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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

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-015-43382		2 Pool Code 55510		3 Pool Name Scanlon Draw; Bone Spring					
4 Property Code 38436		5 Property Name EMERALD PWU 20				6 Well Number 66H			
7 OGRID NO. 6137		8 Operator Name DEVON ENERGY PRODUCTION CO., L.P.				9 Elevation 3322'			
10 Surface Location									
UL or lot no. L	Section 20	Township 19S	Range 29E	Lot Idn	Feet from the 1726	North/South line SOUTH	Feet From the 248	East/West line WEST	County EDDY
11 Bottom Hole Location If Different From Surface									
UL or lot no. I	Section 20	Township 19S	Range 29E	Lot Idn	Feet from the 1775	North/South line SOUTH	Feet from the 270	East/West line EAST	County EDDY
12 Dedicated Acres 160.00		13 Joint or Infill		14 Consolidation Code		15 Order No. State			

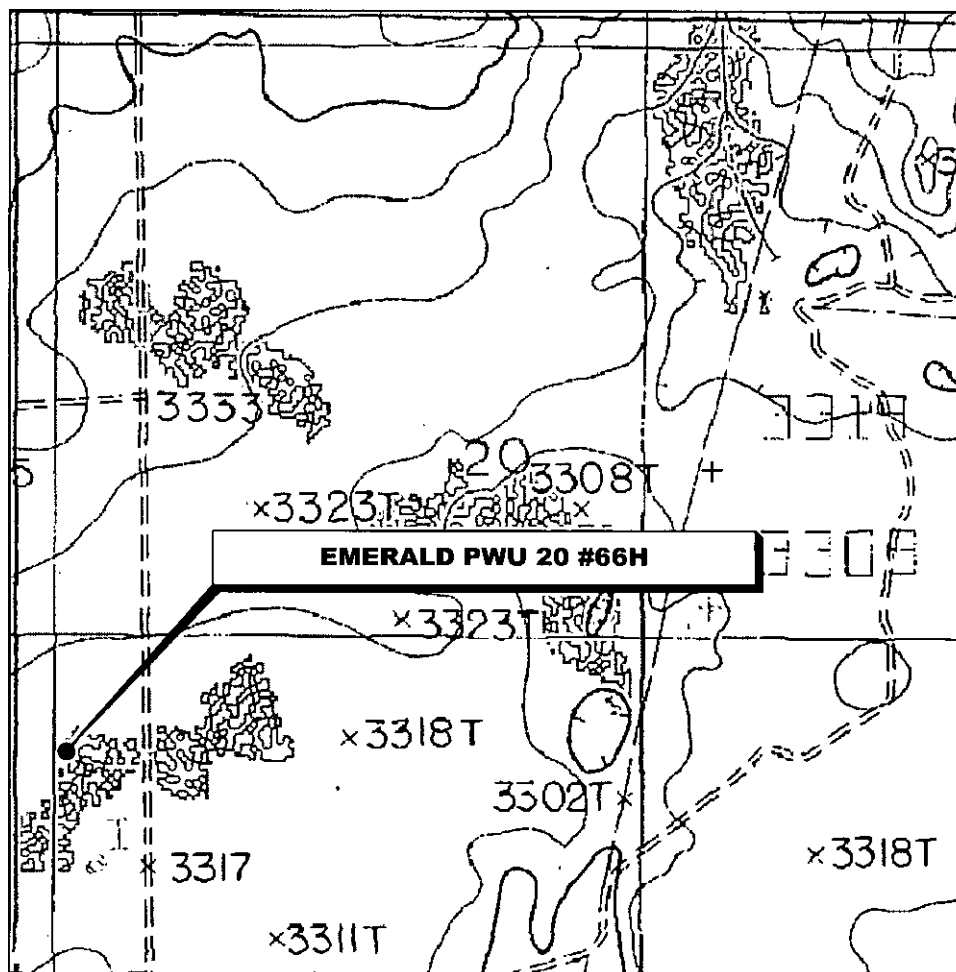
No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16 S 89°50'39" E 2646.55' GEODETIC DATA NAD 83 GRID - NM EAST SURFACE LOCATION N 598045.6 - E 611682.8 LAT: 32.64386750° N LONG: 104.10479305° W BOTTOM HOLE N 598086.1 - E 616460.2 LAT: 32.64394951° N LONG: 104.08927172° W		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: <i>Linda Good</i> Date: 9/18/2015 Printed Name: Linda Good E-mail Address: linda.good@dmv.com	
18 S 89°30'53" E (GRID) 4778.77' (HORIZ.) 248' S. L. 1726' N 89°49'21" W 2653.86'		19 N 89°57'12" E 2658.56' CORNER DATA NAD 83 GRID - NM EAST A: FOUND LIMESTONE ROCK N 596321.1 - E 611438.5 B: FOUND LIMESTONE ROCK 12"x4"x4.5" N 598960.3 - E 611433.1 C: FOUND 1/2" REBAR N 601599.9 - E 611427.2 D: FOUND 1/2" REBAR N 601592.7 - E 614073.1 E: FOUND 1/2" REBAR N 601594.9 - E 616731.0 F: FOUND LIMESTONE ROCK 11"x4.5"x6.5" N 598952.1 - E 616727.9 G: FOUND RAILROAD SPIKE N 596311.3 - E 616734.9 H: FOUND LIMESTONE ROCK 7"x8"x3" N 596312.9 - E 614091.7 270' B. H. 1775' N 89°57'58" W 2643.78'	
20 2639.80' N 00°07'01" W 2640.26' N 00°07'47" W		21 S 00°04'01" W 2643.41' S 00°09'05" E 2641.42' 20451 REV1: 9-14-2015	

RRC - Firm No.: TX 10193838 NM 4655451 - Job No.: LS1508466

9/23/2015

LOCATION VERIFICATION MAP



SECTION 20, TWP. 19 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY CO., NEW MEXICO

OPERATOR: Devon Energy Production
Company, L. P.

LEASE: Emerald PWU 20

WELL NO.: 66H

ELEVATION: 3322'

LOCATION: 1726' FSL & 248' FWL

CONTOUR INTERVAL: 10'

USGS TOPO. SOURCE MAP:

Illinois Camp, NM (P. E. 1985)

Firm No.: TX 10193838 NM 4655451

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1	9-14-2015	REB
NO.	DATE	PS
JOB NO.:	LS1508466	
DWG. NO.:	1508466LVM	

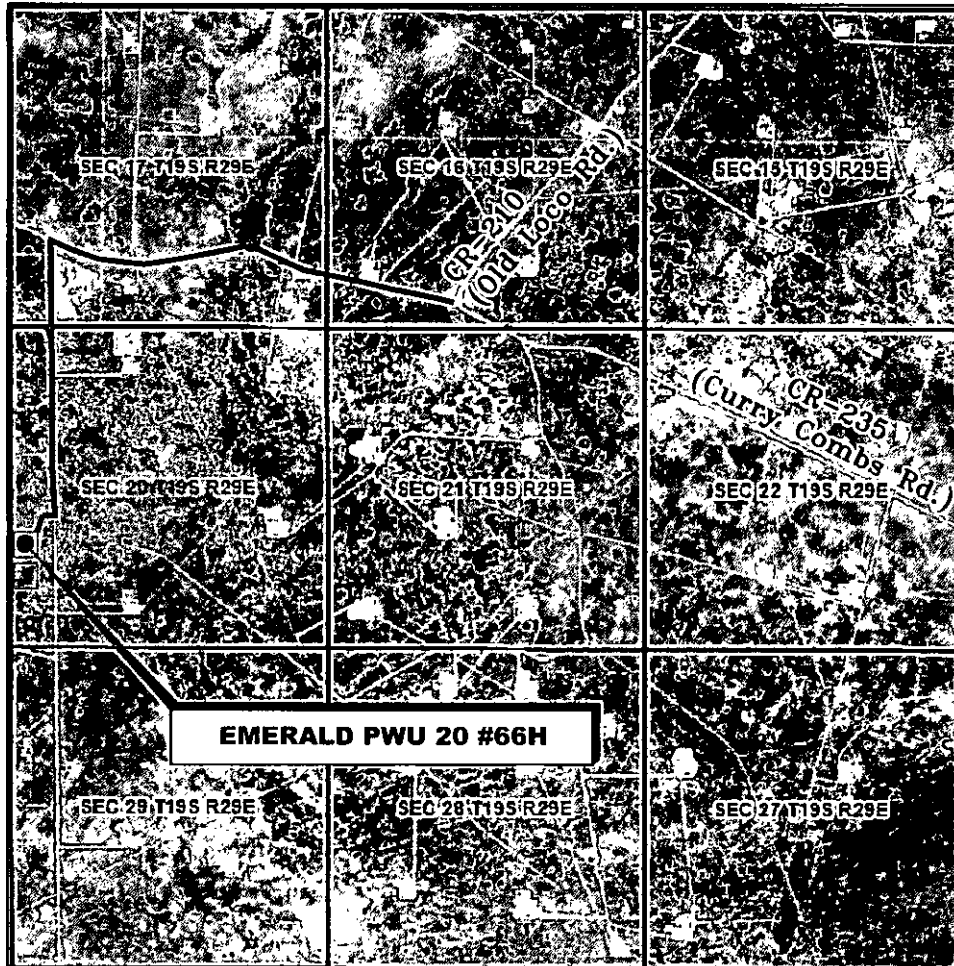
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1"=1000'
DATE: 9-9-2015
SURVEYED BY: BC/CG
DRAWN BY: PDJ
APPROVED BY: REB
SHEET : 1 OF 7

VICINITY MAP

NOT TO SCALE



*SECTION 20, TWP. 19 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY CO., NEW MEXICO*

OPERATOR: Devon Energy Production
Company, L. P.

LOCATION: 1726' FSL & 248' FWL
ELEVATION: 3322'

LEASE: Emerald PWU 20
WELL NO.: 66H

Firm No.: TX 10193838 NM 4655451

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DWG. NO.:	1508466VM	

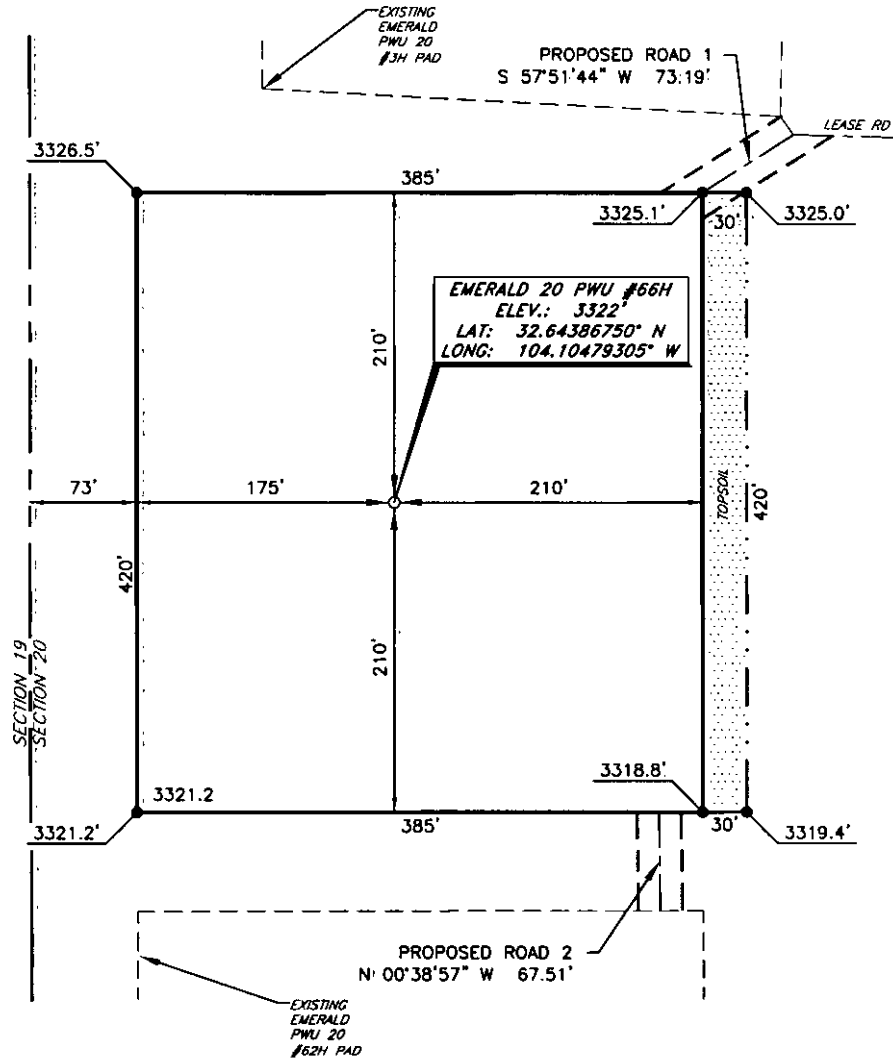
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308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: NTS
DATE: 9-9-2015
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APPROVED BY: REB
SHEET : 2 OF 7

DEVON ENERGY PRODUCTION CO., LP.

EMERALD PWU 20 #66H
(1726' FSL & 248' FWL)
SECTION 20, T19S, R29E,
N. M. P. M., EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

From the intersection of CR-235 (Curry Combs Rd.) and CR-210 (Old Loco Rd.)
Go West on CR-235 approx. 1.3 miles to a lease road on the left;
Turn left and go South approx. 0.8 miles to a lease road on the right;
Turn right and go West approx. 192 feet to a proposed road on left;
Turn left and go Southwest approx. 363 feet;
Well location is on the left 67 feet.

SCALE: 1" = 100'

BEARINGS ARE
NAD 83 GRID - NM EAST
DISTANCES ARE GROUND

Firm No.: TX 10193838 NM 4655451

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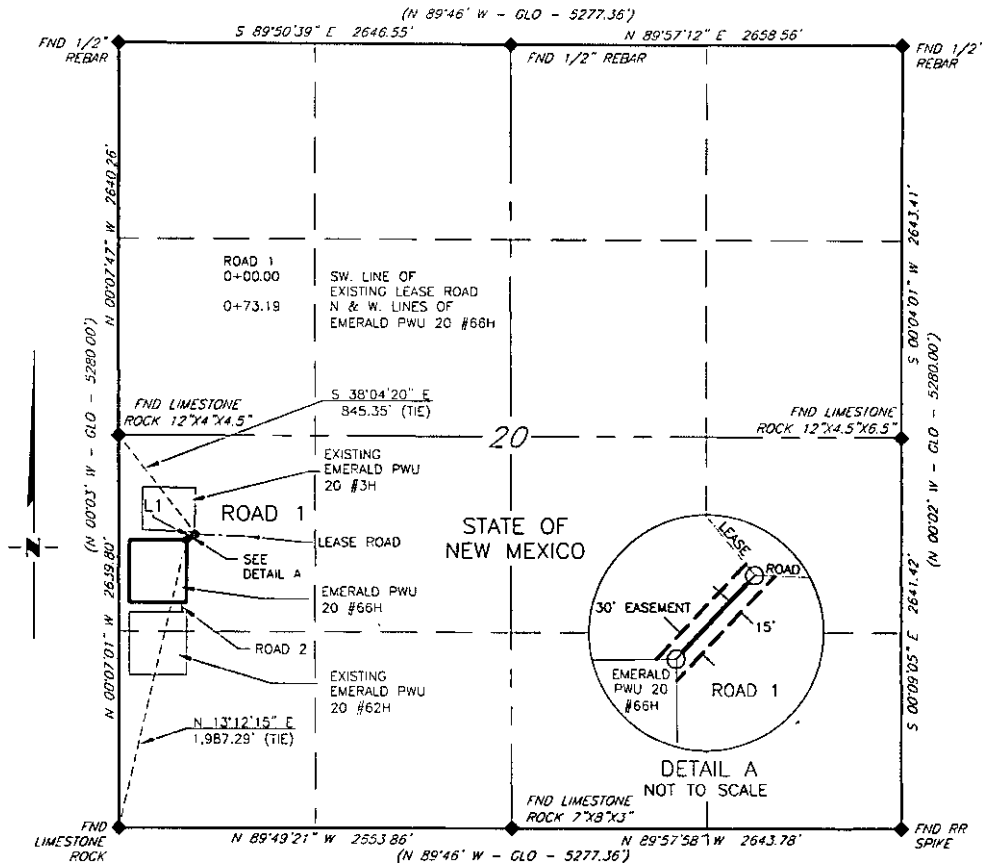
1	9-14-2015	REB
NO.	DATE	PS
JOB NO.:	LS1508466	
DWG. NO.:	1508466PAD	

RRC

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SCALE: 1" = 100'
DATE: 9-9-2015
SURVEYED BY: BC/CG
DRAWN BY: PDJ
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SHEET : 3 OF 7

ROAD 1



LINE TABLE		
LINE	BEARING	LENGTH
L1	S 57°51'44" W	73.19'

BEARINGS ARE NAD 83
NM EAST & DISTANCES ARE
HORIZ. GROUND.

() RECORD DATA - GLO
 FOUND MONUMENT
 AS NOTED
 PROPOSED EASEMENT

I, Richard E Brooks, a New Mexico Professional Surveyor, do hereby certify that the plat shown hereon accurately depicts the conditions on the ground at the time of the survey; that all work was done under my direct supervision and meets the State of New Mexico minimum standards for land surveying to the best of my knowledge.

Richard E Brooks

NM PS 20451



Firm No.: TX 10193838 NM 4655451

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1	9-14-2015	REB
NO.	DATE	PS
JOB NO.: LS1508466		
DWG. NO.: 1508466RD1		

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 9-9-2015
SURVEYED BY: BC/CG
DRAWN BY: PDJ
APPROVED BY: REB
SHEET : 4 OF 7

DEVON ENERGY PRODUCTION COMPANY, L. P.
PROPOSED LEASE ROAD
FROM AN EXISTING LEASE ROAD
TO EMERALD PWU 20 #66H
SECTION 20, T19S, R29E, NMPM,
EDDY CO., NEW MEXICO

DESCRIPTION: ROAD 1

A strip of land 30 feet in width, being 73.19 feet or 4.436 rods in length lying within the Southwest Quarter of Section 20, Township 19 South, Range 29 East, N.M.P.M., Eddy County, State of New Mexico, being 15 feet on each side of the centerline described herein, with the sidelines being shortened or extended to intersect the South and West Lines of an existing lease road and North and East Lines of the Emerald PWU 20 #66H, across State of New Mexico land and being more particularly described as follows:

Beginning at a point on the Southwest Line of an existing lease road which bears S 38°04'20" E, a distance of 845.35 feet from the West Quarter Corner of Section 20, a Limestone Rock 12x4x4.5;

Thence S 57°51'44" W, a distance of 73.19 feet to the intersection of the Northeast Corner of the Emerald PWU 20 #66H, and the Point of Terminus which bears N 13°12'15" E, a distance of 1,987.29 feet from the Southwest Corner of Section 20, a Limestone Rock.

Said strip of land contains 0.060 acres, more or less, and is allocated by Quarter-Quarter (forties) as follows:

NW $\frac{1}{4}$ SW $\frac{1}{4}$ 4.436 Rods 0.060 Acres+-

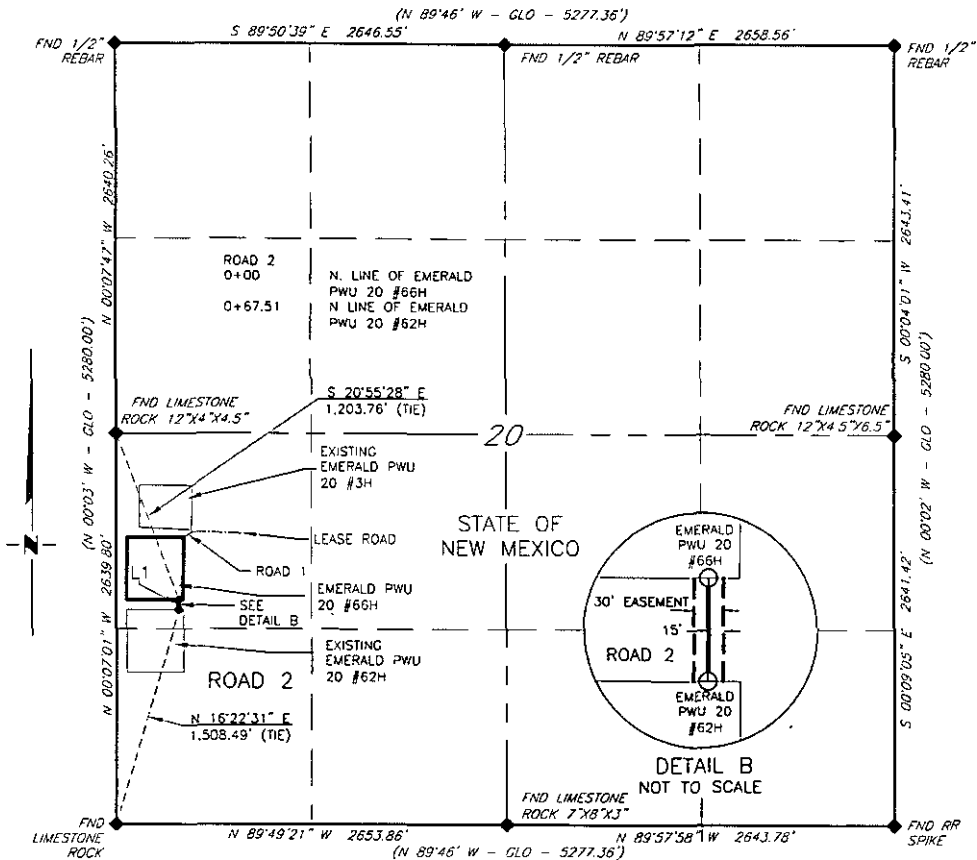
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RRC 308 W. BROADWAY ST., HOBBBS, NM 88240 (575) 964-8200			SCALE: NA
			DATE: 9-9-2015
			SURVEYED BY: BC/CG
			DRAWN BY: PDJ
NO. 1	DATE 9-14-2015	PS REB	APPROVED BY: REB
JOB NO.: LS1508466			SHEET : 5 OF 7
DWG. NO.: 1508466LG1			

DEVON ENERGY PRODUCTION COMPANY, L. P.
 PROPOSED LEASE ROAD
 FROM EMERALD PWU 20 #66H
 TO EMERALD PWU 20 #62H
 SECTION 20, T19S, R29E, NMPM,
 EDDY CO., NEW MEXICO

ROAD 2



LINE TABLE		
LINE	BEARING	LENGTH
L1	S 00°38'57" F	67.51'

SCALE: 1" = 1000'
 0' 500' 1000'

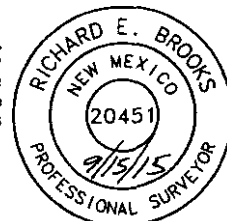
BEARINGS ARE MAG. BY
 NM EAST & DISTANCES ARE
 HORIZ. GROUND.

LEGEND

- () RECORD DATA - GLO
- ◆ FOUND MONUMENT AS NOTED
- PROPOSED EASEMENT

I, Richard E Brooks, a New Mexico Professional Surveyor, do hereby certify that the plat shown hereon accurately depicts the conditions on the ground at the time of the survey; that all work was done under my direct supervision and meets the State of New Mexico minimum standards for land surveying to the best of my knowledge.

Richard E Brooks NM PS 20451



Firm No.: TX 10193838 NM 4655451

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JOB NO.:	LS1508466	
DWG. NO.:	1508466RD2	

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 9-9-2015
SURVEYED BY: BC/CG
DRAWN BY: PDJ
APPROVED BY: REB
SHEET: 6 OF 7

DEVON ENERGY PRODUCTION COMPANY, L. P.
PROPOSED LEASE ROAD
FROM EMERALD PWU 20 #66H
TO EMERALD PWU 20 #62H
SECTION 20, T19S, R29E, NMPM;
EDDY CO., NEW MEXICO

DESCRIPTION ROAD 2

A strip of land 30 feet in width, being 67.51 feet or 4.092 rods in length lying within the Southwest Quarter of Section 20, Township 19 South, Range 29 East, N.M.P.M., Eddy County, State of New Mexico, being 15 feet on each side of the centerline described herein, with the sidelines being shortened or extended to intersect the South Line of Emerald PWU 20 #66H and North Line of the Emerald PWU 20 #62H, across State of New Mexico land and being more particularly described as follows:

Beginning at a point on the South Line of Emerald PWU 20 #66H which bears S 20°55'28" E, a distance of 1,203.76 feet from the West Quarter Corner of Section 20, a Limestone Rock 12"x4"x4.5";

Thence S 00°38'57" E, a distance of 67.51 feet to the intersection of the North Line of the Emerald PWU 20 #62H, and the Point of Terminus which bears N 16°22'31" E, a distance of 1,508.49 feet from the Southwest Corner of Section 20, a Limestone Rock.

Said strip of land contains 0.060 acres, more or less, and is allocated by Quarter-Quarter (forties) as follows:

NW $\frac{1}{4}$ SW $\frac{1}{4}$ 4.092 Rods 0.046 Acres+-

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1	9-14-2015	REB
NO.	DATE	PS
JOB NO.: LS1508466		
DWG. NO.: 1508466LG2		

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: NA
DATE: 9-9-2015
SURVEYED BY: BC/CG
DRAWN BY: PDJ
APPROVED BY: REB
SHEET : 7 OF 7

Devon Energy, Emerald PWU 20 66H

1. Geologic Formations

TVD of target	8,857	Pilot hole depth	N/A
MD at TD:	13,642'	Deepest expected fresh water:	60'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	0	Barren	
Salt	466	Barren	
Tansil	946	Barren	
Yates	1231	Barren	
Queen	1966	Oil	
Grayburg	2606	Oil	
Delaware	3446	Oil	
Bone Spring Lm	4826	Oil	
2nd BS Lm	6976	Oil	
3rd BS Lm	7951	Oil	
3rd BS Sd	8586	Oil	

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	350'	13.375"	48	H-40	STC	4.92	11.05	19.17
12.25"	0'	3,400'	9.625"	40	J-55	LTC	1.32	2.03	3.82
8.5"	0'	13,642'	5.5"	17	L-80	BTC	1.37	1.68	1.71
KOP = 8,298' DV Tool = 1000' DV Tool = 3,450'				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

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

3. Cementing Program

Casing	# Sk	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surf	390	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter.	750	12.9	9.81	1.85	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	330	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter. Two Stage	490	12.9	9.81	1.85	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	330	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
	DV Tool = 1000ft					
	360	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
5-1/2" Prod Single Stage	730	11.9	12.89	2.31	n/a	Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	1420	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
5-1/2" Prod Two Stage	670	11.9	12.89	2.31	n/a	1 st Stage Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	1420	14.5	5.31	1.2	25	1 st Stage Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
	DV Tool = 3450ft					
	40	11	14.81	2.55	22	2 nd Stage Lead: Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake
	50	14.8	6.32	1.33	6	2 nd Stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake

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

Casing String	TOC	% Excess
13-3/8" Surface	0'	100%
9-5/8" Intermediate	0'	75%
9-5/8" Intermediate Casing Two Stage Option	1 st Stage = 1000' / 2 nd Stage = 0'	75%
5-1/2" Production Casing Single Stage Option	2900'	25%
5-1/2" Production Casing Two Stage Option	1 st Stage = 3450' / 2 nd Stage = 2900'	25%

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

*Specify if additional ram is utilized.

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

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

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
---	---

Devon Energy, Emerald PWU 20 66H

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi. - Wellhead will be installed by vendor's representatives. - If the welding is performed by a third party, vendors's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - Vendor representative will install the test plug for the initial BOP test. - Vendor will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. - If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. - Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. - Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon Energy, Emerald PWU 20 66H

	Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns. See attached schematic.
Y	During the course of conducting offset research, should it be determined that the 12-1/4" section will suffer from losses while drilling, a variance is requested to replace the multibowl wellhead system with a conventional wellhead assembly (e.g. conventional casing slips).

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	350'	FW	8.3-8.8	28-34	N/C
350'	3,400'	Saturated Brine	10.0-10.2	28-34	N/C
3,400'	13,642'	Cut Brine	8.5-9.3	28-34	N/C

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

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

6. Logging and Testing Procedures

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

Additional logs planned	Interval
Resistivity	Int. shoe to KOP
Density	Int. shoe to KOP
X CBL	Production casing
X Mud log	Intermediate shoe to TD
PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4283 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

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

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

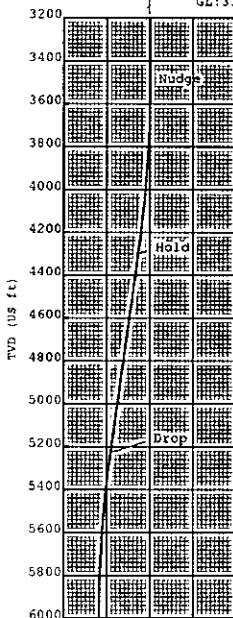
☐ Other, describe

devon

Emerald PWU 20 66H
Eddy Co, NM



KB:3347
GL:3322



VS (US ft) (Bearing:90.10° Scale:200USft/in)

Plan Data for Emerald PWU 20 66H

Plan Point Information:

Dogleg Severity Unit: °/100.00ft		Position offsets from Slot centre						DLS
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)
0.00	0.00	0.00	0.00	0.00	0.00	598045.60	611682.80	0.00
3500.00	0.00	0.00	3500.00	0.00	0.00	598045.60	611682.80	0.00
4300.00	8.00	282.00	4297.40	11.59	-54.54	598057.19	611628.26	-54.56
5240.00	8.00	282.00	5228.26	38.79	-182.51	598084.39	611500.29	-182.57
6040.00	0.00	0.00	6025.66	50.39	-237.05	598095.99	611445.75	-237.13
8298.38	0.00	0.00	8284.04	50.39	-237.05	598095.99	611445.75	-237.13
9198.38	90.00	90.10	8857.00	49.35	335.91	598094.95	612018.71	335.82
13642.38	90.00	90.10	8857.00	41.30	4779.90	598086.90	616462.70	4779.82

Plan Data for Emerald PWU 20 66H

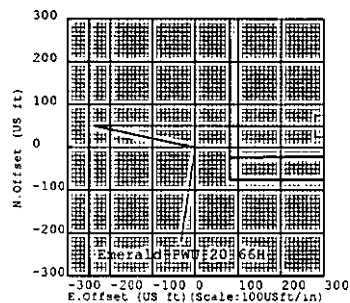
Slot: Emerald PWU 20 66H
Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 598045.60USft Latitude: 32.643868°
+E/-W: 0.00USft Easting: 611682.80USft Longitude: -104.104793°
Elevation Above VRD: 3322.00USft

Plan Data for Emerald PWU 20 66H

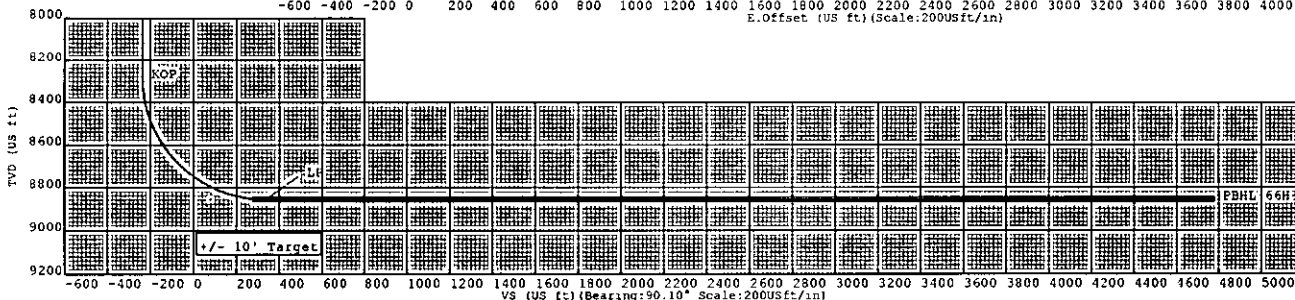
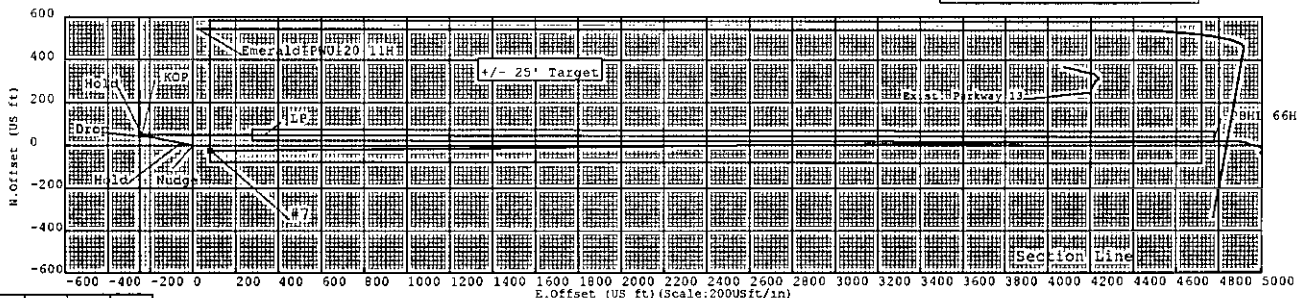
Well: Emerald PWU 20 66H
Type: Main-Well
File Number:
Plan Folder: P1 Plan: P1:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 270.10°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
bgm2015 48397(nT) 7.53° 60.41° 2015-10-30

Plan Data for Emerald PWU 20 66H

Target Set Information:
Name: Emerald PWU 20 66H Tgts
Position offsets from Slot centre
Name TVD Elevation +N/-S +E/-W Northing Easting
(USft) (USft)(USft) (USft) (USft) (USft)
LP Tgt 8857.00 -5510.00 49.86 80.95 598095.46 611763.75
PBHL 66H 8857.00 -5510.00 41.30 4779.90 598086.90 616462.70



Emerald PWU 20 66H
Parkway 13
#7
Emerald PWU 20 11H



**5D Plan Report****Devon Energy****Field Name:** *Eddy Co, NM (Nad 83 NME)***Site Name:** *Emerald PWU 20 66H***Well Name:** *Emerald PWU 20 66H***Plan:** *P1:V1*

16 September 2015




Weatherford

Emerald PWU 20 66H

Field Name: Eddy Co, NM (Nad 83 NME)	Map Units: US ft Vertical Reference Datum (VRD): Mean Sea Level Projected Coordinate System: NAD83 / New Mexico East (ftUS) Comment:	Company Name: Devon Energy
Site: Emerald PWU 20 66H	Units: US ft North Reference: Grid Convergence Angle: 0.12 Position: Northing: 598045.60US ft Easting: 611682.80US ft Latitude: 32° 38' 37.92" Longitude: -104° 6' 17.25" Elevation above MSL: 3322.00 US ft Comment:	
Slot: Emerald PWU 20 66H	Position (Relative to Site Centre) +N/-S: 0.00US ft Northing: 598045.60US ft Latitude: 32°38'37.92" +E/-W: 0.00US ft Easting: 611682.80US ft Longitude: -104°6'17.25" Slot TVD Reference: Ground Elevation Elevation above MSL: 3322.00US ft Comment:	
Well: Emerald PWU 20 66H	Type: Main well UWI: Plan: P1:V1 File Number: Comment: Closure Distance: 4780.08US ft Closure Azimuth: 89.50° Vertical Section: Position of Origin (Relative to Slot centre) +N/-S: 0.00US ft +E/-W: 0.00US ft Az: 90.10° Magnetic Parameters: Model: bggm2015 Field Strength: 48397.4nT Declination: 7.53° Dip: 60.41° Date: 30/Oct/2015	

Drill floor: Plan: P1:V1			
Rig Height (Drill Floor): 25.00us ft	Elevation above MSL: 3347.00us ft	Inclination: 0.00°	Azimuth: 0.00°

Target Set: Emerald PWU 20 66H Tgt Comment							
Target Name:	Shape:	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (USft)	Easting (USft)	Comment
LP Tgt	Point	8857.00	49.86	80.95	598095.46	611763.75	
PBHL 66H	Cuboid	8857.00	41.30	4779.90	598086.90	616462.70	

Wellpath created using minimum curvature.

Tie Point:				
MD: 0.00USFt	Inclination: 0.00°	Azimuth: 0.00°	TVD: 0.00USFt	North Offset: 0.00USFt
				East Offset: 0.00USFt

5D Plan Report

Salient Points: (Relative to Slot centre)(TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	B.Rate (°/100US ft)	T.Rate (°/100US ft)	T.Face (°)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	
3500.00	0.00	0.00	3500.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	Nudge
4300.00	8.00	282.00	4297.40	11.59	-54.54	-54.56	1.00	1.00	0.00	282.00	Hold
5240.00	8.00	282.00	5228.26	38.79	-182.51	-182.57	0.00	0.00	0.00	0.00	Drop
6040.00	0.00	0.00	6025.66	50.39	-237.05	-237.13	1.00	-1.00	0.00	180.00	Hold
8298.38	0.00	0.00	8284.04	50.39	-237.05	-237.13	0.00	0.00	0.00	0.00	KOP
9198.38	90.00	90.10	8857.00	49.35	335.91	335.82	10.00	10.00	0.00	90.10	LP
13642.38	90.00	90.10	8857.00	41.30	4779.90	4779.82	0.00	0.00	0.00	0.00	PBHL 66H

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)		Comment
0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
100.00	0.00	0.00	100.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
200.00	0.00	0.00	200.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
300.00	0.00	0.00	300.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
400.00	0.00	0.00	400.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
500.00	0.00	0.00	500.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
600.00	0.00	0.00	600.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
700.00	0.00	0.00	700.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
800.00	0.00	0.00	800.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
900.00	0.00	0.00	900.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1000.00	0.00	0.00	1000.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1100.00	0.00	0.00	1100.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1200.00	0.00	0.00	1200.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1300.00	0.00	0.00	1300.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1400.00	0.00	0.00	1400.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1500.00	0.00	0.00	1500.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1600.00	0.00	0.00	1600.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1700.00	0.00	0.00	1700.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1800.00	0.00	0.00	1800.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
1900.00	0.00	0.00	1900.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2000.00	0.00	0.00	2000.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2100.00	0.00	0.00	2100.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2200.00	0.00	0.00	2200.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2300.00	0.00	0.00	2300.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2400.00	0.00	0.00	2400.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2500.00	0.00	0.00	2500.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2600.00	0.00	0.00	2600.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2700.00	0.00	0.00	2700.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2800.00	0.00	0.00	2800.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
2900.00	0.00	0.00	2900.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
3000.00	0.00	0.00	3000.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
3100.00	0.00	0.00	3100.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
3200.00	0.00	0.00	3200.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
3300.00	0.00	0.00	3300.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
3400.00	0.00	0.00	3400.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		
3500.00	0.00	0.00	3500.00	0.00	0.00	-0.00	0.00	598045.60	611682.80		Nudge
3600.00	1.00	282.00	3599.99	0.18	-0.85	-0.85	1.00	598045.78	611681.95		
3700.00	2.00	282.00	3699.96	0.73	-3.41	-3.42	1.00	598046.33	611679.39		
3800.00	3.00	282.00	3799.86	1.63	-7.68	-7.68	1.00	598047.23	611675.12		
3900.00	4.00	282.00	3899.68	2.90	-13.65	-13.66	1.00	598048.50	611669.15		
4000.00	5.00	282.00	3999.37	4.53	-21.33	-21.33	1.00	598050.13	611661.47		
4100.00	6.00	282.00	4098.90	6.53	-30.70	-30.71	1.00	598052.13	611652.10		
4200.00	7.00	282.00	4198.26	8.88	-41.77	-41.79	1.00	598054.48	611641.03		
4300.00	8.00	282.00	4297.40	11.59	-54.54	-54.56	1.00	598057.19	611628.26		Hold
4400.00	8.00	282.00	4396.43	14.49	-68.15	-68.18	0.00	598060.09	611614.65		
4500.00	8.00	282.00	4495.46	17.38	-81.77	-81.80	0.00	598062.98	611601.03		
4600.00	8.00	282.00	4594.48	20.27	-95.38	-95.42	0.00	598065.87	611587.42		

SD Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	DLS (%/100US ft)	Northing (US ft)	Easting (US ft)	Comment
4700.00	8.00	282.00	4693.51	23.17	-108.99	-109.03	0.00	598068.77	611573.81	
4800.00	8.00	282.00	4792.54	26.06	-122.61	-122.65	0.00	598071.66	611560.19	
4900.00	8.00	282.00	4891.56	28.95	-136.22	-136.27	0.00	598074.55	611546.58	
5000.00	8.00	282.00	4990.59	31.85	-149.83	-149.89	0.00	598077.45	611532.97	
5100.00	8.00	282.00	5089.62	34.74	-163.45	-163.51	0.00	598080.34	611519.35	
5200.00	8.00	282.00	5188.64	37.64	-177.06	-177.13	0.00	598083.24	611505.74	
5240.00	8.00	282.00	5228.26	38.79	-182.51	-182.57	0.00	598084.39	611500.29	Drop
5300.00	7.40	282.00	5287.71	40.46	-190.37	-190.44	1.00	598086.06	611492.43	
5400.00	6.40	282.00	5386.99	42.96	-202.12	-202.19	1.00	598088.56	611480.68	
5500.00	5.40	282.00	5486.46	45.10	-212.17	-212.25	1.00	598090.70	611470.63	
5600.00	4.40	282.00	5586.09	46.87	-220.53	-220.61	1.00	598092.47	611462.27	
5700.00	3.40	282.00	5685.86	48.29	-227.18	-227.27	1.00	598093.89	611455.62	
5800.00	2.40	282.00	5785.73	49.34	-232.13	-232.22	1.00	598094.94	611450.67	
5900.00	1.40	282.00	5885.67	50.03	-235.37	-235.46	1.00	598095.63	611447.43	
6000.00	0.40	282.00	5985.66	50.36	-236.91	-237.00	1.00	598095.96	611445.89	
6040.00	0.00	0.00	6025.66	50.39	-237.05	-237.13	1.00	598095.99	611445.75	Hold
6100.00	0.00	0.00	6085.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6200.00	0.00	0.00	6185.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6300.00	0.00	0.00	6285.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6400.00	0.00	0.00	6385.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6500.00	0.00	0.00	6485.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6600.00	0.00	0.00	6585.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6700.00	0.00	0.00	6685.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6800.00	0.00	0.00	6785.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
6900.00	0.00	0.00	6885.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7000.00	0.00	0.00	6985.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7100.00	0.00	0.00	7085.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7200.00	0.00	0.00	7185.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7300.00	0.00	0.00	7285.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7400.00	0.00	0.00	7385.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7500.00	0.00	0.00	7485.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7600.00	0.00	0.00	7585.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7700.00	0.00	0.00	7685.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7800.00	0.00	0.00	7785.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
7900.00	0.00	0.00	7885.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
8000.00	0.00	0.00	7985.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
8100.00	0.00	0.00	8085.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
8200.00	0.00	0.00	8185.66	50.39	-237.05	-237.13	0.00	598095.99	611445.75	
8298.38	0.00	0.00	8284.04	50.39	-237.05	-237.13	0.00	598095.99	611445.75	KOP
8300.00	0.16	90.10	8285.66	50.39	-237.04	-237.13	10.00	598095.99	611445.76	
8400.00	10.16	90.10	8385.13	50.37	-228.06	-228.15	10.00	598095.97	611454.74	
8500.00	20.16	90.10	8481.52	50.32	-201.94	-202.02	10.00	598095.92	611480.86	
8600.00	30.16	90.10	8571.92	50.25	-159.47	-159.56	10.00	598095.85	611523.33	
8700.00	40.16	90.10	8653.57	50.14	-101.96	-102.05	10.00	598095.74	611580.84	
8800.00	50.16	90.10	8723.99	50.01	-31.14	-31.23	10.00	598095.61	611651.66	
8900.00	60.16	90.10	8781.04	49.86	50.83	50.75	10.00	598095.46	611733.63	
9000.00	70.16	90.10	8823.00	49.70	141.47	141.38	10.00	598095.30	611824.27	
9100.00	80.16	90.10	8848.57	49.53	238.01	237.92	10.00	598095.13	611920.81	
9198.38	90.00	90.10	8857.00	49.35	335.91	335.82	10.00	598094.95	612018.71	LP
9200.00	90.00	90.10	8857.00	49.35	337.53	337.44	0.00	598094.95	612020.33	
9300.00	90.00	90.10	8857.00	49.16	437.53	437.44	0.00	598094.76	612120.33	
9400.00	90.00	90.10	8857.00	48.98	537.53	537.44	0.00	598094.58	612220.33	
9500.00	90.00	90.10	8857.00	48.80	637.53	637.44	0.00	598094.40	612320.33	
9600.00	90.00	90.10	8857.00	48.62	737.53	737.44	0.00	598094.22	612420.33	
9700.00	90.00	90.10	8857.00	48.44	837.53	837.44	0.00	598094.04	612520.33	
9800.00	90.00	90.10	8857.00	48.26	937.53	937.44	0.00	598093.86	612620.33	
9900.00	90.00	90.10	8857.00	48.08	1037.53	1037.44	0.00	598093.68	612720.33	
10000.00	90.00	90.10	8857.00	47.90	1137.53	1137.44	0.00	598093.50	612820.33	
10100.00	90.00	90.10	8857.00	47.72	1237.53	1237.44	0.00	598093.32	612920.33	

5D Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	DLS (%/100US ft)	Northing (US ft)	Easting (US ft)	Comment
10200.00	90.00	90.10	8857.00	47.53	1337.53	1337.44	0.00	598093.13	613020.33	
10300.00	90.00	90.10	8857.00	47.35	1437.53	1437.44	0.00	598092.95	613120.33	
10400.00	90.00	90.10	8857.00	47.17	1537.53	1537.44	0.00	598092.77	613220.33	
10500.00	90.00	90.10	8857.00	46.99	1637.53	1637.44	0.00	598092.59	613320.33	
10600.00	90.00	90.10	8857.00	46.81	1737.53	1737.44	0.00	598092.41	613420.33	
10700.00	90.00	90.10	8857.00	46.63	1837.52	1837.44	0.00	598092.23	613520.32	
10800.00	90.00	90.10	8857.00	46.45	1937.52	1937.44	0.00	598092.05	613620.32	
10900.00	90.00	90.10	8857.00	46.27	2037.52	2037.44	0.00	598091.87	613720.32	
11000.00	90.00	90.10	8857.00	46.09	2137.52	2137.44	0.00	598091.69	613820.32	
11100.00	90.00	90.10	8857.00	45.90	2237.52	2237.44	0.00	598091.50	613920.32	
11200.00	90.00	90.10	8857.00	45.72	2337.52	2337.44	0.00	598091.32	614020.32	
11300.00	90.00	90.10	8857.00	45.54	2437.52	2437.44	0.00	598091.14	614120.32	
11400.00	90.00	90.10	8857.00	45.36	2537.52	2537.44	0.00	598090.96	614220.32	
11500.00	90.00	90.10	8857.00	45.18	2637.52	2637.44	0.00	598090.78	614320.32	
11600.00	90.00	90.10	8857.00	45.00	2737.52	2737.44	0.00	598090.60	614420.32	
11700.00	90.00	90.10	8857.00	44.82	2837.52	2837.44	0.00	598090.42	614520.32	
11800.00	90.00	90.10	8857.00	44.64	2937.52	2937.44	0.00	598090.24	614620.32	
11900.00	90.00	90.10	8857.00	44.46	3037.52	3037.44	0.00	598090.06	614720.32	
12000.00	90.00	90.10	8857.00	44.27	3137.52	3137.44	0.00	598089.87	614820.32	
12100.00	90.00	90.10	8857.00	44.09	3237.52	3237.44	0.00	598089.69	614920.32	
12200.00	90.00	90.10	8857.00	43.91	3337.52	3337.44	0.00	598089.51	615020.32	
12300.00	90.00	90.10	8857.00	43.73	3437.52	3437.44	0.00	598089.33	615120.32	
12400.00	90.00	90.10	8857.00	43.55	3537.52	3537.44	0.00	598089.15	615220.32	
12500.00	90.00	90.10	8857.00	43.37	3637.52	3637.44	0.00	598088.97	615320.32	
12600.00	90.00	90.10	8857.00	43.19	3737.52	3737.44	0.00	598088.79	615420.32	
12700.00	90.00	90.10	8857.00	43.01	3837.52	3837.44	0.00	598088.61	615520.32	
12800.00	90.00	90.10	8857.00	42.83	3937.52	3937.44	0.00	598088.43	615620.32	
12900.00	90.00	90.10	8857.00	42.64	4037.52	4037.44	0.00	598088.24	615720.32	
13000.00	90.00	90.10	8857.00	42.46	4137.52	4137.44	0.00	598088.06	615820.32	
13100.00	90.00	90.10	8857.00	42.28	4237.52	4237.44	0.00	598087.88	615920.32	
13200.00	90.00	90.10	8857.00	42.10	4337.52	4337.44	0.00	598087.70	616020.32	
13300.00	90.00	90.10	8857.00	41.92	4437.52	4437.44	0.00	598087.52	616120.32	
13400.00	90.00	90.10	8857.00	41.74	4537.52	4537.44	0.00	598087.34	616220.32	
13500.00	90.00	90.10	8857.00	41.56	4637.52	4637.44	0.00	598087.16	616320.32	
13600.00	90.00	90.10	8857.00	41.38	4737.52	4737.44	0.00	598086.98	616420.32	
13642.38	90.00	90.10	8857.00	41.30	4779.90	4779.82	0.00	598086.90	616462.70	PBHL 66H

**5D Anti-Collision Report****Devon Energy****Field Name:** *Eddy Co, NM (Nad 83 NME)***Site Name:** *Emerald PWU 20 66H***Well Name:** *Emerald PWU 20 66H*

16 September 2015





Emerald PWU 20 66H

Field Name: Eddy Co, NM (Nad 83 NME)	Map Units: US ft		Company Name: Devon Energy			
	Vertical Reference Datum (VRD): Mean Sea Level					
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)					
	Comment:					
Site: Emerald PWU 20 66H	Units: US ft	North Reference: Grid	Convergence Angle: 0.12			
	Position:	Northing: 598045.60US ft	Latitude: 32° 38' 37.92"			
		Easting: 611682.80US ft	Longitude: -104° 6' 17.25"			
	Elevation above MSL: 3322.00 US ft					
Comment:						
Slot: Emerald PWU 20 66H	Position (Relative to Site Centre)					
	+N/-S: 0.00US ft	Northing: 598045.60US ft	Latitude: 32°38'37.92"			
	+E/-W: 0.00US ft	Easting: 611682.80US ft	Longitude: -104°6'17.25"			
	Slot TVD Reference: Ground Elevation					
Elevation above MSL: 3322.00US ft						
Comment:						
Well: Emerald PWU 20 66H	Type: Main well		UWI:		Plan: Working Plan	
	File Number:	Comment:				
	Closure Distance: 4780.08US ft		Closure Azimuth: 89.50°			
	Vertical Section: Position of Origin (Relative to Slot centre)					
	+N/-S: 0.00US ft		+E/-W: 0.00US ft		Az: 0.00°	
	Magnetic Parameters:					
	Model: bggm2015	Field Strength:	Declination: 7.53°		Dip: 60.41°	Date:
	48397.4nT				30/Oct/2015	

Drill floor: Plan: Working Plan			
Rig Height (Drill Floor): 25.00us ft	Elevation above MSL: 3347.00us ft	Inclination: 0.00°	Azimuth: 0.00°

Collision / Uncertainty Analysis				
Primary Well	Start MD (USFt)	End MD (USFt)	Collision Risk Interval	No. of Std. Deviations in Error Computation
Emerald PWU 20 66H (p)	0.00	30000.00	100.00	2

Secondary Well Names:				
Parkway 13 (s)				
#7 (p)				
#7 (s)				
Emerald PWU 20 11H (p)				
Emerald PWU 20 62H (p)				

Anti-Collision Report Terminology				
S.Minor, S.Major: Radii of the ellipse of uncertainty at the current location as seen in the along hole direction.				
PHI: Angle between high-side vector and semi-minor axis				

5D Anti-Collision Report

Anti-Collision Report Terminology

TVD Spread: Total TVD range of the ellipsoid of uncertainty at the current location.

ES: Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-Cr.

T.Face to Sec: Angle between the Hi-Side vector of the primary well at the current location and line of closest approach between the two wells.

AC Filter Info: the following filter has been applied: Depth Range.

Separation factors calculated using Pedal Curve (Independent Uncertainty). Surface Uncertainty (S.U.) Not Applied. Wellpath created using minimum curvature.

Anti-Collision Summary (TVD relative to Drill Floor)

SF

Secondary Well Name	Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	ES (US ft)	CC (US ft)	SF	Risk
Emerald PWU 20 62H (p)	13636.59	8857.00	13555.28	245.54	507.24	1.94	SF(L0)
Parkway 13 (s)	13021.09	8857.00	8849.11	170.22	307.40	2.24	
Emerald PWU 20 11H (p)	13617.71	8857.00	8888.11	322.29	477.05	3.08	
#7 (p)	6828.91	6814.56	11515.93	277.33	327.56	6.52	
#7 (s)	13642.38	8857.00	7147.04	1918.74	1967.39	40.44	

Primary Well: Emerald PWU 20 66H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
0.00	0.00	179.82	0.00	0.00	0.00	Emerald PWU 20 62H (p)	486.95	487.52	860.35	
100.00	100.00	179.82	0.11	0.11	4.60	Emerald PWU 20 62H (p)	486.72	487.50	622.71	
200.00	200.00	179.82	0.34	0.34	4.62	Emerald PWU 20 62H (p)	486.27	487.50	397.03	
300.00	300.00	179.82	0.56	0.56	4.65	Emerald PWU 20 62H (p)	485.82	487.50	290.62	
400.00	400.00	179.82	0.79	0.79	4.69	Emerald PWU 20 62H (p)	485.38	487.50	229.20	
500.00	500.00	179.82	1.01	1.01	4.75	Emerald PWU 20 62H (p)	484.93	487.50	189.21	
600.00	600.00	179.82	1.24	1.24	4.81	Emerald PWU 20 62H (p)	484.48	487.50	161.10	
700.00	700.00	179.82	1.46	1.46	4.89	Emerald PWU 20 62H (p)	484.03	487.50	140.26	
800.00	800.00	179.82	1.69	1.69	4.97	Emerald PWU 20 62H (p)	483.58	487.50	124.20	
900.00	900.00	179.82	1.91	1.91	5.06	Emerald PWU 20 62H (p)	483.13	487.50	111.43	
1000.00	1000.00	179.82	2.14	2.14	5.16	Emerald PWU 20 62H (p)	482.68	487.50	101.05	
1100.00	1100.00	179.82	2.36	2.36	5.27	Emerald PWU 20 62H (p)	482.23	487.50	92.44	
1200.00	1200.00	179.82	2.59	2.59	5.38	Emerald PWU 20 62H (p)	481.78	487.50	85.17	
1300.00	1300.00	179.82	2.81	2.81	5.50	Emerald PWU 20 62H (p)	481.33	487.50	78.97	
1400.00	1400.00	179.82	3.03	3.03	5.62	Emerald PWU 20 62H (p)	480.88	487.50	73.61	
1500.00	1500.00	179.82	3.26	3.26	5.75	Emerald PWU 20 62H (p)	480.43	487.50	68.93	
1600.00	1600.00	179.82	3.48	3.48	5.89	Emerald PWU 20 62H (p)	479.98	487.50	64.81	
1700.00	1700.00	179.82	3.71	3.71	6.03	Emerald PWU 20 62H (p)	479.53	487.50	61.16	
1800.00	1800.00	179.82	3.93	3.93	6.17	Emerald PWU 20 62H (p)	479.08	487.50	57.89	
1900.00	1900.00	179.82	4.16	4.16	6.32	Emerald PWU 20 62H (p)	478.63	487.50	54.96	
2000.00	2000.00	179.82	4.38	4.38	6.47	Emerald PWU 20 62H (p)	478.18	487.50	52.31	
2100.00	2100.00	179.82	4.61	4.61	6.62	Emerald PWU 20 62H (p)	477.73	487.50	49.90	
2200.00	2200.00	179.82	4.83	4.83	6.78	Emerald PWU 20 62H (p)	477.28	487.50	47.70	
2300.00	2300.00	179.82	5.06	5.06	6.94	Emerald PWU 20 62H (p)	476.83	487.50	45.69	

SD Anti-Collision Report

Primary Well: Emerald PWU 20 66H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
2400.00	2400.00	179.82	5.28	5.28	7.10	Emerald PWU 20 62H (p)	476.38	487.50	43.85	
2500.00	2500.00	179.82	5.51	5.51	7.27	Emerald PWU 20 62H (p)	475.93	487.50	42.14	
2600.00	2600.00	179.82	5.73	5.73	7.44	Emerald PWU 20 62H (p)	475.48	487.50	40.57	
2700.00	2700.00	179.82	5.96	5.96	7.61	Emerald PWU 20 62H (p)	475.04	487.50	39.10	
2800.00	2800.00	179.82	6.18	6.18	7.79	Emerald PWU 20 62H (p)	474.59	487.50	37.74	
2900.00	2900.00	179.82	6.41	6.41	7.97	Emerald PWU 20 62H (p)	474.14	487.50	36.47	
3000.00	3000.00	179.82	6.63	6.63	8.15	Emerald PWU 20 62H (p)	473.69	487.50	35.29	
3100.00	3100.00	179.82	6.86	6.86	8.33	Emerald PWU 20 62H (p)	473.24	487.50	34.17	
3200.00	3200.00	179.82	7.08	7.08	8.51	Emerald PWU 20 62H (p)	472.79	487.50	33.13	
3300.00	3300.00	179.82	7.31	7.31	8.70	Emerald PWU 20 62H (p)	472.34	487.50	32.15	
3400.00	3400.00	179.82	7.53	7.53	8.89	Emerald PWU 20 62H (p)	471.89	487.50	31.22	
3500.00	3500.00	179.82	7.76	7.76	9.09	Emerald PWU 20 62H (p)	471.44	487.50	30.35	
3600.00	3599.99	257.73	7.97	7.97	9.28	Emerald PWU 20 62H (p)	471.20	487.69	29.58	
3700.00	3699.96	257.43	8.17	8.17	9.48	Emerald PWU 20 62H (p)	471.33	488.25	28.86	
3800.00	3799.86	256.94	8.38	8.37	9.68	Emerald PWU 20 62H (p)	471.88	489.22	28.22	
3900.00	3899.68	256.26	8.59	8.56	9.89	Emerald PWU 20 62H (p)	472.87	490.64	27.61	
4000.00	3999.37	255.40	8.80	8.76	10.09	Emerald PWU 20 62H (p)	474.35	492.56	27.04	
4100.00	4098.90	254.35	9.02	8.96	10.30	Emerald PWU 20 62H (p)	476.42	495.07	26.54	
4200.00	4198.26	253.14	9.25	9.16	10.51	Emerald PWU 20 62H (p)	479.18	498.26	26.11	
4300.00	4297.40	251.76	9.48	9.35	10.72	Emerald PWU 20 62H (p)	482.69	502.23	25.70	
4400.00	4396.43	250.28	9.72	9.56	10.94	Emerald PWU 20 62H (p)	486.79	506.80	25.34	
4500.00	4495.46	248.82	9.97	9.78	11.17	Emerald PWU 20 62H (p)	490.73	511.22	24.95	
4600.00	4594.48	247.53	10.22	9.99	11.40	Emerald PWU 20 62H (p)	493.84	514.79	24.57	
4700.00	4693.51	246.43	10.48	10.21	11.63	Emerald PWU 20 62H (p)	495.97	517.39	24.15	
4800.00	4792.54	245.49	10.74	10.42	11.86	Emerald PWU 20 62H (p)	497.04	518.95	23.69	
4900.00	4891.56	244.72	11.00	10.64	12.10	Emerald PWU 20 62H (p)	497.06	519.41	23.24	
5000.00	4990.59	244.05	11.27	10.86	12.34	Emerald PWU 20 62H (p)	496.70	519.54	22.75	
5100.00	5089.62	243.37	11.55	11.08	12.59	Emerald PWU 20 62H (p)	496.41	519.74	22.28	
5200.00	5188.64	242.69	11.82	11.30	12.84	Emerald PWU 20 62H (p)	496.21	520.01	21.85	
5300.00	5287.71	242.04	12.09	11.53	13.10	Emerald PWU 20 62H (p)	495.97	520.21	21.46	
5400.00	5386.99	241.56	12.31	11.73	13.36	Emerald PWU 20 62H (p)	495.08	519.73	21.09	
5500.00	5486.46	241.18	12.53	11.94	13.62	Emerald PWU 20 62H (p)	494.14	519.22	20.70	
5600.00	5586.09	240.84	12.75	12.14	13.89	Emerald PWU 20 62H (p)	493.57	519.07	20.36	
5700.00	5685.86	240.53	12.96	12.34	14.17	Emerald PWU 20 62H (p)	493.37	519.26	20.06	
5800.00	5785.73	240.26	13.16	12.54	14.44	Emerald PWU 20 62H (p)	493.53	519.80	19.79	
5900.00	5885.67	240.04	13.36	12.73	14.72	Emerald PWU 20 62H (p)	494.04	520.67	19.55	

SD Anti-Collision Report

Primary Well: Emerald PWU 20 66H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
6000.00	5985.66	239.88	13.55	12.92	15.00	Emerald PWU 20 62H (p)	494.43	521.44	19.30	
6100.00	6085.66	103.12	13.74	13.12	15.29	#7 (p)	752.42	798.61	17.29	
6200.00	6185.66	103.12	13.96	13.34	15.58	#7 (p)	662.09	708.59	15.24	
6300.00	6285.66	103.12	14.17	13.56	15.88	#7 (p)	574.55	621.64	13.20	
6400.00	6385.66	103.12	14.38	13.78	16.18	#7 (p)	491.65	539.23	11.33	
6500.00	6485.66	103.12	14.59	14.00	16.48	#7 (p)	415.30	463.79	9.57	
6600.00	6585.66	103.12	14.81	14.22	16.79	#7 (p)	349.95	399.29	8.09	
6700.00	6685.66	103.12	15.02	14.44	17.11	#7 (p)	301.92	351.80	7.05	
6800.00	6785.66	103.12	15.24	14.67	17.43	#7 (p)	278.55	328.78	6.55	
6900.00	6885.66	103.12	15.45	14.89	17.75	#7 (p)	285.39	335.30	6.72	
7000.00	6985.66	103.12	15.66	15.11	18.08	#7 (p)	320.55	369.81	7.51	
7100.00	7085.66	103.12	15.88	15.33	18.42	#7 (p)	376.94	425.55	8.75	
7200.00	7185.66	103.12	16.09	15.55	18.76	#7 (p)	447.32	495.40	10.30	
7300.00	7285.66	103.12	16.31	15.77	19.11	#7 (p)	526.53	574.24	12.04	
7400.00	7385.66	103.12	16.53	15.99	19.46	#7 (p)	611.32	658.85	13.86	
7500.00	7485.66	161.87	16.74	16.22	19.81	Emerald PWU 20 62H (p)	487.92	521.51	15.53	
7600.00	7585.66	161.87	16.96	16.44	20.17	Emerald PWU 20 62H (p)	487.48	521.51	15.32	
7700.00	7685.66	161.87	17.17	16.66	20.54	Emerald PWU 20 62H (p)	487.04	521.51	15.13	
7800.00	7785.66	161.87	17.39	16.88	20.91	Emerald PWU 20 62H (p)	486.60	521.51	14.94	
7900.00	7885.66	161.87	17.61	17.10	21.29	Emerald PWU 20 62H (p)	486.16	521.51	14.75	
8000.00	7985.66	27.43	17.83	17.33	21.67	Emerald PWU 20 11H (p)	1038.56	1119.84	13.78	
8100.00	8085.66	27.43	18.04	17.55	22.06	Emerald PWU 20 11H (p)	948.54	1034.30	12.06	
8200.00	8185.66	27.43	18.26	17.77	22.45	Emerald PWU 20 11H (p)	860.46	951.58	10.44	
8300.00	8285.66	297.16	18.48	17.99	22.85	Emerald PWU 20 11H (p)	775.04	872.49	8.95	
8400.00	8385.13	286.02	18.64	17.96	23.25	Emerald PWU 20 11H (p)	691.02	795.65	7.60	
8500.00	8481.52	275.00	18.76	17.61	23.61	Emerald PWU 20 11H (p)	608.31	721.03	6.40	
8600.00	8571.92	265.46	18.86	16.95	23.93	Emerald PWU 20 11H (p)	529.81	652.03	5.33	
8700.00	8653.57	258.20	19.01	16.06	24.20	Emerald PWU 20 11H (p)	461.27	593.07	4.50	
8800.00	8723.99	253.47	19.27	15.05	24.45	Emerald PWU 20 11H (p)	409.71	549.42	3.93	
8900.00	8781.04	252.86	19.73	14.06	24.70	Emerald PWU 20 11H (p)	381.51	525.39	3.65	
9000.00	8823.00	255.71	20.47	13.25	24.97	Emerald PWU 20 11H (p)	367.59	512.87	3.53	
9100.00	8848.57	257.82	21.50	12.80	25.28	Emerald PWU 20 11H (p)	361.33	506.80	3.48	
9200.00	8857.00	258.58	22.80	12.82	25.65	Emerald PWU 20 11H (p)	360.48	505.07	3.49	
9300.00	8857.00	258.58	24.34	13.05	26.10	Emerald PWU 20 11H (p)	361.67	505.08	3.52	
9400.00	8857.00	258.58	26.07	13.30	26.61	Emerald PWU 20 11H (p)	362.65	505.08	3.55	
9500.00	8857.00	258.58	27.97	13.59	27.19	Emerald PWU 20 11H (p)	363.48	505.09	3.57	
9600.00	8857.00	258.58	30.00	13.92	27.84	Emerald PWU 20 11H (p)	364.17	505.10	3.58	
9700.00	8857.00	258.58	32.15	14.27	28.55	Emerald PWU 20 11H (p)	364.76	505.11	3.60	
9800.00	8857.00	258.58	34.38	14.66	29.32	Emerald PWU 20 11H (p)	365.25	505.11	3.61	
9900.00	8857.00	258.58	36.68	15.07	30.14	Emerald PWU 20 11H (p)	365.66	505.12	3.62	
10000.00	8857.00	258.58	39.04	15.50	31.00	Emerald PWU 20 11H (p)	366.00	505.13	3.63	

5D Anti-Collision Report

Primary Well: Emerald PWU 20 66H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
10100.00	8857.00	258.58	41.45	15.95	31.91	Emerald PWU 20 11H (p)	366.30	505.14	3.64	
10200.00	8857.00	258.58	43.90	16.43	32.86	Emerald PWU 20 11H (p)	366.54	505.14	3.64	
10300.00	8857.00	258.58	46.38	16.92	33.85	Emerald PWU 20 11H (p)	366.76	505.15	3.65	
10400.00	8857.00	258.58	48.89	17.43	34.87	Emerald PWU 20 11H (p)	366.94	505.16	3.65	
10500.00	8857.00	258.58	51.43	17.96	35.92	Emerald PWU 20 11H (p)	367.09	505.16	3.66	
10600.00	8857.00	258.58	53.99	18.50	37.00	Emerald PWU 20 11H (p)	367.21	505.17	3.66	
10700.00	8857.00	258.58	56.57	19.05	38.11	Emerald PWU 20 11H (p)	367.32	505.18	3.66	
10800.00	8857.00	258.58	59.17	19.62	39.24	Emerald PWU 20 11H (p)	367.40	505.19	3.67	
10900.00	8857.00	258.58	61.77	20.19	40.39	Emerald PWU 20 11H (p)	367.47	505.19	3.67	
11000.00	8857.00	258.58	64.39	20.78	41.56	Emerald PWU 20 11H (p)	367.51	505.20	3.67	
11100.00	8857.00	258.58	67.03	21.37	42.75	Emerald PWU 20 11H (p)	367.54	505.21	3.67	
11200.00	8857.00	258.58	69.67	21.98	43.96	Emerald PWU 20 11H (p)	367.55	505.21	3.67	
11300.00	8857.00	102.52	72.32	22.59	45.18	Emerald PWU 20 62H (p)	368.27	507.23	3.65	
11400.00	8857.00	102.52	74.98	23.21	46.41	Emerald PWU 20 62H (p)	363.09	507.22	3.52	
11500.00	8857.00	102.53	77.64	23.83	47.66	Emerald PWU 20 62H (p)	357.89	507.22	3.40	
11600.00	8857.00	102.53	80.31	24.46	48.92	Emerald PWU 20 62H (p)	352.68	507.21	3.28	
11700.00	8857.00	102.53	82.99	25.10	50.20	Emerald PWU 20 62H (p)	347.45	507.20	3.17	
11800.00	8857.00	102.53	85.67	25.74	51.48	Emerald PWU 20 62H (p)	342.22	507.20	3.07	
11900.00	8857.00	102.53	88.36	26.38	52.77	Emerald PWU 20 62H (p)	336.97	507.19	2.98	
12000.00	8857.00	102.53	91.05	27.03	54.07	Emerald PWU 20 62H (p)	331.72	507.18	2.89	
12100.00	8857.00	102.53	93.74	27.69	55.38	Emerald PWU 20 62H (p)	326.45	507.18	2.81	
12200.00	8857.00	102.53	96.44	28.35	56.70	Emerald PWU 20 62H (p)	321.18	507.17	2.73	
12300.00	8857.00	102.53	99.14	29.01	58.02	Emerald PWU 20 62H (p)	315.91	507.16	2.65	
12400.00	8857.00	102.53	101.85	29.68	59.35	Emerald PWU 20 62H (p)	310.63	507.16	2.58	
12500.00	8857.00	102.53	104.55	30.34	60.69	Emerald PWU 20 62H (p)	305.34	507.15	2.51	
12600.00	8857.00	102.53	107.26	31.02	62.03	Emerald PWU 20 62H (p)	300.04	507.15	2.45	
12700.00	8857.00	102.53	109.97	31.69	63.38	Emerald PWU 20 62H (p)	294.74	507.14	2.39	
12800.00	8857.00	102.53	112.69	32.37	64.74	Emerald PWU 20 62H (p)	289.44	507.13	2.33	
12900.00	8857.00	102.53	115.40	33.05	66.09	Emerald PWU 20 62H (p)	284.13	507.13	2.27	
13000.00	8857.00	102.53	118.12	33.73	67.46	Emerald PWU 20 62H (p)	278.82	507.12	2.22	
13100.00	8857.00	102.53	120.84	34.41	68.82	Emerald PWU 20 62H (p)	273.51	507.11	2.17	
13200.00	8857.00	102.53	123.56	35.10	70.20	Emerald PWU 20 62H (p)	268.19	507.11	2.12	
13300.00	8857.00	102.53	126.29	35.78	71.57	Emerald PWU 20 62H (p)	262.87	507.10	2.08	
13400.00	8857.00	102.53	129.01	36.47	72.95	Emerald PWU 20 62H (p)	257.54	507.09	2.03	
13500.00	8857.00	102.53	131.74	37.16	74.33	Emerald PWU 20 62H (p)	252.22	507.09	1.99	SF(Lo)
13600.00	8857.00	102.53	134.46	37.85	75.72	Emerald PWU 20 62H (p)	246.89	507.08	1.95	SF(Lo)

SD Anti-Collision Report

Primary Well: Emerald PWU 20 66H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
13642.38	8857.00	102.53	135.62	38.15	76.31	Emerald PWU 20 62H (p)	245.66	507.43	1.94	SF(Lo)

Secondary Well: Parkway 13 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	8.00	0.00	86.63	0.00	0.00	0.00	4196.36	4197.01	6457.19	
100.00	114.35	106.35	86.63	0.15	0.15	2.63	4195.93	4196.84	4626.58	
200.00	219.17	211.17	86.64	0.42	0.42	2.63	4195.03	4196.43	2988.08	
300.00	318.43	310.43	86.64	0.68	0.68	2.63	4194.09	4195.97	2224.73	
400.00	409.59	401.59	86.65	0.91	0.91	2.64	4193.30	4195.64	1794.66	
500.00	496.01	488.02	86.66	1.09	1.09	2.64	4192.83	4195.57	1527.67	
600.00	597.36	589.37	86.66	1.30	1.30	2.65	4192.50	4195.68	1319.82	
700.00	683.85	675.86	86.66	1.45	1.45	2.65	4192.32	4195.88	1180.33	
800.00	760.20	752.21	86.66	1.55	1.55	2.66	4192.64	4196.52	1082.42	
900.00	838.80	830.82	86.66	1.64	1.64	2.66	4193.57	4197.76	1001.98	
1000.00	928.50	920.53	86.65	1.75	1.75	2.67	4194.83	4199.35	928.28	
1100.00	1025.32	1017.36	86.65	1.89	1.89	2.68	4196.25	4201.14	858.68	
1200.00	1143.57	1135.63	86.64	2.08	2.08	2.69	4197.32	4202.63	791.58	
1300.00	1250.74	1242.82	86.62	2.26	2.26	2.70	4198.23	4203.93	737.05	
1400.00	1354.79	1346.89	86.60	2.44	2.44	2.72	4198.87	4204.97	688.94	
1500.00	1457.92	1450.03	86.58	2.62	2.62	2.73	4199.58	4206.10	645.30	
1600.00	1567.79	1559.92	86.56	2.83	2.83	2.74	4199.98	4206.93	605.18	
1700.00	1688.44	1680.59	86.53	3.05	3.05	2.75	4200.13	4207.53	568.76	
1800.00	1789.42	1781.59	86.50	3.25	3.24	2.77	4199.93	4207.74	538.48	
1900.00	1891.93	1884.12	86.48	3.45	3.45	2.78	4199.74	4207.98	510.58	
2000.00	1990.83	1983.04	86.45	3.65	3.65	2.79	4199.50	4208.17	485.14	
2100.00	2089.02	2081.24	86.42	3.87	3.86	2.80	4199.31	4208.41	462.40	
2200.00	2189.84	2182.08	86.40	4.09	4.09	2.82	4199.12	4208.67	440.78	
2300.00	2285.60	2277.84	86.38	4.31	4.31	2.83	4198.95	4208.95	420.99	
2400.00	2378.42	2370.68	86.37	4.53	4.53	2.84	4198.93	4209.37	403.01	
2500.00	2471.51	2463.77	86.36	4.76	4.76	2.86	4199.07	4209.97	386.34	
2600.00	2573.17	2565.44	86.35	5.01	5.01	2.87	4199.29	4210.67	370.26	
2700.00	2669.67	2661.94	86.34	5.25	5.25	2.89	4199.47	4211.30	355.89	
2800.00	2766.92	2759.19	86.33	5.49	5.49	2.90	4199.79	4212.09	342.70	
2900.00	2864.83	2857.11	86.33	5.73	5.73	2.92	4200.13	4212.88	330.43	
3000.00	2965.82	2958.11	86.32	5.98	5.98	2.94	4200.50	4213.73	318.59	
3100.00	3067.85	3060.14	86.31	6.24	6.24	2.96	4200.79	4214.50	307.36	
3200.00	3176.99	3169.28	86.30	6.52	6.51	2.98	4200.98	4215.20	296.53	
3300.00	3284.55	3276.84	86.30	6.79	6.79	3.00	4200.92	4215.63	286.57	
3400.00	3386.17	3378.46	86.29	7.05	7.04	3.02	4200.78	4215.97	277.57	
3500.00	3487.78	3480.07	86.28	7.30	7.29	3.05	4200.62	4216.28	269.20	
3600.00	3582.65	3574.96	164.26	7.53	7.53	3.07	4201.35	4217.46	261.83	
3700.00	3682.11	3674.42	164.25	7.78	7.78	3.09	4203.86	4220.41	254.99	
3800.00	3772.72	3765.04	164.23	8.01	8.00	3.12	4208.12	4225.11	248.64	
3900.00	3869.65	3861.99	164.22	8.26	8.25	3.15	4214.25	4231.71	242.44	
4000.00	3966.32	3958.68	164.20	8.50	8.50	3.18	4222.06	4239.97	236.66	
4100.00	4064.92	4057.28	164.19	8.76	8.75	3.21	4231.64	4250.02	231.22	
4200.00	4164.95	4157.33	164.18	9.01	9.01	3.24	4242.83	4261.68	226.10	
4300.00	4256.44	4248.83	164.16	9.25	9.25	3.27	4255.79	4275.08	221.56	
4400.00	4346.36	4338.77	164.19	9.49	9.48	3.31	4269.82	4289.56	217.33	
4500.00	4441.82	4434.25	164.23	9.73	9.73	3.35	4283.97	4304.16	213.15	
4600.00	4542.51	4534.95	164.26	10.00	9.99	3.39	4298.14	4318.81	208.99	
4700.00	4647.06	4639.52	164.29	10.27	10.26	3.44	4312.16	4333.31	204.87	
4800.00	4755.40	4747.89	164.32	10.55	10.54	3.49	4326.09	4347.74	200.82	
4900.00	4888.44	4880.94	164.35	10.88	10.88	3.55	4339.45	4361.66	196.38	
5000.00	4971.55	4964.08	164.37	11.09	11.08	3.60	4352.59	4375.23	193.26	
5100.00	5050.95	5043.49	164.39	11.29	11.28	3.64	4366.27	4389.33	190.33	
5200.00	5132.13	5124.69	164.41	11.50	11.49	3.69	4380.30	4403.79	187.46	

5D Anti-Collision Report

Secondary Well: Parkway 13 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
5300.00	5206.69	5199.28	164.45	11.70	11.69	3.73	4394.55	4418.45	184.91	
5400.00	5267.36	5259.97	164.50	11.85	11.84	3.77	4408.05	4432.28	182.96	
5500.00	5348.36	5341.02	164.55	12.05	12.04	3.82	4420.62	4445.22	180.68	
5600.00	5457.39	5450.11	164.59	12.33	12.32	3.90	4431.33	4456.38	177.93	
5700.00	5556.93	5549.71	164.61	12.58	12.57	3.97	4440.32	4465.83	175.07	
5800.00	5681.61	5674.46	164.62	12.91	12.89	4.06	4447.39	4473.43	171.79	
5900.00	5927.12	5920.07	164.58	13.50	13.49	4.25	4450.57	4477.39	166.94	
6000.00	6098.89	6091.92	164.53	13.81	13.81	4.40	4449.85	4477.21	163.62	
6100.00	6193.54	6186.65	86.49	13.97	13.97	4.49	4447.10	4474.84	161.35	
6200.00	6309.69	6302.88	86.45	14.16	14.15	4.60	4444.16	4472.28	159.07	
6300.00	6407.70	6400.94	86.43	14.30	14.29	4.69	4441.08	4469.53	157.11	
6400.00	6501.41	6494.70	86.41	14.43	14.42	4.79	4438.03	4466.87	154.92	
6500.00	6613.59	6606.94	86.38	14.59	14.59	4.90	4434.92	4464.15	152.72	
6600.00	6724.08	6717.49	86.36	14.75	14.74	5.02	4431.58	4461.17	150.75	
6700.00	6847.33	6840.82	86.33	14.91	14.90	5.16	4427.93	4457.85	148.97	
6800.00	6956.27	6949.85	86.32	15.04	15.03	5.28	4423.67	4453.99	146.88	
6900.00	7052.64	7046.30	86.31	15.16	15.15	5.40	4419.58	4450.25	145.10	
7000.00	7148.26	7141.98	86.29	15.28	15.27	5.51	4415.49	4446.48	143.47	
7100.00	7232.20	7225.98	86.28	15.39	15.38	5.62	4411.72	4443.01	142.03	
7200.00	7317.50	7311.32	86.28	15.49	15.48	5.73	4408.24	4439.88	140.30	
7300.00	7411.92	7405.79	86.27	15.61	15.60	5.85	4404.98	4436.99	138.64	
7400.00	7522.48	7516.39	86.26	15.76	15.75	6.00	4401.63	4434.00	136.96	
7500.00	7623.12	7617.09	86.25	15.91	15.90	6.14	4398.18	4430.91	135.41	
7600.00	7722.05	7716.07	86.23	16.06	16.05	6.28	4394.75	4427.80	133.95	
7700.00	7813.73	7807.80	86.22	16.21	16.20	6.41	4391.34	4424.80	132.24	
7800.00	7891.81	7885.92	86.21	16.34	16.34	6.52	4388.32	4422.15	130.70	
7900.00	8006.29	8000.44	86.19	16.53	16.52	6.69	4385.41	4419.66	129.04	
8000.00	8106.21	8100.40	86.18	16.69	16.68	6.85	4382.31	4416.93	127.55	
8100.00	8206.13	8200.36	86.17	16.85	16.85	7.00	4379.21	4414.20	126.15	
8200.00	8306.05	8300.32	86.16	17.02	17.01	7.16	4376.12	4411.48	124.79	
8300.00	8405.96	8400.27	356.04	17.19	17.18	7.32	4372.99	4408.74	123.32	
8400.00	8505.10	8499.45	355.94	17.36	17.35	7.49	4360.93	4397.07	121.67	
8500.00	8600.69	8595.08	355.68	17.52	17.51	7.65	4331.89	4368.39	119.67	
8600.00	8689.83	8684.26	355.23	17.68	17.67	7.80	4286.77	4323.58	117.43	
8700.00	8769.82	8764.28	354.48	17.82	17.81	7.94	4226.88	4264.01	114.83	
8800.00	8838.21	8832.70	353.24	17.94	17.93	8.06	4154.12	4191.48	112.18	
8900.00	8892.94	8887.45	351.00	18.04	18.03	8.16	4070.73	4108.21	109.60	
9000.00	8932.34	8926.86	346.23	18.11	18.10	8.23	3979.10	4016.73	106.74	
9100.00	8955.21	8949.74	331.30	18.15	18.14	8.27	3882.11	3919.82	103.95	
9200.00	8960.86	8955.40	251.36	18.16	18.15	8.28	3782.69	3820.42	101.24	
9300.00	8958.08	8952.62	251.82	18.16	18.15	8.28	3683.06	3720.79	98.60	
9400.00	8955.30	8949.84	252.29	18.15	18.14	8.27	3583.41	3621.18	95.87	
9500.00	8952.52	8947.05	252.76	18.15	18.14	8.27	3483.78	3521.59	93.13	
9600.00	8949.74	8944.27	253.23	18.14	18.13	8.26	3384.16	3422.02	90.39	
9700.00	8946.96	8941.49	253.71	18.14	18.13	8.26	3284.57	3322.48	87.65	
9800.00	8944.18	8938.71	254.19	18.13	18.12	8.25	3185.00	3222.96	84.92	
9900.00	8941.40	8935.93	254.66	18.13	18.12	8.25	3085.46	3123.47	82.19	
10000.00	8938.62	8933.15	255.15	18.12	18.11	8.24	2985.96	3024.00	79.49	
10100.00	8935.84	8930.36	255.63	18.12	18.11	8.24	2886.44	2924.58	76.69	
10200.00	8933.05	8927.58	256.12	18.11	18.10	8.23	2786.94	2825.19	73.87	
10300.00	8930.27	8924.80	256.60	18.11	18.10	8.23	2687.50	2725.84	71.10	
10400.00	8927.49	8922.02	257.09	18.10	18.09	8.22	2588.09	2626.54	68.30	
10500.00	8924.71	8919.24	257.59	18.10	18.09	8.22	2488.60	2527.29	65.31	
10600.00	8921.93	8916.45	258.08	18.09	18.08	8.21	2389.25	2428.10	62.50	
10700.00	8919.15	8913.67	258.58	18.09	18.08	8.21	2289.96	2328.98	59.68	
10800.00	8916.37	8910.89	259.08	18.08	18.07	8.20	2190.64	2229.93	56.75	
10900.00	8913.59	8908.11	259.57	18.08	18.07	8.20	2091.30	2130.97	53.72	
11000.00	8910.81	8905.33	260.08	18.07	18.06	8.19	1992.12	2032.10	50.82	

5D Anti-Collision Report

Secondary Well: Parkway 13 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
11100.00	8908.03	8902.55	260.58	18.07	18.06	8.19	1892.99	1933.35	47.91	
11200.00	8905.25	8899.76	261.08	18.06	18.05	8.18	1793.84	1834.72	44.87	
11300.00	8902.47	8896.98	261.59	18.06	18.05	8.18	1694.79	1736.26	41.87	
11400.00	8899.69	8894.20	262.10	18.05	18.04	8.17	1595.75	1637.97	38.80	
11500.00	8896.91	8891.42	262.60	18.05	18.04	8.17	1496.85	1539.89	35.78	
11600.00	8894.13	8888.64	263.11	18.04	18.03	8.16	1398.07	1442.08	32.77	
11700.00	8891.35	8885.86	263.63	18.04	18.03	8.16	1299.31	1344.58	29.70	
11800.00	8888.56	8883.07	264.14	18.03	18.02	8.15	1200.61	1247.47	26.62	
11900.00	8885.78	8880.29	264.65	18.03	18.02	8.15	1102.14	1150.85	23.63	
12000.00	8883.00	8877.51	265.16	18.02	18.01	8.14	1003.95	1054.85	20.72	
12100.00	8880.22	8874.73	265.68	18.02	18.01	8.14	905.88	959.67	17.84	
12200.00	8877.44	8871.95	266.19	18.01	18.00	8.13	808.32	865.56	15.12	
12300.00	8874.66	8869.17	266.71	18.01	18.00	8.13	711.31	772.92	12.55	
12400.00	8871.88	8866.38	267.23	18.00	17.99	8.12	614.82	682.35	10.11	
12500.00	8869.10	8863.60	267.74	18.00	17.99	8.12	519.90	594.79	7.94	
12600.00	8866.32	8860.82	268.26	17.99	17.98	8.11	427.17	511.80	6.05	
12700.00	8863.54	8858.04	268.78	17.99	17.98	8.11	338.75	436.00	4.48	
12800.00	8860.76	8855.26	269.30	17.98	17.97	8.10	259.63	371.79	3.31	
12900.00	8857.98	8852.47	269.82	17.98	17.97	8.10	198.87	326.11	2.56	
13000.00	8855.20	8849.69	270.34	17.97	17.96	8.09	170.67	307.33	2.25	
13100.00	8852.42	8846.91	270.85	17.97	17.96	8.09	185.66	320.22	2.38	
13200.00	8849.64	8844.13	271.37	17.96	17.95	8.08	237.57	361.40	2.92	
13300.00	8846.86	8841.35	271.89	17.96	17.95	8.08	311.31	422.69	3.80	
13400.00	8844.08	8838.57	272.41	17.95	17.94	8.07	396.81	496.70	4.97	
13500.00	8841.29	8835.78	272.93	17.95	17.94	8.07	488.11	578.57	6.40	
13600.00	8838.51	8833.00	273.45	17.94	17.93	8.06	582.39	665.39	8.02	
13642.38	8837.34	8831.82	273.66	17.94	17.93	8.06	622.80	703.24	8.74	

Secondary Well: #7 (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	4.00	0.00	90.40	0.00	0.00	0.00	4996.01	4997.54	3254.89	
100.00	108.72	104.72	90.39	0.12	0.12	4.60	4995.67	4997.43	2830.27	
200.00	181.87	177.87	90.39	0.27	0.27	4.61	4995.39	4997.53	2333.34	
300.00	312.47	308.48	90.39	0.54	0.54	4.65	4995.09	4997.73	1897.11	
400.00	414.79	410.79	90.39	0.76	0.76	4.70	4994.36	4997.44	1623.58	
500.00	502.19	498.19	90.39	0.95	0.95	4.75	4993.78	4997.27	1432.31	
600.00	599.26	595.26	90.39	1.15	1.15	4.81	4993.34	4997.26	1276.49	
700.00	698.29	694.29	90.39	1.35	1.35	4.88	4992.94	4997.28	1150.39	
800.00	770.85	766.85	90.38	1.51	1.51	4.94	4992.85	4997.57	1057.77	
900.00	843.83	839.84	90.38	1.66	1.66	5.01	4993.33	4998.44	979.17	
1000.00	921.93	917.95	90.37	1.83	1.83	5.08	4994.31	4999.81	909.78	
1100.00	1017.48	1013.52	90.36	2.03	2.03	5.17	4995.53	5001.45	845.83	
1200.00	1130.80	1126.85	90.35	2.27	2.27	5.30	4996.49	5002.87	783.88	
1300.00	1232.35	1228.42	90.33	2.49	2.48	5.41	4997.57	5004.38	734.50	
1400.00	1380.02	1376.11	90.31	2.80	2.79	5.59	4997.71	5005.06	681.36	
1500.00	1522.99	1519.12	90.27	3.10	3.09	5.78	4997.12	5005.01	634.83	
1600.00	1622.10	1618.25	90.25	3.30	3.30	5.91	4996.24	5004.55	601.97	
1700.00	1719.07	1715.23	90.23	3.50	3.49	6.05	4995.40	5004.13	573.28	
1800.00	1814.56	1810.74	90.22	3.70	3.69	6.19	4994.66	5003.82	546.18	
1900.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4874.50	4914.74	122.14	
2000.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4774.44	4814.76	119.43	
2100.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4674.38	4714.77	116.73	
2200.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4574.32	4614.79	114.03	
2300.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4474.26	4514.81	111.34	
2400.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4374.19	4414.83	108.66	
2500.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4274.13	4314.85	105.98	
2600.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4174.07	4214.87	103.31	
2700.00	6814.00	11515.93	106.30	132.52	35.48	71.08	4074.00	4114.89	100.64	

5D Anti-Collision Report

Secondary Well: #7 (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
2800.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3973.93	4014.91	97.99	
2900.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3873.87	3914.93	95.34	
3000.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3773.80	3814.96	92.70	
3100.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3673.74	3714.98	90.07	
3200.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3573.67	3615.01	87.45	
3300.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3473.61	3515.04	84.84	
3400.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3373.54	3415.07	82.24	
3500.00	6814.00	11515.93	106.30	132.52	35.48	71.08	3273.48	3315.10	79.65	
3600.00	6814.00	11515.93	182.58	132.52	35.48	71.08	3173.44	3215.16	77.06	
3700.00	6814.00	11515.93	181.86	132.52	35.48	71.08	3073.49	3115.31	74.49	
3800.00	6814.00	11515.93	181.46	132.52	35.48	71.08	2973.66	3015.58	71.94	
3900.00	6814.00	11515.93	181.21	132.52	35.48	71.08	2874.00	2916.02	69.40	
4000.00	6814.00	11515.93	181.04	132.52	35.48	71.08	2774.55	2816.67	66.87	
4100.00	6814.00	11515.93	180.92	132.52	35.48	71.08	2675.38	2717.60	64.37	
4200.00	6814.00	11515.93	180.82	132.52	35.48	71.08	2576.55	2618.87	61.88	
4300.00	6814.00	11515.93	180.75	132.52	35.48	71.08	2478.12	2520.55	59.40	
4400.00	6814.00	11515.93	180.75	132.52	35.48	71.08	2379.99	2422.53	56.94	
4500.00	6814.00	11515.93	180.75	132.52	35.48	71.08	2282.03	2324.68	54.49	
4600.00	6814.00	11515.93	180.75	132.52	35.48	71.08	2184.26	2227.03	52.07	
4700.00	6814.00	11515.93	180.75	132.52	35.48	71.08	2086.68	2129.59	49.62	
4800.00	6814.00	11515.93	180.75	132.52	35.48	71.08	1989.32	2032.40	47.18	
4900.00	6814.00	11515.93	180.75	132.52	35.48	71.08	1892.26	1935.50	44.76	
5000.00	6814.00	11515.93	180.75	132.52	35.48	71.08	1795.52	1838.93	42.36	
5100.00	6814.00	11515.93	180.75	132.52	35.48	71.08	1699.15	1742.75	39.97	
5200.00	6814.00	11515.93	180.75	132.52	35.48	71.08	1603.22	1647.02	37.61	
5300.00	6814.00	11515.93	180.77	132.52	35.48	71.08	1507.75	1551.73	35.28	
5400.00	6814.00	11515.93	180.82	132.52	35.48	71.08	1412.40	1456.55	32.99	
5500.00	6814.00	11515.93	180.86	132.52	35.48	71.08	1317.18	1361.49	30.72	
5600.00	6814.00	11515.93	180.91	132.52	35.48	71.08	1222.06	1266.60	28.43	
5700.00	6814.00	11515.93	180.95	132.52	35.48	71.08	1127.18	1171.96	26.17	
5800.00	6814.00	11515.93	181.00	132.52	35.48	71.08	1032.62	1077.67	23.92	
5900.00	6814.00	11515.93	181.05	132.52	35.48	71.08	938.44	983.85	21.67	
6000.00	6814.00	11515.93	181.10	132.52	35.48	71.08	844.90	890.70	19.45	
6100.00	6814.00	11515.93	103.12	132.52	35.48	71.08	752.42	798.61	17.29	
6200.00	6814.00	11515.93	103.12	132.52	35.48	71.08	662.09	708.59	15.24	
6300.00	6814.00	11515.93	103.12	132.52	35.48	71.08	574.55	621.64	13.20	
6400.00	6814.00	11515.93	103.12	132.52	35.48	71.08	491.65	539.23	11.33	
6500.00	6814.00	11515.93	103.12	132.52	35.48	71.08	415.30	463.79	9.57	
6600.00	6814.00	11515.93	103.12	132.52	35.48	71.08	349.95	399.29	8.09	
6700.00	6814.00	11515.93	103.12	132.52	35.48	71.08	301.92	351.80	7.05	
6800.00	6814.00	11515.93	103.12	132.52	35.48	71.08	278.55	328.78	6.55	
6900.00	6814.00	11515.93	103.12	132.52	35.48	71.08	285.39	335.30	6.72	
7000.00	6814.00	11515.93	103.12	132.52	35.48	71.08	320.55	369.81	7.51	
7100.00	6814.00	11515.93	103.12	132.52	35.48	71.08	376.94	425.55	8.75	
7200.00	6814.00	11515.93	103.12	132.52	35.48	71.08	447.32	495.40	10.30	
7300.00	6814.00	11515.93	103.12	132.52	35.48	71.08	526.53	574.24	12.04	
7400.00	6814.00	11515.93	103.12	132.52	35.48	71.08	611.32	658.85	13.86	
7500.00	6814.00	11515.93	103.12	132.52	35.48	71.08	699.74	747.27	15.72	
7600.00	6814.00	11515.93	103.12	132.52	35.48	71.08	790.71	838.30	17.61	
7700.00	6814.00	11515.93	103.12	132.52	35.48	71.08	883.55	931.17	19.55	
7800.00	6814.00	11515.93	103.12	132.52	35.48	71.08	977.76	1025.38	21.53	
7900.00	6814.00	11515.93	103.12	132.52	35.48	71.08	1072.87	1120.60	23.48	
8000.00	6814.00	11515.93	103.12	132.52	35.48	71.08	1168.66	1216.58	25.39	
8100.00	6814.00	11515.93	103.12	132.52	35.48	71.08	1265.07	1313.17	27.30	
8200.00	6814.00	11515.93	103.12	132.52	35.48	71.08	1361.97	1410.23	29.22	
8300.00	6814.00	11515.93	12.85	132.52	35.48	71.08	1459.26	1507.67	31.14	
8400.00	6814.00	11515.93	7.22	132.52	35.48	71.08	1554.59	1603.15	33.02	
8500.00	6814.00	11515.93	5.01	132.52	35.48	71.08	1644.39	1693.15	34.73	

SD Anti-Collision Report

Secondary Well: #7 (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
8600.00	6814.00	11515.93	3.86	132.52	35.48	71.08	1726.96	1775.97	36.24	
8700.00	6814.00	11515.93	3.18	132.52	35.48	71.08	1801.00	1850.22	37.59	
8800.00	6814.00	11515.93	2.74	132.52	35.48	71.08	1865.33	1914.76	38.73	
8900.00	6816.18	11463.94	2.40	131.10	35.11	70.35	1918.78	1967.99	40.00	
9000.00	6820.04	11371.63	2.16	128.58	34.46	69.04	1957.39	2006.04	41.23	
9100.00	6824.12	11274.11	2.02	125.92	33.77	67.66	1979.41	2027.50	42.16	
9200.00	6828.30	11174.34	1.97	123.20	33.06	66.25	1984.16	2031.71	42.73	
9300.00	6832.48	11074.43	1.94	120.47	32.36	64.84	1980.44	2027.49	43.09	
9400.00	6836.67	10974.53	1.91	117.75	31.65	63.43	1976.68	2023.26	43.44	
9500.00	6840.85	10874.62	1.88	115.03	30.95	62.02	1972.89	2019.04	43.75	
9600.00	6845.03	10774.72	1.85	112.30	30.25	60.62	1969.07	2014.82	44.05	
9700.00	6849.21	10674.81	1.82	109.58	29.55	59.22	1965.22	2010.59	44.32	
9800.00	6853.39	10574.91	1.79	106.86	28.85	57.83	1961.35	2006.37	44.57	
9900.00	6857.58	10475.00	1.76	104.15	28.15	56.43	1957.42	2002.15	44.76	
10000.00	6861.76	10375.09	1.73	101.43	27.46	55.05	1953.46	1997.93	44.93	
10100.00	6865.94	10275.19	1.70	98.71	26.76	53.66	1949.48	1993.71	45.08	
10200.00	6870.12	10175.28	1.67	96.00	26.07	52.28	1945.50	1989.49	45.22	
10300.00	6874.31	10075.38	1.64	93.29	25.38	50.90	1941.53	1985.27	45.38	
10400.00	6878.49	9975.47	1.61	90.58	24.70	49.53	1937.48	1981.05	45.47	
10500.00	6882.67	9875.57	1.58	87.87	24.02	48.17	1933.46	1976.83	45.57	
10600.00	6886.85	9775.66	1.54	85.17	23.33	46.81	1929.38	1972.62	45.62	
10700.00	6891.04	9675.76	1.51	82.47	22.66	45.45	1925.30	1968.40	45.67	
10800.00	6895.22	9575.85	1.48	79.77	21.98	44.11	1921.20	1964.18	45.69	
10900.00	6899.40	9475.95	1.45	77.07	21.31	42.77	1917.04	1959.97	45.66	
11000.00	6903.07	9387.53	1.42	74.69	20.73	41.59	1912.88	1955.82	45.55	
11100.00	6904.40	9327.56	1.40	73.07	20.37	40.79	1910.24	1953.43	45.23	
11200.00	6905.95	9227.58	1.37	70.38	19.71	39.47	1908.74	1951.85	45.28	
11300.00	6907.51	9127.59	1.34	67.70	19.05	38.16	1907.15	1950.27	45.23	
11400.00	6909.06	9027.61	1.30	65.02	18.40	36.86	1905.58	1948.69	45.21	
11500.00	6910.61	8927.63	1.27	62.34	17.76	35.57	1904.04	1947.11	45.22	
11600.00	6912.17	8827.65	1.23	59.67	17.12	34.30	1902.49	1945.53	45.21	
11700.00	6913.72	8727.67	1.20	57.02	16.50	33.04	1900.88	1943.95	45.14	
11800.00	6915.27	8627.69	1.16	54.37	15.88	31.80	1899.32	1942.37	45.12	
11900.00	6916.82	8527.71	1.13	51.73	15.27	30.59	1897.75	1940.79	45.09	
12000.00	6918.38	8427.73	1.10	49.10	14.67	29.39	1896.13	1939.22	45.00	
12100.00	6919.93	8327.75	1.06	46.49	14.08	28.22	1894.50	1937.64	44.91	
12200.00	6921.48	8227.77	1.03	43.89	13.51	27.08	1892.83	1936.07	44.77	
12300.00	6923.04	8127.79	0.99	41.32	12.96	25.97	1891.13	1934.49	44.61	
12400.00	6924.59	8027.81	0.96	38.76	12.42	24.90	1889.41	1932.92	44.43	
12500.00	6926.14	7927.83	0.92	36.24	11.91	23.87	1887.71	1931.35	44.26	
12600.00	6927.70	7827.84	0.89	33.75	11.42	22.89	1885.93	1929.77	44.02	
12700.00	6929.25	7727.86	0.85	31.31	10.96	21.96	1884.13	1928.20	43.75	
12800.00	6930.80	7627.88	0.82	28.93	10.52	21.10	1882.31	1926.63	43.46	
12900.00	6932.35	7527.90	0.78	26.61	10.13	20.30	1880.45	1925.06	43.15	
13000.00	6933.91	7427.92	0.75	24.39	9.77	19.58	1878.56	1923.49	42.80	
13100.00	6935.46	7327.94	0.71	22.28	9.45	18.95	1876.62	1921.93	42.42	
13200.00	6936.44	7259.89	0.69	20.92	9.28	18.56	1874.83	1920.70	41.87	
13300.00	6935.95	7237.00	0.68	20.49	9.29	18.45	1876.16	1922.80	41.22	
13400.00	6934.56	7214.19	0.67	20.06	9.31	18.34	1881.56	1928.91	40.74	
13500.00	6932.27	7191.52	0.67	19.65	9.36	18.23	1890.92	1938.98	40.35	
13600.00	6929.13	7169.06	0.66	19.27	9.43	18.14	1904.28	1952.98	40.10	
13642.38	6927.55	7159.63	0.66	19.11	9.46	18.10	1911.14	1960.09	40.04	
Secondary Well: #7 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	4.00	0.00	90.40	0.00	0.00	0.00	4996.01	4997.54	3254.89	
100.00	108.72	104.72	90.39	0.14	0.14	2.63	4995.65	4997.43	2800.30	
200.00	181.87	177.87	90.39	0.28	0.28	2.63	4995.38	4997.53	2331.28	

5D Anti-Collision Report

Secondary Well: #7 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
300.00	312.47	308.48	90.39	0.47	0.47	2.63	4995.16	4997.73	1947.76	
400.00	414.79	410.79	90.39	0.67	0.67	2.64	4994.45	4997.44	1672.57	
500.00	502.19	498.19	90.39	0.86	0.86	2.64	4993.87	4997.27	1468.56	
600.00	599.26	595.26	90.39	1.02	1.02	2.65	4993.47	4997.26	1320.09	
700.00	698.29	694.29	90.39	1.18	1.18	2.65	4993.11	4997.28	1198.29	
800.00	770.85	766.85	90.38	1.31	1.31	2.66	4993.05	4997.57	1103.75	
900.00	843.83	839.84	90.38	1.45	1.45	2.67	4993.55	4998.44	1022.92	
1000.00	921.93	917.95	90.37	1.60	1.60	2.67	4994.55	4999.81	951.02	
1100.00	1017.48	1013.52	90.36	1.79	1.79	2.68	4995.77	5001.45	881.27	
1200.00	1130.80	1126.85	90.35	2.03	2.03	2.69	4996.73	5002.87	814.17	
1300.00	1232.35	1228.42	90.33	2.27	2.27	2.70	4997.77	5004.38	756.78	
1400.00	1380.02	1376.11	90.31	2.63	2.63	2.72	4997.87	5005.06	696.06	
1500.00	1522.99	1519.12	90.27	2.97	2.97	2.73	4997.25	5005.01	645.71	
1600.00	1622.10	1618.25	90.25	3.20	3.20	2.75	4996.33	5004.55	608.94	
1700.00	1719.07	1715.23	90.23	3.43	3.43	2.76	4995.47	5004.13	577.64	
1800.00	1814.56	1810.74	90.22	3.66	3.66	2.77	4994.70	5003.82	548.33	
1900.00	1929.94	1926.12	90.21	3.93	3.92	2.78	4993.69	5003.30	520.41	
2000.00	2023.83	2020.01	90.20	4.13	4.13	2.80	4992.76	5002.80	498.18	
2100.00	2132.09	2128.27	90.19	4.37	4.37	2.81	4991.70	5002.20	476.55	
2200.00	2225.34	2221.53	90.18	4.59	4.59	2.82	4990.68	5001.63	456.96	
2300.00	2317.96	2314.16	90.18	4.81	4.80	2.84	4989.79	5001.18	438.97	
2400.00	2405.53	2401.72	90.17	5.01	5.01	2.85	4989.13	5000.95	422.84	
2500.00	2515.72	2511.92	90.17	5.27	5.27	2.86	4988.41	5000.72	406.33	
2600.00	2610.79	2606.99	90.17	5.49	5.49	2.88	4987.71	5000.46	392.16	
2700.00	2711.43	2707.62	90.16	5.73	5.73	2.89	4987.02	5000.24	378.22	
2800.00	2823.13	2819.32	90.16	6.00	6.00	2.91	4986.18	4999.89	364.71	
2900.00	2927.43	2923.63	90.16	6.24	6.24	2.93	4985.21	4999.38	352.86	
3000.00	3026.44	3022.64	90.15	6.46	6.46	2.95	4984.20	4998.80	342.33	
3100.00	3111.60	3107.80	90.15	6.64	6.64	2.96	4983.41	4998.43	332.99	
3200.00	3200.14	3196.34	90.15	6.85	6.85	2.98	4982.87	4998.31	323.71	
3300.00	3314.44	3310.64	90.14	7.14	7.14	3.01	4982.18	4998.14	313.20	
3400.00	3401.22	3397.42	90.14	7.36	7.36	3.02	4981.58	4997.98	304.62	
3500.00	3514.04	3510.25	90.13	7.65	7.65	3.05	4980.89	4997.81	295.27	
3600.00	3606.80	3603.00	168.12	7.89	7.89	3.07	4981.10	4998.47	287.70	
3700.00	3732.75	3728.97	168.11	8.22	8.21	3.11	4982.65	5000.56	279.19	
3800.00	3838.54	3834.77	168.10	8.49	8.49	3.13	4985.77	5004.15	272.24	
3900.00	3954.65	3950.89	168.09	8.78	8.78	3.17	4990.33	5009.19	265.60	
4000.00	4097.07	4093.33	168.09	9.12	9.12	3.21	4996.07	5015.46	258.63	
4100.00	4202.23	4198.52	168.09	9.35	9.35	3.25	5002.98	5022.82	253.09	
4200.00	4287.46	4283.76	168.09	9.54	9.54	3.28	5011.76	5031.99	248.72	
4300.00	4387.80	4384.12	168.09	9.77	9.77	3.32	5022.34	5043.03	243.78	
4400.00	4487.92	4484.25	168.12	9.98	9.98	3.36	5033.74	5054.86	239.30	
4500.00	4570.88	4567.23	168.14	10.17	10.16	3.40	5045.31	5066.82	235.49	
4600.00	6925.76	7182.00	168.65	18.76	9.16	18.09	5038.87	5063.37	206.67	
4700.00	6925.76	7182.00	168.65	18.76	9.16	18.09	5005.92	5030.74	202.70	
4800.00	6925.76	7182.00	168.65	18.76	9.16	18.09	4974.74	4999.90	198.78	
4900.00	6925.76	7182.00	168.65	18.76	9.16	18.09	4945.39	4970.88	195.03	
5000.00	6925.76	7182.00	168.65	18.76	9.16	18.09	4917.88	4943.71	191.45	
5100.00	6925.76	7182.00	168.65	18.76	9.16	18.09	4892.24	4918.42	187.87	
5200.00	6925.76	7182.00	168.65	18.76	9.16	18.09	4868.52	4895.05	184.50	
5300.00	6925.76	7182.00	168.63	18.76	9.16	18.09	4846.45	4873.32	181.38	
5400.00	6925.76	7182.00	168.58	18.76	9.16	18.09	4824.82	4852.00	178.52	
5500.00	6925.76	7182.00	168.54	18.76	9.16	18.09	4803.51	4830.98	175.81	
5600.00	6925.76	7182.00	168.50	18.76	9.16	18.09	4782.51	4810.27	173.22	
5700.00	6925.76	7182.00	168.46	18.76	9.16	18.09	4761.83	4789.88	170.77	
5800.00	6925.76	7182.00	168.42	18.76	9.16	18.09	4741.50	4769.82	168.45	
5900.00	6925.76	7182.00	168.38	18.76	9.16	18.09	4721.52	4750.09	166.26	
6000.00	6925.76	7182.00	168.34	18.76	9.16	18.09	4701.90	4730.71	164.18	

5D Anti-Collision Report

Secondary Well: #7 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
6100.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4682.93	4711.99	162.12	
6200.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4665.86	4695.19	160.04	
6300.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4650.87	4680.47	158.12	
6400.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4637.96	4667.85	156.20	
6500.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4627.18	4657.34	154.43	
6600.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4618.53	4648.95	152.82	
6700.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4612.04	4642.71	151.37	
6800.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4607.70	4638.61	150.07	
6900.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4605.54	4636.67	148.93	
7000.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4605.54	4636.88	147.93	
7100.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4607.71	4639.25	147.08	
7200.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4612.05	4643.77	146.38	
7300.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4618.55	4650.44	145.81	
7400.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4627.20	4659.25	145.38	
7500.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4637.98	4670.18	145.04	
7600.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4650.86	4683.22	144.71	
7700.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4665.82	4698.36	144.39	
7800.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4682.85	4715.56	144.16	
7900.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4701.95	4734.82	144.06	
8000.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4723.09	4756.10	144.07	
8100.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4746.24	4779.38	144.21	
8200.00	6925.76	7182.00	90.32	18.76	9.16	18.09	4771.37	4804.63	144.45	
8300.00	6925.76	7182.00	0.22	18.76	9.16	18.09	4798.45	4831.81	144.81	
8400.00	6925.76	7182.00	0.21	18.76	9.16	18.09	4818.75	4852.17	145.19	
8500.00	6925.76	7182.00	0.21	18.76	9.16	18.09	4823.84	4857.28	145.27	
8600.00	6925.76	7182.00	0.21	18.76	9.16	18.09	4813.59	4847.02	145.00	
8700.00	6925.76	7182.00	0.22	18.76	9.16	18.09	4788.22	4821.62	144.35	
8800.00	6925.76	7182.00	0.24	18.76	9.16	18.09	4748.24	4781.61	143.33	
8900.00	6925.76	7182.00	0.27	18.76	9.16	18.09	4694.49	4727.85	141.73	
9000.00	6925.76	7182.00	0.31	18.76	9.16	18.09	4628.22	4661.54	139.92	
9100.00	6925.76	7182.00	0.39	18.76	9.16	18.09	4550.91	4584.19	137.74	
9200.00	6925.76	7182.00	0.52	18.76	9.16	18.09	4464.41	4497.66	135.27	
9300.00	6925.76	7182.00	0.52	18.76	9.16	18.09	4374.37	4407.56	132.83	
9400.00	6925.76	7182.00	0.52	18.76	9.16	18.09	4284.78	4317.89	130.40	
9500.00	6925.76	7182.00	0.52	18.76	9.16	18.09	4195.65	4228.69	128.01	
9600.00	6925.76	7182.00	0.52	18.76	9.16	18.09	4107.03	4139.98	125.65	
9700.00	6925.76	7182.00	0.52	18.76	9.16	18.09	4018.91	4051.80	123.19	
9800.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3931.30	3964.17	120.58	
9900.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3844.30	3877.15	118.03	
10000.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3757.97	3790.77	115.58	
10100.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3672.34	3705.07	113.20	
10200.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3587.34	3620.11	110.47	
10300.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3503.19	3535.93	107.99	
10400.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3419.82	3452.60	105.34	
10500.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3337.40	3370.17	102.86	
10600.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3255.91	3288.72	100.25	
10700.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3175.42	3208.31	97.53	
10800.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3096.05	3129.04	94.84	
10900.00	6925.76	7182.00	0.52	18.76	9.16	18.09	3017.86	3050.99	92.11	
11000.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2940.96	2974.25	89.35	
11100.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2865.50	2898.93	86.72	
11200.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2791.45	2825.14	83.87	
11300.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2719.13	2753.00	81.28	
11400.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2648.45	2682.65	78.43	
11500.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2579.76	2614.24	75.82	
11600.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2513.10	2547.92	73.18	
11700.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2448.56	2483.85	70.39	
11800.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2386.49	2422.22	67.81	

SD Anti-Collision Report

Secondary Well: #7 (s)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
11900.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2327.03	2363.21	65.32	
12000.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2270.27	2307.03	62.77	
12100.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2216.57	2253.88	60.41	
12200.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2166.10	2204.00	58.15	
12300.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2119.01	2157.60	55.91	
12400.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2075.61	2114.91	53.80	
12500.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2036.14	2076.17	51.87	
12600.00	6925.76	7182.00	0.52	18.76	9.16	18.09	2000.86	2041.59	50.12	
12700.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1969.89	2011.40	48.46	
12800.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1943.41	1985.79	46.86	
12900.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1921.75	1964.94	45.50	
13000.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1905.04	1949.00	44.34	
13100.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1893.40	1938.10	43.36	
13200.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1886.79	1932.31	42.44	
13300.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1885.33	1931.70	41.66	
13400.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1889.13	1936.26	41.09	
13500.00	6925.76	7182.00	0.52	18.76	9.16	18.09	1898.10	1945.95	40.67	
13600.00	6922.40	7159.28	0.50	18.39	9.17	17.99	1911.84	1960.26	40.48	
13642.38	6920.34	7147.04	0.50	18.19	9.17	17.93	1918.74	1967.39	40.44	

Secondary Well: Emerald PWU 20 11H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	0.00	2.00	94.01	0.00	0.00	0.10	4786.53	4787.10	8415.55	
100.00	100.00	102.00	94.01	0.12	0.12	4.60	4786.31	4787.10	6050.28	
200.00	200.00	202.00	94.01	0.34	0.34	4.62	4785.86	4787.10	3861.52	
300.00	300.00	302.00	94.01	0.57	0.57	4.65	4785.41	4787.10	2835.68	
400.00	400.00	402.00	94.01	0.79	0.79	4.69	4784.96	4787.10	2240.48	
500.00	500.00	502.00	94.01	1.02	1.02	4.75	4784.52	4787.10	1851.80	
600.00	600.00	602.00	94.01	1.24	1.24	4.81	4784.07	4787.10	1578.03	
700.00	700.00	702.00	94.01	1.47	1.47	4.89	4783.62	4787.10	1374.79	
800.00	800.00	802.00	94.01	1.69	1.69	4.97	4783.17	4787.10	1217.93	
900.00	900.00	902.00	94.01	1.92	1.92	5.06	4782.72	4787.10	1093.19	
1000.00	1000.00	1002.00	94.01	2.14	2.14	5.16	4782.27	4787.10	991.64	
1100.00	1100.00	1102.00	94.01	2.36	2.36	5.27	4781.82	4787.10	907.34	
1200.00	1200.00	1202.00	94.01	2.59	2.59	5.38	4781.38	4787.10	836.26	
1300.00	1300.00	1302.00	94.01	2.81	2.81	5.50	4780.93	4787.10	775.50	
1400.00	1400.00	1402.00	94.01	3.04	3.04	5.63	4780.48	4787.10	722.98	
1500.00	1500.00	1502.00	94.01	3.26	3.26	5.76	4780.03	4787.10	677.12	
1600.00	1600.00	1602.00	94.01	3.49	3.49	5.89	4779.58	4787.10	636.72	
1700.00	1700.00	1702.00	94.01	3.71	3.71	6.03	4779.13	4787.10	600.88	
1800.00	1800.00	1802.00	94.01	3.94	3.94	6.17	4778.69	4787.10	568.86	
1900.00	1893.41	1895.42	94.00	4.15	4.15	6.31	4778.30	4787.16	540.42	
2000.00	1985.33	1987.35	93.98	4.35	4.35	6.45	4778.09	4787.38	515.46	
2100.00	2077.11	2079.20	93.94	4.56	4.56	6.59	4778.05	4787.77	492.67	
2200.00	2168.69	2170.91	93.88	4.76	4.76	6.73	4778.19	4788.34	471.93	
2300.00	2260.01	2262.44	93.80	4.97	4.96	6.87	4778.50	4789.08	452.67	
2400.00	2354.08	2356.86	93.71	5.19	5.17	7.02	4778.98	4790.00	434.75	
2500.00	2453.32	2456.48	93.61	5.42	5.40	7.19	4779.50	4790.96	418.03	
2600.00	2552.56	2556.10	93.50	5.66	5.62	7.36	4780.01	4791.95	401.37	
2700.00	2651.80	2655.72	93.40	5.90	5.85	7.53	4780.54	4792.94	386.38	
2800.00	2751.04	2755.34	93.30	6.14	6.08	7.70	4781.09	4793.96	372.47	
2900.00	2850.28	2854.95	93.19	6.38	6.30	7.88	4781.65	4794.99	359.48	
3000.00	2949.53	2954.57	93.09	6.63	6.53	8.06	4782.22	4796.03	347.32	
3100.00	3048.77	3054.19	92.99	6.88	6.76	8.24	4782.81	4797.09	335.92	
3200.00	3148.01	3153.81	92.88	7.13	6.99	8.42	4783.41	4798.17	325.22	
3300.00	3247.25	3253.43	92.78	7.38	7.22	8.61	4784.03	4799.26	315.15	
3400.00	3346.49	3353.05	92.68	7.63	7.44	8.80	4784.66	4800.37	305.66	
3500.00	3445.73	3452.67	92.58	7.88	7.67	8.99	4785.31	4801.49	296.72	

SD Anti-Collision Report

Secondary Well: Emerald PWU 20 11H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
3600.00	3540.29	3547.61	170.47	8.12	7.89	9.18	4786.86	4803.51	288.57	
3700.00	3629.32	3637.11	170.36	8.36	8.09	9.36	4790.36	4807.45	281.41	
3800.00	3717.85	3726.26	170.24	8.60	8.29	9.53	4795.80	4813.33	274.62	
3900.00	3806.93	3816.14	170.09	8.85	8.49	9.71	4803.18	4821.16	268.16	
4000.00	3904.73	3914.90	169.93	9.14	8.72	9.92	4812.37	4830.83	261.69	
4100.00	4002.38	4013.52	169.77	9.42	8.96	10.13	4823.29	4842.23	255.64	
4200.00	8957.00	13666.14	134.56	133.21	37.95	76.02	4743.48	4789.24	104.67	
4300.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4644.66	4690.61	102.08	
4400.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4546.01	4592.16	99.52	
4500.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4447.43	4493.78	96.96	
4600.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4348.91	4395.46	94.41	
4700.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4250.46	4297.23	91.88	
4800.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4152.09	4199.08	89.36	
4900.00	8957.00	13666.14	138.66	133.21	37.95	76.02	4053.80	4101.02	86.86	
5000.00	8957.00	13666.14	138.66	133.21	37.95	76.02	3955.60	4003.05	84.36	
5100.00	8957.00	13666.14	138.66	133.21	37.95	76.02	3857.50	3905.19	81.89	
5200.00	8957.00	13666.14	138.66	133.21	37.95	76.02	3759.51	3807.44	79.43	
5300.00	8957.00	13666.14	136.82	133.21	37.95	76.02	3661.56	3709.76	76.96	
5400.00	8957.00	13666.14	133.51	133.21	37.95	76.02	3563.47	3611.95	74.51	
5500.00	8957.00	13666.14	129.89	133.21	37.95	76.02	3465.25	3514.02	72.06	
5600.00	8957.00	13666.14	125.96	133.21	37.95	76.02	3366.82	3415.97	69.51	
5700.00	8957.00	13666.14	121.72	133.21	37.95	76.02	3268.28	3317.83	66.95	
5800.00	8957.00	13666.14	117.19	133.21	37.95	76.02	3169.65	3219.63	64.41	
5900.00	8957.00	13666.14	112.42	133.21	37.95	76.02	3070.95	3121.39	61.88	
6000.00	8957.00	13666.14	107.46	133.21	37.95	76.02	2972.22	3023.14	59.37	
6100.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2873.49	2924.92	56.88	
6200.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2774.85	2826.81	54.40	
6300.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2676.32	2728.85	51.95	
6400.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2577.92	2631.03	49.53	
6500.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2479.64	2533.39	47.14	
6600.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2381.52	2435.94	44.76	
6700.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2283.40	2338.70	42.29	
6800.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2185.47	2241.71	39.86	
6900.00	8957.00	13666.14	27.43	133.21	37.95	76.02	2087.73	2144.99	37.46	
7000.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1990.22	2048.59	35.10	
7100.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1892.98	1952.55	32.78	
7200.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1796.07	1856.93	30.51	
7300.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1699.45	1761.79	28.26	
7400.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1603.06	1667.23	25.98	
7500.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1507.17	1573.33	23.78	
7600.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1411.88	1480.24	21.65	
7700.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1317.26	1388.11	19.59	
7800.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1223.36	1297.14	17.58	
7900.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1130.28	1207.60	15.62	
8000.00	8957.00	13666.14	27.43	133.21	37.95	76.02	1038.56	1119.84	13.78	
8100.00	8957.00	13666.14	27.43	133.21	37.95	76.02	948.54	1034.30	12.06	
8200.00	8957.00	13666.14	27.43	133.21	37.95	76.02	860.46	951.58	10.44	
8300.00	8957.00	13666.14	297.16	133.21	37.95	76.02	775.04	872.49	8.95	
8400.00	8957.00	13666.14	286.02	133.21	37.95	76.02	691.02	795.65	7.60	
8500.00	8957.00	13666.14	275.00	133.21	37.95	76.02	608.31	721.03	6.40	
8600.00	8957.00	13666.14	265.46	133.21	37.95	76.02	529.81	652.03	5.33	
8700.00	8957.00	13666.14	258.20	133.21	37.95	76.02	461.27	593.07	4.50	
8800.00	8957.00	13666.14	253.47	133.21	37.95	76.02	409.71	549.42	3.93	
8900.00	8957.00	13634.14	252.86	132.34	37.73	75.58	381.51	525.39	3.65	
9000.00	8957.00	13543.51	255.71	129.88	37.10	74.33	367.59	512.87	3.53	
9100.00	8957.00	13446.97	257.82	127.25	36.44	73.00	361.33	506.80	3.48	
9200.00	8957.00	13347.45	258.58	124.55	35.75	71.64	360.48	505.07	3.49	
9300.00	8957.00	13247.45	258.58	121.83	35.07	70.27	361.67	505.08	3.52	

SD Anti-Collision Report

Secondary Well: Emerald PWU 20 11H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
9400.00	8957.00	13147.45	258.58	119.12	34.38	68.90	362.65	505.08	3.55	
9500.00	8957.00	13047.45	258.58	116.40	33.70	67.54	363.48	505.09	3.57	
9600.00	8957.00	12947.45	258.58	113.69	33.02	66.18	364.17	505.10	3.58	
9700.00	8957.00	12847.45	258.58	110.99	32.35	64.83	364.76	505.11	3.60	
9800.00	8957.00	12747.45	258.58	108.28	31.67	63.48	365.25	505.11	3.61	
9900.00	8957.00	12647.45	258.58	105.58	31.00	62.14	365.66	505.12	3.62	
10000.00	8957.00	12547.45	258.58	102.88	30.33	60.81	366.00	505.13	3.63	
10100.00	8957.00	12447.45	258.58	100.18	29.66	59.48	366.30	505.14	3.64	
10200.00	8957.00	12347.45	258.58	97.49	29.00	58.15	366.54	505.14	3.64	
10300.00	8957.00	12247.45	258.58	94.80	28.34	56.84	366.76	505.15	3.65	
10400.00	8957.00	12147.45	258.58	92.12	27.68	55.53	366.94	505.16	3.65	
10500.00	8957.00	12047.45	258.58	89.44	27.03	54.23	367.09	505.16	3.66	
10600.00	8957.00	11947.45	258.58	86.76	26.38	52.94	367.21	505.17	3.66	
10700.00	8957.00	11847.45	258.58	84.09	25.74	51.66	367.32	505.18	3.66	
10800.00	8957.00	11747.45	258.58	81.42	25.10	50.38	367.40	505.19	3.67	
10900.00	8957.00	11647.45	258.58	78.76	24.47	49.12	367.47	505.19	3.67	
11000.00	8957.00	11547.45	258.58	76.11	23.84	47.87	367.51	505.20	3.67	
11100.00	8957.00	11447.45	258.58	73.47	23.22	46.64	367.54	505.21	3.67	
11200.00	8957.00	11347.45	258.58	70.83	22.60	45.41	367.55	505.21	3.67	
11300.00	8957.00	11247.45	258.58	68.21	21.99	44.20	367.55	505.22	3.67	
11400.00	8957.00	11147.45	258.58	65.59	21.39	43.01	367.53	505.23	3.67	
11500.00	8957.00	11047.45	258.58	62.99	20.80	41.84	367.49	505.24	3.67	
11600.00	8957.00	10947.45	258.58	60.40	20.22	40.68	367.44	505.24	3.67	
11700.00	8957.00	10847.45	258.58	57.83	19.65	39.55	367.37	505.25	3.66	
11800.00	8957.00	10747.45	258.59	55.27	19.09	38.43	367.28	505.26	3.66	
11900.00	8957.00	10647.45	258.59	52.74	18.54	37.35	367.15	505.27	3.66	
12000.00	8957.00	10547.45	258.59	50.23	18.00	36.29	366.95	505.27	3.65	
12100.00	8957.00	10447.45	258.59	47.74	17.48	35.25	366.69	505.28	3.65	
12200.00	8957.00	10347.45	258.59	45.29	16.97	34.25	366.40	505.29	3.64	
12300.00	8957.00	10247.45	258.59	42.87	16.48	33.29	366.08	505.29	3.63	
12400.00	8957.00	10147.45	258.59	40.50	16.01	32.36	365.72	505.30	3.62	
12500.00	8957.00	10047.45	258.59	38.18	15.56	31.47	365.33	505.31	3.61	
12600.00	8957.00	9947.45	258.59	35.92	15.13	30.63	364.90	505.32	3.60	
12700.00	8957.00	9847.45	258.59	33.74	14.73	29.83	364.45	505.32	3.59	
12800.00	8957.00	9747.45	258.59	31.65	14.35	29.09	363.79	505.33	3.57	
12900.00	8957.00	9647.45	258.59	29.66	14.00	28.41	363.04	505.34	3.55	
13000.00	8957.00	9547.45	258.59	27.81	13.68	27.78	362.26	505.34	3.53	
13100.00	8957.00	9447.45	258.59	26.11	13.40	27.22	361.20	505.35	3.51	
13200.00	8957.00	9347.45	258.59	24.58	13.16	26.72	360.01	505.36	3.48	
13300.00	8941.69	9210.32	260.26	22.91	13.87	26.15	354.67	501.76	3.41	
13400.00	8900.43	9085.71	264.91	21.79	15.70	25.72	342.50	492.35	3.29	
13500.00	8847.91	8982.51	271.08	21.15	17.61	25.40	329.32	482.16	3.15	
13600.00	8795.60	8900.64	277.40	20.78	19.14	25.15	322.39	477.04	3.08	
13642.38	8774.96	8871.55	279.90	20.69	19.66	25.07	322.91	477.65	3.09	

Secondary Well: Emerald PWU 20 62H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	4.00	0.00	179.82	0.00	0.00	0.00	486.95	487.52	860.35	
100.00	100.00	96.00	179.82	0.11	0.11	4.42	486.72	487.50	622.71	
200.00	200.00	196.00	179.82	0.33	0.33	4.62	486.27	487.50	397.03	
300.00	300.00	296.00	179.82	0.55	0.55	4.65	485.82	487.50	290.62	
400.00	400.00	396.00	179.82	0.78	0.78	4.69	485.38	487.50	229.20	
500.00	500.00	496.00	179.82	1.00	1.00	4.75	484.93	487.50	189.21	
600.00	600.00	596.00	179.82	1.23	1.23	4.81	484.48	487.50	161.10	
700.00	700.00	696.00	179.82	1.45	1.45	4.88	484.03	487.50	140.26	
800.00	800.00	796.00	179.82	1.68	1.68	4.97	483.58	487.50	124.20	
900.00	900.00	896.00	179.82	1.90	1.90	5.06	483.13	487.50	111.43	
1000.00	1000.00	996.00	179.82	2.13	2.13	5.16	482.68	487.50	101.05	

5D Anti-Collision Report

Secondary Well: Emerald PWU 20 62H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
1100.00	1100.00	1096.00	179.82	2.35	2.35	5.26	482.23	487.50	92.44	
1200.00	1200.00	1196.00	179.82	2.58	2.58	5.37	481.78	487.50	85.17	
1300.00	1300.00	1296.00	179.82	2.80	2.80	5.49	481.33	487.50	78.97	
1400.00	1400.00	1396.00	179.82	3.03	3.03	5.62	480.88	487.50	73.61	
1500.00	1500.00	1496.00	179.82	3.25	3.25	5.75	480.43	487.50	68.93	
1600.00	1600.00	1596.00	179.82	3.48	3.48	5.88	479.98	487.50	64.81	
1700.00	1700.00	1696.00	179.82	3.70	3.70	6.02	479.53	487.50	61.16	
1800.00	1800.00	1796.00	179.82	3.92	3.92	6.16	479.08	487.50	57.89	
1900.00	1900.00	1896.00	179.82	4.15	4.15	6.31	478.63	487.50	54.96	
2000.00	2000.00	1996.00	179.82	4.37	4.37	6.46	478.18	487.50	52.31	
2100.00	2100.00	2096.00	179.82	4.60	4.60	6.62	477.73	487.50	49.90	
2200.00	2200.00	2196.00	179.82	4.82	4.82	6.77	477.28	487.50	47.70	
2300.00	2300.00	2296.00	179.82	5.05	5.05	6.93	476.83	487.50	45.69	
2400.00	2400.00	2396.00	179.82	5.27	5.27	7.10	476.38	487.50	43.85	
2500.00	2500.00	2496.00	179.82	5.50	5.50	7.26	475.93	487.50	42.14	
2600.00	2600.00	2596.00	179.82	5.72	5.72	7.43	475.48	487.50	40.57	
2700.00	2700.00	2696.00	179.82	5.95	5.95	7.61	475.04	487.50	39.10	
2800.00	2800.00	2796.00	179.82	6.17	6.17	7.78	474.59	487.50	37.74	
2900.00	2900.00	2896.00	179.82	6.40	6.40	7.96	474.14	487.50	36.47	
3000.00	3000.00	2996.00	179.82	6.62	6.62	8.14	473.69	487.50	35.29	
3100.00	3100.00	3096.00	179.82	6.85	6.85	8.32	473.24	487.50	34.17	
3200.00	3200.00	3196.00	179.82	7.07	7.07	8.51	472.79	487.50	33.13	
3300.00	3300.00	3296.00	179.82	7.30	7.30	8.70	472.34	487.50	32.15	
3400.00	3400.00	3396.00	179.82	7.52	7.52	8.89	471.89	487.50	31.22	
3500.00	3500.00	3496.00	179.82	7.75	7.75	9.08	471.44	487.50	30.35	
3600.00	3599.99	3595.99	257.73	7.97	7.97	9.28	471.20	487.69	29.58	
3700.00	3699.96	3695.96	257.43	8.20	8.20	9.48	471.33	488.25	28.86	
3800.00	3799.86	3795.86	256.94	8.42	8.42	9.68	471.88	489.22	28.22	
3900.00	3899.68	3895.68	256.26	8.64	8.64	9.88	472.87	490.64	27.61	
4000.00	3999.37	3995.37	255.40	8.87	8.87	10.09	474.35	492.56	27.04	
4100.00	4098.90	4094.90	254.35	9.09	9.09	10.30	476.42	495.07	26.54	
4200.00	4198.26	4194.26	253.14	9.32	9.32	10.51	479.18	498.26	26.11	
4300.00	4297.40	4293.40	251.76	9.54	9.54	10.73	482.69	502.23	25.70	
4400.00	4396.43	4392.43	250.28	9.76	9.76	10.95	486.79	506.80	25.34	
4500.00	4500.81	4496.81	248.82	9.99	9.99	11.18	490.73	511.22	24.95	
4600.00	4606.03	4602.08	247.53	10.21	10.21	11.42	493.84	514.79	24.57	
4700.00	4711.57	4707.72	246.43	10.44	10.42	11.67	495.97	517.39	24.15	
4800.00	4817.32	4813.68	245.49	10.66	10.64	11.91	497.04	518.95	23.69	
4900.00	4921.96	4918.66	244.72	10.89	10.85	12.16	497.06	519.41	23.24	
5000.00	5021.39	5018.47	244.05	11.11	11.06	12.40	496.70	519.54	22.75	
5100.00	5120.82	5118.28	243.37	11.34	11.28	12.65	496.41	519.74	22.28	
5200.00	5220.25	5218.09	242.69	11.56	11.49	12.90	496.21	520.01	21.85	
5300.00	5319.70	5317.92	242.04	11.79	11.70	13.15	495.97	520.21	21.46	
5400.00	5418.14	5416.74	241.56	12.01	11.91	13.41	495.08	519.73	21.09	
5500.00	5511.72	5510.59	241.18	12.21	12.11	13.66	494.14	519.22	20.70	
5600.00	5605.39	5604.43	240.84	12.38	12.29	13.91	493.57	519.07	20.36	
5700.00	5699.11	5698.24	240.53	12.56	12.47	14.16	493.37	519.26	20.06	
5800.00	5792.86	5792.03	240.26	12.73	12.64	14.42	493.53	519.80	19.79	
5900.00	5886.62	5885.79	240.04	12.91	12.81	14.68	494.04	520.67	19.55	
6000.00	5985.66	5984.83	239.88	13.11	13.01	14.96	494.43	521.44	19.30	
6100.00	6085.66	6084.83	161.87	13.33	13.24	15.25	494.08	521.51	19.01	
6200.00	6185.66	6184.83	161.87	13.55	13.46	15.54	493.64	521.51	18.71	
6300.00	6285.66	6284.83	161.87	13.77	13.68	15.84	493.20	521.51	18.42	
6400.00	6385.66	6384.83	161.87	14.00	13.91	16.14	492.77	521.51	18.14	
6500.00	6485.66	6484.83	161.87	14.22	14.13	16.45	492.33	521.51	17.87	
6600.00	6585.66	6584.83	161.87	14.44	14.35	16.76	491.89	521.51	17.60	
6700.00	6685.66	6684.83	161.87	14.66	14.58	17.07	491.45	521.51	17.35	
6800.00	6785.66	6784.83	161.87	14.89	14.80	17.39	491.01	521.51	17.10	

5D Anti-Collision Report

Secondary Well: Emerald PWU 20 62H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
6900.00	6885.66	6884.83	161.87	15.11	15.03	17.72	490.57	521.51	16.85	
7000.00	6985.66	6984.83	161.87	15.33	15.25	18.05	490.13	521.51	16.62	
7100.00	7085.66	7084.83	161.87	15.56	15.47	18.38	489.69	521.51	16.39	
7200.00	7185.66	7184.83	161.87	15.78	15.70	18.72	489.25	521.51	16.16	
7300.00	7285.66	7284.83	161.87	16.00	15.92	19.07	488.81	521.51	15.94	
7400.00	7385.66	7384.83	161.87	16.23	16.15	19.42	488.37	521.51	15.73	
7500.00	7485.66	7484.83	161.87	16.45	16.37	19.78	487.92	521.51	15.53	
7600.00	7585.66	7584.83	161.87	16.67	16.60	20.14	487.48	521.51	15.32	
7700.00	7685.66	7684.83	161.87	16.90	16.82	20.51	487.04	521.51	15.13	
7800.00	7785.66	7784.83	161.87	17.12	17.04	20.88	486.60	521.51	14.94	
7900.00	7885.66	7884.83	161.87	17.35	17.27	21.26	486.16	521.51	14.75	
8000.00	7985.66	7984.83	161.87	17.57	17.49	21.64	485.72	521.51	14.57	
8100.00	8085.66	8084.83	161.87	17.79	17.72	22.03	485.27	521.51	14.39	
8200.00	8185.66	8184.83	161.87	18.02	17.94	22.42	484.83	521.51	14.22	
8300.00	8285.66	8284.83	71.77	18.24	18.16	22.82	484.39	521.51	14.05	
8400.00	8385.13	8384.30	72.96	18.46	18.39	23.22	481.26	518.77	13.83	
8500.00	8464.99	8464.35	75.29	18.61	18.46	23.54	475.28	513.00	13.60	
8600.00	8543.45	8544.37	77.98	18.76	18.30	23.85	469.22	507.22	13.35	
8700.00	8621.18	8626.76	81.02	18.91	17.92	24.14	463.74	502.02	13.12	
8800.00	8696.76	8712.15	84.36	19.10	17.31	24.41	459.18	497.99	12.83	
8900.00	8768.48	8801.28	87.90	19.34	16.51	24.66	456.10	495.69	12.52	
9000.00	8834.13	8895.05	91.57	19.71	15.55	24.89	454.83	495.52	12.18	
9100.00	8890.88	8994.51	95.29	20.31	14.53	25.13	455.56	497.70	11.81	
9200.00	8935.01	9100.86	98.95	21.24	13.60	25.40	458.12	502.14	11.41	
9300.00	8962.00	9217.49	101.97	22.65	13.04	25.76	459.72	506.49	10.83	
9400.00	8967.00	9331.67	102.52	24.34	13.09	26.18	457.28	507.35	10.13	
9500.00	8967.00	9431.67	102.52	26.02	13.31	26.63	453.80	507.34	9.48	
9600.00	8967.00	9531.67	102.52	27.88	13.57	27.14	450.03	507.34	8.85	
9700.00	8967.00	9631.67	102.52	29.88	13.86	27.73	446.02	507.33	8.27	
9800.00	8967.00	9731.67	102.52	31.99	14.19	28.38	441.81	507.33	7.74	
9900.00	8967.00	9831.67	102.52	34.19	14.54	29.08	437.45	507.32	7.26	
10000.00	8967.00	9931.67	102.52	36.47	14.92	29.85	432.93	507.31	6.82	
10100.00	8967.00	10031.67	102.52	38.81	15.33	30.66	428.29	507.31	6.42	
10200.00	8967.00	10131.67	102.52	41.21	15.76	31.52	423.56	507.30	6.06	
10300.00	8967.00	10231.67	102.52	43.64	16.21	32.43	418.75	507.29	5.73	
10400.00	8967.00	10331.67	102.52	46.11	16.68	33.37	413.88	507.29	5.43	
10500.00	8967.00	10431.67	102.52	48.62	17.17	34.35	408.95	507.28	5.16	
10600.00	8967.00	10531.67	102.52	51.14	17.68	35.37	403.97	507.27	4.91	
10700.00	8967.00	10631.67	102.52	53.70	18.21	36.41	398.96	507.27	4.68	
10800.00	8967.00	10731.67	102.52	56.27	18.74	37.49	393.91	507.26	4.48	
10900.00	8967.00	10831.67	102.52	58.85	19.29	38.59	388.83	507.25	4.28	
11000.00	8967.00	10931.67	102.52	61.46	19.85	39.71	383.72	507.25	4.11	
11100.00	8967.00	11031.67	102.52	64.07	20.43	40.86	378.59	507.24	3.94	
11200.00	8967.00	11131.67	102.52	66.70	21.01	42.02	373.44	507.24	3.79	
11300.00	8967.00	11231.67	102.52	69.34	21.60	43.21	368.27	507.23	3.65	
11400.00	8967.00	11331.67	102.52	71.98	22.20	44.41	363.09	507.22	3.52	
11500.00	8967.00	11431.67	102.53	74.64	22.81	45.62	357.89	507.22	3.40	
11600.00	8967.00	11531.67	102.53	77.30	23.43	46.85	352.68	507.21	3.28	
11700.00	8967.00	11631.67	102.53	79.96	24.05	48.10	347.45	507.20	3.17	
11800.00	8967.00	11731.67	102.53	82.64	24.68	49.35	342.22	507.20	3.07	
11900.00	8967.00	11831.67	102.53	85.32	25.31	50.62	336.97	507.19	2.98	
12000.00	8967.00	11931.67	102.53	88.00	25.95	51.90	331.72	507.18	2.89	
12100.00	8967.00	12031.67	102.53	90.69	26.59	53.19	326.45	507.18	2.81	
12200.00	8967.00	12131.67	102.53	93.38	27.24	54.48	321.18	507.17	2.73	
12300.00	8967.00	12231.67	102.53	96.08	27.89	55.79	315.91	507.16	2.65	
12400.00	8967.00	12331.67	102.53	98.77	28.55	57.10	310.63	507.16	2.58	
12500.00	8967.00	12431.67	102.53	101.48	29.21	58.42	305.34	507.15	2.51	
12600.00	8967.00	12531.67	102.53	104.18	29.87	59.75	300.04	507.15	2.45	

5D Anti-Collision Report

Secondary Well: Emerald PWU 20 62H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
12700.00	8967.00	12631.67	102.53	106.89	30.54	61.08	294.74	507.14	2.39	
12800.00	8967.00	12731.67	102.53	109.60	31.21	62.42	289.44	507.13	2.33	
12900.00	8967.00	12831.67	102.53	112.31	31.88	63.77	284.13	507.13	2.27	
13000.00	8967.00	12931.67	102.53	115.03	32.56	65.12	278.82	507.12	2.22	
13100.00	8967.00	13031.67	102.53	117.74	33.24	66.47	273.51	507.11	2.17	
13200.00	8967.00	13131.67	102.53	120.46	33.92	67.83	268.19	507.11	2.12	
13300.00	8967.00	13231.67	102.53	123.18	34.60	69.20	262.87	507.10	2.08	
13400.00	8967.00	13331.67	102.53	125.90	35.28	70.57	257.54	507.09	2.03	
13500.00	8967.00	13431.67	102.53	128.63	35.97	71.94	252.22	507.09	1.99	SF(Lo)
13600.00	8967.00	13531.67	102.53	131.35	36.66	73.32	246.89	507.08	1.95	SF(Lo)
13642.38	8967.00	13555.28	102.53	131.99	36.82	73.64	245.66	507.43	1.94	SF(Lo)

**Weatherford**

Weatherford Drilling Services

GeoDec4 v2.1.0.0

Report Date: September 16, 2015
Job Number: _____
Customer: Devon Energy
Well Name: Emerald PWU 20 66H
API Number: _____
Rig Name: _____
Location: Eddy Co, NM Nad83 NME
Block: _____
Engineer: _____

NAD83 / New Mexico East (ftUS)	NAD83 (1986)
Projected Coordinate System	Geodetic Coordinate System
Datum: North American Datum 1983 (1986)	Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
EPSG: 2257	EPSG: 4269
North: 598045.6 US Survey Foot	Latitude: 32.643868 Degree
East: 611682.8 US Survey Foot	Longitude: -104.104793 Degree
Convergence: 0.12°	
Declination: 7.53°	
Total Correction: 7.41°	
Datum Transformation: none	

Geodetic Location WGS84

MSL Elevation = 0 m
Latitude = 32° 38' 37.92" N
Longitude = 104° 06' 17.25" W

Magnetic Declination = 7.53 deg	[True North Offset]
Local Gravity = .9988 g	Checksum = 6555
Local Field Strength = 48397 nT	Magnetic Vector X = 23689 nT
Magnetic Dip = 60.41 deg	Magnetic Vector Y = 3131 nT
Magnetic Model = bggm2015.dat	Magnetic Vector Z = 42087 nT
Run Date = October 30, 2015	Magnetic Vector H = 23895 nT

Signed: _____ Date: _____

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