	313.52	2981.24	15.36	OSF1.50	22390.00	12520.00				MINPT-O-EOU
	3191.30	313.93	2981.34	15.34	OSF1.50	22410.00	12520.00				MinPt-O-ADP
	3188.96	316.81	2987.09	15.23	OSF1.50	22573.17	12520.00				MinPt-O-SF

Cimarex Vaca Draw 20-17
Federal #1H Surcon 0ft-12740
(Def Survey)

Pass

3778.36	32.81	3776.34	3745.55	107057.35	MAS = 10.00 (m)	0.00	0.00	Surface
3778.26	32.81	3776.17	3745.45	34577.16	MAS = 10.00 (m)	23.00	23.00	WRP
3776.37	32.81	3773.20	3743.56	3172.64	MAS = 10.00 (m)	290.00	290.00	MinPls
3776.83	32.81	3772.82	3744.03	1856.34	MAS = 10.00 (m)	450.00	450.00	MINPT-O-EOU
3822.77	32.81	3809.70	3789.96	344.58	MAS = 10.00 (m)	2600.00	2599.98	MinPt-O-SF
3242.58	42.53	3213.30	3200.05	122.21	OSF1.50	7800.00	7738.56	MinPt-O-SF
3224.50	41.25	3196.07	3183.25	125.69	OSF1.50	8150.00	8087.42	MinPls
3224.49	41.23	3196.07	3183.26	125.75	OSF1.50	8160.00	8097.42	MinPt-CtCt
3225.36	41.65	3196.66	3183.71	124.43	OSF1.50	8350.00	8287.42	MinPt-O-ADP
3230.65	44.37	3200.14	3186.28	116.43	OSF1.50	9580.00	9517.42	MinPt-CtCt
3192.98	55.91	3154.74	3137.07	90.26	OSF1.50	12440.00	12342.22	MinPt-CtCt
3193.00	55.95	3154.73	3137.05	90.20	OSF1.50	12450.00	12349.33	MINPT-O-EOU
3193.03	55.99	3154.74	3137.04	90.14	OSF1.50	12460.00	12356.29	MinPt-O-ADP
3871.44	79.03	3818.09	3792.41	75.33	OSF1.50	14670.00	12520.00	MinPt-O-SF
10584.85	106.37	10513.28	10478.48	152.07	OSF1.50	22573.17	12520.00	TD

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

CONDITIONS

Action 19634

CONDITIONS OF APPROVAL

Operator: CIMAREX ENERGY CO. Suite 600 Midland, TX79701	600 N. Marienfeld Street	OGRID: 215099	Action Number: 19634	Action Type: C-103A
OCD Reviewer pkautz	Condition None			