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

Sundry Print Report

01/20/2022

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

Notice of Intent

Sundry ID: 2652401

Type of Submission: Notice of Intent

Type of Action: APD Change

Date Sundry Submitted: 01/13/2022

Time Sundry Submitted: 09:58

Date proposed operation will begin: 01/16/2022

Procedure Description: Mack Energy Corporation is requesting a change to the FTP, LTP and BHL for our Red Deer Federal Com 1H. Please see the attached revised plat, casing detail, cement detail, horizontal well plan and anti-collision report.

Application

Well Name: RED DEER FEDERAL COM

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Section 1 - General

APD ID: 10400032359

Tie to previous NOS?

Submission Date: 05/04/2021

BLM Office: Roswell

User: DEANA WEAVER

Title: Production Clerk

Federal/Indian APD: FED

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

Lease number: NMNM132939

Lease Acres:

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: MACK ENERGY CORPORATION

Operator letter of designation:

Operator Info

Operator Organization Name: MACK ENERGY CORPORATION

Operator Address: 11344 Lovington HWY

Zip: 88211

Operator PO Box:

Operator City: Artesia

State: NM

Operator Phone: (575)748-1288

Operator Internet Address: jerrys@mec.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: RED DEER FEDERAL COM

Well Number: 1H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: ROUND TANK

Pool Name: SAN ANDRES

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Is the proposed well in a Helium production area? N

Use Existing Well Pad? NO

New surface disturbance?

Type of Well Pad: SINGLE WELL

Multiple Well Pad Name:

Number:

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: DELINEATION

Well Name: RED DEER FEDERAL COM

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Is the proposed well in an area containing other mineral resources? USEABLE WATER

Describe sub-type:

Distance to town: 30 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 810 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: RED_DEER_FEDERAL_COM_1H_20180820153748.pdf

Well work start Date: 12/01/2018 **Duration:** 20 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 5306 **Reference Datum:**

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	810	FNL	1115	FWL	15S	28E	35	Aliquot NWNW	32.9775872	-104.1075662	CHAVES	NEW MEXICO	NEW MEXICO	F	FEE	3587	0	0	
KOP Leg #1	810	FNL	1115	FWL	15S	28E	35	Aliquot NWNW	32.9775872	-104.1075662	CHAVES	NEW MEXICO	NEW MEXICO	F	FEE	1649	1938	1938	
PPP Leg #1-1	100	FSL	965	FWL	15S	28E	26	Aliquot SWSW	32.9801003	-104.1080823	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 132939	1062	2626	2525	
EXIT Leg #1	100	FNL	965	FWL	15S	28E	26	Aliquot NWNW	32.9940799	-104.1080269	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 132939	792	8400	2795	

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Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
BHL Leg #1	10	FNL	965	FWL	15S	28E	26	Aliquot NWNW	32.9943272	-104.1080296	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 132939	792	8501	2795	

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
8021958	QUÁTERNARY	3587	0	0	ALLUVIUM	NONE	N
8021959	YATES	3077	510	510	ANHYDRITE, SILTSTONE	NATURAL GAS, OIL	N
8021960	SEVEN RIVERS	2848	739	739	ANHYDRITE, SILTSTONE	NATURAL GAS, OIL	N
8021961	QUEEN	2360	1227	1227	ANHYDRITE, SILTSTONE	NATURAL GAS, OIL	N
8021962	GRAYBURG	1961	1626	1626	ANHYDRITE, DOLOMITE, SILTSTONE	NATURAL GAS, OIL	N
8021963	SAN ANDRES	1639	1948	1948	ANHYDRITE, DOLOMITE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M

Rating Depth: 8501

Equipment: Rotating Head, Mud-Gas Separator

Requesting Variance? NO

Variance request:

Testing Procedure: The BOP/BOPE test shall include a low pressure test from 250 to 300psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

Choke Diagram Attachment:

choke_manifold_diagram_20180801113213.pdf

choke_manifold_20180801113222.pdf

BOP Diagram Attachment:

bop_diagram_20180801113231.pdf

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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	API	N	0	250	0	250			250	J-55	48	ST&C	5.929	4.691	BUOY	42.296	BUOY	4.
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	1200	0	1200			1200	J-55	36	ST&C	3.232	7.04	BUOY	10.768	BUOY	7.
3	PRODUCTION	8.75	7.0	NEW	API	N	0	3500	0	3500			3500	HCP-110	26	BUTT	5.729	3.107	BUOY	8.261	BUOY	3.6
4	PRODUCTION	8.75	5.5	NEW	API	N	3500	8501	3500	8501			5001	HCP-110	17	BUTT	5.729	3.711	BUOY	8.261	BUOY	3.1

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Deer_1_Pro_Csg_20180809104901.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Red_Deer_1_Pro_Csg_20180809103652.pdf

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County or Parish/State: CHAVES / NM

Well Number: 1H

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Unit or CA Number: NMNM142019

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Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead	250	0	250	100	1.61	14.4	340		RFC + 125 PF53 +2%PF1+ 5ppsPF42+.125p psPF29	20bbls Gelled Water 50sx of 11# Scavenger Cement
SURFACE	Tail		0	250	200	1.34	14.8		100	Class C + 1%PF1	20bbls Gelled Water 50sx of 11# Scavenger Cement
INTERMEDIATE	Lead	1200	0	1200	560	1.34	14.8	0	100	Class C 1% PF1	20bbls Gelled Water 50sx of 11# Scavenger Cement
PRODUCTION	Lead	3500	0	3500	300	1.84	13.2	1047.76	35	Class C 4% PF20 +4pps PF45+125pps PF29	20bbls Gelled Water 20bbls Chemical Wash 50sx of 11# Scavenger Cement

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Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

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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
PRODUCTION	Lead	8501	3500	8501	1410	1.48	13	1047.76	35	PVL + 1.3 (BWOW) PF44 +5% PF174+ .5% PF606 +.1%PF153 +.4pps PF44	20bbls Gelled Water 20bbls Chemical Wash 50sx of 11# Scavenger Cement

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: BOPE Brine Water

Describe the mud monitoring system utilized: Parson PVT with Pit Volume Recorder

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	250	SPUD MUD	9.6	10	74.8		11		160000		Gel Strength 0-1.0 Viscosity 34-38
250	1200	LSND/GEL	9.6	10	74.8		11		160000		Gel Strength 0-1.0 Viscosity 34-38
1800	8501	LSND/GEL	9.6	10	74.8		11		160000		Gel Strength 0-1.0 Viscosity 34-38

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Type of Well: OIL WELL

Allottee or Tribe Name:

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Section 6 - Test, Logging, Coring

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

None

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

CALIPER,CNL/FDC,DLL,FDC,GR

Coring operation description for the well:

Will evaluate after logging to determine the necessity for sidewall coring

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1404

Anticipated Surface Pressure: 778.54

Anticipated Bottom Hole Temperature(F): 95

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

red_deer_1_directional_plan_20180809113445.pdf
red_deer_1_h2s_20180820153917.pdf
h2s_contingency_plan_20180820154018.pdf
red_deer_1_drill_pro_20180820153829.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Other Variance attachment:

SUPO

Well Name: RED DEER FEDERAL COM

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Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Vicinity_Map_20180820123116.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

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:

Vicinity_Map_20180820123243.pdf

New road type: TWO-TRACK

Length: 900 Feet

Width (ft.): 14

Max slope (%): 1

Max grade (%): 2

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns. The average grade will be less than 1%. No turnouts are planned. No culverts, cattleguard, gates, low water crossing or fence cuts are necessary. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit located Sec. 19 T15S R29E and Sec 34 T15S R29E.

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: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche will be obtained from the nearest BLM approved caliche pit located Sec. 19 T15S R29E and Sec 34 T15S R29E

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County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

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Access onsite topsoil source depth: 2

Offsite topsoil source description:

Onsite topsoil removal process: Blade topsoil into windrow along- up slope edge of road.

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: The Maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns. The average grade will be less than 1%. No turnouts are planned, No culverts, cattleguard, gates, low water crossing or fence cuts are necessary. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit located Sec. 19 T15S R29E and Sec 34 T15S R29E.
Road Drainage Control Structures (DCS) description: The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns. The average grade will be less than 1%. No turnouts are planned, no culverts, cattleguard, gates, low water crossing or fence cuts are necessar. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit located Sec 19 T15S R29E and Sec 34 T15S R29E.
Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Red_Deer_Federal_Com__1H_well_map_20180809113526.pdf

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: A.) Mack Energy Corporation will produce this well at the Ajax CTB located NE/4 NE/4 Sec. 35 T15S R28E 990 FNL 990 FEL. B.) If the well is productive, contemplated facilities will be as follows: 1) San Andres Completion: Will be sent to the Ajax CTB located NE/4 NE/4 Sec. 35 T15S R28E. The facility is shown in attachment. 2) The tank battery and facilities including all flow lines and piping will be installed according API specifications. 3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors. 4) It will be necessary to run electric power if this well is productive. Power will be run by CVE and they will send in a separate plan for power. Proposed flow lines will tren South to the Ajax CTB. Flowline will be a 4" poly surface line, 3474' in length with a 40 psi working pressure.
Production Facilities map:

AJax__CTB_20180820152150.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Well Name: RED DEER FEDERAL COM

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Water source type: GW WELL

Water source use type: SURFACE CASING
STIMULATION
DUST CONTROL
CAMP USE
INTERMEDIATE/PRODUCTION CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: OTHER

Water source transport method: TRUCKING

Source land ownership: OTHER

Describe land ownership:

Source transportation land ownership: OTHER

Describe transportation land ownership:

Water source volume (barrels): 2000

Source volume (acre-feet): 0.25778618

Source volume (gal): 84000

Water source and transportation map:

Water_Source_20180801143720.pdf
Water_Source_2_20180801143657.pdf
Water_Source_3_20180801143709.pdf

Water source comments: Please see attachment. City/Municipal Water: Town of Hagerman S10 T14S R26E, Mor-West Sec 20 T17S R30E Brine Water: Salty Dog Sec 5 T19S R36E Wasserhund Sec 36 T16S R34E

New water well? NO

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:

Well Name: RED DEER FEDERAL COM

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Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: All caliche required for construction of drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from approved caliche pit @ Sec. 34 T15S R29E and/or Sec. 19 T15S R29E

Construction Materials source location attachment:

Caliche_Pits_20180801151817.pdf

Section 7 - Methods for Handling Waste

Waste type: PRODUCED WATER

Waste content description: Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) and trucked to the Round Tank SWD #1 L-0729 30-005-64095, Sec. 19 T15S R29E 1980 FSL 1980 FWL, Chaves County NM; produced oil will be collected in steel tanks until sold.

Amount of waste: 2080 barrels

Waste disposal frequency : Weekly

Safe containment description: Water produced from the well during completion may be disposed into a steel tank. After the well is permanently placed on production, produced water will be collected in tanks (fiberglass) and trucked to the Round Tank SWD #1 L-0729 30-005-64095, Sec. 19 T15S R29E 1980 FSL 1980 FWL, Chaves County NM; produced oil will be collected in steel tanks until sold.

Safe containmant attachment:

Waste disposal type: OFF-LEASE INJECTION **Disposal location ownership:** STATE

Disposal type description:

Disposal location description: Round Tank SWD #1 L-0729 30-005-64095, Sec. 19 R15S R29E 1980 FSL 1980 FWL Chaves County NM

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved local landfill. No toxic waste or hazardous chemicals will be produced by this operation.

Amount of waste:

Waste disposal frequency : Weekly

Safe containment description: Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved local landfill. No toxic water or hazardous chemicals will be produced by this operation.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Black Hawk will dispose at an approved location. Black Hawk Keith Willis 575-631-6378

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Waste type: SEWAGE

Waste content description: Sewage and Gray Water will be placed in container and hauled to an approved facility. Container and disposal handled by Black Hawk.
Amount of waste:

Waste disposal frequency : Weekly

Safe containment description: Sewage and Gray Water will be placed in container and hauled to an approved facility. Container and disposal handled by Black Hawk.
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Black Hawk will dispose at an approved location. Black Hawk Keith Willis 575-631-6378

Waste type: DRILLING

Waste content description: Drill cutting and fluids will be disposed into the steel tanks and hauled to R-360 disposal facility, permit number NM-01-0006. Located on HWY 62 to MM 66. Drilling fluids will be contained in steel tanks using a closed loop system. No pits will be used during drilling operations.
Amount of waste: 380 barrels

Waste disposal frequency : Weekly

Safe containment description: Drill cutting and fluids will be disposed into the steel tanks and hauled to R-360 disposal facility, permit number NM-01-0006. Located on HWY 62 to MM 66. Drilling fluids will be contained in steel tanks using a closed loop system. No pits will be used during drilling operations.
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: R-360 disposal facility, permit number NM-01-0006. Located on HWY 62 at MM 66.

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

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

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:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Site_Map_20180801152248.pdf

Comments: A) The well site and elevation plat for the proposed well is shown in attachment. It was staked by Maddron Surveying, Carlsbad, NM B) The drill pad layout, with elevation staked by Maddron Surveying, is shown in attachment. Dimension of the pad are shown. Topsoil, if available will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required. C) Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/ toolpusher's trailer will be on location during the drilling operations.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name:

Multiple Well Pad Number:

Recontouring attachment:

red_deer_reclaim_20180820122241.pdf

Drainage/Erosion control construction: Edges of location will be bermed to prevent run off or erosion.

Drainage/Erosion control reclamation: The maximum width of the running surface will be 14'. The road will be crowned and ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 3' wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage and to be consistent with local drainage patterns.

Well pad proposed disturbance (acres): 2.1192

Well pad interim reclamation (acres): 0.762

Well pad long term disturbance (acres): 1.43

Road proposed disturbance (acres): 0.4123

Road interim reclamation (acres): 0.1237

Road long term disturbance (acres): 0.2886

Powerline proposed disturbance (acres): 0

Powerline interim reclamation (acres): 0

Powerline long term disturbance (acres): 0

Pipeline proposed disturbance (acres): 0

Pipeline interim reclamation (acres): 0

Pipeline long term disturbance (acres): 0

Other proposed disturbance (acres): 0

Other interim reclamation (acres): 0

Other long term disturbance (acres): 0

Total proposed disturbance: 2.5315

Total interim reclamation: 0.8857

Total long term disturbance: 1.7186

Well Name: RED DEER FEDERAL COM	**Well Location:** T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662	**County or Parish/State:** CHAVES / NM
Well Number: 1H	**Type of Well:** OIL WELL	**Allottee or Tribe Name:**
Lease Number: NMNM132939	**Unit or CA Name:**	**Unit or CA Number:** NMNM142019
US Well Number: 3000564323	**Well Status:** Drilling Well	**Operator:** MACK ENERGY CORPORATION

Disturbance Comments:

Reconstruction method: Caliche will be removed, ground ripped and stockpiled topsoil used to re-contoured as close as possible to the original natural level to prevent erosion and ponding of water. 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure Live Seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.
Topsoil redistribution: Caliche will be removed, ground ripped and stockpiled topsoil used to re-contoured as close as possible to the original natural level to prevent erosion and ponding of water. 2) Area will be reseeded as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure Live Seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.
Soil treatment: Caliche will be removed, ground ripped and stockpiled topsoil used to re-contoured as close as possible to the original natural level to prevent erosion and ponding of water. 2) Area will be reseeding as per BLM specifications. Seeding will be done when moisture is available and weather permitting. Pure Live Seed will be used to prevent noxious weeds. Annual inspection of growth will be done and necessary measures taken to eliminate noxious weeds.
Existing Vegetation at the well pad: The area around the well site is grassland and topsoil is sandy. The vegetation is native scrub grass with sagebrush.
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: The area around the pipeline is grassland and topsoil is sandy. The vegetation is native scrub grass with sagebrush.
Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: The area is grassland and topsoil is sandy. The vegetation is native scrub grass with sagebrush.
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? YES

Seed harvest description: A cultural resources examination has been requested and will be forwarded to your office in the near future.
Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name:

Last Name:

Phone: (575)748-1288

Email: jerrys@mec.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: The holder shall seed all disturber areas with the seeds mixture listed by BLM. The seed mixture will be planted in the amounts specified in pounds of pure live seeds (PLS)* per acres. There shall be no primary or secondary noxious weeds in seed mixture. Seed will be tested and the viability tested of seed will be done in accordance with State Laws and the nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State Law (s) and available for inspection by the authorized office.

Weed treatment plan attachment:

Monitoring plan description: After all disturbed area have been satisfactorily prepared, these areas need to be re-vegetated with seed mixture provided by BLM. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may be repeated until re-vegetation is successful, as determined by the BLM.

Monitoring plan attachment:

Success standards: The seeding will be repeated until a satisfactory stand is established as determined by the authorized office. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Pit closure description: No pit

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:

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: 7/31/2018

Other SUPO Attachment

red_deer_1_supo_20180820153855.pdf
red_deer_1_gas_capture_20180820154428.pdf
red_deer_horizonal_20180820154448.pdf

PWD

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options?

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:

Well Name: RED DEER FEDERAL COM	**Well Location:** T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662	**County or Parish/State:** CHAVES / NM
Well Number: 1H	**Type of Well:** OIL WELL	**Allottee or Tribe Name:**
Lease Number: NMNM132939	**Unit or CA Name:**	**Unit or CA Number:** NMNM142019
US Well Number: 3000564323	**Well Status:** Drilling Well	**Operator:** MACK ENERGY CORPORATION

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options?

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?

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

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?

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?

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?

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Operator Certification

Operator Certification

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

NAME: DEANA WEAVER

Signed on: 01/13/2022

Title: Production Clerk

Street Address: 11344 Lovington HWY

City: Artesia **State:** NM **Zip:** 88211

Phone: (575)748-1288

Email address: dweaver@mec.com

Field Representative

Representative Name:

Street Address:

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

Phone:

Email address:

Well Name: RED DEER FEDERAL COM

Well Location: T15S / R28E / SEC 35 / NWNW / 32.9775872 / -104.1075662

County or Parish/State: CHAVES / NM

Well Number: 1H

Type of Well: OIL WELL

Allottee or Tribe Name:

Lease Number: NMNM132939

Unit or CA Name:

Unit or CA Number: NMNM142019

US Well Number: 3000564323

Well Status: Drilling Well

Operator: MACK ENERGY CORPORATION

NOI Attachments

Procedure Description

02012022171530001_20220113095740.pdf

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: JERRY SHERRELL

Signed on: JAN 13, 2022 09:57 AM

Name: MACK ENERGY CORPORATION

Title: Production Clerk

Street Address: 11344 Lovington HWY

City: Artesia **State:** NM

Phone: (575) 748-1288

Email address: jerrys@mec.com

Field Representative

Representative Name:

Street Address:

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

Phone:

Email address:

BLM Point of Contact

BLM POC Name: JENNIFER SANCHEZ

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5756270237

BLM POC Email Address: j1sanchez@blm.gov

Disposition: Approved

Disposition Date: 01/13/2022

Signature: Jennifer Sanchez

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

[1] API Number	[2] Pool Code	[3] Pool Name
30-005-64323	52770	Round Tank; San Andres

[4] Property Code	[5] Property Name	[6] Well Number
	RED DEER FEDERAL COM	1H

[7] OGRID No.	[8] Operator Name	[9] Elevation
13837	MACK ENERGY CORPORATION	3587.3

[10] Surface Location

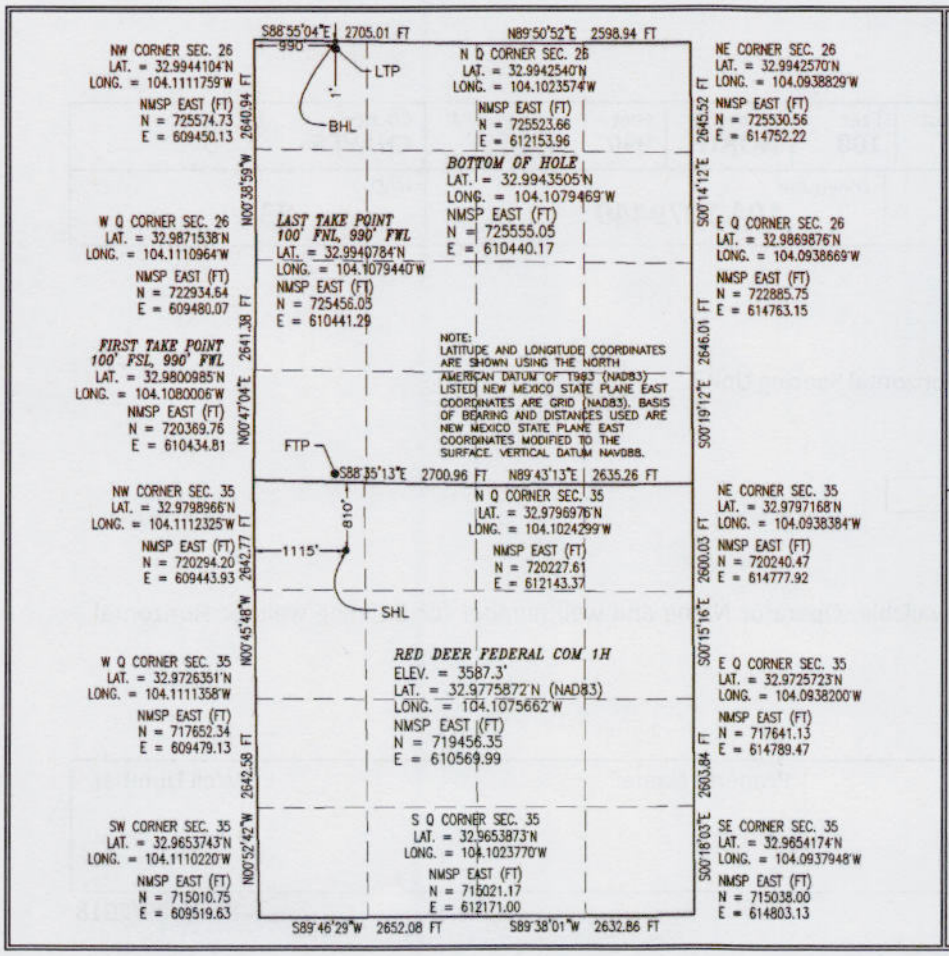
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	35	15 S	28 E		810	NORTH	1115	WEST	CHAVES

[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	26	15 S	28 E		1	NORTH	990	WEST	CHAVES

[12] Dedicated Acres	[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.



[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 — Date: 1/13/2022

Jerry W Sherrell
Printed Name

jerrys@mec.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.

JANUARY 10, 2022
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: SIMON F. JARAMILLO PLS 12797

SURVEY NO. 5306A

Intent ☐ As Drilled ☐

API #

Operator Name:	Property Name:	Well Number
MACK ENERGY CORPORATION	RED DEER FEDERAL COM	1H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
D	35	15S	28E		810	NORTH	1115	WEST	CHAVES

Latitude	Longitude	NAD
32.9775872	104.1075662	83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
M	26	15S	28E		100	SOUTH	990	WEST	CHAVES

Latitude	Longitude	NAD
32.9800985	104.1080006	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
D	26	15S	28E		100	NORTH	990	WEST	CHAVES

Latitude	Longitude	NAD
32.9940784	104.1079440	83

Is this well the defining well for the Horizontal Spacing Unit? ☐

Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

Red Deer Federal Com#1H

Surface- 17 ½" hole 250' 13 3/8" 48# J-55

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead	RFC + 12% PF53+2%PF1+5ppsPF42+ .125ppsPF29	14.4	1.61	7.357	100		
Tail	Class C+1%PF1	14.8	1.34	6.323	200	100	

Comments	20bbls Gelled Water. 50 sacks of 11# Scavenger cement.

Hole = cu/ft 340

Intermediate:12 ¼" hole 1,200' 9 5/8"-36#-J-55

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead							
Tail	Class C 1% PF1	14.8	1.34	6.323	560	100	surface

Comments	20bbls Gelled Water. 50 sacks of 11# Scavenger cement.

Red Deer Federal Com#1H

Production-8,600' 7" 26# HCP-110. 3,100' Crossover 7"X 5 ½". 5,500' 5 ½"-17# HCP-110

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead	Class "C" 4% PF20+4 pps PF45+125pps PF29	13.2	1.84	9.914	300	35	Surface
Tail	PVL+1.3 (BWOW) PF44+5%PF174+.5%PF606+.1%PF153+.4ppsPF44	13	1.48	7.577	1,660	35	1,400'

Comments	20bbls Gelled Water. 20bbls Chemical wash. 50 sacks of 11# Scavenger cement.

Hole = cu/ft 2172.36

Stage 2	Slurry	Density	Yield	# of sacks	% Excess	Slurry Top
Lead						
Tail						

Comments:	

Prior to any cement job it is Mack Energy policy to circulate bottoms up 1 time before commencing with cement operations. On wells where hole conditions have been an issue during the drilling and reaming process the number or circulations needs to increase to a minimum of 2 times around.

All production cement figured with an additional 10% for washout unless otherwise noted. Flush is figured with a 40' shoe joint. Do not displace more than 2bbls over calculated flush without prior approval.

PANTHER

Mack Energy

Chaves County
Sec 35-T15S-R28E
Red Deer Federal Com 1H

Wellbore #1

Plan: Plan #4

Standard Planning Report

11 January, 2022

MACK Energy Corporation

PANTHER

Microsoft
Planning Report

MACK Energy Corporation

Database:	EDM 5000.15 Single User Db	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Company:	Mack Energy	**TVD Reference:**	3587.3+18 @ 3605.30usft
Project:	Chaves County	**MD Reference:**	3587.3+18 @ 3605.30usft
Site:	Sec 35-T15S-R28E	**North Reference:**	Grid
Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4		

Project Chaves County

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Sec 35-T15S-R28E

Site Position:		**Northing:**	715,214.26 usft	**Latitude:**	32.965929
From:	Map	**Easting:**	610,416.50 usft	**Longitude:**	-104.108097
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.12 °

Well Red Deer Federal Com 1H

Well Position	**+N/-S**	4,242.09 usft	**Northing:**	719,456.35 usft	**Latitude:**	32.977587
	+E/-W	153.49 usft	**Easting:**	610,569.99 usft	**Longitude:**	-104.107566
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,587.30 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	01/11/22	6.77	60.60	47,852.20973272

Design Plan #4

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	358.78

Plan Survey Tool Program **Date** 01/11/22

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	8,599.15	Plan #4 (Wellbore #1)	MWD	
				MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,413.21	0.00	0.00	1,413.21	0.00	0.00	0.00	0.00	0.00	0.00	
1,913.21	10.00	357.60	1,910.67	43.48	-1.82	2.00	2.00	0.00	357.60	
2,263.21	10.00	357.60	2,255.36	104.21	-4.37	0.00	0.00	0.00	0.00	
2,828.27	55.00	346.76	2,720.01	393.69	-62.47	8.00	7.96	-1.92	-12.54	
3,028.27	55.00	346.76	2,834.72	553.16	-100.00	0.00	0.00	0.00	0.00	
3,403.36	90.39	0.07	2,945.00	902.82	-136.25	10.00	9.43	3.55	22.22	
8,599.36	90.39	0.07	2,910.00	6,098.70	-129.82	0.00	0.00	0.00	0.00	BHL Red Deer Feder

PANTHER

Microsoft
Planning Report

MACK Energy Corporation

Database:	EDM 5000.15 Single User Db	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Company:	Mack Energy	**TVD Reference:**	3587.3+18 @ 3605.30usft
Project:	Chaves County	**MD Reference:**	3587.3+18 @ 3605.30usft
Site:	Sec 35-T15S-R28E	**North Reference:**	Grid
Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,413.21	0.00	0.00	1,413.21	0.00	0.00	0.00	0.00	0.00	0.00
Nudge 2°/100'									
1,500.00	1.74	357.60	1,499.99	1.31	-0.06	1.31	2.00	2.00	0.00
1,600.00	3.74	357.60	1,599.87	6.08	-0.25	6.09	2.00	2.00	0.00
1,700.00	5.74	357.60	1,699.52	14.33	-0.60	14.34	2.00	2.00	0.00
1,800.00	7.74	357.60	1,798.83	26.05	-1.09	26.07	2.00	2.00	0.00
1,900.00	9.74	357.60	1,897.66	41.22	-1.73	41.25	2.00	2.00	0.00
1,913.21	10.00	357.60	1,910.67	43.48	-1.82	43.51	2.00	2.00	0.00
EON HLD 10° Inc.									
2,000.00	10.00	357.60	1,996.15	58.54	-2.45	58.58	0.00	0.00	0.00
2,100.00	10.00	357.60	2,094.63	75.89	-3.18	75.94	0.00	0.00	0.00
2,200.00	10.00	357.60	2,193.11	93.24	-3.91	93.30	0.00	0.00	0.00
2,263.21	10.00	357.60	2,255.36	104.21	-4.37	104.28	0.00	0.00	0.00
KOP BLD 8°/100'									
2,300.00	12.89	354.74	2,291.41	111.49	-4.88	111.57	8.00	7.85	-7.79
2,350.00	16.84	352.40	2,339.73	124.23	-6.35	124.33	8.00	7.91	-4.66
2,400.00	20.82	350.94	2,387.04	140.19	-8.71	140.34	8.00	7.94	-2.93
2,450.00	24.80	349.93	2,433.13	159.29	-11.94	159.51	8.00	7.96	-2.02
2,500.00	28.78	349.18	2,477.75	181.45	-16.03	181.75	8.00	7.97	-1.49
2,550.00	32.77	348.61	2,520.70	206.55	-20.97	206.95	8.00	7.98	-1.16
2,600.00	36.76	348.14	2,561.76	234.47	-26.72	234.99	8.00	7.98	-0.93
2,650.00	40.76	347.76	2,600.75	265.08	-33.26	265.72	8.00	7.99	-0.77
2,700.00	44.75	347.43	2,637.45	298.22	-40.55	299.01	8.00	7.99	-0.66
2,750.00	48.75	347.14	2,671.71	333.73	-48.57	334.69	8.00	7.99	-0.57
2,800.00	52.74	346.89	2,703.34	371.45	-57.27	372.59	8.00	7.99	-0.50
2,828.27	55.00	346.76	2,720.01	393.69	-62.47	394.93	8.00	7.99	-0.46
EOB HLD 55° Inc. 200'									
2,900.00	55.00	346.76	2,761.15	450.88	-75.93	452.39	0.00	0.00	0.00
3,000.00	55.00	346.76	2,818.51	530.62	-94.69	532.51	0.00	0.00	0.00
3,028.27	55.00	346.76	2,834.72	553.16	-100.00	555.16	0.00	0.00	0.00
CONT BLD 10°/100'									
3,050.00	57.02	347.74	2,846.87	570.73	-103.97	572.81	10.00	9.28	4.51
3,100.00	61.68	349.83	2,872.36	612.91	-112.31	615.16	10.00	9.33	4.19
3,150.00	66.37	351.75	2,894.25	657.27	-119.49	659.66	10.00	9.39	3.84
3,200.00	71.09	353.54	2,912.38	703.47	-125.44	705.98	10.00	9.43	3.57
3,250.00	75.82	355.22	2,926.62	751.15	-130.12	753.75	10.00	9.46	3.37
3,300.00	80.56	356.84	2,936.85	799.96	-133.50	802.62	10.00	9.49	3.23
3,350.00	85.31	358.41	2,943.00	849.52	-135.55	852.21	10.00	9.50	3.15

PANTHER

Microsoft
Planning Report

MACK Energy Corporation

Database:	EDM 5000.15 Single User Db	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Company:	Mack Energy	**TVD Reference:**	3587.3+18 @ 3605.30usft
Project:	Chaves County	**MD Reference:**	3587.3+18 @ 3605.30usft
Site:	Sec 35-T15S-R28E	**North Reference:**	Grid
Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,403.36	90.39	0.07	2,945.00	902.82	-136.25	905.51	10.00	9.51	3.10
EOB HLD 90.39° Inc.									
3,500.00	90.39	0.07	2,944.35	999.46	-136.13	1,002.13	0.00	0.00	0.00
3,600.00	90.39	0.07	2,943.67	1,099.46	-136.01	1,102.10	0.00	0.00	0.00
3,700.00	90.39	0.07	2,943.00	1,199.45	-135.89	1,202.07	0.00	0.00	0.00
3,800.00	90.39	0.07	2,942.33	1,299.45	-135.76	1,302.05	0.00	0.00	0.00
3,900.00	90.39	0.07	2,941.65	1,399.45	-135.64	1,402.02	0.00	0.00	0.00
4,000.00	90.39	0.07	2,940.98	1,499.45	-135.51	1,501.99	0.00	0.00	0.00
4,100.00	90.39	0.07	2,940.30	1,599.44	-135.39	1,601.96	0.00	0.00	0.00
4,200.00	90.39	0.07	2,939.63	1,699.44	-135.27	1,701.94	0.00	0.00	0.00
4,300.00	90.39	0.07	2,938.96	1,799.44	-135.14	1,801.91	0.00	0.00	0.00
4,400.00	90.39	0.07	2,938.28	1,899.44	-135.02	1,901.88	0.00	0.00	0.00
4,500.00	90.39	0.07	2,937.61	1,999.44	-134.90	2,001.85	0.00	0.00	0.00
4,600.00	90.39	0.07	2,936.94	2,099.43	-134.77	2,101.83	0.00	0.00	0.00
4,700.00	90.39	0.07	2,936.26	2,199.43	-134.65	2,201.80	0.00	0.00	0.00
4,800.00	90.39	0.07	2,935.59	2,299.43	-134.52	2,301.77	0.00	0.00	0.00
4,900.00	90.39	0.07	2,934.92	2,399.43	-134.40	2,401.74	0.00	0.00	0.00
5,000.00	90.39	0.07	2,934.24	2,499.42	-134.28	2,501.71	0.00	0.00	0.00
5,100.00	90.39	0.07	2,933.57	2,599.42	-134.15	2,601.69	0.00	0.00	0.00
5,200.00	90.39	0.07	2,932.90	2,699.42	-134.03	2,701.66	0.00	0.00	0.00
5,300.00	90.39	0.07	2,932.22	2,799.42	-133.90	2,801.63	0.00	0.00	0.00
5,400.00	90.39	0.07	2,931.55	2,899.41	-133.78	2,901.60	0.00	0.00	0.00
5,500.00	90.39	0.07	2,930.88	2,999.41	-133.66	3,001.58	0.00	0.00	0.00
5,600.00	90.39	0.07	2,930.20	3,099.41	-133.53	3,101.55	0.00	0.00	0.00
5,700.00	90.39	0.07	2,929.53	3,199.41	-133.41	3,201.52	0.00	0.00	0.00
5,800.00	90.39	0.07	2,928.85	3,299.40	-133.29	3,301.49	0.00	0.00	0.00
5,900.00	90.39	0.07	2,928.18	3,399.40	-133.16	3,401.47	0.00	0.00	0.00
6,000.00	90.39	0.07	2,927.51	3,499.40	-133.04	3,501.44	0.00	0.00	0.00
6,100.00	90.39	0.07	2,926.83	3,599.40	-132.91	3,601.41	0.00	0.00	0.00
6,200.00	90.39	0.07	2,926.16	3,699.40	-132.79	3,701.38	0.00	0.00	0.00
6,300.00	90.39	0.07	2,925.49	3,799.39	-132.67	3,801.36	0.00	0.00	0.00
6,400.00	90.39	0.07	2,924.81	3,899.39	-132.54	3,901.33	0.00	0.00	0.00
6,500.00	90.39	0.07	2,924.14	3,999.39	-132.42	4,001.30	0.00	0.00	0.00
6,600.00	90.39	0.07	2,923.47	4,099.39	-132.30	4,101.27	0.00	0.00	0.00
6,700.00	90.39	0.07	2,922.79	4,199.38	-132.17	4,201.25	0.00	0.00	0.00
6,800.00	90.39	0.07	2,922.12	4,299.38	-132.05	4,301.22	0.00	0.00	0.00
6,900.00	90.39	0.07	2,921.45	4,399.38	-131.92	4,401.19	0.00	0.00	0.00
7,000.00	90.39	0.07	2,920.77	4,499.38	-131.80	4,501.16	0.00	0.00	0.00
7,100.00	90.39	0.07	2,920.10	4,599.37	-131.68	4,601.13	0.00	0.00	0.00
7,200.00	90.39	0.07	2,919.43	4,699.37	-131.55	4,701.11	0.00	0.00	0.00
7,300.00	90.39	0.07	2,918.75	4,799.37	-131.43	4,801.08	0.00	0.00	0.00
7,400.00	90.39	0.07	2,918.08	4,899.37	-131.30	4,901.05	0.00	0.00	0.00
7,500.00	90.39	0.07	2,917.40	4,999.36	-131.18	5,001.02	0.00	0.00	0.00
7,600.00	90.39	0.07	2,916.73	5,099.36	-131.06	5,101.00	0.00	0.00	0.00
7,700.00	90.39	0.07	2,916.06	5,199.36	-130.93	5,200.97	0.00	0.00	0.00
7,800.00	90.39	0.07	2,915.38	5,299.36	-130.81	5,300.94	0.00	0.00	0.00
7,900.00	90.39	0.07	2,914.71	5,399.36	-130.69	5,400.91	0.00	0.00	0.00
8,000.00	90.39	0.07	2,914.04	5,499.35	-130.56	5,500.89	0.00	0.00	0.00
8,100.00	90.39	0.07	2,913.36	5,599.35	-130.44	5,600.86	0.00	0.00	0.00
8,200.00	90.39	0.07	2,912.69	5,699.35	-130.31	5,700.83	0.00	0.00	0.00
8,300.00	90.39	0.07	2,912.02	5,799.35	-130.19	5,800.80	0.00	0.00	0.00
8,400.00	90.39	0.07	2,911.34	5,899.34	-130.07	5,900.78	0.00	0.00	0.00
8,500.00	90.39	0.07	2,910.67	5,999.34	-129.94	6,000.75	0.00	0.00	0.00

PANTHER

Microsoft
Planning Report

MACK Energy Corporation

Database:	EDM 5000.15 Single User Db	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Company:	Mack Energy	**TVD Reference:**	3587.3+18 @ 3605.30usft
Project:	Chaves County	**MD Reference:**	3587.3+18 @ 3605.30usft
Site:	Sec 35-T15S-R28E	**North Reference:**	Grid
Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,599.36	90.39	0.07	2,910.00	6,098.70	-129.82	6,100.08	0.00	0.00	0.00
TD at 8599.36									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL Red Deer Federal - plan hits target center - Point	0.00	0.00	2,910.00	6,098.70	-129.82	725,555.05	610,440.17	32.994351	-104.107947
LTP Red Deer Federal (- plan misses target center by 1.29usft at 8500.00usft MD (2910.67 TVD, 5999.34 N, -129.94 E) - Point	0.00	0.00	2,910.67	5,999.68	-128.70	725,456.03	610,441.29	32.994078	-104.107944
FTP Red Deer Federal (- plan misses target center by 1.06usft at 3413.95usft MD (2944.93 TVD, 913.41 N, -136.24 E) - Point	0.00	0.00	2,944.93	913.41	-135.18	720,369.76	610,434.81	32.980099	-104.108001

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,413.21	1,413.21	0.00	0.00	Nudge 2°/100'
1,913.21	1,910.67	43.48	-1.82	EON HLD 10° Inc.
2,263.21	2,255.36	104.21	-4.37	KOP BLD 8°/100'
2,828.27	2,720.01	393.69	-62.47	EOB HLD 55° Inc. 200'
3,028.27	2,834.72	553.16	-100.00	CONT BLD 10°/100'
3,403.36	2,945.00	902.82	-136.25	EOB HLD 90.39° Inc.
8,599.36	2,910.00	6,098.70	-129.82	TD at 8599.36

PANTHER

Mack Energy

Chaves County
Sec 35-T15S-R28E
Red Deer Federal Com 1H

Wellbore #1
Plan #4

Anticollision Report

11 January, 2022

MACK Energy Corporation

PANTHER

Microsoft
Anticollision Report

MACK Energy Corporation

Company:	Mack Energy	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Project:	Chaves County	**TVD Reference:**	3587.3+18 @ 3605.30usft
Reference Site:	Sec 35-T15S-R28E	**MD Reference:**	3587.3+18 @ 3605.30usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.15 Single User Db
Reference Design:	Plan #4	**Offset TVD Reference:**	Offset Datum

Reference	Plan #4		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.00 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 01/11/22

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,599.15	Plan #4 (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 35-T15S-R28E						
Medicine Hat State Com #1H - Lateral - Lateral	3,099.49	7,406.27	60.43	-32.87	0.648	Level 1, CC, ES, SF
Medicine Hat State Com #1H - Pilot - Wellbore #1						Out of range
Red Deer Federal Com 2H - Wellbore #1 - Wellbore #1	2,166.46	2,125.28	1,143.01	1,133.77	123.706	CC
Red Deer Federal Com 2H - Wellbore #1 - Wellbore #1	8,599.36	8,331.00	1,326.37	1,113.62	6.234	ES, SF

Offset Design Sec 35-T15S-R28E - Medicine Hat State Com #1H - Lateral - Lateral — Offset Site Error: 0.00 usft

Survey Program: 532-MWD, 2017-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,200.00	1,200.00	6,814.12	2,858.30	2.56	74.19	-82.52	21.84	-166.37	1,672.94	1,639.81	33.13	50.490	
1,300.00	1,300.00	6,812.89	2,858.32	2.79	74.17	-82.94	20.61	-166.37	1,573.48	1,540.24	33.24	47.338	
1,400.00	1,400.00	6,811.64	2,858.33	3.01	74.15	-83.36	19.36	-166.37	1,474.09	1,440.72	33.37	44.178	
1,500.00	1,499.99	6,811.64	2,858.33	3.24	74.15	-95.65	19.36	-166.37	1,374.77	1,341.24	33.53	40.998	
1,600.00	1,599.87	6,814.96	2,858.29	3.47	74.21	-109.62	22.68	-166.37	1,275.60	1,241.84	33.76	37.789	
1,700.00	1,699.52	6,821.66	2,858.20	3.69	74.32	-119.82	29.38	-166.36	1,176.72	1,142.67	34.05	34.560	
1,800.00	1,798.83	6,831.78	2,858.08	3.93	74.50	-126.83	39.50	-166.34	1,078.28	1,043.85	34.43	31.322	
1,900.00	1,897.66	6,845.32	2,857.91	4.18	74.73	-131.49	53.04	-166.32	980.44	945.53	34.91	28.085	
2,000.00	1,996.15	6,861.06	2,857.73	4.45	75.00	-129.35	68.78	-166.28	883.18	847.64	35.53	24.855	
2,100.00	2,094.63	6,876.94	2,857.56	4.74	75.28	-126.03	84.65	-166.23	786.28	749.93	36.35	21.634	
2,200.00	2,193.11	6,894.24	2,857.36	5.04	75.58	-122.02	101.95	-166.18	689.87	652.44	37.44	18.427	
2,300.00	2,291.41	6,912.82	2,857.10	5.36	75.90	-123.16	120.53	-166.14	594.27	555.31	38.96	15.253	
2,400.00	2,387.04	6,942.02	2,856.58	5.76	76.41	-131.68	149.72	-166.14	501.21	460.20	41.01	12.222	
2,500.00	2,477.75	6,983.19	2,855.61	6.29	77.12	-136.22	190.89	-166.24	412.50	368.74	43.76	9.426	
2,600.00	2,561.76	7,033.38	2,854.32	7.00	77.99	-138.04	241.06	-166.50	329.91	282.43	47.48	6.948	
2,700.00	2,637.45	7,094.95	2,852.79	7.90	79.07	-137.44	302.61	-167.00	255.13	202.57	52.56	4.854	
2,800.00	2,703.34	7,166.76	2,850.88	9.01	80.32	-134.59	374.39	-167.79	189.37	129.92	59.46	3.185	
2,900.00	2,761.15	7,244.64	2,848.82	10.30	81.67	-125.41	452.23	-168.68	131.98	62.49	69.48	1.899	
3,000.00	2,818.51	7,323.18	2,847.15	11.66	83.01	-104.41	530.75	-169.36	82.40	-4.67	87.08	0.946	Level 1
3,099.49	2,870.73	7,406.27	2,845.74	13.09	84.43	-69.14	613.83	-169.22	60.43	-32.87	93.30	0.648	Level 1, CC, ES, SF
3,100.00	2,872.36	7,405.65	2,845.75	13.10	84.42	-67.78	613.21	-169.23	60.46	-32.10	92.56	0.653	Level 1
3,200.00	2,912.38	7,494.87	2,842.86	14.66	85.95	-34.21	702.36	-167.09	75.79	11.50	64.29	1.179	Level 2
3,300.00	2,936.85	7,581.99	2,839.96	16.31	87.45	-20.16	789.40	-165.28	96.67	45.86	50.81	1.903	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

PANTHER

Microsoft
Anticollision Report

MACK Energy Corporation

Company:	Mack Energy	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Project:	Chaves County	**TVD Reference:**	3587.3+18 @ 3605.30usft
Reference Site:	Sec 35-T15S-R28E	**MD Reference:**	3587.3+18 @ 3605.30usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.15 Single User Db
Reference Design:	Plan #4	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 35-T15S-R28E - Medicine Hat State Com #1H - Lateral - Lateral

Offset Site Error: 0.00 usft

Survey Program: 532-MWD, 2017-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,400.00	2,945.01	7,581.99	2,839.96	17.99	87.45	-16.38	789.40	-165.28	150.75	116.29	34.46	4.374	
3,500.00	2,944.35	7,581.99	2,839.96	19.69	87.45	-16.17	789.40	-165.28	233.69	208.94	24.76	9.439	
3,600.00	2,943.67	7,581.99	2,839.96	21.41	87.45	-16.17	789.40	-165.28	326.34	306.33	20.01	16.311	
3,700.00	2,943.00	7,581.99	2,839.96	23.14	87.45	-16.17	789.40	-165.28	422.35	404.88	17.47	24.174	
3,800.00	2,942.33	7,581.99	2,839.96	24.89	87.45	-16.17	789.40	-165.28	519.87	503.87	16.00	32.483	
3,900.00	2,941.65	7,581.99	2,839.96	26.65	87.45	-16.17	789.40	-165.28	618.19	603.08	15.11	40.918	
4,000.00	2,940.98	7,581.99	2,839.96	28.43	87.45	-16.17	789.40	-165.28	716.96	702.42	14.54	49.307	
4,100.00	2,940.30	7,581.99	2,839.96	30.21	87.45	-16.17	789.40	-165.28	816.04	801.87	14.17	57.576	
4,200.00	2,939.63	7,581.99	2,839.96	31.99	87.45	-16.17	789.40	-165.28	915.32	901.39	13.93	65.702	
4,300.00	2,938.96	7,581.99	2,839.96	33.78	87.45	-16.17	789.40	-165.28	1,014.74	1,000.97	13.77	73.686	
4,400.00	2,938.28	7,581.99	2,839.96	35.58	87.45	-16.17	789.40	-165.28	1,114.26	1,100.60	13.67	81.540	
4,500.00	2,937.61	7,581.99	2,839.96	37.38	87.45	-16.17	789.40	-165.28	1,213.86	1,200.27	13.60	89.279	
4,600.00	2,936.94	7,581.99	2,839.96	39.18	87.45	-16.17	789.40	-165.28	1,313.53	1,299.97	13.55	96.919	
4,700.00	2,936.26	7,581.99	2,839.96	40.99	87.45	-16.17	789.40	-165.28	1,413.24	1,399.71	13.53	104.473	
4,800.00	2,935.59	7,581.99	2,839.96	42.80	87.45	-16.17	789.40	-165.28	1,512.98	1,499.47	13.51	111.951	
4,900.00	2,934.92	7,581.99	2,839.96	44.61	87.45	-16.17	789.40	-165.28	1,612.76	1,599.25	13.51	119.363	

PANTHER

Microsoft
Anticollision Report

MACK Energy Corporation

Company:	Mack Energy	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Project:	Chaves County	**TVD Reference:**	3587.3+18 @ 3605.30usft
Reference Site:	Sec 35-T15S-R28E	**MD Reference:**	3587.3+18 @ 3605.30usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.15 Single User Db
Reference Design:	Plan #4	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 35-T15S-R28E - Red Deer Federal Com 2H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.00 usft

Survey Program: 130-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	76.19	281.76	1,146.03	1,180.20				
100.00	100.00	96.15	96.15	0.09	0.10	76.17	282.13	1,145.70	1,179.94	1,179.75	0.19	6,336.757	
200.00	200.00	195.76	195.74	0.32	0.27	76.11	283.15	1,144.87	1,179.38	1,178.79	0.59	2,015.815	
300.00	300.00	292.20	292.19	0.54	0.47	76.05	284.33	1,144.28	1,179.07	1,178.06	1.02	1,160.513	
391.32	391.32	381.75	381.73	0.75	0.66	75.99	285.49	1,143.93	1,179.02	1,177.61	1.41	837.323	
400.00	400.00	390.31	390.29	0.77	0.68	75.98	285.60	1,143.91	1,179.02	1,177.58	1.45	815.780	
500.00	500.00	490.98	490.94	0.99	0.89	75.92	286.89	1,143.59	1,179.03	1,177.15	1.88	627.102	
600.00	600.00	591.64	591.59	1.22	1.11	75.83	288.54	1,143.02	1,178.87	1,176.55	2.32	507.952	
612.14	612.14	602.59	602.54	1.24	1.13	75.82	288.74	1,142.96	1,178.87	1,176.50	2.37	497.063	
700.00	700.00	688.75	688.68	1.44	1.31	75.74	290.34	1,142.73	1,179.04	1,176.29	2.75	428.745	
800.00	800.00	793.45	793.36	1.67	1.53	75.66	292.09	1,142.20	1,178.96	1,175.77	3.19	369.412	
900.00	900.00	893.50	893.40	1.89	1.74	75.56	293.85	1,141.46	1,178.68	1,175.05	3.63	324.690	
1,000.00	1,000.00	997.46	997.34	2.12	1.96	75.47	295.68	1,140.61	1,178.33	1,174.26	4.07	289.197	
1,100.00	1,100.00	1,099.44	1,099.29	2.34	2.17	75.38	297.31	1,139.40	1,177.58	1,173.07	4.51	260.898	
1,200.00	1,200.00	1,196.63	1,196.47	2.56	2.38	75.29	298.87	1,138.37	1,176.96	1,172.02	4.94	238.109	
1,300.00	1,300.00	1,297.22	1,297.04	2.79	2.59	75.20	300.51	1,137.36	1,176.41	1,171.03	5.38	218.653	
1,400.00	1,400.00	1,403.42	1,403.22	3.01	2.82	75.11	302.10	1,136.12	1,175.67	1,169.84	5.83	201.700	
1,500.00	1,499.99	1,507.28	1,507.06	3.24	3.03	77.53	303.26	1,134.59	1,174.26	1,167.99	6.27	187.300	
1,600.00	1,599.87	1,645.53	1,645.22	3.47	3.32	77.95	301.52	1,130.22	1,169.73	1,162.96	6.78	172.641	
1,700.00	1,699.52	1,735.94	1,735.53	3.69	3.51	78.52	298.77	1,126.85	1,163.67	1,156.48	7.19	161.887	
1,800.00	1,798.83	1,824.18	1,823.61	3.93	3.69	79.34	293.89	1,124.95	1,157.97	1,150.36	7.60	152.293	
1,900.00	1,897.66	1,916.05	1,915.30	4.18	3.88	80.37	288.52	1,123.59	1,152.50	1,144.45	8.04	143.283	
2,000.00	1,996.15	2,004.00	2,003.15	4.45	4.06	81.33	284.26	1,122.59	1,147.58	1,139.09	8.50	135.029	
2,100.00	2,094.63	2,088.31	2,087.43	4.74	4.24	82.15	282.17	1,122.05	1,143.98	1,135.01	8.96	127.615	
2,166.46	2,160.07	2,125.28	2,124.38	4.94	4.32	82.44	282.74	1,122.23	1,143.01	1,133.77	9.24	123.706 CC	
2,200.00	2,193.11	2,141.80	2,140.87	5.04	4.35	82.54	283.71	1,122.57	1,143.26	1,133.89	9.37	121.985	
2,300.00	2,291.41	2,197.69	2,196.28	5.36	4.48	85.40	290.52	1,124.73	1,146.90	1,137.11	9.79	117.124	
2,400.00	2,387.04	2,259.79	2,256.62	5.76	4.64	88.63	304.66	1,128.11	1,154.99	1,144.68	10.31	111.987	
2,500.00	2,477.75	2,317.31	2,311.15	6.29	4.79	89.60	322.46	1,132.26	1,167.52	1,156.56	10.96	106.479	
2,600.00	2,561.76	2,379.94	2,369.12	7.00	4.97	89.78	345.25	1,138.63	1,184.83	1,173.00	11.83	100.183	
2,700.00	2,637.45	2,505.27	2,481.05	7.90	5.49	90.47	400.44	1,149.14	1,203.07	1,189.78	13.29	90.517	
2,800.00	2,703.34	2,592.88	2,554.24	9.01	6.01	90.49	448.16	1,154.97	1,222.65	1,207.75	14.90	82.054	
2,900.00	2,761.15	2,708.04	2,641.38	10.30	6.93	91.48	523.15	1,158.38	1,241.32	1,224.21	17.11	72.558	
3,000.00	2,818.51	2,764.48	2,679.57	11.66	7.48	91.86	564.66	1,160.12	1,261.92	1,242.98	18.94	66.641	
3,100.00	2,872.36	2,833.91	2,722.35	13.10	8.23	89.11	619.17	1,164.23	1,284.26	1,263.22	21.03	61.060	
3,200.00	2,912.38	2,927.00	2,778.62	14.66	9.29	87.02	693.10	1,170.09	1,301.51	1,277.88	23.62	55.094	
3,300.00	2,936.85	2,994.31	2,816.02	16.31	10.16	86.07	748.82	1,174.91	1,314.13	1,288.06	26.07	50.407	
3,400.00	2,945.01	3,089.12	2,857.76	17.99	11.50	86.63	833.54	1,181.89	1,322.07	1,292.95	29.12	45.400	
3,500.00	2,944.35	3,177.75	2,883.23	19.69	12.87	87.75	918.11	1,187.77	1,327.40	1,295.21	32.19	41.241	
3,600.00	2,943.67	3,373.85	2,897.57	21.41	16.10	88.43	1,112.97	1,193.26	1,329.84	1,292.51	37.33	35.624	
3,700.00	2,943.00	3,463.61	2,896.36	23.14	17.61	88.40	1,202.71	1,192.58	1,328.99	1,288.41	40.58	32.752	
3,723.37	2,942.84	3,482.67	2,895.98	23.55	17.93	88.39	1,221.77	1,192.55	1,328.93	1,287.63	41.30	32.177	
3,800.00	2,942.33	3,548.61	2,894.31	24.89	19.02	88.34	1,287.69	1,192.84	1,329.21	1,285.48	43.73	30.398	
3,900.00	2,941.65	3,686.03	2,890.60	26.65	21.22	88.22	1,425.05	1,192.05	1,328.58	1,280.84	47.74	27.831	
4,000.00	2,940.98	3,782.32	2,889.67	28.43	22.67	88.20	1,521.32	1,190.34	1,326.69	1,275.72	50.97	26.030	
4,100.00	2,940.30	3,888.03	2,890.24	30.21	24.37	88.26	1,627.01	1,188.35	1,324.64	1,270.18	54.46	24.324	
4,200.00	2,939.63	3,984.60	2,889.87	31.99	26.04	88.27	1,723.56	1,186.64	1,322.74	1,264.82	57.92	22.837	
4,300.00	2,938.96	4,072.13	2,888.57	33.78	27.57	88.23	1,811.07	1,185.35	1,321.18	1,259.94	61.23	21.576	
4,400.00	2,938.28	4,166.56	2,886.18	35.58	29.18	88.16	1,905.47	1,184.75	1,320.47	1,255.83	64.63	20.430	
4,500.00	2,937.61	4,265.78	2,885.10	37.38	30.82	88.14	2,004.68	1,184.24	1,319.84	1,251.76	68.08	19.387	
4,581.83	2,937.06	4,340.44	2,884.35	38.85	32.07	88.13	2,079.34	1,184.12	1,319.62	1,248.83	70.79	18.641	
4,600.00	2,936.94	4,357.02	2,884.09	39.18	32.34	88.12	2,095.92	1,184.15	1,319.63	1,248.24	71.39	18.484	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

PANTHER

Microsoft
Anticollision Report

MACK Energy Corporation

Company:	Mack Energy	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Project:	Chaves County	**TVD Reference:**	3587.3+18 @ 3605.30usft
Reference Site:	Sec 35-T15S-R28E	**MD Reference:**	3587.3+18 @ 3605.30usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.15 Single User Db
Reference Design:	Plan #4	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 35-T15S-R28E - Red Deer Federal Com 2H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.00 usft

Survey Program: 130-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,700.00	2,936.26	4,449.49	2,882.05	40.99	33.96	88.06	2,188.36	1,184.60	1,320.05	1,245.24	74.81	17.645	
4,800.00	2,935.59	4,543.50	2,879.28	42.80	35.60	87.97	2,282.32	1,185.54	1,321.00	1,242.76	78.24	16.885	
4,900.00	2,934.92	4,639.33	2,878.06	44.61	37.20	87.95	2,378.14	1,186.89	1,322.30	1,240.66	81.64	16.196	
5,000.00	2,934.24	4,735.51	2,877.34	46.42	38.82	87.95	2,474.30	1,188.55	1,323.91	1,238.84	85.07	15.563	
5,100.00	2,933.57	4,834.49	2,876.03	48.24	40.57	87.92	2,573.25	1,190.44	1,325.72	1,237.10	88.62	14.959	
5,200.00	2,932.90	4,933.33	2,874.28	50.05	42.34	87.88	2,672.05	1,192.36	1,327.57	1,235.37	92.20	14.398	
5,300.00	2,932.22	5,037.24	2,871.93	51.87	44.18	87.81	2,775.92	1,194.44	1,329.52	1,233.64	95.87	13.868	
5,400.00	2,931.55	5,157.50	2,869.68	53.69	46.25	87.75	2,896.15	1,195.40	1,330.21	1,230.41	99.80	13.329	
5,500.00	2,930.88	5,273.51	2,867.26	55.51	48.26	87.68	3,012.14	1,195.15	1,329.97	1,226.33	103.64	12.832	
5,600.00	2,930.20	5,402.79	2,864.73	57.33	50.48	87.60	3,141.36	1,192.30	1,327.67	1,220.01	107.66	12.332	
5,700.00	2,929.53	5,497.11	2,863.91	59.15	52.05	87.59	3,235.63	1,189.48	1,324.57	1,213.51	111.06	11.927	
5,800.00	2,928.85	5,590.01	2,864.26	60.98	53.62	87.62	3,328.50	1,187.19	1,321.94	1,207.48	114.46	11.549	
5,900.00	2,928.18	5,681.10	2,863.62	62.80	55.24	87.62	3,419.57	1,185.45	1,319.91	1,202.00	117.91	11.194	
6,000.00	2,927.51	5,773.78	2,861.34	64.63	56.91	87.55	3,512.22	1,184.24	1,318.55	1,197.16	121.40	10.862	
6,100.00	2,926.83	5,869.55	2,857.36	66.45	58.63	87.40	3,607.89	1,183.30	1,317.60	1,192.68	124.92	10.547	
6,200.00	2,926.16	5,968.70	2,853.45	68.28	60.32	87.26	3,706.96	1,182.51	1,316.84	1,188.41	128.42	10.254	
6,277.26	2,925.64	6,036.35	2,851.60	69.69	61.44	87.19	3,774.59	1,182.21	1,316.49	1,185.55	130.93	10.055	
6,300.00	2,925.49	6,055.38	2,851.13	70.10	61.75	87.18	3,793.61	1,182.25	1,316.52	1,184.87	131.65	10.000	
6,400.00	2,924.81	6,147.03	2,849.20	71.93	63.25	87.12	3,885.23	1,183.06	1,317.34	1,182.38	134.96	9.761	
6,500.00	2,924.14	6,254.08	2,848.59	73.76	65.02	87.13	3,992.28	1,183.75	1,317.84	1,179.27	138.57	9.510	
6,600.00	2,923.47	6,337.35	2,848.61	75.59	66.43	87.16	4,075.54	1,184.73	1,318.86	1,177.10	141.76	9.303	
6,700.00	2,922.79	6,427.43	2,848.25	77.41	67.99	87.17	4,165.60	1,186.78	1,320.98	1,175.87	145.11	9.103	
6,800.00	2,922.12	6,521.92	2,846.82	79.24	69.66	87.14	4,260.05	1,189.34	1,323.60	1,175.02	148.58	8.908	
6,900.00	2,921.45	6,631.30	2,844.12	81.07	71.58	87.06	4,369.35	1,192.26	1,326.25	1,173.89	152.36	8.705	
7,000.00	2,920.77	6,750.17	2,841.48	82.90	73.61	86.99	4,488.18	1,193.99	1,327.67	1,171.40	156.27	8.496	
7,100.00	2,920.10	6,866.99	2,839.61	84.73	75.59	86.94	4,604.98	1,194.08	1,327.66	1,167.58	160.08	8.293	
7,200.00	2,919.43	6,974.40	2,839.35	86.56	77.42	86.96	4,712.39	1,193.17	1,326.66	1,162.91	163.75	8.102	
7,300.00	2,918.75	7,071.40	2,838.60	88.39	79.10	86.95	4,809.38	1,192.27	1,325.61	1,158.35	167.26	7.925	
7,400.00	2,918.08	7,163.85	2,836.84	90.22	80.76	86.90	4,901.81	1,191.74	1,324.98	1,154.25	170.73	7.761	
7,500.00	2,917.40	7,269.91	2,834.41	92.05	82.62	86.83	5,007.84	1,191.31	1,324.56	1,150.15	174.41	7.595	
7,600.00	2,916.73	7,369.11	2,833.13	93.88	84.34	86.80	5,107.03	1,190.45	1,323.60	1,145.64	177.95	7.438	
7,700.00	2,916.06	7,462.76	2,830.71	95.71	85.97	86.72	5,200.65	1,190.09	1,323.19	1,141.80	181.39	7.295	
7,800.00	2,915.38	7,570.19	2,828.86	97.55	87.82	86.67	5,308.05	1,189.57	1,322.65	1,137.58	185.07	7.147	
7,900.00	2,914.71	7,671.57	2,829.08	99.38	89.51	86.71	5,409.43	1,188.87	1,321.78	1,133.18	188.59	7.009	
8,000.00	2,914.04	7,765.88	2,830.07	101.21	91.12	86.77	5,503.73	1,188.34	1,321.01	1,128.96	192.04	6.879	
8,077.12	2,913.52	7,836.48	2,829.86	102.62	92.35	86.79	5,574.34	1,188.26	1,320.81	1,126.13	194.68	6.785	
8,100.00	2,913.36	7,856.92	2,829.65	103.04	92.72	86.78	5,594.77	1,188.30	1,320.83	1,125.37	195.45	6.758	
8,200.00	2,912.69	7,949.00	2,827.98	104.87	94.37	86.74	5,686.84	1,188.91	1,321.42	1,122.51	198.91	6.643	
8,300.00	2,912.02	8,041.58	2,825.47	106.71	95.99	86.66	5,779.38	1,189.76	1,322.34	1,120.02	202.32	6.536	
8,400.00	2,911.34	8,142.83	2,822.28	108.54	97.75	86.55	5,880.57	1,191.47	1,324.06	1,118.17	205.89	6.431	
8,500.00	2,910.67	8,244.82	2,820.01	110.37	99.52	86.49	5,982.52	1,192.35	1,324.88	1,115.40	209.48	6.325	
8,599.36	2,910.00	8,331.00	2,817.80	112.19	101.03	86.42	6,068.66	1,193.64	1,326.37	1,113.62	212.75	6.234	ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

PANTHER

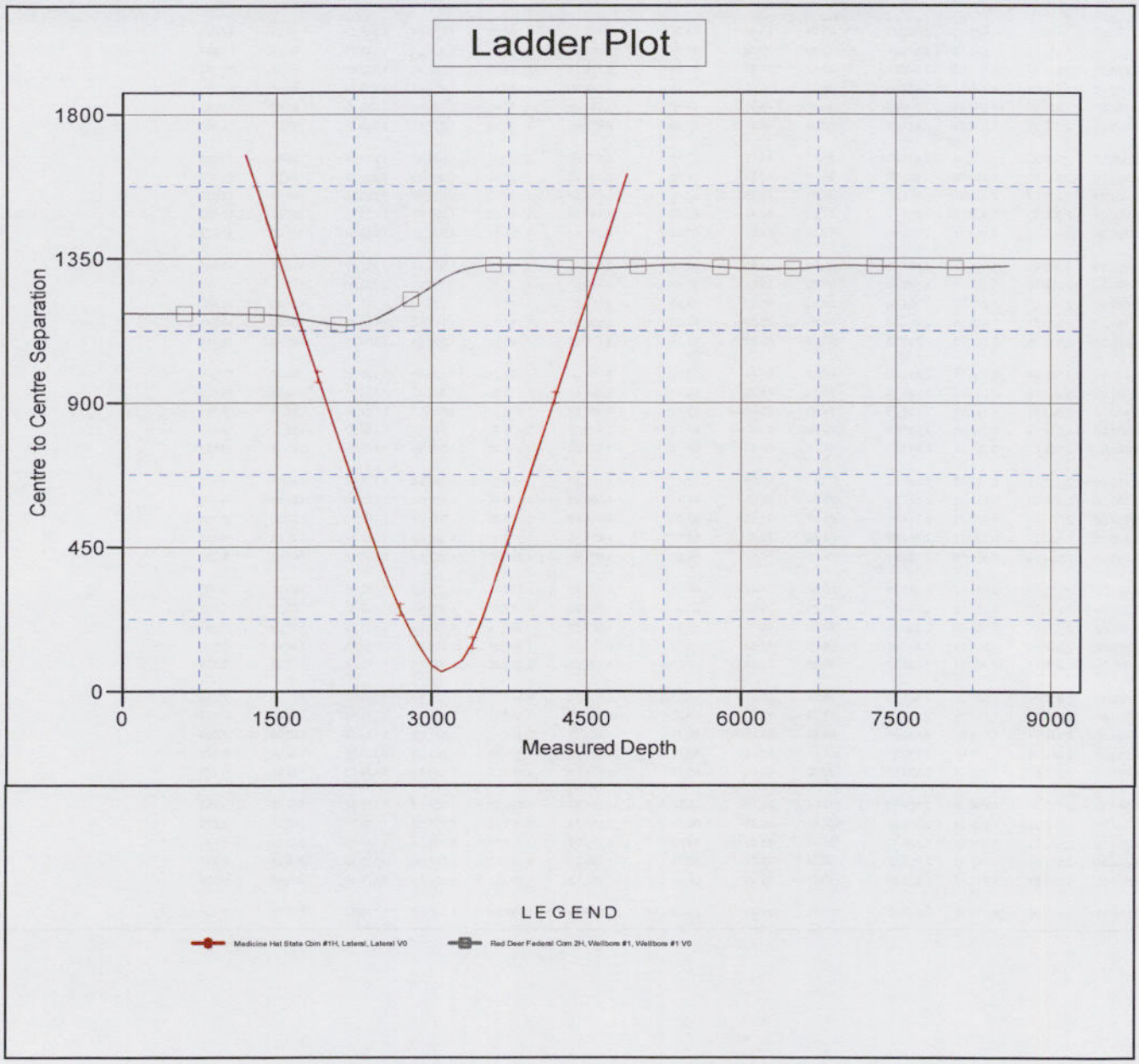
Microsoft
Anticollision Report

MACK Energy Corporation

Company:	Mack Energy	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Project:	Chaves County	**TVD Reference:**	3587.3+18 @ 3605.30usft
Reference Site:	Sec 35-T15S-R28E	**MD Reference:**	3587.3+18 @ 3605.30usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.15 Single User Db
Reference Design:	Plan #4	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 3587.3+18 @ 3605.30usft
Offset Depths are relative to Offset Datum
Central Meridian is -104.333334

Coordinates are relative to: Red Deer Federal Com 1H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.12°



CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

PANTHER

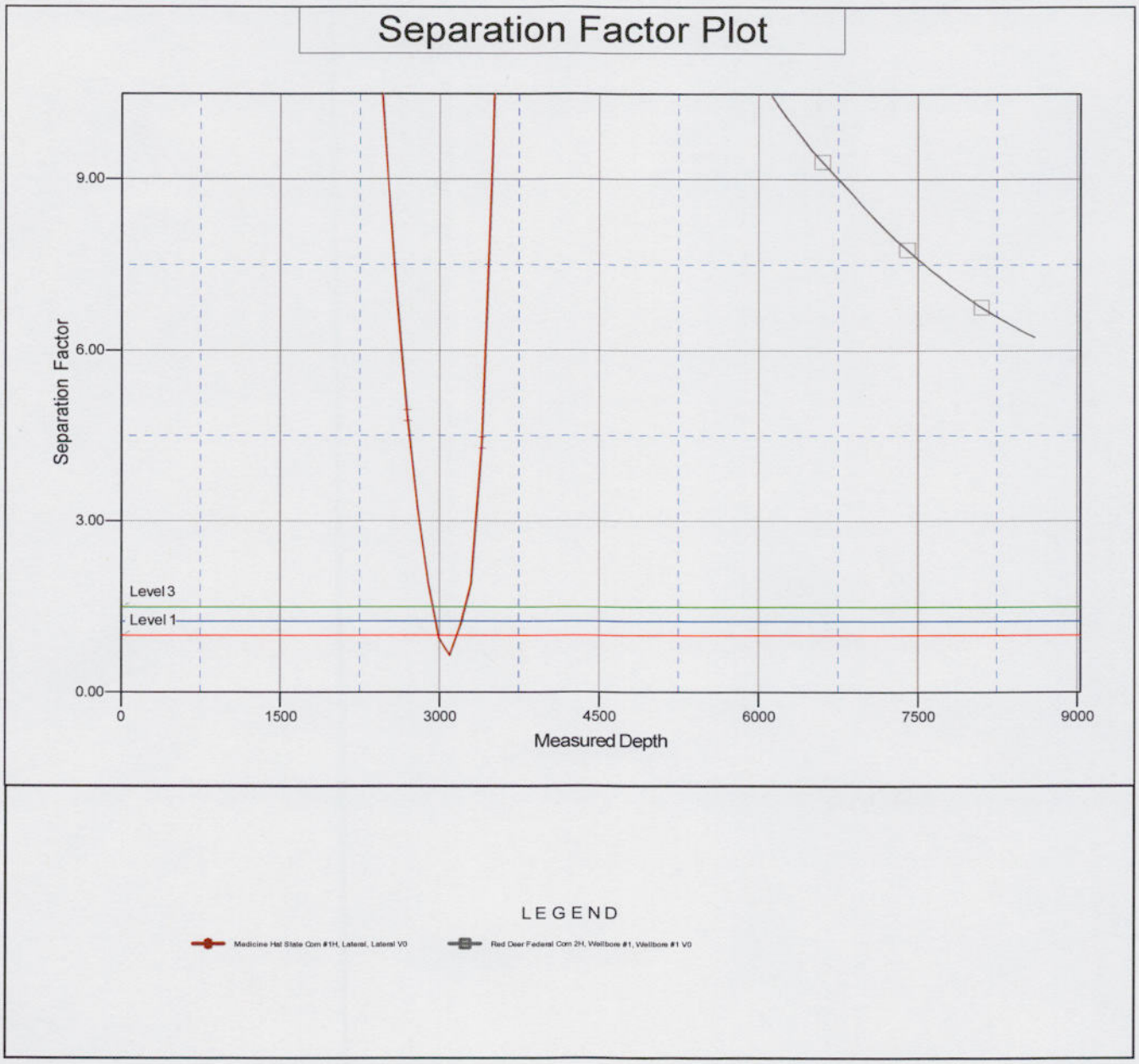
Microsoft
Anticollision Report

MACK Energy Corporation

Company:	Mack Energy	**Local Co-ordinate Reference:**	Well Red Deer Federal Com 1H
Project:	Chaves County	**TVD Reference:**	3587.3+18 @ 3605.30usft
Reference Site:	Sec 35-T15S-R28E	**MD Reference:**	3587.3+18 @ 3605.30usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	Red Deer Federal Com 1H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.15 Single User Db
Reference Design:	Plan #4	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 3587.3+18 @ 3605.30usft	Coordinates are relative to: Red Deer Federal Com 1H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.12°

Separation Factor Plot



CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Casing Design **Well:** Red Deer Federal Com #1H

String Size & Function: 13 3/8 in surface x intermediate

Total Depth: 250 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 9.6 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 9.6 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 9.6 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 124.8 psi Burst: 124.8 psi, joint strength: 124.8 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	250 ft to 0 ft		Make up Torque ft-lbs		Total ft = 250
O.D.	Weight	Grade Threads	opt.	min.	mx.
13.375 inches	48 #/ft	J-55 ST&C	3,220	2,420	4,030
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
740	2,370 psi	433 ,000 #	744 ,000 #		12.559

2nd segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

3rd segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

4th segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

5th segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

6th segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

Select 1st segment bottom 250

250 ft	to	0 ft	
13.375	0	J-55	ST&C

S.F.	Actual		Desire
collapse	5.929487	>=	1.125
burst-b	4.691211	>=	1.25
burst-t	4.74		

Top of segment 1 (ft) 0

Select 2nd segment from bottom

0 ft	to	0 ft	
0	0	0	0

S.F.	Actual		Desire
collapse	#DIV/0!	>=	1.125
burst-b	0	>=	1.25
burst-t	0		
jnt strngth	42.29573	>=	1.8

	Top of segment 2 (ft)		S.F.	Actual		Desire
Select	3rd segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to 0 ft		burst-t	0		
0	0 0 0		jnt strngth	0	>=	1.8
	Top of segment 3 (ft)		S.F.	Actual		Desire
Select	4th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to 0 ft		burst-t	0		
0	0 0 0		jnt strngth	0	>=	1.8
	Top of segment 4 (ft)		S.F.	Actual		Desire
Select	5th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to ft		burst-t	0		
0	0 0 0		jnt strngth	0	>=	1.8
	Top of segment 5 (ft)		S.F.	Actual		Desire
Select	6th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to ft		burst-t	0		
0	0 0 0		jnt strngth	0	>=	1.8
	Top of segment 6 (ft)		jnt strngth		>=	1.8

use in colapse calculations across different pressured formations

Three gradient pressure function

Depth of evaluation:	1,200 ft		516	psi @	1,200 ft
Top of salt:	2,400 ft	fx #1	516		
Base of salt:	3,700 ft	fx #2	900		
TD of intermediate:	4,600 ft	fx #3	540		

Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft

fx #1	fx #2	fx #3
0.43	0.75	0.45

1) Calculate neutral point for buckling with temperature affects computed also
2) Surface burst calculations & kick tolerance in surface pressure for burst
3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
4) Raise joint strength safety factor up to next level on page #2
5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	#DIV/0!
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	214.782
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	369.048
S.F. Body yield strength top of segment:	72.6744

Collapse calculations for 1st segment - casing evacuated

Buoyancy factor collapse:	0.85312	
calculations for bottom of segment @	250 ft	
hydrostatic pressure collapse - backside:	124.8 psi	
Axial load @ bottom of section	0 lbs	previous segments
Axial load factor:	0	load/(pipe body yield strength)
Collapse strength reduction factor:	1	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	740 psi	
Actual safety factor	5.92949	adjusted casing rating / actual pressure

Casing Design Well: Red Deer Federal Com #1H

String Size & Function: 9 5/8 in surface intermediate x

Total Depth: 1200 ft TVD: 1200 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 10 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 10 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 624 psi Burst: 624 psi, joint strength: 624 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	1200 ft to 0 ft		Make up Torque ft-lbs		Total ft = 1200
O.D.	Weight	Grade Threads	opt.	min.	mx.
9.625 inches	36 #/ft	J-55 LT&C	3,940	2,960	4,930
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
2,020 psi	3,520 psi	394 ,000 #	564 ,000 #		8.765

2nd segment	ft to ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

3rd segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

4th segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

5th segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

6th segment	0 ft to 0 ft		Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade Threads	opt.	min.	mx.
inches	#/ft				
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift
psi	psi	,000 #	,000 #		

Select 1st segment bottom 1200

1200 ft	to	0 ft	
9.625	0	J-55	LT&C

S.F.	Actual		Desire
collapse	3.237179	>=	1.125
burst-b	7.04	>=	1.25
burst-t	7.04		

Top of segment 1 (ft) 0

Select 2nd segment from bottom

0 ft	to	0 ft	
0	0	0	0

S.F.	Actual		Desire
collapse	#DIV/0!	>=	1.125
burst-b	0	>=	1.25
burst-t	0		
jnt strngth	10.76785	>=	1.8

	Top of segment 2 (ft)	0	S.F.	Actual		Desire
Select	3rd segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
	0 ft to 0 ft		burst-t	0		
	0 0 0 0		jnt strngth	0	>=	1.8
	Top of segment 3 (ft)		S.F.	Actual		Desire
Select	4th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
	0 ft to 0 ft		burst-t	0		
	0 0 0 0		jnt strngth	0	>=	1.8
	Top of segment 4 (ft)		S.F.	Actual		Desire
Select	5th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
	0 ft to ft		burst-t	0		
	0 0 0 0		jnt strngth	0	>=	1.8
	Top of segment 5 (ft)		S.F.	Actual		Desire
Select	6th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
	0 ft to ft		burst-t	0		
	0 0 0 0		jnt strngth	0	>=	1.8
	Top of segment 6 (ft)		jnt strngth		>=	1.8

use in collapse calculations across different pressured formations

Three gradient pressure function

Depth of evaluation:	1,200 ft		516	psi @	1,200 ft
Top of salt:	2,400 ft	fx #1	516		
Base of salt:	3,700 ft	fx #2	900		
TD of intermediate:	4,600 ft	fx #3	540		

Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft

fx #1	fx #2	fx #3
0.43	0.75	0.45

1) Calculate neutral point for buckling with temperature affects computed also
2) Surface burst calculations & kick tolerance in surface pressure for burst
3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
4) Raise joint strength safety factor up to next level on page #2
5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	#DIV/0!
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	260.582
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	373.016
S.F. Body yield strength top of segment:	15.4139

Collapse calculations for 1st segment - casing evacuated

Buoyancy factor collapse:	0.847		
calculations for bottom of segment @	1200	ft	
hydrostatic pressure collapse - backside:	624	psi	
Axial load @ bottom of section	0	lbs	previous segments
Axial load factor:	0		load/(pipe body yield strength)
Collapse strength reduction factor:	1		Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	2020	psi	
Actual safety factor	3.23718		adjusted casing rating / actual pressure

Casing Design Well: Red Deer Federal Com #1H

String Size & Function: 5 1/2" x 7" in Production x

Total Depth: 8600 ft TVD: 2910 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 10.3 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10.3 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 10.3 #/gal Safety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1558.596 psi Burst: 1558.596 psi, joint strength: 1558.596 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment	8600 ft to 3100 ft			Make up Torque ft-lbs		Total ft = 5500
O.D.	Weight	Grade	Threads	opt.	min.	mx.
5.5 inches	17 #/ft	HCP-110	Buttress	4,620	3,470	5,780
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
8,580 psi	10,640 psi-lrcr	568 ,000 #		546 ,000 #		4.767

2nd segment	3100 ft to 1400 ft			Make up Torque ft-lbs		Total ft = 1300
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	HCP-110	Buttress	6,930	5,200	8,660
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
7,800 psi	9,950 psi-lrcr	853 ,000 #		830 ,000 #		6.151

3rd segment	1400 ft to 0 ft			Make up Torque ft-lbs		Total ft = 1400
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	HCP-110	LT&C	6930	5200	8660
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
7,800 psi	9,950 psi	693 ,000 #		830 ,000 #		6.151

4th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

5th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

6th segment	0 ft to 0 ft			Make up Torque ft-lbs		Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield		Drift
psi	psi	,000 #		,000 #		

Select 1st segment bottom 8501

	S.F.	Actual		Desire
	collapse	5.504954	>=	1.125
	burst-b	3.712699	>=	1.25
	burst-t	3.604776		

8600 ft to 3100 ft
5.5 0 HCP-110 Buttress

Top of segment 1 (ft) 3100

Select 2nd segment from bottom

	S.F.	Actual		Desire
	collapse	4.562101	>=	1.125
	burst-b	3.371007	>=	1.25
	burst-t	3.340989		
	jnt strngth	7.211294	>=	1.8

3100 ft to 1400 ft
7 26 HCP-110 Buttress

	Top of segment 2 (ft)	1400	S.F.	Actual		Desire
Select	3rd segment from bottom		collapse	9.929072	>=	1.125
			burst-b	3.340989	>=	1.25
1400 ft	to 0 ft		burst-t	3.316667		
7	26 HCP-110 LT&C		jnt strngth	7.353457	>=	1.8
	Top of segment 3 (ft)	0	S.F.	Actual		Desire
Select	4th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to 0 ft		burst-t	0		
0 0	0 0		jnt strngth	5.97415	>=	1.8
	Top of segment 4 (ft)		S.F.	Actual		Desire
Select	5th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to ft		burst-t	0		
0 0	0 0		jnt strngth	0	>=	1.8
	Top of segment 5 (ft)		S.F.	Actual		Desire
Select	6th segment from bottom		collapse	#DIV/0!	>=	1.125
			burst-b	0	>=	1.25
0 ft	to ft		burst-t	0		
0 0	0 0		jnt strngth	0	>=	1.8
	Top of segment 6 (ft)		jnt strngth		>=	1.8

use in collapse calculations across different pressured formations

Three gradient pressure function

Depth of evaluation:	1,200 ft			516	psi @	1,200 ft
Top of salt:	2,400 ft	fx #1	516			
Base of salt:	3,700 ft	fx #2	900			
TD of intermediate:	4,600 ft	fx #3	540			

Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft

fx #1	fx #2	fx #3
0.43	0.75	0.45

1) Calculate neutral point for buckling with temperature affects computed also
2) Surface burst calculations & kick tolerance in surface pressure for burst
3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
4) Raise joint strength safety factor up to next level on page #2
5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	4.92335
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	795.518
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	764.706
S.F. Body yield strength top of segment:	6.93198

Collapse calculations for 1st segment - casing evacuated

Buoyancy factor collapse:	0.84241		
calculations for bottom of segment @	2910	ft	
hydrostatic pressure collapse - backside:	1558.6	psi	
Axial load @ bottom of section	0	lbs	previous segments
Axial load factor:	0		load/(pipe body yield strength)
Collapse strength reduction factor:	1		Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	8580	psi	
Actual safety factor	5.50495		adjusted casing rating / actual pressure

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
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Santa Fe, NM 87505

COMMENTS

Action 73877

COMMENTS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 73877
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO review 1/27/2022	1/27/2022
jagarcia	Approved, John Garcia, Petroleum Engineer	2/9/2022

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CONDITIONS

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CONDITIONS

Created By	Condition	Condition Date
jagarcia	None	2/9/2022