

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM117116

6. If Indian, Allottee or Tribe Name

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

SUBMIT IN TRIPLICATE - Other instructions on page 28. Well Name and No.
CABRERA 34 FEDERAL 4H9. API Well No.
30-015-43173-00-X110. Field and Pool or Exploratory Area
WILDCAT11. County or Parish, State
EDDY COUNTY, NM

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
CIMAREX ENERGY COMPANYContact: ARICKA EASTERLING
E-Mail: aeasterling@cimarex.com3a. Address
600 N MARIENFELD STE 600
MIDLAND, TX 797033b. Phone No. (include area code)
Ph: 1938-660-7060

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 34 T26S R27E NENE 1110FSL 290FEL
32.001100 N Lat, 104.101164 W Lon**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Cimarex respectfully requests approval to change BHL of the Cabrera 34 Federal 4H well.

Approved:

BHL: 400 FNL & 330 FWL

Proposed:

BHL: 400 FNL & 100 FWL

RECEIVED

JAN 17 2019

DISTRICT II-ARTESIA O.C.D.

X Please see attached plat, directional plan, and drilling plan for changes.

All previous COAs shall apply. BOP is approved as in the drilling program.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #448620 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 12/20/2018 (19PP0683SE)

Name (Printed/Typed) ARICKA EASTERLING

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 12/20/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS

Title PETROLEUM ENGINEER

Date 01/15/2018

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

Office Carlsbad

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.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

RWP 2-21-19.

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

JAN 17 2019

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-43173		² Pool Code 30215		³ Pool Name Bone Spring: Hay Hollow	
⁴ Property Code 40432		⁵ Property Name CABRERA 34 FEDERAL		⁶ Well Number #4H	
⁷ OGRID No. 215099		⁸ Operator Name CIMAREX ENERGY CO.		⁹ Elevation 3233.4'	

¹⁰ Surface Location

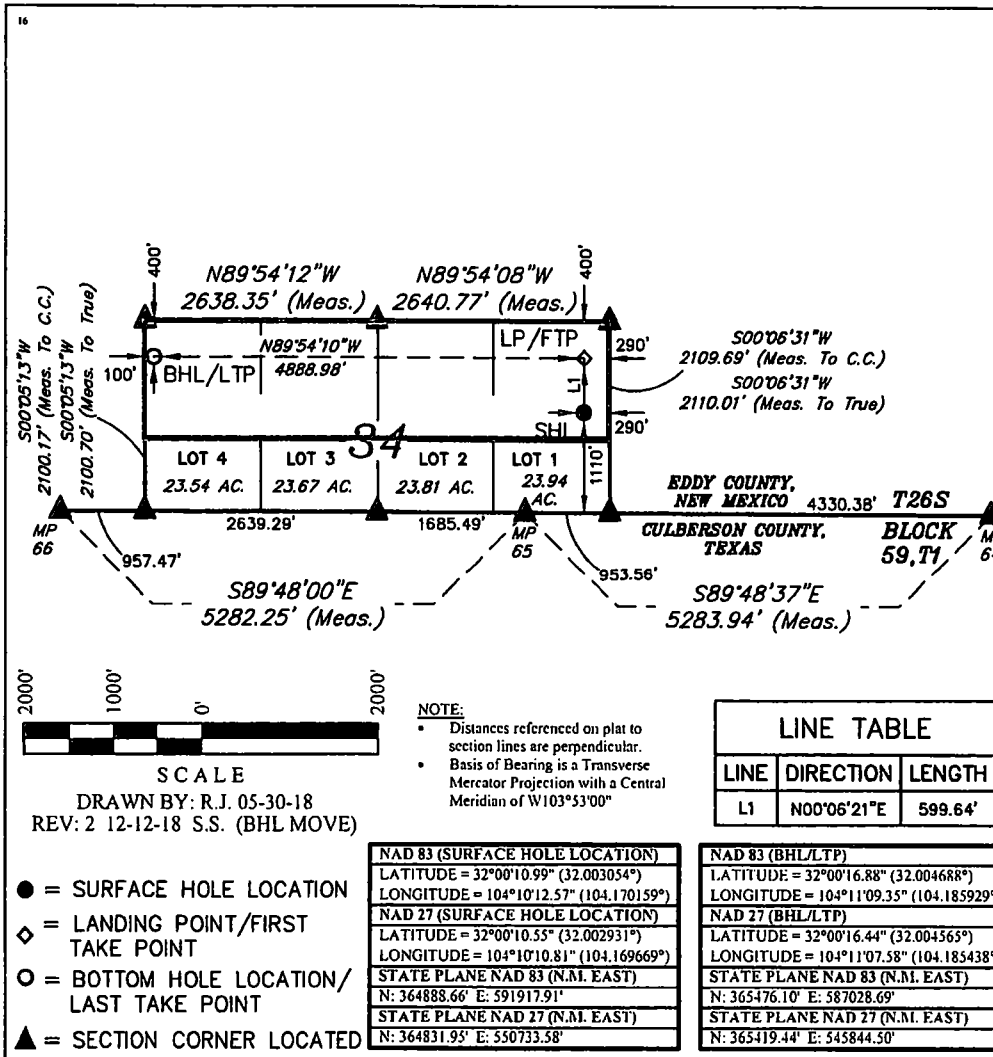
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	34	26S	27E		1110	SOUTH	290	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	34	26S	27E		400	NORTH	100	WEST	EDDY

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



¹⁷ OPERATOR
CERTIFICATION

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

Signature: Aricka Easterling Date: 12/17/18

Printed Name: Aricka Easterling

E-mail Address: aeasterling@cimarex.com

E-mail Address: aeasterling@cimarex.com

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.

June 6, 2018

Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number:

pwf. 2-21-19.

1. Geological Formations

TVD of target 7,610

Pilot Hole TD N/A

MD at TD 12,381

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	0	N/A	
Salado	1598	N/A	
Castille	2076	N/A	
Bell Canyon	2250	N/A	
Brushy Canyon	4425	Hydrocarbons	
Bone Spring	5913	Hydrocarbons	
Bone Spring A Shale	6063	Hydrocarbons	
Bone Spring C Shale	6548	Hydrocarbons	
1st Bone Spring	6850	Hydrocarbons	
2nd Bone Spring	7323	Hydrocarbons	
2nd Bone Spring Target	7660	Hydrocarbons	
3rd Bone Spring Limestone	7784	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	400	400	13-3/8"	48.00	H-40	ST&C	4.04	9.45	16.77
12 1/4	0	2230	2230	9-5/8"	36.00	J-55	LT&C	1.71	2.98	5.64
8 3/4	0	7218	7218	5-1/2"	17.00	L-80	LT&C	1.86	2.29	2.61
8 3/4	7218	12381	7610	5-1/2"	17.00	L-80	BT&C	1.77	2.17	59.57
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	60	13.50	1.75	8.83	15.5	Lead: Class C + Bentonite + Calcium Chloride + LCM
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	427	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	128	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Production	448	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1104	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	31
Intermediate	0	49
Production	2030	17

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			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.

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 400'	FW Spud Mud	8.30 - 8.80	30-32	N/C
400' to 2230'	Brine Water	9.70 - 10.20	30-32	N/C
2230' to 12381'	FW/Cut Brine	8.50 - 9.00	30-32	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
☐	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
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	3561 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.

☒	H ₂ S is present
☒	H ₂ S plan is attached

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

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 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.

Cimarex Cabrera 34 Federal #4H Rev3 RM 13Dec18 Proposal Geodetic Report

(Def Plan)



Report Date:	December 13, 2018 - 03:55 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	269.858 ° (Grid North)
Field:	NM Eddy County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Cabrera 34 Federal #4H / Cimarex Cabrera 34 Federal #4H	TVD Reference Datum:	RKB
Well:	Cimarex Cabrera 34 Federal #4H	TVD Reference Elevation:	3259.400 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	3233.400 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.205 °
Survey Name:	Cimarex Cabrera 34 Federal #4H Rev3 RM 13Dec18	Total Gravity Field Strength:	998.4286mgn (9.80665 Based)
Survey Date:	June 04, 2018	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	110.308 ° / 5489.287 ft / 5.991 / 0.717	Total Magnetic Field Strength:	47801.468 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.623 °
Location Lat / Long:	N 32° 0' 10.99450", W 104° 10' 12.57286"	Declination Date:	December 13, 2018
Location Grid N/E Y/X:	N 364888.660 ftUS, E 591917.910 ftUS	Magnetic Declination Model:	HDGM 2018
CRS Grid Convergence Angle:	0.0865 °	North Reference:	Grid North
Grid Scale Factor:	0.99991202	Grid Convergence Used:	0.0865 °
Version / Patch:	2.10.753.0	Total Corr Mag North->Grid North:	7.1190 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [1110' FSL, 290' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
Nudge 2"/100' DLS	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	364888.66	591917.91	N 32 0 10.99 W 104 10 12.57	
Salado (Top Salt)	1598.02	1.96	0.00	1598.00	0.00	1.68	0.00	2.00	364890.34	591917.91	N 32 0 11.01 W 104 10 12.57	
	1600.00	2.00	0.00	1599.98	0.00	1.75	0.00	2.00	364890.40	591917.91	N 32 0 11.01 W 104 10 12.57	
	1700.00	4.00	0.00	1699.84	-0.02	6.98	0.00	2.00	364895.64	591917.91	N 32 0 11.06 W 104 10 12.57	
	1800.00	6.00	0.00	1799.45	-0.04	15.69	0.00	2.00	364904.35	591917.91	N 32 0 11.15 W 104 10 12.57	
Hold Nudge	1842.00	6.84	0.00	1841.19	-0.05	20.39	0.00	2.00	364909.05	591917.91	N 32 0 11.20 W 104 10 12.57	
	1900.00	6.84	0.00	1898.78	-0.07	27.30	0.00	0.00	364915.96	591917.91	N 32 0 11.26 W 104 10 12.57	
	2000.00	6.84	0.00	1998.06	-0.10	39.21	0.00	0.00	364927.86	591917.91	N 32 0 11.38 W 104 10 12.57	

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 ° ' ")
Castille (Base Salt)	2078.50	6.84	0.00	2076.00	-0.12	48.56	0.00	0.00	364937.21	591917.91	N 32 0 11.47 W 104 10 12.57	
	2100.00	6.84	0.00	2097.35	-0.13	51.12	0.00	0.00	364939.77	591917.91	N 32 0 11.50 W 104 10 12.57	
	2200.00	6.84	0.00	2196.64	-0.16	63.03	0.00	0.00	364951.68	591917.91	N 32 0 11.62 W 104 10 12.57	
Bell Canyon (Delaware)	2253.74	6.84	0.00	2250.00	-0.17	69.43	0.00	0.00	364958.08	591917.91	N 32 0 11.68 W 104 10 12.57	
	2300.00	6.84	0.00	2295.93	-0.19	74.94	0.00	0.00	364963.59	591917.91	N 32 0 11.74 W 104 10 12.57	
	2400.00	6.84	0.00	2395.22	-0.22	86.85	0.00	0.00	364975.50	591917.91	N 32 0 11.85 W 104 10 12.57	
	2500.00	6.84	0.00	2494.50	-0.24	98.76	0.00	0.00	364987.41	591917.91	N 32 0 11.97 W 104 10 12.57	
	2600.00	6.84	0.00	2593.79	-0.27	110.67	0.00	0.00	364999.32	591917.91	N 32 0 12.09 W 104 10 12.57	
	2700.00	6.84	0.00	2693.08	-0.30	122.58	0.00	0.00	365011.22	591917.91	N 32 0 12.21 W 104 10 12.57	
	2800.00	6.84	0.00	2792.37	-0.33	134.49	0.00	0.00	365023.13	591917.91	N 32 0 12.33 W 104 10 12.57	
	2900.00	6.84	0.00	2891.66	-0.36	146.40	0.00	0.00	365035.04	591917.91	N 32 0 12.44 W 104 10 12.57	
	3000.00	6.84	0.00	2990.95	-0.39	158.31	0.00	0.00	365046.95	591917.91	N 32 0 12.56 W 104 10 12.57	
	3100.00	6.84	0.00	3090.23	-0.42	170.21	0.00	0.00	365058.86	591917.91	N 32 0 12.68 W 104 10 12.57	
Cherry Canyon	3200.00	6.84	0.00	3189.52	-0.45	182.12	0.00	0.00	365070.77	591917.91	N 32 0 12.80 W 104 10 12.57	
	3267.96	6.84	0.00	3257.00	-0.47	190.22	0.00	0.00	365078.86	591917.91	N 32 0 12.88 W 104 10 12.57	
	3300.00	6.84	0.00	3288.81	-0.48	194.03	0.00	0.00	365082.68	591917.91	N 32 0 12.91 W 104 10 12.57	
	3400.00	6.84	0.00	3388.10	-0.51	205.94	0.00	0.00	365094.59	591917.91	N 32 0 13.03 W 104 10 12.57	
	3500.00	6.84	0.00	3487.39	-0.54	217.85	0.00	0.00	365106.49	591917.91	N 32 0 13.15 W 104 10 12.57	
	3600.00	6.84	0.00	3586.68	-0.57	229.76	0.00	0.00	365118.40	591917.91	N 32 0 13.27 W 104 10 12.57	
	3700.00	6.84	0.00	3685.96	-0.60	241.67	0.00	0.00	365130.31	591917.91	N 32 0 13.39 W 104 10 12.57	
	3800.00	6.84	0.00	3785.25	-0.63	253.58	0.00	0.00	365142.22	591917.91	N 32 0 13.50 W 104 10 12.57	
	3900.00	6.84	0.00	3884.54	-0.66	265.49	0.00	0.00	365154.13	591917.91	N 32 0 13.62 W 104 10 12.57	
	4000.00	6.84	0.00	3983.83	-0.69	277.40	0.00	0.00	365166.04	591917.91	N 32 0 13.74 W 104 10 12.57	
Brushy Canyon	4100.00	6.84	0.00	4083.12	-0.72	289.31	0.00	0.00	365177.95	591917.91	N 32 0 13.86 W 104 10 12.57	
	4200.00	6.84	0.00	4182.41	-0.75	301.22	0.00	0.00	365189.86	591917.91	N 32 0 13.98 W 104 10 12.57	
	4300.00	6.84	0.00	4281.69	-0.78	313.13	0.00	0.00	365201.76	591917.91	N 32 0 14.09 W 104 10 12.57	
	4400.00	6.84	0.00	4380.98	-0.81	325.04	0.00	0.00	365213.67	591917.91	N 32 0 14.21 W 104 10 12.57	
	4444.33	6.84	0.00	4425.00	-0.82	330.32	0.00	0.00	365218.95	591917.91	N 32 0 14.26 W 104 10 12.57	
	4500.00	6.84	0.00	4480.27	-0.84	336.95	0.00	0.00	365225.58	591917.91	N 32 0 14.33 W 104 10 12.57	
	4600.00	6.84	0.00	4579.56	-0.86	348.86	0.00	0.00	365237.49	591917.91	N 32 0 14.45 W 104 10 12.57	
	4700.00	6.84	0.00	4678.85	-0.89	360.77	0.00	0.00	365249.40	591917.91	N 32 0 14.56 W 104 10 12.57	
	4800.00	6.84	0.00	4778.13	-0.92	372.68	0.00	0.00	365261.31	591917.91	N 32 0 14.68 W 104 10 12.57	
	4900.00	6.84	0.00	4877.42	-0.95	384.59	0.00	0.00	365273.22	591917.91	N 32 0 14.80 W 104 10 12.57	
Brushy Canyon Lower	5000.00	6.84	0.00	4976.71	-0.98	396.50	0.00	0.00	365285.13	591917.91	N 32 0 14.92 W 104 10 12.57	
	5100.00	6.84	0.00	5076.00	-1.01	408.41	0.00	0.00	365297.03	591917.91	N 32 0 15.04 W 104 10 12.57	
	5200.00	6.84	0.00	5175.29	-1.04	420.32	0.00	0.00	365308.94	591917.91	N 32 0 15.15 W 104 10 12.57	
	5300.00	6.84	0.00	5274.58	-1.07	432.23	0.00	0.00	365320.85	591917.91	N 32 0 15.27 W 104 10 12.57	
	5400.00	6.84	0.00	5373.86	-1.10	444.14	0.00	0.00	365332.76	591917.91	N 32 0 15.39 W 104 10 12.57	
	5500.00	6.84	0.00	5473.15	-1.13	456.05	0.00	0.00	365344.67	591917.91	N 32 0 15.51 W 104 10 12.56	
	5600.00	6.84	0.00	5572.44	-1.16	467.96	0.00	0.00	365356.58	591917.91	N 32 0 15.63 W 104 10 12.56	
	5700.00	6.84	0.00	5671.73	-1.19	479.87	0.00	0.00	365368.49	591917.91	N 32 0 15.74 W 104 10 12.56	
	5723.44	6.84	0.00	5695.00	-1.20	482.66	0.00	0.00	365371.28	591917.91	N 32 0 15.77 W 104 10 12.56	
	5800.00	6.84	0.00	5771.02	-1.22	491.78	0.00	0.00	365380.39	591917.91	N 32 0 15.86 W 104 10 12.56	
Bone Spring	5900.00	6.84	0.00	5870.31	-1.25	503.69	0.00	0.00	365392.30	591917.91	N 32 0 15.98 W 104 10 12.56	
	5943.00	6.84	0.00	5913.00	-1.26	508.81	0.00	0.00	365397.42	591917.91	N 32 0 16.03 W 104 10 12.56	
Bone Spring "A" Shale	6000.00	6.84	0.00	5969.59	-1.28	515.60	0.00	0.00	365404.21	591917.91	N 32 0 16.10 W 104 10 12.56	
	6094.08	6.84	0.00	6063.00	-1.31	526.80	0.00	0.00	365415.42	591917.91	N 32 0 16.21 W 104 10 12.56	
	6100.00	6.84	0.00	6068.88	-1.31	527.51	0.00	0.00	365416.12	591917.91	N 32 0 16.21 W 104 10 12.56	
	6200.00	6.84	0.00	6168.17	-1.34	539.42	0.00	0.00	365428.03	591917.91	N 32 0 16.33 W 104 10 12.56	
	6300.00	6.84	0.00	6267.46	-1.37	551.33	0.00	0.00	365439.94	591917.91	N 32 0 16.45 W 104 10 12.56	
	6400.00	6.84	0.00	6366.75	-1.40	563.24	0.00	0.00	365451.85	591917.91	N 32 0 16.57 W 104 10 12.56	
	6500.00	6.84	0.00	6466.04	-1.43	575.15	0.00	0.00	365463.76	591917.91	N 32 0 16.69 W 104 10 12.56	
Drop to Vertical 2°/100' DLS	6534.21	6.84	0.00	6500.00	-1.44	579.22	0.00	0.00	365467.83	591917.91	N 32 0 16.73 W 104 10 12.56	

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 ° ' ")
Bone Spring "C" Shale	6582.51	5.87	0.00	6548.00	-1.45	584.57	0.00	2.00	365473.18	591917.91	N 32 0 16.78 W 104 10 12.56	
	6600.00	5.52	0.00	6565.41	-1.45	586.31	0.00	2.00	365474.91	591917.91	N 32 0 16.80 W 104 10 12.56	
	6700.00	3.52	0.00	6665.09	-1.47	594.19	0.00	2.00	365482.80	591917.91	N 32 0 16.87 W 104 10 12.56	
	6800.00	1.52	0.00	6764.99	-1.48	598.60	0.00	2.00	365487.20	591917.91	N 32 0 16.92 W 104 10 12.56	
Hold Vertical	6876.21	0.00	0.00	6841.19	-1.49	599.61	0.00	2.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
1st Bone Spring Ss	6885.02	0.00	0.00	6850.00	-1.49	599.61	0.00	0.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
	6900.00	0.00	0.00	6864.98	-1.49	599.61	0.00	0.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
	7000.00	0.00	0.00	6964.98	-1.49	599.61	0.00	0.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
	7100.00	0.00	0.00	7064.98	-1.49	599.61	0.00	0.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
	7200.00	0.00	0.00	7164.98	-1.49	599.61	0.00	0.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
KOP - Build 12"/100' DLS	7217.56	0.00	0.00	7182.54	-1.49	599.61	0.00	0.00	365488.22	591917.91	N 32 0 16.93 W 104 10 12.56	
	7300.00	9.89	269.86	7264.57	5.61	599.59	-7.10	12.00	365488.20	591910.81	N 32 0 16.93 W 104 10 12.64	
2nd Bone Spring Ss	7360.13	17.11	269.86	7323.00	19.64	599.56	-21.13	12.00	365488.17	591896.78	N 32 0 16.93 W 104 10 12.81	
	7400.00	21.89	269.86	7360.57	32.95	599.53	-34.43	12.00	365488.13	591883.48	N 32 0 16.93 W 104 10 12.96	
	7500.00	33.89	269.86	7448.79	79.65	599.41	-81.13	12.00	365488.02	591836.79	N 32 0 16.93 W 104 10 13.50	
	7600.00	45.89	269.86	7525.38	143.67	599.25	-145.15	12.00	365487.86	591772.77	N 32 0 16.93 W 104 10 14.25	
	7700.00	57.89	269.86	7586.98	222.21	599.06	-223.69	12.00	365487.66	591694.24	N 32 0 16.93 W 104 10 15.16	
	7800.00	69.89	269.86	7630.90	311.84	598.84	-313.33	12.00	365487.44	591604.61	N 32 0 16.92 W 104 10 16.20	
	7900.00	81.89	269.86	7655.23	408.65	598.60	-410.13	12.00	365487.20	591507.81	N 32 0 16.92 W 104 10 17.33	
Landing Point - Hold to 1955' VS	7967.56	90.00	269.86	7660.00	475.98	598.43	-477.46	12.00	365487.03	591440.49	N 32 0 16.92 W 104 10 18.11	
	8000.00	90.00	269.86	7660.00	508.42	598.35	-509.91	0.00	365486.95	591408.05	N 32 0 16.92 W 104 10 18.48	
	8100.00	90.00	269.86	7660.00	608.42	598.10	-609.91	0.00	365486.71	591308.06	N 32 0 16.92 W 104 10 19.65	
	8200.00	90.00	269.86	7660.00	708.42	597.85	-709.91	0.00	365486.46	591208.07	N 32 0 16.92 W 104 10 20.81	
	8300.00	90.00	269.86	7660.00	808.42	597.60	-809.91	0.00	365486.21	591108.08	N 32 0 16.92 W 104 10 21.97	
	8400.00	90.00	269.86	7660.00	908.42	597.36	-909.91	0.00	365485.96	591008.09	N 32 0 16.92 W 104 10 23.13	
	8500.00	90.00	269.86	7660.00	1008.42	597.11	-1009.91	0.00	365485.71	590908.09	N 32 0 16.92 W 104 10 24.29	
	8600.00	90.00	269.86	7660.00	1108.42	596.86	-1109.91	0.00	365485.47	590808.10	N 32 0 16.92 W 104 10 25.45	
	8700.00	90.00	269.86	7660.00	1208.42	596.61	-1209.91	0.00	365485.22	590708.11	N 32 0 16.92 W 104 10 26.61	
	8800.00	90.00	269.86	7660.00	1308.42	596.36	-1309.91	0.00	365484.97	590608.12	N 32 0 16.92 W 104 10 27.77	
	8900.00	90.00	269.86	7660.00	1408.42	596.12	-1409.91	0.00	365484.72	590508.13	N 32 0 16.91 W 104 10 28.94	
	9000.00	90.00	269.86	7660.00	1508.42	595.87	-1509.90	0.00	365484.48	590408.14	N 32 0 16.91 W 104 10 30.10	
	9100.00	90.00	269.86	7660.00	1608.42	595.62	-1609.90	0.00	365484.23	590308.15	N 32 0 16.91 W 104 10 31.26	
	9200.00	90.00	269.86	7660.00	1708.42	595.37	-1709.90	0.00	365483.98	590208.16	N 32 0 16.91 W 104 10 32.42	
	9300.00	90.00	269.86	7660.00	1808.42	595.13	-1809.90	0.00	365483.73	590108.17	N 32 0 16.91 W 104 10 33.58	
	9400.00	90.00	269.86	7660.00	1908.42	594.88	-1909.90	0.00	365483.48	590008.18	N 32 0 16.91 W 104 10 34.74	
2"/100' DLS	9446.58	90.00	269.86	7660.00	1955.00	594.76	-1956.48	0.00	365483.37	589961.61	N 32 0 16.91 W 104 10 35.28	
	9500.00	91.07	269.86	7659.50	2008.42	594.63	-2009.90	2.00	365483.24	589908.19	N 32 0 16.91 W 104 10 35.90	
Hold to 3155' VS	9599.42	93.06	269.86	7655.92	2107.77	594.38	-2109.25	2.00	365482.99	589808.85	N 32 0 16.91 W 104 10 37.06	
	9600.00	93.06	269.86	7655.89	2108.35	594.38	-2109.83	0.00	365482.99	589808.27	N 32 0 16.91 W 104 10 37.06	
	9700.00	93.06	269.86	7650.56	2208.21	594.13	-2209.69	0.00	365482.74	589708.42	N 32 0 16.91 W 104 10 38.22	
	9800.00	93.06	269.86	7645.23	2308.07	593.89	-2309.54	0.00	365482.49	589608.57	N 32 0 16.91 W 104 10 39.38	
	9900.00	93.06	269.86	7639.90	2407.92	593.64	-2409.40	0.00	365482.25	589508.72	N 32 0 16.90 W 104 10 40.54	
	10000.00	93.06	269.86	7634.56	2507.78	593.39	-2509.26	0.00	365482.00	589408.88	N 32 0 16.90 W 104 10 41.70	
	10100.00	93.06	269.86	7629.23	2607.64	593.14	-2609.12	0.00	365481.75	589309.03	N 32 0 16.90 W 104 10 42.86	
	10200.00	93.06	269.86	7623.90	2707.50	592.90	-2708.97	0.00	365481.50	589209.18	N 32 0 16.90 W 104 10 44.02	
	10300.00	93.06	269.86	7618.56	2807.35	592.65	-2808.83	0.00	365481.26	589109.33	N 32 0 16.90 W 104 10 45.18	
	10400.00	93.06	269.86	7613.23	2907.21	592.40	-2908.69	0.00	365481.01	589009.48	N 32 0 16.90 W 104 10 46.34	
	10500.00	93.06	269.86	7607.90	3007.07	592.15	-3008.55	0.00	365480.76	588909.63	N 32 0 16.90 W 104 10 47.50	
	10600.00	93.06	269.86	7602.57	3106.93	591.91	-3108.40	0.00	365480.51	588809.79	N 32 0 16.90 W 104 10 48.66	
2"/100' DLS	10648.14	93.06	269.86	7600.00	3155.00	591.79	-3156.48	0.00	365480.39	588761.71	N 32 0 16.90 W 104 10 49.22	
	10700.00	92.02	269.86	7597.70	3206.81	591.66	-3208.28	2.00	365480.27	588709.92	N 32 0 16.90 W 104 10 49.82	
	10800.00	90.02	269.86	7595.92	3306.79	591.41	-3308.26	2.00	365480.02	588609.95	N 32 0 16.89 W 104 10 50.98	

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 ° ' ")
Hold to Target	10826.71	89.49	269.86	7596.04	3333.49	591.35	-3334.97	2.00	365479.95	588583.24	N 32 0 16.89 W 104 10 51.29	
	10900.00	89.49	269.86	7596.70	3406.78	591.16	-3408.26	0.00	365479.77	588509.96	N 32 0 16.89 W 104 10 52.14	
	11000.00	89.49	269.86	7597.60	3506.78	590.92	-3508.25	0.00	365479.52	588409.97	N 32 0 16.89 W 104 10 53.30	
	11100.00	89.49	269.86	7598.49	3606.77	590.67	-3608.25	0.00	365479.28	588309.98	N 32 0 16.89 W 104 10 54.46	
	11200.00	89.49	269.86	7599.39	3706.77	590.42	-3708.25	0.00	365479.03	588210.00	N 32 0 16.89 W 104 10 55.63	
	11300.00	89.49	269.86	7600.29	3806.77	590.17	-3808.24	0.00	365478.78	588110.01	N 32 0 16.89 W 104 10 56.79	
	11400.00	89.49	269.86	7601.19	3906.76	589.93	-3908.24	0.00	365478.53	588010.02	N 32 0 16.89 W 104 10 57.95	
	11500.00	89.49	269.86	7602.09	4006.76	589.68	-4008.23	0.00	365478.28	587910.04	N 32 0 16.89 W 104 10 59.11	
	11600.00	89.49	269.86	7602.98	4106.75	589.43	-4108.23	0.00	365478.04	587810.05	N 32 0 16.89 W 104 11 0 27	
	11700.00	89.49	269.86	7603.88	4206.75	589.18	-4208.22	0.00	365477.79	587710.06	N 32 0 16.88 W 104 11 1 43	
	11800.00	89.49	269.86	7604.78	4306.75	588.93	-4308.22	0.00	365477.54	587610.08	N 32 0 16.88 W 104 11 2 59	
	11900.00	89.49	269.86	7605.68	4406.74	588.69	-4408.22	0.00	365477.29	587510.09	N 32 0 16.88 W 104 11 3 75	
	12000.00	89.49	269.86	7606.57	4506.74	588.44	-4508.21	0.00	365477.05	587410.10	N 32 0 16.88 W 104 11 4 92	
	12100.00	89.49	269.86	7607.47	4606.73	588.19	-4608.21	0.00	365476.80	587310.12	N 32 0 16.88 W 104 11 6 08	
	12200.00	89.49	269.86	7608.37	4706.73	587.94	-4708.20	0.00	365476.55	587210.13	N 32 0 16.88 W 104 11 7 24	
	12300.00	89.49	269.86	7609.27	4806.73	587.69	-4808.20	0.00	365476.30	587110.14	N 32 0 16.88 W 104 11 8 40	

Cimarex
Cabrera 34
Federal #4H -
PBHL [400'
FNL, 100' FWL]

12381.47

89.49

269.86

7610.00

4888.19

587.49

-4889.66

0.00

365476.10

587028.69

N 32 0 16.88 W 104 11 9.35

Survey Type: Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Cabrera 34 Federal #4H Rev3 RM 13Dec18
	1	26.000	12381.466	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Cabrera 34 Federal #4H Rev3

Structure:

Cimarex Cabrera 34 Federal #4H

The map displays a survey area with a grid. The horizontal axis is labeled 'E-W (ft) Scale = 1:1239.08 ft' and ranges from -500 to 500. The vertical axis is labeled 'N-S (ft) Scale = 1:1239.08 ft' and ranges from -1500 to 1500. The map shows a 100' Hardline (top boundary) and a 330' Hardline (left boundary). The 330' Hardline is labeled 'Leaseline' and '330' Hardline'. The 100' Hardline is labeled '100' Hardline'. The map includes various points of interest, including 'Hold to 3155 VS', 'Hold to 27100 DLS', 'Landing Point: Hold to 1955 VS', and 'Hold Vertical'. It also includes a compass rose, a scale bar (1:1239.08 ft), and a north arrow. The map is labeled with 'Leaseline' and '100' Hardline'.

Cimarex Cabrera 34 Federal #4H Rev3 RM 13Dec18 Anti-Collision Summary Report

Analysis Date-24hr Time: December 13, 2018 - 15:55

Client: Cimarex

Field: NM Eddy County (NAD 83)

Structure: Cimarex Cabrera 34 Federal #4H

Slot: Cimarex Cabrera 34 Federal #4H

Well: Cimarex Cabrera 34 Federal #4H

Borehole: Original Borehole

Scan MD Range: 0.00ft ~ 12381.47ft

Analysis Method: 3D Least Distance

Reference Trajectory: Cimarex Cabrera 34 Federal #4H Rev3 RM 13Dec18 (Def Plan)

Depth Interval: Every 10.00 Measured Depth (ft)

Rule Set: NAL Procedure: D&M AntiCollision Standard S002

Min Pts: All local minima indicated.

Version / Patch: 2.10.753.0

Database \ Project: US1153APP452.dir.slb.com\drilling-NM Eddy County 2.10

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

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan:

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 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		

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Cabrera 34 Federal
#1H Rev2 RM 13Dec18 (Def Plan)

20.00	16.50	17.50	3.50	N/A	MAS = 5.03 (m)	0.00	0.00	CICt<=15m<15.00				Warning Alert
20.00	16.50	17.50	3.50	N/A	MAS = 5.03 (m)	26.00	26.00					Enter Alert
20.00	16.50	8.44	3.50	1.93	MAS = 5.03 (m)	1510.00	1510.00					WRP
20.04	16.50	8.32	3.54	1.90	MAS = 5.03 (m)	1560.00	1560.00					MinPts
20.12	16.50	8.34	3.62	1.90	MAS = 5.03 (m)	1580.00	1579.99					MINPT-Q-EQU
48.98	16.82	36.93	32.16	4.87	OSF 1.50	1860.00	1859.06	OSF>5.00				MinPt-Q-SF
1309.63	53.77	1272.95	1255.85	38.24	OSF 1.50	7230.00	7194.98					Exit Alert
1309.68	53.89	1272.92	1255.79	38.16	OSF 1.50	7300.00	7264.57					MinPts
1300.71	218.50	1154.21	1082.21	9.02	OSF 1.50	12381.47	7610.00					MinPts