

PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Popham 3B-201**

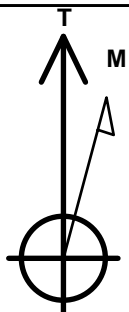
Surface Location: Popham 4N64W3Q Pad Sec.3-T4N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4660.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1366762.81	3268235.29	40.336170	-104.537780	

RKB - 23' WELL @ 4683.0ft (RKB - 23')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 746'FSL & 2288'FWL, Sec.3	1.0	0.0	0.0	Point
BHL 200'FSL & 1205'FWL, Sec.34	6634.0	4714.2	-844.6	Point
LPL 819'FSL & 1443'FWL, Sec.3	6664.0	72.9	-844.6	Point



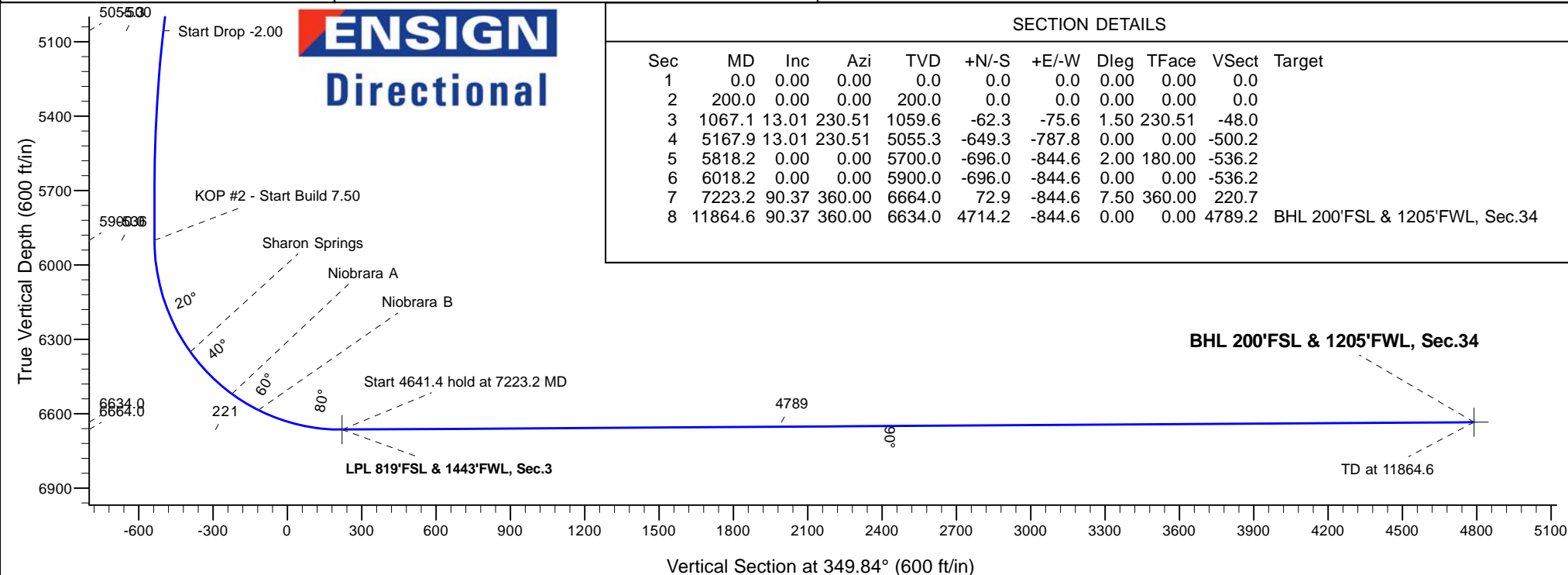
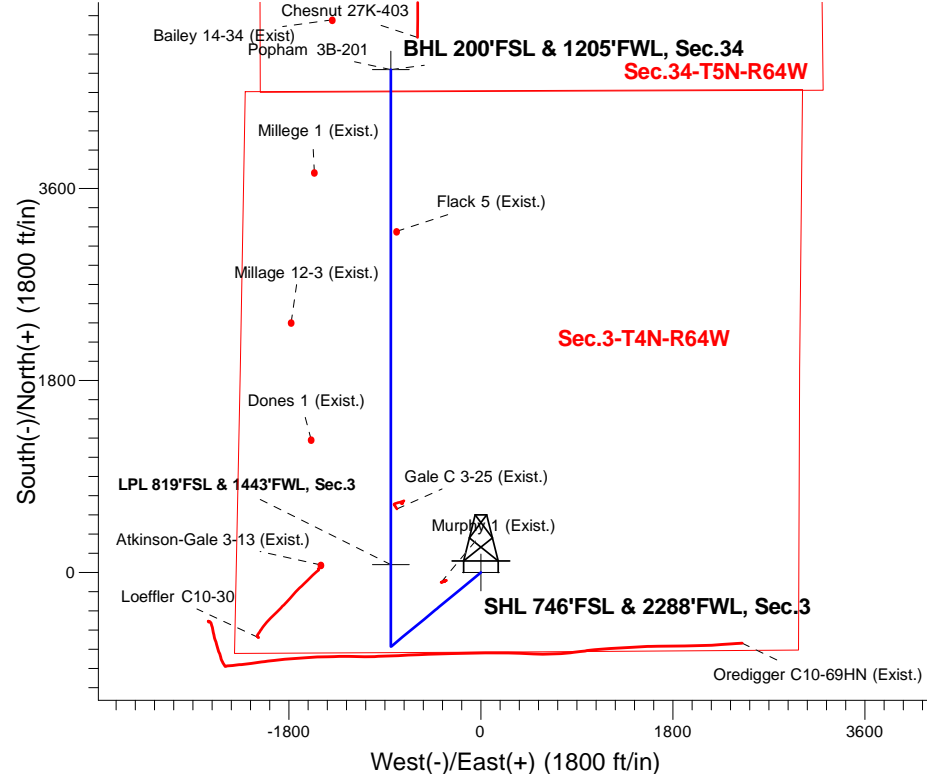
Azimuths to True North
Magnetic North: 8.04°

Magnetic Field
Strength: 52578.9snT
Dip Angle: 66.85°
Date: 8/12/2016
Model: IGRF2010

Popham 4N64W3Q Pad Sec.3-T4N-R64W
Popham 3B-201
Plan #1 (8-12-16)
15:06, August 16 2016

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 1.50
5055.3	5167.9	Start Drop -2.00
5900.0	6018.2	KOP #2 - Start Build 7.50
6664.0	7223.2	Start 4641.4 hold at 7223.2 MD
6634.0	11864.6	TD at 11864.6





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SEC.3-T4N-R64W

Popham 4N64W3Q Pad Sec.3-T4N-R64W

Popham 3B-201

Wellbore #1

Plan #1 (8-12-16)

Anticollision Report

16 August, 2016



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Popham 3B-201
Project:	SEC.3-T4N-R64W	TVD Reference:	WELL @ 4683.0ft (RKB - 23')
Reference Site:	Popham 4N64W3Q Pad Sec.3-T4N-R64W	MD Reference:	WELL @ 4683.0ft (RKB - 23')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Popham 3B-201	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (8-12-16)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (8-12-16)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	8/16/2016		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,864.6	Plan #1 (8-12-16) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Chesnut 27K-HZ Pad Sec.27-T5N-R64W						
Chesnut 27K-403 - Wellbore #1 - Wellbore #1	11,864.6	14,160.0	433.3	201.2	1.867	CC, ES, SF
Chesnut Existing Pad Sec.27-T5N-R64W						
Bailey 14-34 (Exist.) - Wellbore #1 - Wellbore #1	11,864.6	6,619.0	720.4	441.8	2.586	CC, ES, SF
Existing Wells for Sec.3-T4N-R64W GRID						
Gale C 3-25 (Exist.) - Wellbore #1 - Wellbore #1	7,757.4	6,651.3	48.6	6.5	1.154	Level 2, CC, ES, SF
Murphy 1 (Exist.) - Wellbore #1 - Wellbore #1	2,030.6	1,983.8	157.9	142.8	10.446	CC, ES
Murphy 1 (Exist.) - Wellbore #1 - Wellbore #1	2,200.0	2,149.4	162.1	145.9	9.993	SF
Oredigger C10-69HN (Exist.) - Wellbore #1 - Wellbore #1	6,500.0	7,964.4	377.2	311.5	5.740	SF
Oredigger C10-69HN (Exist.) - Wellbore #1 - Wellbore #1	6,569.1	7,966.5	367.8	306.4	5.994	CC, ES
Existing Wells Sec.3-T4N-R64W						
Atkinson-Gale 3-13 (Exist.) - Wellbore #1 - Wellbore #1	7,219.6	6,659.2	655.3	469.9	3.535	CC, ES, SF
Dones 1 (Exist.) - Wellbore #1 - Wellbore #1	8,396.3	6,655.4	747.2	544.8	3.691	CC
Dones 1 (Exist.) - Wellbore #1 - Wellbore #1	8,400.0	6,655.4	747.2	544.7	3.690	ES
Dones 1 (Exist.) - Wellbore #1 - Wellbore #1	8,500.0	6,654.7	754.4	549.9	3.689	SF
Flack 5 (Exist.) - Wellbore #1 - Wellbore #1	10,349.0	6,639.8	52.9	-191.5	0.216	Level 1, CC, ES, SF
Millage 12-3 (Exist.) - Wellbore #1 - Wellbore #1	9,492.9	6,654.3	933.9	708.3	4.140	CC
Millage 12-3 (Exist.) - Wellbore #1 - Wellbore #1	9,500.0	6,654.3	933.9	708.2	4.137	ES
Millage 12-3 (Exist.) - Wellbore #1 - Wellbore #1	9,600.0	6,653.6	940.0	712.1	4.124	SF
Millege 1 (Exist.) - Wellbore #1 - Wellbore #1	10,899.2	6,641.2	716.4	459.4	2.788	CC
Millege 1 (Exist.) - Wellbore #1 - Wellbore #1	10,900.0	6,641.2	716.4	459.4	2.788	ES, SF
Loeffler C 10-30 Sec.3-T4N-R64W						
Loeffler C10-30 - Loeffler C10-30 - Loeffler C10-30						Out of range
Popham 4N64W3Q Pad Sec.3-T4N-R64W						
Popham 3B-221 - Wellbore #1 - Plan #1 (8-12-16)	200.0	200.0	29.3	28.5	35.449	CC, ES
Popham 3B-221 - Wellbore #1 - Plan #1 (8-12-16)	11,864.6	11,807.5	493.5	260.5	2.118	SF
Popham 3B-301 - Wellbore #1 - Plan #1 (8-12-16)	200.0	200.0	14.6	13.8	17.647	CC, ES
Popham 3B-301 - Wellbore #1 - Plan #1 (8-12-16)	11,864.6	11,914.5	250.8	22.7	1.099	Level 2, SF
Popham 3P-241 - Wellbore #1 - Plan #1 (8-12-16)	200.0	200.0	47.4	46.6	57.435	CC, ES
Popham 3P-241 - Wellbore #1 - Plan #1 (8-12-16)	700.0	698.6	73.7	70.1	20.416	SF
Popham 3P-341 - Wellbore #1 - Plan #1 (8-12-16)	200.0	200.0	62.0	61.2	75.053	CC, ES
Popham 3P-341 - Wellbore #1 - Plan #1 (8-12-16)	11,864.6	11,876.7	802.1	569.6	3.450	SF

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