



Weatherford

30-025-41118

Devon Energy
Thistle Unit 46H
Lea County, New Mexico

Section 4

Weatherford Final BHA Reports

NOV 14 2013

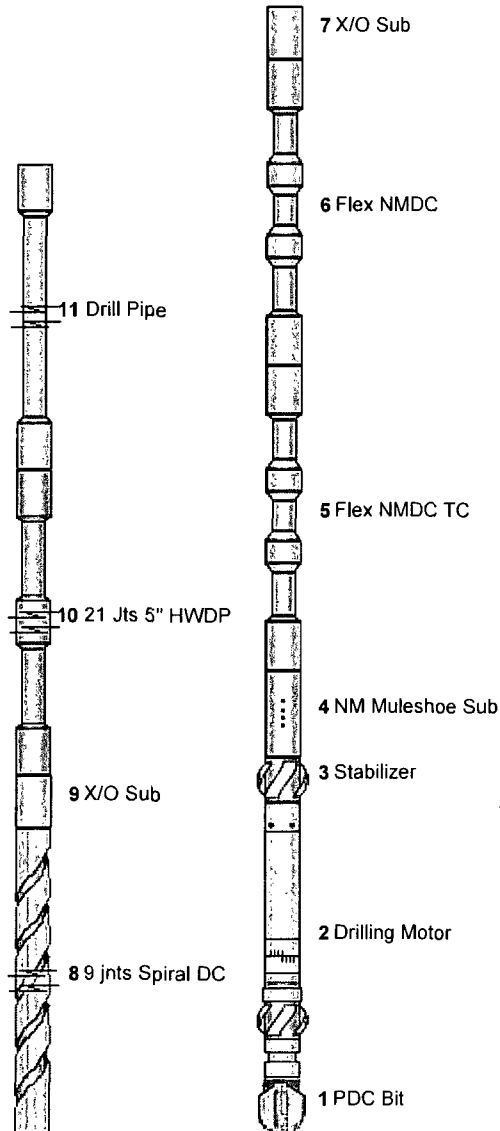
Thistle Unit #46H

BHA NO.: 1

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	7146052		0	8.75	0		4 1/2" REG Pin	1.00 ft	1.00 ft
2	1	Drilling Motor	675-1609	6 3/4" (171mm)	0	6.75	0	4 1/2" REG Box	4 1/2" IF Box	27.33 ft	28.33 ft
3	1	Stabilizer	SD 17824	8.5	6.8	6.8	2.25	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	33.69 ft
4	1	NM Muleshoe Sub	675-36603		6.75	6.75	3.25	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	37.31 ft
5	1	Flex NMDC TC	675-20307		6.1	6.1	2.875	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	67.78 ft
6	1	Flex NMDC	675-38554		6.4	6.4	3.25	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	98.04 ft
7	1	X/O Sub	675-36841		6.5	6.5	6.5	4 1/2" IF Pin	4 1/2" XH Box	3.00 ft	101.04 ft
8	9	9 jnts Spiral DC			6	6	0	4 1/2" XH Pin	4 1/2" XH Box	271.54 ft	372.58 ft
9	1	X/O Sub			0	0	0	4 1/2" XH Pin	4 1/2" IF Box	3.37 ft	375.95 ft
10	21	21 Jts 5" HWDP	Rig	5	5	5	3	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1009.41 ft
11	279	Drill Pipe	Rig		0	5.5	0	4 1/2" IF Pin	4 1/2" IF Box	8793.59 ft	9803.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 9803.00 ft



COMMENTS

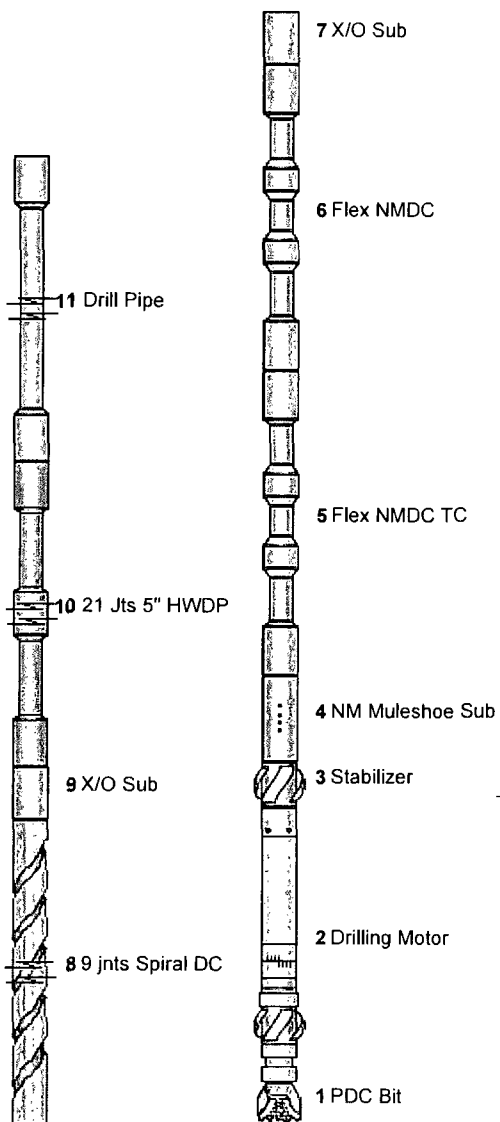
Thistle Unit #46H

BHA NO.: 2

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	12257840		0	8.75	0		4 1/2" REG Pin	1.00 ft	1.00 ft
2	1	Drilling Motor	675-4178	6 3/4" (171mm)	0	6.75	0	4 1/2" REG Box	4 1/2" IF Box	27.85 ft	28.85 ft
3	1	Stabilizer	SD 17824	8.5	6.8	6.8	2.25	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	34.21 ft
4	1	NM Muleshoe Sub	675-36603		6.75	6.75	3.25	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	37.83 ft
5	1	Flex NMDC TC	675-20307		6.1	6.1	2.8754	1/2" IF Pin	4 1/2" IF Box	30.47 ft	68.30 ft
6	1	Flex NMDC	675-38554		6.4	6.4	3.25	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	98.56 ft
7	1	X/O Sub	675-36841		6.5	6.5	6.5	4 1/2" IF Pin	4 1/2" XH Box	3.00 ft	101.56 ft
8	9	9 jnts Spiral DC			6	6	0	4 1/2" XH Pin	4 1/2" XH Box	271.54 ft	373.10 ft
9	1	X/O Sub			0	0	0	4 1/2" XH Pin	4 1/2" IF Box	3.37 ft	376.47 ft
10	21	21 Jts 5" HWDP	Rig	5	5	5	3	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1009.93 ft
11	309	Drill Pipe	Rig		0	5.5	0	4 1/2" IF Pin	4 1/2" IF Box	9714.07 ft	10724.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 10724.00 ft



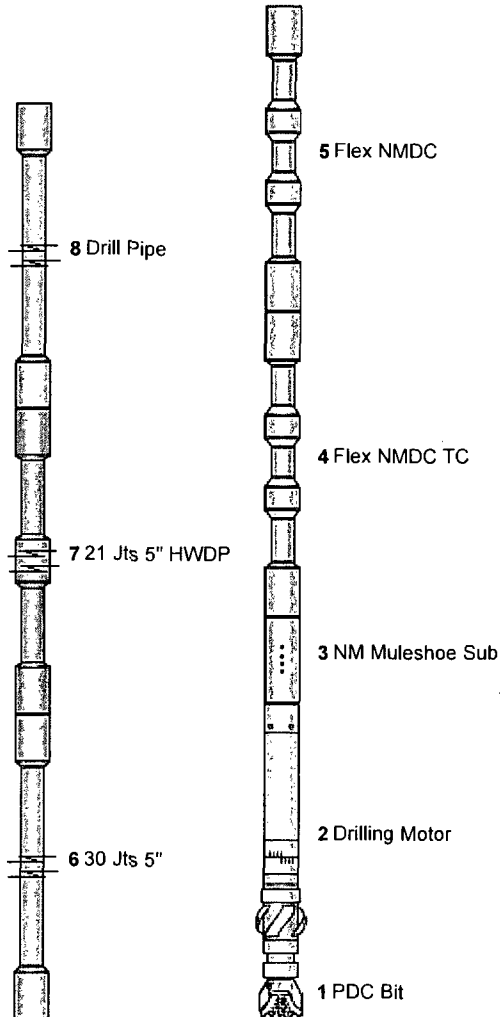
COMMENTS

BHA NO.: 3

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	7143679		0	8.75	0		4 1/2" REG Pin	1.00 ft	1.00 ft
2	1	Drilling Motor	675-24X-322	6 3/4" (171mm)	0	8.125	0	4 1/2" REG Box	4 1/2" IF Box	25.78 ft	26.78 ft
3	1	NM Muleshoe Sub	675-36603		6.75	6.75	3.25	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	30.40 ft
4	1	Flex NMDC TC	675-20307		6.1	6.1	2.875	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	60.87 ft
5	1	Flex NMDC	675-38554		6.4	6.4	3.25	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	91.13 ft
6	30	30 Jts 5"	Rig	5	6.25	6.25	0	4 1/2" IF Pin	4 1/2" IF Box	946.73 ft	1037.86 ft
7	21	21 Jts 5" HWDP	Rig	5	5	5	3	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1671.32 ft
8	305	Drill Pipe	Rig		0	5.5	0	4 1/2" IF Pin	4 1/2" IF Box	9611.68 ft	11283.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 11283.00 ft



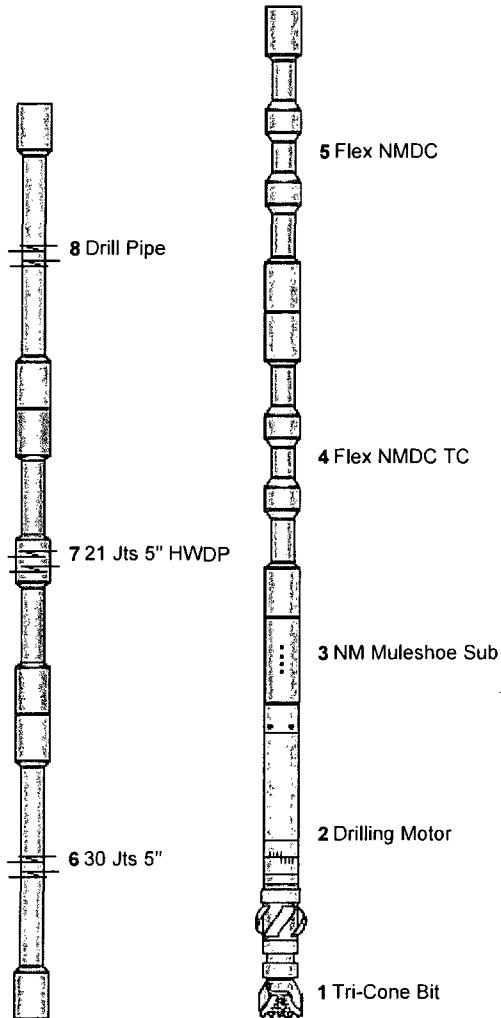
COMMENTS

BHA NO.: 4

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	Tri-Cone Bit	5226327		0	8.75	0		4 1/2" REG Pin	1.00 ft	1.00 ft
2	1	Drilling Motor	675-24X-322	6 3/4" (171mm)	0	8.125	0	4 1/2" REG Box	4 1/2" IF Box	25.78 ft	26.78 ft
3	1	NM Muleshoe Sub	675-36603		6.75	6.75	3.25	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	30.40 ft
4	1	Flex NMDC TC	675-20307		6.1	6.1	2.8754	1/2" IF Pin	4 1/2" IF Box	30.47 ft	60.87 ft
5	1	Flex NMDC	675-38554		6.4	6.4	3.25	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	91.13 ft
6	30	30 Jts 5"	Rig	5	6.25	6.25	0	4 1/2" IF Pin	4 1/2" IF Box	946.73 ft	1037.86 ft
7	21	21 Jts 5" HWDP	Rig	5	5	5	3	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1671.32 ft
8	314	Drill Pipe	Rig		0	5.5	0	4 1/2" IF Pin	4 1/2" IF Box	9888.68	11560.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 11560.00 ft



COMMENTS

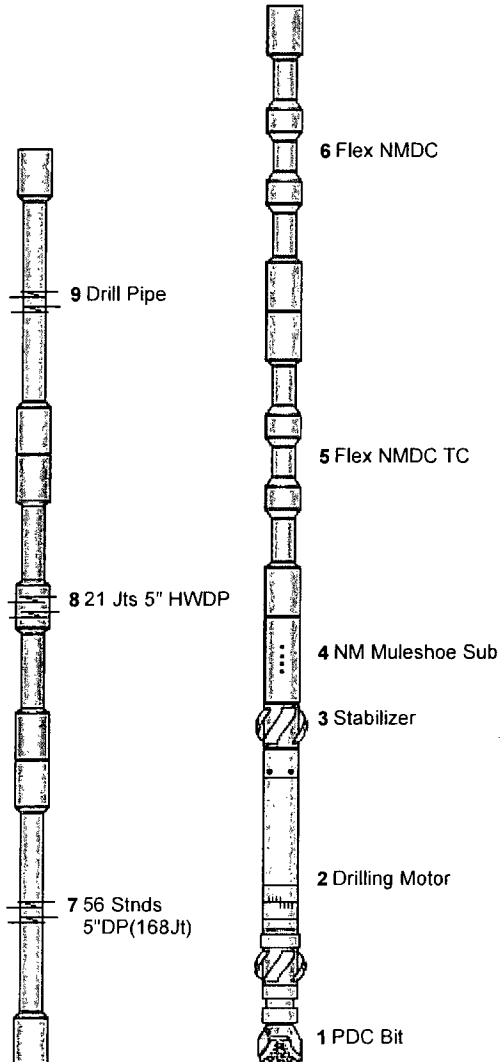
Thistle Unit #46H

BHA NO.: 5

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	12257840		0	8.75	0		4 1/2" REG Pin	1.00 ft	1.00 ft
2	1	Drilling Motor	2015895	6 3/4" (171mm)	0	6.55	0	4 1/2" REG Pin	4 1/2" IF Box	31.65 ft	32.65 ft
3	1	Stabilizer	SD 17824	8.5	6.8	6.8	2.25	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	38.01 ft
4	1	NM Muleshoe Sub	675-36603		6.75	6.75	3.25	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	41.63 ft
5	1	Flex NMDC TC	675-20307		6.1	6.1	2.875	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	72.10 ft
6	1	Flex NMDC	675-38554		6.4	6.4	3.25	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	102.36 ft
7	168	56 Stnds	Rig		5	5	0	4 1/2" IF Pin	4 1/2" IF Box	5295.12	5397.48 ft
8	21	21 Jts 5" HWDP	Rig	5	5	5	3	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	6030.94 ft
9	228	Drill Pipe	Rig		0	5.5	0	4 1/2" IF Pin	4 1/2" IF Box	7187.06	13218.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 13218.00 ft



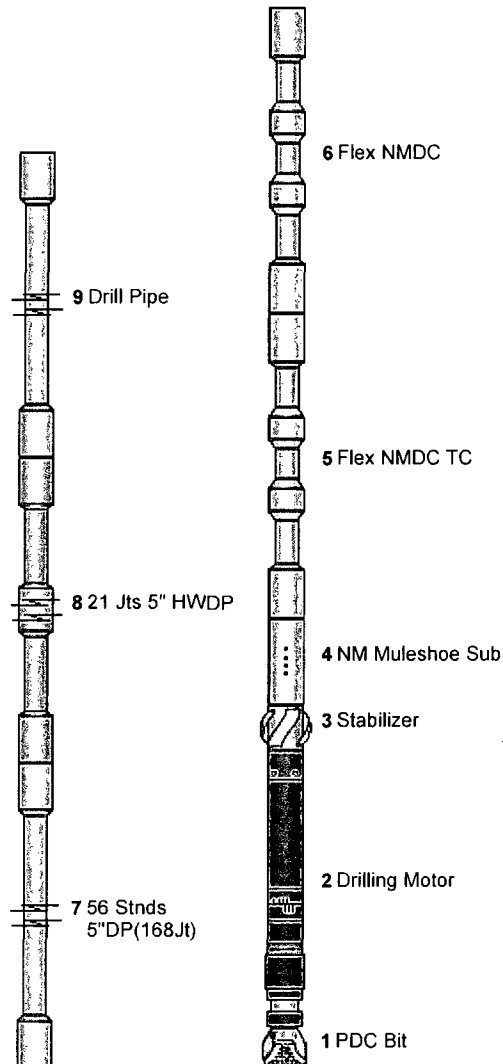
COMMENTS

BHA NO.: 6

ITEM#	QTY	COMPONENT	SERIAL #	DETAIL	BOT OD	TOP OD	I.D.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	1	PDC Bit	12257840		0	8.75	0		4 1/2" REG Pin	1.00 ft	1.00 ft
2	1	Drilling Motor	10167329	6 3/4" (171mm)	0	6.8	0	4 1/2" REG Box	4 1/2" XH Box	31.70 ft	32.70 ft
3	1	Stabilizer	SD 17824	8.5	6.8	6.8	2.25	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	38.06 ft
4	1	NM Muleshoe Sub	675-36603		6.75	6.75	3.25	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	41.68 ft
5	1	Flex NMDC TC	675-20307		6.1	6.1	2.875	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	72.15 ft
6	1	Flex NMDC	675-38554		6.4	6.4	3.25	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	102.41 ft
7	168	56 Stnds	Rig		5	5	0	4 1/2" IF Pin	4 1/2" IF Box	5295.12	5397.53 ft
8	21	21 Jts 5" HWDP	Rig	5	5	5	3	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	6030.99 ft
9	312	Drill Pipe	Rig		0	5.5	0	4 1/2" IF Pin	4 1/2" IF Box	9837.01	15868.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

TOTAL: 15868.00 ft



COMMENTS



BHA Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Hughes	7146052	T607X	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Drilling Motor	WFT C	675-1609	QLE 7850	6.75	0	23.68	4 1/2" REG Box	4 1/2" IF Box	27.33 ft	28.33 ft
1	Stabilizer	Stabil Drill	SD 17824	Nortrac	6.8	2.25	1.72	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	33.69 ft
1	NM Muleshoe Sub	WFT	675-36603		6.75	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	37.31 ft
1	Flex NMDC TC	Weatherford	675-20307	Flex TC	6.1	2.875	0	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	67.78 ft
1	Flex NMDC	Weatherford	675-38554	Flex	6.4	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	98.04 ft
1	X/O Sub	Weatherford	675-36841	X-O	6.5	6.5	0	4 1/2" IF Pin	4 1/2" XH Box	3.00 ft	101.04 ft
9	9 jnts Spiral DC	Rig			6	0	0	4 1/2" XH Pin	4 1/2" XH Box	271.54 ft	372.58 ft
1	X/O Sub	Rig			0	0	0	4 1/2" XH Pin	4 1/2" IF Box	3.37 ft	375.95 ft
21	21 Jts 5" HWDP	Rig	Rig	HWDP	5	3	0	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1009.41 ft
279	Drill Pipe	Rig	Rig		5.5	0	0	4 1/2" IF Pin	4 1/2" IF Box	8793.59	9803.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2013/07/19 TO 2013/07/23
DEPTH IN: 5285.00 ft ANGLE IN: 0.00 °
DEPTH OUT: 9803.00 ft ANGLE OUT: 7.25 °
DRILL HRS: 59.83 BUILD: 7.25 °
ORIENTING HRS: 18.67 HOLE MADE: 4518.00 ft
ROTATING HRS: 41.17 AVG R.O.P.: 75.51 ft/hr

MOTOR INFORMATION

MANFCT: WFT C SETTING: 1.50 °
SERIAL #: 675-1609 KICK PAD: No
MODEL: QLE 7850 STABILIZER: 8 1/2
LOBE CFG: 7/8 MOTOR HRS: 74.75
BIT TO BEND: 6.15

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	100.0%	95.0%	100.0%
S.P.M.:	67	67	0
STROKE VOLUME:	4.7486 gal/stk	4.5112 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	605.29186 gal/min		
PUMP PRESSURE:	OFF BTM: 2000 psi	ON BTM: 2350 psi	

MUD INFORMATION

MUD TYPE: FRESH WATER LIQUID BASE: Water
DENSITY: 0 lb/gal TEMP: 0 °F
VISCOSITY: 0 sec/qt pH: 0
WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
PLAST VISC: 0 cP SOLIDS: 0 GAS TYPE:
YIELD PT: 0 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Hughes TYPE: T607X IADC BIT GRADE: 1 1/3 / CT / G / X / I / NO / BHA
NOZZLES: 0.773 in² TFA

REASON FOR BHA CHANGE

Pick up a new motor and bit.

FORMATION CHARACTERISTICS

MWD COMMENTS

Good run with MWD , no issues to report.



SIDETRACKING PROCEDURE COMMENTS

N/A

RUN SUMMARY

Our build rates averaged 5 1/2 to 6 1/2 deg per 100' up to around MD 9000'. Our build rates then were consistanly around 2 1/2 to 3 1/2 deg per 100'. We are well with in plan targets.

Sliding: From 9718' - 9722' the motor stauled out 7 times with no more than 15/18k. Rop for that last hour was 8'/10' per hour. I couldn't slide more without stacking out on weight and getting hung up. On rotation we were consistantly stauling out and ROP slowly fell off. @ 2AM , MD 9803' the company man called and decided to POOH to pick up a new motor and bit.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 2 - Build & Hold Section

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Security	12257840	MM66DC	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Drilling Motor	WFT C	675-4178	QLE 7850	6.75	0	24.55	4 1/2" REG Box	4 1/2" IF Box	27.85 ft	28.85 ft
1	Stabilizer	Stabil Drill	SD 17824	Nortrac	6.8	2.25	1.72	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	34.21 ft
1	NM Muleshoe Sub	WFT	675-36603		6.75	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	37.83 ft
1	Flex NMDC TC	Weatherford	675-20307	Flex TC	6.1	2.875	0	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	68.30 ft
1	Flex NMDC	Weatherford	675-38554	Flex	6.4	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	98.56 ft
1	X/O Sub	Weatherford	675-36841	X-O	6.5	6.5	0	4 1/2" IF Pin	4 1/2" XH Box	3.00 ft	101.56 ft
9	9 jnts Spiral DC	Rig			6	0	0	4 1/2" XH Pin	4 1/2" XH Box	271.54 ft	373.10 ft
1	X/O Sub	Rig			0	0	0	4 1/2" XH Pin	4 1/2" IF Box	3.37 ft	376.47 ft
21	21 Jts 5" HWDP	Rig	Rig	HWDP	5	3	0	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1009.93 ft
309	Drill Pipe	Rig	Rig		5.5	0	0	4 1/2" IF Pin	4 1/2" IF Box	9714.07	10724.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2013/07/23 TO 2013/07/24
 DEPTH IN: 9803.00 ft ANGLE IN: 0.00 °
 DEPTH OUT: 10724.00 ft ANGLE OUT: 7.41 °
 DRILL HRS: 19.75 BUILD: 7.41 °
 ORIENTING HRS: 6.00 HOLE MADE: 921.00 ft
 ROTATING HRS: 13.75 AVG R.O.P.: 46.63 ft/hr

MOTOR INFORMATION

MANFCT. WFT C SETTING: 2.38 °
 SERIAL #: 675-4178 KICK PAD: No
 MODEL: QLE 7850 STABILIZER: 8 1/2
 LOBE CFG: 7/8 MOTOR HRS: 23.75
 BIT TO BEND: 6.15

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	100.0%	95.0%	100.0%
S.P.M.:	67	67	0
STROKE VOLUME:	4.7486 gal/stk	4.5112 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	605.29186 gal/min		
PUMP PRESSURE:	OFF BTM: 2050 psi	ON BTM: 2300 psi	

MUD INFORMATION

MUD TYPE: FRESH WATER LIQUID BASE: Water
 DENSITY: 0 lb/gal TEMP: 0 °F
 VISCOSITY: 0 sec/qt pH: 0
 WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
 PLAST VISC: 0 cP SOLIDS: 0 GAS TYPE:
 YIELD PT: 0 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: MM66DC IADC BIT GRADE: 1 / 2 / CT / G / X / 1 / NO / TD
 NOZZLES: 0.66 in² TFA

REASON FOR BHA CHANGE

TD'd Nudge Section of the well. TOH to pickup BHA #3 (Curve assembly).

FORMATION CHARACTERISTICS

MWD COMMENTS

No MWD problems to report.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 2 - Build & Hold Section

~~SIDETRACKING PROCEDURE COMMENTS~~

N/A

~~RUN SUMMARY~~

The motor had the tendency to stall out after applying more than 18k when slideing. The motor seemed a bit week even on rotation, but we were able to get the BR we needed and stay on plan.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 3 - Curve Section

FILE #: 4030046

WELL NAME: Thistle Unit #46H

SERVICE CO.: Weatherford Directional Services

JOB TYPE: Horizontal

COMPANY: Devon Energy Corp

SURVEY TYPE: Positive Pulse MWD

RIG & NO: H & P 416

SURFACE LOCATION: Lea County

FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Hughes	7143679	DPD505	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Drilling Motor	National	675-24X-322	LE7861	8.125	0	0	4 1/2" REG Box	4 1/2" IF Box	25.78 ft	26.78 ft
1	NM Muleshoe Sub	WFT	675-36603		6.75	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	30.40 ft
1	Flex NMDC TC	Weatherford	675-20307	Flex TC	6.1	2.875	0	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	60.87 ft
1	Flex NMDC	Weatherford	675-38554	Flex	6.4	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	91.13 ft
30	30 Jts 5"	Rig	Rig		6.25	0	0	4 1/2" IF Pin	4 1/2" IF Box	946.73 ft	1037.86 ft
21	21 Jts 5" HWDP	Rig	Rig	HWDP	5	3	0	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1671.32 ft
305	Drill Pipe	Rig	Rig		5.5	0	0	4 1/2" IF Pin	4 1/2" IF Box	9611.68 ft	11283.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

MOTOR INFORMATION

DATES RUN: 2013/07/25 TO 2013/07/26	MANFCT.: National	SETTING: 2.38 °
DEPTH IN: 10724.00 ft	ANGLE IN: 7.41 °	SERIAL #: 675-24X-322
DEPTH OUT: 11283.00 ft	ANGLE OUT: 45.80 °	KICK PAD: No
DRILL HRS: 10.33	BUILD: 38.39 °	MODEL: LE7861
ORIENTING HRS: 10.33	HOLE MADE: 559.00 ft	LOBE CFG: 7/8
ROTATING HRS: 0.00	AVG R.O.P.: 54.11 ft/hr	BIT TO BEND: 6.38
		STABILIZER: 8 1/2" (219mm)
		MOTOR HRS: 19.75

PUMP INFORMATION

MUD INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3	MUD TYPE: FRESH WATER	LIQUID BASE: Water
EFFICIENCY:	100.0%	95.0%	100.0%	DENSITY: 8.7 lb/gal	TEMP: 0 °F
S.P.M.:	70	70	0	VISCOSITY: 29 sec/qt	pH: 9
STROKE VOLUME:	4.7486 gal/stk	4.5112 gal/stk	0.0 gal/stk	WTR LOSS: 0 cc/30min	SAND: 0
TOTAL FLOW RATE:	632.39448 gal/min			PLAST VISC: 0 cP	SOLIDS: 0
PUMP PRESSURE:	OFF BTM: 2450 psi	ON BTM: 2800 psi		YIELD PT: 0 lb/100 ft ²	OIL: 0
				LIQUID RATE: 0 gal/min	GAS TYPE:
				GAS RATE: 0 cu ft/min	

BIT INFORMATION

MANFCT: Hughes	TYPE: DPD505	IADC BIT GRADE: 2 / 2 / CT / G / X / 1 / NO / BHA
		NOZZLES: 0.55 in ² TFA

REASON FOR BHA CHANGE

TOH to Dial motor up to 2.66.

FORMATION CHARACTERISTICS

When we hit more of a sandy formation 80%+ our ROP was anywhere between 125-180 feet per hour. In this formation our build rates fell off drastically to the point that the 2.38 degree bend was not enough.

MWD COMMENTS

No MWD problems to report.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 3 - Curve Section

SIDETRACKING PROCEDURE COMMENTS

N/A

RUN SUMMARY

We had to POOH to dial up the motor from a 2.38 deg to a 2.60 and also drop the PDC bit and pick up a tricone bit. Our BR fell off to the point that the BHA in the hole would not meet BR's needed to hit the target plan. The BR's fell from 11's+ down to 7's.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 4 - Curve Section

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Tri-Cone Bit	Hughes	5226327	VGD-38CH	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Drilling Motor	National	675-24X-322	LE7861	8.125	0	0	4 1/2" REG Box	4 1/2" IF Box	25.78 ft	26.78 ft
1	NM Muleshoe Sub	WFT	675-36603		6.75	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	30.40 ft
1	Flex NMDC TC	Weatherford	675-20307	Flex TC	6.1	2.875	0	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	60.87 ft
1	Flex NMDC	Weatherford	675-38554	Flex	6.4	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	91.13 ft
30	30 Jts 5"	Rig	Rig		6.25	0	0	4 1/2" IF Pin	4 1/2" IF Box	946.73 ft	1037.86 ft
21	21 Jts 5" HWDP	Rig	Rig	HWDP	5	3	0	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	1671.32 ft
314	Drill Pipe	Rig	Rig		5.5	0	0	4 1/2" IF Pin	4 1/2" IF Box	9888.68	11560.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

— GENERAL INFORMATION

DATES RUN:	2013/07/27 TO 2013/07/28		
DEPTH IN:	11283.00 ft	ANGLE IN:	45.80 °
DEPTH OUT:	11560.00 ft	ANGLE OUT:	81.44 °
DRILL HRS:	14.00	BUILD:	35.64 °
ORIENTING HRS:	14.00	HOLE MADE:	277.00 ft
ROTATING HRS:	0.00	AVG R.O.P.:	19.79 ft/hr

— MOTOR INFORMATION

MANFCT.	National	SETTING:	2.60 °
SERIAL #:	675-24X-322	KICK PAD:	No
MODEL:	LE7861	STABILIZER:	No
LOBE CFG:	7/8	MOTOR HRS:	18.00
BIT TO BEND:	6.38		

— PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	100.0%	95.0%	100.0%
S.P.M.:	70	70	0
STROKE VOLUME:	4.7486 gal/stk	4.5112 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	632.39448 gal/min		
PUMP PRESSURE:	OFF BTM: 2900 psi	ON BTM: 3350 psi	

— MUD INFORMATION

MUD TYPE:	Water	LIQUID BASE:	Water
DENSITY:	0 lb/gal	TEMP:	0 °F
VISCOSITY:	0 sec/qt	pH:	0
WTR LOSS:	0 cc/30min	SAND:	0
PLAST VISC:	0 cP	SOLIDS:	0
YIELD PT:	0 lb/100 ft ²	OIL:	0
		LIQUID RATE:	0 gal/min
		GAS TYPE:	
		GAS RATE:	0 cu ft/min

— BIT INFORMATION

MANFCT:	Hughes	TYPE:	VGD-38CH	IADC BIT GRADE:	1 / 1 / NO / A / E / 1 / NO / TD
		NOZZLES:	14, 14, 14, n/a: 0.451 in ² TFA		

— REASON FOR BHA CHANGE

PICK UP LATERAL BHA

— FORMATION CHARACTERISTICS

— MWD COMMENTS

No MWD problems to report.

— SIDETRACKING PROCEDURE COMMENTS

N/A



RUN SUMMARY

We averaged BR's of 16.41 deg per 100'. We were able to get back close to plan and pull out of the hole with an 81.44 inclination and an azimuth of 22.46. Projection at bit was 90.79 inc. and a azimuth of 12. We ill go in with the Lateral BHA and finish soft landing the curve and continue drilling with the Lateral.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 5 - Lateral 1 Section

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Security	12257840	MM66DC	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Drilling Motor	Baker	2015895	8.25 NB STBLZR	8.75	0	0	4 1/2" REG Pin	4 1/2" IF Box	31.65 ft	32.65 ft
1	Stabilizer	Stabil Drill	SD 17824	Nortrac	6.8	2.25	1.72	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	38.01 ft
1	NM Muleshoe Sub	WFT	675-36603		6.75	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	41.63 ft
1	Flex NMDC TC	Weatherford	675-20307	Flex TC	6.1	2.875	0	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	72.10 ft
1	Flex NMDC	Weatherford	675-38554	Flex	6.4	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	102.36 ft
168	56 Stnds 5" DP (168) Rig	Rig		5"	5	0	0	4 1/2" IF Pin	4 1/2" IF Box	5295.12	5397.48 ft
21	21 Jts 5" HWDP	Rig		HWDP	5	3	0	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	6030.94 ft
228	Drill Pipe	Rig			5.5	0	0	4 1/2" IF Pin	4 1/2" IF Box	7187.06	13218.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2013/07/28 TO 2013/07/30
 DEPTH IN: 11560.00 ft ANGLE IN: 81.44 °
 DEPTH OUT: 13218.00 ft ANGLE OUT: 84.11 °
 DRILL HRS: 28.58 BUILD: 2.67 °
 ORIENTING HRS: 19.08 HOLE MADE: 1658.00 ft
 ROTATING HRS: 9.50 AVG R.O.P.: 58.01 ft/hr

MOTOR INFORMATION

MANFCT. Baker SETTING: 1.50 °
 SERIAL #: 2015895 KICK PAD: No
 MODEL: 8.25 NB STBLZR STABILIZER: 8 1/4
 LOBE CFG: 7/8 MOTOR HRS: 40.25
 BIT TO BEND: 6.48

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	100.0%	95.0%	100.0%
S.P.M.:	75	75	0
STROKE VOLUME:	4.7486 gal/stk	4.5112 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	677.56551 gal/min		
PUMP PRESSURE:	OFF BTM: 3100 psi	ON BTM: 3575 psi	

MUD INFORMATION

MUD TYPE: Water LIQUID BASE: Water
 DENSITY: 8.8 lb/gal TEMP: 0 °F
 VISCOSITY: 27 sec/qt pH: 8
 WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
 PLAST VISC: 0 cP SOLIDS: 0 GAS TYPE:
 YIELD PT: 0 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: MM66DC IADC BIT GRADE: 1 / 1 / NO / A / X / 1 / NO / ?
 NOZZLES: 0.663 in² TFA

REASON FOR BHA CHANGE

Check scibe on motor. Will re-run the same bit.

FORMATION CHARACTERISTICS

MWD COMMENTS

No problems with MWD detection.



SIDETRACKING PROCEDURE COMMENTS

RUN SUMMARY

TOH to check scribe. A Baker Hughes motor was picked up for this run. The adjustable housing being very different than most mub motor we scribe from the adjustable housing instead of the actually high side numbers that were above the adjustable bend.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 6 - Lateral 1 Section

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas, Sean Clawson
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	PDC Bit	Security	12257840	MM66DC	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Drilling Motor	Baker	10167329		6.8	0	0	4 1/2" REG Box	4 1/2" XH Box	31.70 ft	32.70 ft
1	Stabilizer	Stabil Drill	SD 17824	Nortrac	6.8	2.25	1.72	4 1/2" IF Pin	4 1/2" IF Box	5.36 ft	38.06 ft
1	NM Muleshoe Sub	WFT	675-36603		6.75	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	3.62 ft	41.68 ft
1	Flex NMDC TC	Weatherford	675-20307	Flex TC	6.1	2.875	0	4 1/2" IF Pin	4 1/2" IF Box	30.47 ft	72.15 ft
1	Flex NMDC	Weatherford	675-38554	Flex	6.4	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	30.26 ft	102.41 ft
168	56 Stnds 5" DP(168) Rig	Rig	Rig	5"	5	0	0	4 1/2" IF Pin	4 1/2" IF Box	5295.12	5397.53 ft
21	21 Jts 5" HWDP	Rig	Rig	HWDP	5	3	0	4 1/2" IF Pin	4 1/2" IF Box	633.46 ft	6030.99 ft
312	Drill Pipe	Rig	Rig		5.5	0	0	4 1/2" IF Pin	4 1/2" IF Box	9837.01	15868.00 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2013/07/30 TO 2013/08/04
 DEPTH IN: 13218.00 ft ANGLE IN: 84.11 °
 DEPTH OUT: 15868.00 ft ANGLE OUT: 90.07 °
 DRILL HRS: 43.25 BUILD: 5.96 °
 ORIENTING HRS: 22.50 HOLE MADE: 2650.00 ft
 ROTATING HRS: 20.75 AVG R.O.P.: 61.27 ft/hr

MOTOR INFORMATION

MANFCT. Baker SETTING: 1.50 °
 SERIAL #: 10167329 KICK PAD: No
 MODEL: STABILIZER: 8.25
 LOBE CFG: 6/7 MOTOR HRS: 77.25
 BIT TO BEND: 6.54

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	100.0%	95.0%	100.0%
S.P.M.:	0	0	0
STROKE VOLUME:	0.0 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	0 gal/min		
PUMP PRESSURE:	OFF BTM: 0 psi	ON BTM: 0 psi	

MUD INFORMATION

MUD TYPE: Water LIQUID BASE: Water
 DENSITY: 0 lb/gal TEMP: 0 °F
 VISCOSITY: 0 sec/qt pH: 0
 WTR LOSS: 0 cc/30min SAND: 0 LIQUID RATE: 0 gal/min
 PLAST VISC: 0 cP SOLIDS: 0 GAS TYPE:
 YIELD PT: 0 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: MM66DC IADC BIT GRADE: 1 / 3 / CT / G / X / I / NO / TD
 NOZZLES: 0.663 in² TFA

REASON FOR BHA CHANGE

TD well @ 10,686 MD.

FORMATION CHARACTERISTICS

Target formation is mostly sand with 10-20 percent shale.

MWD COMMENTS

No problems with the MWD, Detection was very good threw out the in tower run.



Weatherford

BHA Report

Drilling Services
v4.2.2674

BHA 6 - Lateral 1 Section

SIDETRACKING PROCEDURE COMMENTS

RUN SUMMARY

We receive average 4-6.5 Dog' Leg's from the 1.5 bend . Inspected the BHA when reached surface and no problems found. No problems were encountered during the run.



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section, Motor #675-1609

FILE #: 4030046	WELL NAME: Thistle Unit #46H	SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal	COMPANY: Devon Energy Corp	SURVEY TYPE: Positive Pulse MWD
RIG & NO: H & P 416	SURFACE LOCATION: Lea County	FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD **HOLE SIZE:** 8.75 in

GENERAL INFORMATION:

BHA #: 1	START DEPTH: 5285.00 ft
DATE IN: 2013/07/19	END DEPTH: 9803.00 ft
DATE OUT: 2013/07/23	HOLE MADE: 4518.00 ft
ANGLE IN: 0.00 °	AVG ROP: 75.51 ft/hr
ANGLE OUT: 7.25 °	
ORIENTING HRS: 18.67	ROTATING HRS: 41.17

MOTOR INFORMATION:

MANFCT: WFT C	
SERIAL #: 675-1609	
MODEL: QLE 7850	
LOBE: 7/8	BIT TO BEND: 6.15 ft
SETTING: 1.50 °	KICKPAD: No
	STABILIZER: 8 1/2

DRILLING INFORMATION:

BIT TYPE: T607X	IADC BIT GRADE: 1 / 3 / CT / G / X / I / NO / BHA	
BIT PRESS DROP: 0.00 psi	TOTAL FLOW RATE: 605.29 gal/min	PUMP PRESS: (OFF) 2000.00 psi
MTR PRESS DROP: 0.00 psi	NOZZLES: 0.773 in ² TFA	(ON) 2350.00 psi

MUD INFORMATION:

MUD TYPE: FRESH WATER	LIQUID BASE: Water	(All units are imperial.)
DENSITY: 0 lb/gal	VISCOSITY: 0 sec/qt	
SAND: 0.000	WATER LOSS: 0.00 cc/30min	LIQUID RATE: 0.00 gal/min
SOLIDS: 0.000	PLASTIC VISC: 0.0 cP	GAS TYPE:
OIL: 0.000	YIELD POINT: 0.0 lb/100 ft ²	GAS RATE: 0.00 cu ft/min
TEMP: 0 °F	pH: 0.0	

TIME INFORMATION:

CIRCULATING HOURS:	14.92
REAMING HOURS:	0.00
TIME DRILL HOURS:	0.00
MOTOR DRILL HOURS:	59.83
MOTOR HOURS THIS RUN:	74.75
PREVIOUS HOURS:	0.00
TOTAL MOTOR HOURS:	74.75
TOTAL BRT HOURS:	74.25

MOTOR EVALUATION COMMENTS:

REASON FOR BHA CHANGE:

Pick up a new motor and bit.

COMMENTS FROM LAST DAY RAN:

Rotation: The torque spikes from 9,800 -16,000 lbs and the ROP is down to around 45'/50' per hour. The differential bounces around from 275 / 1100 PSI.

@ 2AM 9803' Companyman called and decided to POOH. idnight Depth was 9722'



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section, Motor #675-1609

On rotation the ROP is averaging around 45/65 per hour with the Diff spiking and stauil outs. We cant put more than 18/22k on the bit .Could be change in formation.

18:00 9810' 10% Chert ,30%LS,60%SHALE
20:30 9900' 40% Chert ,60% LS
23:30 10,000' 40%,50% Chert,LS ,20%SHALE

Ending Depth : 9,803' - 10,050'



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 2 - Build & Hold Section, Motor #675-4178

FILE #: 4030046	WELL NAME: Thistle Unit #46H	SERVICE CO.: Weatherford Directional Services
JOB TYPE: Horizontal	COMPANY: Devon Energy Corp	SURVEY TYPE: Positive Pulse MWD
RIG & NO: H & P 416	SURFACE LOCATION: Lea County	FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD **HOLE SIZE:** 8.75 in

GENERAL INFORMATION:		MOTOR INFORMATION:	
BHA #: 2	START DEPTH: 9803.00 ft	MANFCT: WFT C	
DATE IN: 2013/07/23	END DEPTH: 10724.00 ft	SERIAL #: 675-4178	
DATE OUT: 2013/07/24	HOLE MADE: 921.00 ft	MODEL: QLE 7850	
ANGLE IN: 0.00 °	AVG ROP: 46.63 ft/hr	LOBE: 7/8	BIT TO BEND: 6.15 ft
ANGLE OUT: 7.41 °		SETTING: 2.38 °	KICKPAD: No
ORIENTING HRS: 6.00	ROTATING HRS: 13.75		STABILIZER: 8 1/2

DRILLING INFORMATION:

BIT TYPE: MM66DC	IADC BIT GRADE: 1 / 2 / CT / G / X / I / NO / TD	
BIT PRESS DROP: 0.00 psi	TOTAL FLOW RATE: 605.29 gal/min	PUMP PRESS: (OFF) 2050.00 psi
MTR PRESS DROP: 0.00 psi	NOZZLES: 0.66 in ² TFA	(ON) 2300.00 psi

MUD INFORMATION:

MUD TYPE: FRESH WATER	LIQUID BASE: Water	(All units are imperial.)
DENSITY: 0 lb/gal	VISCOSITY: 0 sec/qt	
SAND: 0.000	WATER LOSS: 0.00 cc/30min	LIQUID RATE: 0.00 gal/min
SOLIDS: 0.000	PLASTIC VISC: 0.0 cP	GAS TYPE:
OIL: 0.000	YIELD POINT: 0.0 lb/100 ft ²	GAS RATE: 0.00 cu ft/min
TEMP: 0 °F	pH: 0.0	

TIME INFORMATION:

CIRCULATING HOURS:	4.00
REAMING HOURS:	0.00
TIME DRILL HOURS:	0.00
MOTOR DRILL HOURS:	19.75
MOTOR HOURS THIS RUN:	23.75
PREVIOUS HOURS:	0.00
TOTAL MOTOR HOURS:	23.75
TOTAL BRT HOURS:	23.75

MOTOR EVALUATION COMMENTS:
 Motor was allready drained when came thru rotary table.

REASON FOR BHA CHANGE:
 TD'd Nudge Section of the well. TOH to pickup BHA #3 (Curve assembly).

COMMENTS FROM LAST DAY RAN:
 Starting Depth: 10,050' - 10,724'



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 3 - Curve Section, Motor #675-24X-322

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

— GENERAL INFORMATION: —

BHA #: 3 START DEPTH: 10724.00 ft
DATE IN: 2013/07/25 END DEPTH: 11283.00 ft
DATE OUT: 2013/07/26 HOLE MADE: 559.00 ft
ANGLE IN: 7.41 ° AVG ROP: 54.11 ft/hr
ANGLE OUT: 45.80 °
ORIENTING HRS: 10.33 ROTATING HRS: 0.00

— MOTOR INFORMATION: —

MANFCT: National
SERIAL #: 675-24X-322
MODEL: LE7861
LOBE: 7/8 BIT TO BEND: 6.38 ft
SETTING: 2.38 ° KICKPAD: No
STABILIZER: 8 1/2" (219mm)

— DRILLING INFORMATION: —

BIT TYPE: DPD505 IADC BIT GRADE: 2 / 2 / CT / G / X / I / NO / BHA
BIT PRESS DROP: 0.00 psi TOTAL FLOW RATE: 632.39 gal/min PUMP PRESS: (OFF) 2450.00 psi
MTR PRESS DROP: 0.00 psi NOZZLES: 0.55 in² TFA (ON) 2800.00 psi

— MUD INFORMATION: —

MUD TYPE: FRESH WATER LIQUID BASE: Water (All units are imperial.)
DENSITY: 9 lb/gal VISCOSITY: 29 sec/qt
SAND: 0.000 WATER LOSS: 0.00 cc/30min LIQUID RATE: 0.00 gal/min
SOLIDS: 0.000 PLASTIC VISC: 0.0 cP GAS TYPE:
OIL: 0.000 YIELD POINT: 0.0 lb/100 ft² GAS RATE: 0.00 cu ft/min
TEMP: 0 °F pH: 9.0

— TIME INFORMATION: —

CIRCULATING HOURS: 9.42
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 10.33
MOTOR HOURS THIS RUN: 19.75
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 19.75
TOTAL BRT HOURS: 19.25

— MOTOR EVALUATION COMMENTS: —

NOV motor. 3rd party

— REASON FOR BHA CHANGE: —

TOH to Dial motor up to 2.66.

— COMMENTS FROM LAST DAY RAN: —

We will be POOH to dial up the motor.

Motor output started off at 11.5's & then started dropping to 8-9 Degrees when reaching 30-40 degrees of Inc. It was decided to TOH to dial up the motor.



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 4 - Curve Section, Motor #675-24X-322

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Deleware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

— GENERAL INFORMATION:

BHA #:	4	START DEPTH:	11283.00 ft
DATE IN:	2013/07/27	END DEPTH:	11560.00 ft
DATE OUT:	2013/07/28	HOLE MADE:	277.00 ft
ANGLE IN:	45.80 °	AVG ROP:	19.79 ft/hr
ANGLE OUT:	81.44 °		
ORIENTING HRS:	14.00	ROTATING HRS:	0.00

— MOTOR INFORMATION:

MANFCT:	National		
SERIAL #:	675-24X-322		
MODEL:	LE7861		
LOBE:	7/8	BIT TO BEND:	6.38 ft
SETTING:	2.60 °	KICKPAD:	No
		STABILIZER:	No

— DRILLING INFORMATION:

BIT TYPE:	VGD-38CH	IADC BIT GRADE:	1 / 1 / NO / A / E / I / NO / TD		
BIT PRESS DROP:	0.00 psi	TOTAL FLOW RATE:	632.39 gal/min	PUMP PRESS:	(OFF) 2900.00 psi
MTR PRESS DROP:	0.00 psi	NOZZLES:	14, 14, 14, n/a: 0.451 in ² TFA		(ON) 3350.00 psi

— MUD INFORMATION:

MUD TYPE:	Water	LIQUID BASE:	Water	(All units are imperial.)	
DENSITY:	0 lb/gal	VISCOSITY:	0 sec/qt		
SAND:	0.000	WATER LOSS:	0.00 cc/30min	LIQUID RATE:	0.00 gal/min
SOLIDS:	0.000	PLASTIC VISC:	0.0 cP	GAS TYPE:	
OIL:	0.000	YIELD POINT:	0.0 lb/100 ft ²	GAS RATE:	0.00 cu ft/min
TEMP:	0 °F	pH:	0.0		

— TIME INFORMATION:

CIRCULATING HOURS:	4.00
REAMING HOURS:	0.00
TIME DRILL HOURS:	0.00
MOTOR DRILL HOURS:	14.00
MOTOR HOURS THIS RUN:	18.00
PREVIOUS HOURS:	19.75
TOTAL MOTOR HOURS:	37.75
TOTAL BRT HOURS:	18.00

— MOTOR EVALUATION COMMENTS:

Re-ran same motor, just dialed up, with a new bit.

— REASON FOR BHA CHANGE:

PICK UP LATERAL BHA

— COMMENTS FROM LAST DAY RAN:

We will pull out of the hole, laydown tools and do some rig repairs(drawworks) before picking up our tools.



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 5 - Lateral 1 Section, Motor #2015895

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

— GENERAL INFORMATION:

BHA #: 5 START DEPTH: 11560.00 ft
DATE IN: 2013/07/28 END DEPTH: 13218.00 ft
DATE OUT: 2013/07/30 HOLE MADE: 1658.00 ft
ANGLE IN: 81.44 ° AVG ROP: 58.01 ft/hr
ANGLE OUT: 84.11 °
ORIENTING HRS: 19.08 ROTATING HRS: 9.50

— MOTOR INFORMATION:

MANFCT: Baker
SERIAL #: 2015895
MODEL: 8.25 NB STBLZR
LOBE: 7/8 BIT TO BEND: 6.48 ft
SETTING: 1.50 ° KICKPAD: No
STABILIZER: 8 1/4

— DRILLING INFORMATION:

BIT TYPE: MM66DC IADC BIT GRADE: 1 / 1 / NO / A / X / 1 / NO / ?
BIT PRESS DROP: 0.00 psi TOTAL FLOW RATE: 677.57 gal/min PUMP PRESS: (OFF) 3100.00 psi
MTR PRESS DROP: 0.00 psi NOZZLES: 0.663 in² TFA (ON) 3575.00 psi

— MUD INFORMATION:

MUD TYPE: Water LIQUID BASE: Water (All units are imperial.)
DENSITY: 9 lb/gal VISCOSITY: 27 sec/qt
SAND: 0.000 WATER LOSS: 0.00 cc/30min LIQUID RATE: 0.00 gal/min
SOLIDS: 0.000 PLASTIC VISC: 0.0 cP GAS TYPE:
OIL: 0.000 YIELD POINT: 0.0 lb/100 ft² GAS RATE: 0.00 cu ft/min
TEMP: 0 °F pH: 8.0

— TIME INFORMATION:

CIRCULATING HOURS: 11.67
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 28.58
MOTOR HOURS THIS RUN: 40.25
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 40.25
TOTAL BRT HOURS: 40.25

— MOTOR EVALUATION COMMENTS:

3rd party motor (Baker).

— REASON FOR BHA CHANGE:

Check scribe on motor. Will re-run the same bit.

— COMMENTS FROM LAST DAY RAN:

We will POOH to check scribe of the motor, possibly over torqued in the hole. Tool Faces held do not reflect toolfaces calculated.



Weatherford

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 6 - Lateral 1 Section, Motor #10167329

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas, Sean Clawson
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA SURVEY TYPE: Positive Pulse MWD HOLE SIZE: 8.75 in

GENERAL INFORMATION:

BHA #: 6 START DEPTH: 13218.00 ft
DATE IN: 2013/07/30 END DEPTH: 15868.00 ft
DATE OUT: 2013/08/04 HOLE MADE: 2650.00 ft
ANGLE IN: 84.11 ° AVG ROP: 61.27 ft/hr
ANGLE OUT: 90.07 °
ORIENTING HRS: 22.50 ROTATING HRS: 20.75

MOTOR INFORMATION:

MANFCT: Baker
SERIAL #: 10167329
MODEL:
LOBE: 6/7 BIT TO BEND: 6.54 ft
SETTING: 1.50 ° KICKPAD: No
STABILIZER: 8.25

DRILLING INFORMATION:

BIT TYPE: MM66DC IADC BIT GRADE: 1 / 3 / CT / G / X / I / NO / TD
BIT PRESS DROP: 0.00 psi TOTAL FLOW RATE: 0.00 gal/min PUMP PRESS: (OFF) 0.00 psi
MTR PRESS DROP: 0.00 psi NOZZLES: 0.663 in² TFA (ON) 0.00 psi

MUD INFORMATION:

MUD TYPE: Water LIQUID BASE: Water (All units are imperial.)
DENSITY: 0 lb/gal VISCOSITY: 0 sec/qt
SAND: 0.000 WATER LOSS: 0.00 cc/30min LIQUID RATE: 0.00 gal/min
SOLIDS: 0.000 PLASTIC VISC: 0.0 cP GAS TYPE:
OIL: 0.000 YIELD POINT: 0.0 lb/100 ft² GAS RATE: 0.00 cu ft/min
TEMP: 0 °F pH: 0.0

TIME INFORMATION:

CIRCULATING HOURS: 34.00
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 43.25
MOTOR HOURS THIS RUN: 77.25
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 77.25
TOTAL BRT HOURS: 77.25

MOTOR EVALUATION COMMENTS:

Re-run same bit. picked up a new Baker Motor for Run #6.

REASON FOR BHA CHANGE:

TD well @ 10,686 MD.

COMMENTS FROM LAST DAY RAN:

TOH to lay down Directional Tools & RIH with liner.

Released.



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 1 - 2013/07/19 TO 2013/07/23

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA NO: 1	DATES RUN: 2013/07/19 TO 2013/07/23	SECTION: Build & Ho	TOOLFACE OFFSET:	SURVEY OFFSET: 64 ft
MOTOR SETTING: 1.50 °	KICKPAD: No	STABILIZER: 8 1/2	MODEL: QLE 7850	SERIAL NO: 675-1609
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY				ORIENTING			ROTATING			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS	
	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET					
5285.00	138.00	5221.00	0.00	0.00	5285.00	5285.00	0.00	5285.00	5423.00	138.00	0.00	0.00	0.00		
5423.00	31.00	5359.00	3.37	108.07	85 MTF	5423.00	5438.00	15.00	5438.00	5454.00	16.00	0.00	0.00	2.44	
5454.00	32.00	5390.00	3.12	110.59	85 MTF	5454.00	5469.00	15.00	5469.00	5486.00	17.00	0.00	0.00	-0.81	
5486.00	94.00	5422.00	3.91	99.91		5486.00	5486.00	0.00	5486.00	5580.00	94.00	0.00	0.00	2.47	
5580.00	64.00	5516.00	5.88	94.40	40 GTF	5580.00	5595.00	15.00	5595.00	5644.00	49.00	30.00	0.07	2.10	
5644.00	94.00	5580.00	6.41	97.16		5644.00	5644.00	0.00	5644.00	5738.00	94.00	0.00	0.00	0.83	
5738.00	95.00	5674.00	6.76	98.66	20 GTF	5738.00	5753.00	15.00	5753.00	5833.00	80.00	15.00	0.02	0.37	
5833.00	94.00	5769.00	7.74	96.33	60 GTF	5833.00	5853.00	20.00	5853.00	5927.00	74.00	15.00	0.07	1.03	
5927.00	95.00	5863.00	8.39	97.92	75R GTF	5927.00	5942.00	15.00	5942.00	6022.00	80.00	20.00	0.03	0.69	
6022.00	94.00	5958.00	8.59	109.11	-80L GTF	6022.00	6032.00	10.00	6032.00	6116.00	84.00	15.00	0.01	0.21	
6116.00	94.00	6052.00	7.85	101.34		6116.00	6116.00	0.00	6116.00	6210.00	94.00	10.00	-0.07	-0.79	
6210.00	95.00	6146.00	7.12	103.00	-25L GTF	6210.00	6220.00	10.00	6220.00	6305.00	85.00	0.00	0.00	-0.78	
6305.00	94.00	6241.00	8.58	97.33		6305.00	6305.00	0.00	6305.00	6399.00	94.00	10.00	0.15	1.54	
6399.00	95.00	6335.00	7.85	95.68	35R GTF	6399.00	6417.00	18.00	6417.00	6494.00	77.00	0.00	0.00	-0.78	
6494.00	94.00	6430.00	9.31	101.88		6494.00	6494.00	0.00	6494.00	6588.00	94.00	18.00	0.08	1.54	
6588.00	94.00	6524.00	9.38	103.10		6588.00	6588.00	0.00	6588.00	6682.00	94.00	0.00	0.00	0.07	
6682.00	95.00	6618.00	8.81	102.22		6682.00	6682.00	0.00	6682.00	6777.00	95.00	0.00	0.00	-0.61	
6777.00	94.00	6713.00	8.58	102.55		6777.00	6777.00	0.00	6777.00	6871.00	94.00	0.00	0.00	-0.24	
6871.00	94.00	6807.00	7.93	101.29		6871.00	6871.00	0.00	6871.00	6965.00	94.00	0.00	0.00	-0.69	
6965.00	95.00	6901.00	7.43	101.27	10L	6965.00	6977.00	12.00	6977.00	7060.00	83.00	0.00	0.00	-0.53	
7060.00	94.00	6996.00	8.30	101.16	5L	7060.00	7075.00	15.00	7075.00	7154.00	79.00	12.00	0.07	0.92	
7154.00	95.00	7090.00	9.25	98.95		7154.00	7154.00	0.00	7154.00	7249.00	95.00	15.00	0.06	1.01	
7249.00	95.00	7185.00	8.85	100.52		7249.00	7249.00	0.00	7249.00	7344.00	95.00	0.00	0.00	-0.42	
7344.00	94.00	7280.00	8.37	99.33	5R	7344.00	7357.00	13.00	7357.00	7438.00	81.00	0.00	0.00	-0.51	



Slide Sheet Report

Drilling Services

v4.2.2674

BHA 1 - 2013/07/19 TO 2013/07/23

(Distances are shown in feet.)

BIT		SURVEY			ORIENTING			ROTATING			SLIDE	BUR	BUR	COMMENTS	
DEPTH	DRILLED	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET	SEEN	/ft		/100ft
7438.00	95.00	7374.00	9.05	99.22		7438.00	7438.00	0.00	7438.00	7533.00	95.00	13.00	0.05	0.72	
7533.00	94.00	7469.00	8.70	98.95		7533.00	7533.00	0.00	7533.00	7627.00	94.00	0.00	0.00	-0.37	
7627.00	95.00	7563.00	8.42	99.68	5R	7627.00	7645.00	18.00	7645.00	7722.00	77.00	0.00	0.00	-0.30	
7722.00	94.00	7658.00	9.56	100.83		7722.00	7722.00	0.00	7722.00	7816.00	94.00	18.00	0.06	1.20	
7816.00	95.00	7752.00	8.68	102.68		7816.00	7816.00	0.00	7816.00	7911.00	95.00	0.00	0.00	-0.94	
7911.00	94.00	7847.00	8.32	102.34	-20L	7911.00	7927.00	16.00	7927.00	8005.00	78.00	0.00	0.00	-0.38	
8005.00	95.00	7941.00	8.34	101.44	-30L	8005.00	8025.00	20.00	8025.00	8100.00	75.00	16.00	0.00	0.02	
8100.00	95.00	8036.00	9.13	102.04		8100.00	8100.00	0.00	8100.00	8195.00	95.00	20.00	0.04	0.83	
8195.00	94.00	8131.00	8.43	102.74	-25L	8195.00	8213.00	18.00	8213.00	8289.00	76.00	0.00	0.00	-0.74	
8289.00	95.00	8225.00	8.68	100.76		8289.00	8289.00	0.00	8289.00	8384.00	95.00	18.00	0.01	0.27	
8384.00	94.00	8320.00	8.14	100.88	-35L	8384.00	8404.00	20.00	8404.00	8478.00	74.00	0.00	0.00	-0.57	
8478.00	95.00	8414.00	8.80	99.91	HS	8478.00	8488.00	10.00	8488.00	8573.00	85.00	20.00	0.03	0.70	
8573.00	94.00	8509.00	8.80	99.00	HS	8573.00	8593.00	20.00	8593.00	8667.00	74.00	10.00	0.00	0.00	
8667.00	95.00	8603.00	9.78	101.30		8667.00	8667.00	0.00	8667.00	8762.00	95.00	20.00	0.05	1.04	
8762.00	10.00	8698.00	8.92	101.22		8762.00	8762.00	0.00	8762.00	8772.00	10.00	0.00	0.00	-0.91	
8772.00	84.00	8708.00	0.00	0.00	25L	8772.00	8792.00	20.00	8792.00	8856.00	64.00	0.00	0.00	-89.20	
8856.00	95.00	8792.00	10.24	100.55		8856.00	8856.00	0.00	8856.00	8951.00	95.00	20.00	0.51	12.19	
8951.00	95.00	8887.00	9.74	101.64	60L	8951.00	8964.00	13.00	8964.00	9046.00	82.00	0.00	0.00	-0.53	
9046.00	95.00	8982.00	8.99	97.77		9046.00	9046.00	0.00	9046.00	9141.00	95.00	13.00	-0.06	-0.79	
9141.00	94.00	9077.00	8.34	99.80	30L	9141.00	9161.00	20.00	9161.00	9235.00	74.00	0.00	0.00	-0.68	
9235.00	95.00	9171.00	9.00	95.73		9235.00	9235.00	0.00	9235.00	9330.00	95.00	20.00	0.03	0.70	
9330.00	94.00	9266.00	8.26	96.69	-10L	9330.00	9355.00	25.00	9355.00	9424.00	69.00	0.00	0.00	-0.78	
9424.00	95.00	9360.00	8.46	92.13	30R	9424.00	9446.00	22.00	9446.00	9519.00	73.00	25.00	0.01	0.21	
9519.00	10.00	9455.00	8.77	95.56		9519.00	9519.00	0.00	9519.00	9529.00	10.00	22.00	0.01	0.33	
9529.00	85.00	9465.00	0.00	0.00	30R	9529.00	9553.00	24.00	9553.00	9614.00	61.00	0.00	0.00	-87.70	
9614.00	94.00	9550.00	8.66	96.27		9614.00	9614.00	0.00	9614.00	9708.00	94.00	21.00	0.41	10.19	
9708.00	10.00	9644.00	7.97	98.48		9708.00	9708.00	0.00	9708.00	9718.00	10.00	3.00	-0.23	-0.73	
9718.00	85.00	9654.00	0.00	0.00	15R	9718.00	9726.00	8.00	9726.00	9803.00	77.00	0.00	0.00	-79.70	
9803.00	0.00	9739.00	7.25	100.40		9803.00	9803.00	0.00	9803.00	9803.00	0.00	8.00	0.91	8.53	POOH for Motor & Bit.

Totals:	427.00 ft	4091.00 ft
Percentages:	9.5%	90.5%
Time:	18.67 hrs	41.17 hrs
Percentages:	31.2%	68.8%



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 2 - 2013/07/23 TO 2013/07/24

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA NO: 2	DATES RUN: 2013/07/23 TO 2013/07/24	SECTION: Build & Ho	TOOLFACE OFFSET:	SURVEY OFFSET: 63 ft
MOTOR SETTING: 2.38 °	KICKPAD: No	STABILIZER: 8 1/2	MODEL: QLE 7850	SERIAL NO: 675-4178
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY				ORIENTING			ROTATING			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS	
	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET					
9803.00	95.00	9740.00	0.00	0.00	25	10R	9803.00	9828.00	25.00	9828.00	9898.00	70.00	0.00	0.00	0.00
9898.00	94.00	9835.00	8.96	105.03	10L		9898.00	9908.00	10.00	9908.00	9992.00	84.00	25.00	0.36	9.43
9992.00	10.00	9929.00	9.18	104.71			9992.00	9992.00	0.00	9992.00	10002.00	10.00	10.00	0.02	0.23
10002.00	85.00	9939.00	0.00	0.00	60L		10002.00	10017.00	15.00	10017.00	10087.00	70.00	0.00	0.00	-91.80
10087.00	95.00	10024.00	9.28	102.20			10087.00	10087.00	0.00	10087.00	10182.00	95.00	15.00	0.62	10.92
10182.00	10.00	10119.00	8.51	104.93			10182.00	10182.00	0.00	10182.00	10192.00	10.00	0.00	0.00	-0.81
10192.00	84.00	10129.00	0.00	0.00	30L		10192.00	10217.00	25.00	10217.00	10276.00	59.00	0.00	0.00	-85.10
10276.00	94.00	10213.00	9.69	99.28			10276.00	10276.00	0.00	10276.00	10370.00	94.00	21.00	0.46	11.54
10370.00	95.00	10307.00	9.75	97.62			10370.00	10370.00	0.00	10370.00	10465.00	95.00	4.00	0.02	0.06
10465.00	94.00	10402.00	9.10	10.56			10465.00	10465.00	0.00	10465.00	10559.00	94.00	0.00	0.00	-0.68
10559.00	95.00	10496.00	8.28	98.11	20R		10559.00	10572.00	13.00	10572.00	10654.00	82.00	0.00	0.00	-0.87
10654.00	70.00	10591.00	8.10	102.72			10654.00	10654.00	0.00	10654.00	10724.00	70.00	13.00	-0.01	-0.19
10724.00	0.00	10661.00	7.41	101.29			10724.00	10724.00	0.00	10724.00	10724.00	0.00	0.00	0.00	-0.99

Totals:	88.00 ft	833.00 ft
Percentages:	9.6%	90.4%
Time:	6.00 hrs	13.75 hrs
Percentages:	30.4%	69.6%



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 3 - 2013/07/25 TO 2013/07/26

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA NO: 3	DATES RUN: 2013/07/25 TO 2013/07/26	SECTION: Curve	TOOLFACE OFFSET:	SURVEY OFFSET: 58 ft
MOTOR SETTING: 2.38 °	KICKPAD: No	STABILIZER: 8 1/2" (219mm)	MODEL: LE7861	SERIAL NO: 675-24X-322
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY			ORIENTING			ROTATING			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS	
	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO					FEET
10724.00	23.00	10666.00	7.41	101.29	-60L	10724.00	10747.00	23.00	10747.00	10747.00	0.00	0.00	0.00	
10747.00	32.00	10689.00	7.06	103.82	-60L	10747.00	10779.00	32.00	10779.00	10779.00	0.00	0.00	0.00	-1.52
10779.00	31.00	10721.00	7.30	99.63	-60L	10779.00	10810.00	31.00	10810.00	10810.00	0.00	0.00	0.00	0.75
10810.00	32.00	10752.00	9.32	90.02	-55L	10810.00	10842.00	32.00	10842.00	10842.00	0.00	28.00	0.07	6.52
10842.00	31.00	10784.00	12.07	76.78	-50L	10842.00	10873.00	31.00	10873.00	10873.00	0.00	32.00	0.09	8.59
10873.00	31.00	10815.00	15.31	70.29	-65L	10873.00	10904.00	31.00	10904.00	10904.00	0.00	31.00	0.10	10.45
10904.00	32.00	10846.00	18.61	64.52	50L	10904.00	10936.00	32.00	10936.00	10936.00	0.00	31.00	0.11	10.65
10936.00	31.00	10878.00	20.62	58.30	35L	10936.00	10967.00	31.00	10967.00	10967.00	0.00	32.00	0.06	6.28
10967.00	32.00	10909.00	22.18	50.02	25L	10967.00	10999.00	32.00	10999.00	10999.00	0.00	31.00	0.05	5.03
10999.00	32.00	10941.00	24.92	45.53	30L	10999.00	11031.00	32.00	11031.00	11031.00	0.00	32.00	0.09	8.56
11031.00	31.00	10973.00	27.40	45.05	60L	11031.00	11062.00	31.00	11062.00	11062.00	0.00	32.00	0.08	7.75
11062.00	31.00	11004.00	28.42	48.48	50L	11062.00	11093.00	31.00	11093.00	11093.00	0.00	31.00	0.03	3.29
11093.00	32.00	11035.00	30.43	47.20	30L	11093.00	11125.00	32.00	11125.00	11125.00	0.00	31.00	0.06	6.48
11125.00	31.00	11067.00	31.69	42.85	30L	11125.00	11156.00	31.00	11156.00	11156.00	0.00	32.00	0.04	3.94
11156.00	32.00	11098.00	34.38	38.80	30L	11156.00	11188.00	32.00	11188.00	11188.00	0.00	31.00	0.09	8.68
11188.00	32.00	11130.00	37.48	35.51	25L	11188.00	11220.00	32.00	11220.00	11220.00	0.00	32.00	0.10	9.69
11220.00	31.00	11162.00	40.10	32.90	15L	11220.00	11251.00	31.00	11251.00	11251.00	0.00	32.00	0.08	8.19
11251.00	32.00	11193.00	43.51	29.87	10L	11251.00	11283.00	32.00	11283.00	11283.00	0.00	31.00	0.11	11.00
11283.00	0.00	11225.00	45.80	28.70		11283.00	11283.00	0.00	11283.00	11283.00	0.00	32.00	0.07	7.16 POOH to dial up motor

Totals:	559.00 ft	0.00 ft
Percentages:	100.0%	0.0%
Time:	10.33 hrs	0.00 hrs
Percentages:	100.0%	0.0%



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 4 - 2013/07/27 TO 2013/07/28

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA NO: 4	DATES RUN: 2013/07/27 TO 2013/07/28	SECTION: Curve	TOOLFACE OFFSET:	SURVEY OFFSET: 58 ft
MOTOR SETTING: 2.60 °	KICKPAD: No	STABILIZER: No	MODEL: LE7861	SERIAL NO: 675-24X-322
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY			ORIENTING			ROTATING			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS	
	DEPTH	INC	AZM TF	FROM	TO	FEET	FROM	TO	FEET					
11283.00	31.00	11225.00	45.80	28.70	-10L	11283.00	11314.00	31.00	11314.00	11314.00	0.00	0.00	0.00	
11314.00	32.00	11256.00	48.68	27.43	-15L	11314.00	11346.00	32.00	11346.00	11346.00	0.00	0.00	0.00	9.29
11346.00	31.00	11288.00	53.18	27.05	-20L	11346.00	11377.00	31.00	11377.00	11377.00	0.00	5.00	0.90	14.06
11377.00	32.00	11319.00	58.18	26.54	-25L	11377.00	11409.00	32.00	11409.00	11409.00	0.00	31.00	0.16	16.13
11409.00	31.00	11351.00	61.40	27.45	-25L	11409.00	11440.00	31.00	11440.00	11440.00	0.00	32.00	0.10	10.06
11440.00	32.00	11382.00	66.33	26.05	-30L	11440.00	11472.00	32.00	11472.00	11472.00	0.00	31.00	0.16	15.90
11472.00	31.00	11414.00	21.42	25.68	35L	11472.00	11503.00	31.00	11503.00	11503.00	0.00	32.00	-1.40	-140.34
11503.00	32.00	11445.00	76.17	24.29	35L	11503.00	11535.00	32.00	11535.00	11535.00	0.00	31.00	1.77	176.61
11535.00	25.00	11477.00	81.44	22.46	75L	11535.00	11560.00	25.00	11560.00	11560.00	0.00	32.00	0.16	16.47 POOH to P/U Lat. BHA

Totals:	277.00 ft	0.00 ft
Percentages:	100.0%	0.0%
Time:	14.00 hrs	0.00 hrs
Percentages:	100.0%	0.0%



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 5 - 2013/07/28 TO 2013/07/30

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA NO: 5	DATES RUN: 2013/07/28 TO 2013/07/30	SECTION: Lateral 1	TOOLFACE OFFSET:	SURVEY OFFSET: 70 ft
MOTOR SETTING: 1.50 °	KICKPAD: No	STABILIZER: 8 1/4	MODEL: 8.25 NB STBLZR	SERIAL NO: 2015895
				BHA SURVEY TYPE: Positive Pulse MWD

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY			ORIENTING			ROTATING			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS		
	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO					FEET	
11560.00	17.00	11490.00	81.44	22.46	-70L	11560.00	11577.00	17.00	11577.00	11577.00	0.00	0.00	0.00		
11577.00	31.00	11507.00	87.24	20.42	130L	11577.00	11592.00	15.00	11592.00	11608.00	16.00	0.00	0.00	34.12	
11608.00	33.00	11538.00	89.93	16.78	60L	11608.00	11623.00	15.00	11623.00	11641.00	18.00	0.00	0.00	8.68	
11641.00	63.00	11571.00	89.30	13.89		11641.00	11641.00	0.00	11641.00	11704.00	63.00	11.00	-0.06	-1.91	
11704.00	94.00	11634.00	87.34	13.39	50L	11704.00	11748.00	44.00	11748.00	11798.00	50.00	36.00	-0.05	-3.11	
11798.00	95.00	11728.00	87.76	11.12	10L	11798.00	11828.00	30.00	11828.00	11893.00	65.00	24.00	0.02	0.45	
11893.00	95.00	11823.00	87.76	7.34	10L	11893.00	11956.00	63.00	11956.00	11988.00	32.00	45.00	0.00	0.00	
11988.00	95.00	11918.00	88.53	5.70	5L	11988.00	12038.00	50.00	12038.00	12083.00	45.00	30.00	0.03	0.81	
12083.00	94.00	12013.00	89.16	2.42	HS	12083.00	12178.00	95.00	12178.00	12177.00	-1.00	63.00	0.01	0.66	
12177.00	32.00	12107.00	90.35	358.14		12177.00	12177.00	0.00	12177.00	12209.00	32.00	49.00	0.02	1.27	
12209.00	31.00	12139.00	91.40	355.62	90R	12209.00	12223.00	14.00	12223.00	12240.00	17.00	32.00	0.03	3.28	
12240.00	32.00	12170.00	91.89	353.83	90R	12240.00	12255.00	15.00	12255.00	12272.00	17.00	31.00	0.02	1.58	
12272.00	95.00	12202.00	92.31	353.43	110R	12272.00	12304.00	32.00	12304.00	12367.00	63.00	8.00	0.05	1.31	
12367.00	94.00	12297.00	95.26	356.12	160R	12367.00	12419.00	52.00	12419.00	12461.00	42.00	54.00	0.05	3.11	
12461.00	95.00	12391.00	95.61	358.74	165R	12461.00	12525.00	64.00	12525.00	12556.00	31.00	31.00	0.01	0.37	
12556.00	95.00	12486.00	93.08	1.53		12556.00	12556.00	0.00	12556.00	12651.00	95.00	53.00	-0.05	-2.66	
12651.00	94.00	12581.00	91.54	2.80	180	12651.00	12683.00	32.00	12683.00	12745.00	62.00	39.00	-0.04	-1.62	
12745.00	95.00	12675.00	89.86	3.03		12745.00	12745.00	0.00	12745.00	12840.00	95.00	24.00	-0.07	-1.79	
12840.00	94.00	12770.00	90.42	2.73	180 GTF	12840.00	12857.00	17.00	12857.00	12934.00	77.00	8.00	0.07	0.59	
12934.00	95.00	12864.00	91.19	3.86	130L	12934.00	12989.00	55.00	12989.00	13029.00	40.00	17.00	0.05	0.82	
13029.00	32.00	12959.00	89.79	5.17		13029.00	13029.00	0.00	13029.00	13061.00	32.00	25.00	-0.06	-1.47	
13061.00	63.00	12991.00	0.00	0.00	50L	13061.00	13084.00	23.00	13084.00	13124.00	40.00	30.00	-2.99	-280.59	
13124.00	94.00	13054.00	88.46	4.95	50L	13124.00	13163.00	39.00	13163.00	13218.00	55.00	0.00	0.00	140.41	
13218.00	0.00	13148.00	84.11	2.69		13218.00	13218.00	0.00	13218.00	13218.00	0.00	47.00	-0.09	-4.63	POOH TO CHECK TOOLS



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 5 - 2013/07/28 TO 2013/07/30

Totals:	672.00 ft	986.00 ft
Percentages:	40.5%	59.5%
Time:	19.08 hrs	9.50 hrs
Percentages:	66.8%	33.2%



Slide Sheet Report

Drilling Services
v4.2.2674

BHA 6 - 2013/07/30 TO 2013/08/04

FILE #: 4030046
JOB TYPE: Horizontal
RIG & NO: H & P 416

WELL NAME: Thistle Unit #46H
COMPANY: Devon Energy Corp
SURFACE LOCATION: Lea County

SERVICE CO.: Weatherford Directional Services
SURVEY TYPE: Positive Pulse MWD
FIELD / LOCATION: Delaware Basin / New Mexico / USA

Company Man: Jeff Foster, Jack Pierce
DIR Supervisor: Kevin Moss, Rene Rosas, Sean Clawson
MWD Supervisor: Dave Latch, Ryan Broadfoot

BHA NO: 6	DATES RUN: 2013/07/30 TO 2013/08/04	SECTION: Lateral 1	TOOLFACE OFFSET:	SURVEY OFFSET: 70 ft
MOTOR SETTING: 1.50 °	KICKPAD: No	STABILIZER: 8.25	MODEL:	SERIAL NO: 10167329
				BHA SURVEY TYPE: Positive Pulse MWD

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY			ORIENTING			ROTATING			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS		
	DEPTH	INC	AZM TF	FROM	TO	FEET	FROM	TO	FEET						
13218.00	95.00	13148.00	84.11	2.69	-20L	13218.00	13313.00	95.00	13313.00	13313.00	0.00	0.00	0.00	0.00	
13313.00	95.00	13243.00	86.57	1.82	-20L	13313.00	13376.00	63.00	13376.00	13408.00	32.00	25.00	0.10	2.59	
13408.00	95.00	13338.00	91.96	359.62		13408.00	13408.00	0.00	13408.00	13503.00	95.00	95.00	0.06	5.67	
13503.00	94.00	13433.00	94.55	359.77	-145L	13503.00	13535.00	32.00	13535.00	13597.00	62.00	38.00	0.07	2.73	
13597.00	95.00	13527.00	90.07	358.95		13597.00	13597.00	0.00	13597.00	13692.00	95.00	24.00	-0.19	-4.77	
13692.00	95.00	13622.00	90.21	359.13		13692.00	13692.00	0.00	13692.00	13787.00	95.00	8.00	0.02	0.15	
13787.00	95.00	13717.00	91.19	359.53		13787.00	13787.00	0.00	13787.00	13882.00	95.00	0.00	0.00	1.03	
13882.00	94.00	13812.00	91.40	359.58		13882.00	13882.00	0.00	13882.00	13976.00	94.00	0.00	0.00	0.22	
13976.00	95.00	13906.00	91.68	0.29	145L	13976.00	13996.00	20.00	13996.00	14071.00	75.00	0.00	0.00	0.30	
14071.00	95.00	14001.00	90.91	358.28		14071.00	14071.00	0.00	14071.00	14166.00	95.00	20.00	-0.04	-0.81	
14166.00	94.00	14096.00	91.75	359.96	160L	14166.00	14211.00	45.00	14211.00	14260.00	49.00	0.00	0.00	0.88	
14260.00	95.00	14190.00	89.37	359.56		14260.00	14260.00	0.00	14260.00	14355.00	95.00	24.00	-0.10	-2.53	
14355.00	94.00	14285.00	89.72	0.13		14355.00	14355.00	0.00	14355.00	14449.00	94.00	21.00	0.02	0.37	
14449.00	95.00	14379.00	89.86	0.62		14449.00	14449.00	0.00	14449.00	14544.00	95.00	0.00	0.00	0.15	
14544.00	95.00	14474.00	90.49	0.93	140L	14544.00	14576.00	32.00	14576.00	14639.00	63.00	0.00	0.00	0.66	
14639.00	94.00	14569.00	87.83	0.58		14639.00	14639.00	0.00	14639.00	14733.00	94.00	25.00	-0.11	-2.80	
14733.00	95.00	14663.00	88.04	0.67	-30L	14733.00	14740.00	7.00	14740.00	14828.00	88.00	7.00	0.03	0.22	
14828.00	94.00	14758.00	88.04	0.54	-30L	14828.00	14859.00	31.00	14859.00	14922.00	63.00	7.00	0.00	0.00	
14922.00	94.00	14852.00	89.09	0.03	-30L	14922.00	14953.00	31.00	14953.00	15016.00	63.00	24.00	0.04	1.12	
15016.00	95.00	14946.00	90.42	358.97	20L	15016.00	15048.00	32.00	15048.00	15111.00	63.00	31.00	0.04	1.41	
15111.00	95.00	15041.00	92.66	358.84		15111.00	15111.00	0.00	15111.00	15206.00	95.00	32.00	0.07	2.36	
15206.00	94.00	15136.00	93.42	358.81	160L	15206.00	15226.00	20.00	15226.00	15300.00	74.00	7.00	0.11	0.80	
15300.00	94.00	15230.00	91.75	358.59		15300.00	15300.00	0.00	15300.00	15394.00	94.00	20.00	-0.08	-1.78	
15394.00	95.00	15324.00	92.10	358.51	170R	15394.00	15409.00	15.00	15409.00	15489.00	80.00	0.00	0.00	0.37	



Weatherford

(Distances are shown in feet.)

Slide Sheet Report

Drilling Services
v4.2.2674

BHA 6 - 2013/07/30 TO 2013/08/04

BIT		SURVEY			----- ORIENTING -----			----- ROTATING -----			SLIDE	BUR	BUR	COMMENTS	
DEPTH	DRILLED	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET	SEEN	/ft		/100ft
15489.00	95.00	15419.00	91.05	358.74		15489.00	15489.00	0.00	15489.00	15584.00	95.00	15.00	-0.07	-1.11	
15584.00	95.00	15514.00	91.61	359.14	170R	15584.00	15614.00	30.00	15614.00	15679.00	65.00	0.00	0.00	0.59	
15679.00	95.00	15609.00	91.19	359.12		15679.00	15679.00	0.00	15679.00	15774.00	95.00	25.00	-0.02	-0.44	
15774.00	94.00	15704.00	90.07	359.71		15774.00	15774.00	0.00	15774.00	15868.00	94.00	5.00	-0.22	-1.18	

Totals:	453.00 ft	2197.00 ft
Percentages:	17.1%	82.9%
Time:	22.50 hrs	20.75 hrs
Percentages:	52.0%	48.0%