

NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV
 Field: Monongalia
 Facility: Beach Pad

Slot: 04
 Well: Beach 4H
 Wellbore: Beach 4H PWB



Plot reference wellpath is Beach 4H PWB Rev-B.0

Drawn by: JAC/BJ	Checked by: JAC/BJ
Drawn Date: 10/18/2014	Checked Date: 10/18/2014
Drawn Time: 10:00 AM	Checked Time: 10:00 AM
Drawn User: JAC/BJ	Checked User: JAC/BJ
Drawn Project: 66922669	Checked Project: 66922669
Drawn Well: Beach 4H PWB	Checked Well: Beach 4H PWB
Drawn Wellbore: Beach 4H PWB	Checked Wellbore: Beach 4H PWB
Drawn Slot: 04	Checked Slot: 04
Drawn Field: Monongalia	Checked Field: Monongalia
Drawn Location: Monongalia County, WV	Checked Location: Monongalia County, WV
Drawn Facility: Beach Pad	Checked Facility: Beach Pad

Location Information

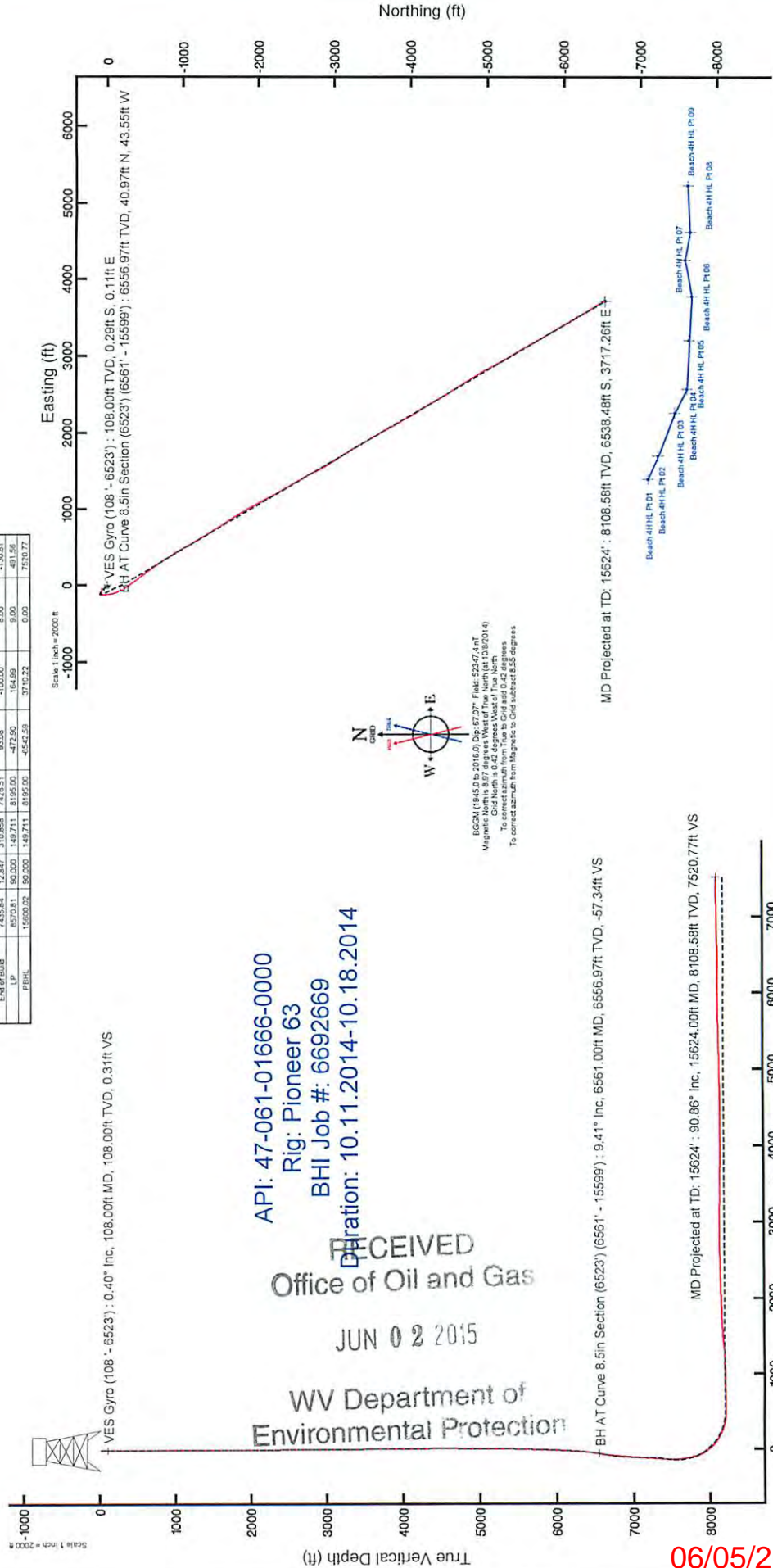
Facility Name	Grid East (US #)	Grid North (US #)	Longitude	Latitude
Beach Pad	1764915.100	439301.800	82°09'00.000"W	39°42'15.411"N
Slot	04	04		
Well	1764915.100	439301.800	82°09'00.000"W	39°42'15.411"N
Wellbore	1764915.100	439301.800	82°09'00.000"W	39°42'15.411"N

Well Data

Well	Wellbore	Wellpath
04	Beach 4H PWB	Beach 4H PWB
04	Beach 4H	Beach 4H PWB Rev-B.0

Well Profile Data

Depth (ft)	MD (ft)	PC (ft)	AS (ft)	TVD (ft)	Local E (ft)	Local N (ft)	DLE (ft/1000ft)	VS (ft)
0	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
1000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
2000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
3000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
4000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
5000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
6000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
7000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01
8000	6523.00	10.430	313.470	6519.54	36.32	-38.84	0.00	-51.01



API: 47-061-01666-0000
 Rig: Pioneer 63
 BHI Job #: 66922669
 Operation: 10.11.2014-10.18.2014

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5102/50/90

Perforation Record					
Stage Number	Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	12/7/2014	15,525	15,377	40	Marcellus Shale
2	12/7/2014	15,325	15,175	40	Marcellus Shale
3	12/8/2014	15,125	14,977	40	Marcellus Shale
4	12/8/2014	14,925	14,777	40	Marcellus Shale
5	12/9/2014	14,725	14,577	40	Marcellus Shale
6	12/9/2014	14,525	14,377	40	Marcellus Shale
7	12/10/2014	14,325	14,177	40	Marcellus Shale
8	12/10/2014	14,125	13,977	40	Marcellus Shale
9	12/11/2014	13,925	13,777	40	Marcellus Shale
10	12/11/2014	13,725	13,577	40	Marcellus Shale
11	12/12/2014	13,525	13,377	40	Marcellus Shale
12	12/13/2014	13,325	13,177	40	Marcellus Shale
13	12/13/2014	13,125	12,977	40	Marcellus Shale
14	12/14/2014	12,925	12,777	40	Marcellus Shale
16	12/14/2014	12,725	12,577	40	Marcellus Shale
16	12/15/2014	12,525	12,377	40	Marcellus Shale
17	12/15/2014	12,325	12,177	40	Marcellus Shale
18	12/15/2014	12,125	11,977	40	Marcellus Shale
19	12/18/2014	11,925	11,777	40	Marcellus Shale
20	12/18/2014	11,725	11,579	40	Marcellus Shale
21	12/17/2014	11,525	11,377	40	Marcellus Shale
22	12/17/2014	11,325	11,177	40	Marcellus Shale
23	12/18/2014	11,125	10,977	40	Marcellus Shale
24	12/19/2014	10,925	10,777	40	Marcellus Shale
25	12/19/2014	10,725	10,577	40	Marcellus Shale
26	12/19/2014	10,525	10,377	40	Marcellus Shale
27	12/20/2014	10,325	10,177	40	Marcellus Shale
28	12/20/2014	10,125	9,977	40	Marcellus Shale
29	12/21/2014	9,925	9,777	40	Marcellus Shale
30	12/22/2014	9,725	9,577	40	Marcellus Shale
31	12/22/2014	9,725	9,577	40	Marcellus Shale
32	12/23/2014	9,325	9,177	40	Marcellus Shale
33	12/28/2014	9,125	8,977	40	Marcellus Shale
34	12/28/2014	8,925	8,777	40	Marcellus Shale
35	12/27/2014	8,725	8,577	40	Marcellus Shale
36	12/27/2014	8,510	8,317	40	Marcellus Shale

Stimulation Record							
Stage Number	Date	Average Treating Rate (BPM)	Average Treating Pressure (psf)	Breakdown Pressure (psf)	ISIP (psi)	Total Proppant Amount (lbs)	Total Clean Fluid (Bbls)
1	12/7/2014	74	8,821	8,452	4,905	400,620	7,642
2	12/7/2014	74	8,885	8,826	6,357	404,720	7,831
3	12/8/2014	71	8,939	7,429	5,312	400,420	7,044
4	12/8/2014	75	8,583	6,507	5,880	398,560	7,943
6	12/9/2014	80	8,733	6,579	5,893	398,320	7,458
6	12/9/2014	74	8,715	7,239	6,471	403,800	9,106
7	12/10/2014	75	8,689	7,496	6,384	333,600	7,351
8	12/10/2014	81	8,482	6,613	5,835	404,300	8,041
9	12/11/2014	79	8,653	7,172	6,472	405,280	8,565
10	12/11/2014	80	8,525	6,670	6,040	403,500	7,834
11	12/12/2014	80	8,558	6,589	4,443	399,180	7,741
12	12/13/2014	79	8,652	7,729	6,356	404,080	7,567
13	12/13/2014	78	8,634	7,635	6,386	398,900	7,204
14	12/14/2014	83	8,651	6,883	6,147	396,040	7,614
15	12/14/2014	81	8,496	6,826	5,980	398,890	7,728
16	12/15/2014	90	8,741	6,876	5,980	396,340	7,753
17	12/15/2014	82	8,670	7,151	6,124	403,240	7,387
18	12/15/2014	79	8,815	8,815	5,753	399,800	8,857
19	12/16/2014	71	8,912	8,153	5,179	401,620	7,137
20	12/16/2014	74	8,949	8,013	6,160	400,160	8,234
21	12/17/2014	83	8,780	8,516	5,655	399,180	7,260
22	12/17/2014	89	8,600	9,031	5,560	401,200	6,887
23	12/18/2014	68	8,568	9,261	5,686	376,794	7,222
24	12/19/2014	68	8,888	8,989	5,468	393,320	7,111
25	12/19/2014	65	8,605	8,273	6,036	396,480	6,959
26	12/19/2014	66	8,782	9,010	6,058	396,800	6,826
27	12/20/2014	69	8,747	8,962	6,004	399,600	6,821
28	12/20/2014	69	8,786	8,789	6,036	396,600	6,683
29	12/21/2014	90	8,765	8,495	5,750	400,650	7,333
30	12/22/2014	90	8,670	8,154	5,468	401,060	7,111
31	12/22/2014	87	8,386	7,069	6,986	399,420	7,117
32	12/23/2014	68	8,695	7,616	6,162	400,650	7,590
33	12/26/2014	68	8,730	7,676	6,384	399,640	7,251
34	12/26/2014	66	8,332	7,313	6,797	399,480	6,977
35	12/27/2014	67	8,432	7,491	6,036	399,260	6,221
36	12/27/2014	68	8,071	7,327	6,068	397,260	6,269

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CEMENT JOB REPORT



CUSTOMER NORTHEAST NATURAL ENER	DATE 19-OCT-14	F.R.# 10011110222	SERV. SUPV. Scott J Carson
LEASE & WELL NAME BEACH 4H - API 47081016880000	LOCATION BLACKSVILLE		COUNTY-PARISH-BLOCK Monongalia West Virginia
DISTRICT Clarksburg	DRILLING CONTRACTOR RIG # PERFORMANCE 1		TYPE OF JOB Long String

SIZE & TYPE OF PLUGS	LIST OF HARDWARE	MECHANICAL BARRIERS	MD	TVD	HANGER TYPES	MD	TVD
Latch Down Plug & Assembly, 5-1/2	Guide Shoe, Cement Nose, 5-1/2 I Float Collar, AI Flap, 5-1/2 - 8rd	NONE			NONE		

MATERIALS FURNISHED BY BJ	LAB REPORT NO.	PHYSICAL SLURRY PROPERTIES							
		SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER	
ULTRA-FLUSH HV			13				100		
50/50 PREMIUM NE-1 .3% R-3 .3% MPA-170	189101233	3,005	14.6	1.17	5.19	07:49	626	371.23	
50# SUGAR /H2O			8.34				6		
H2O			8.34				348		
100# SUGAR			0				0		
Available Mix Water		750	Bbl.	Available Displ. Fluid		750	Bbl.	TOTAL	1078 371.23

HOLE			TBO CSG O.P.						COLLAR DEPTHS			
SIZE	% EXCESS	DEPTH	ID	OD	WGT	TYPE	MD	TVD	GRADE	SHOE	FLOAT	STAGE
8.5	10	16624	4.778	5.6	20	CSG	15615	8108	J-55	16616	15602	1

LAST CASING					PKR. GMT RET. OR PL. LINER		PERF. DEPTH		TOP CONN.		WELL FLUID		
ID	OD	WGT	TYPE	MD	TVD	BRAND & TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT.
8.8	9.625	40	CSG	2388	2386					5.5	BUTT	SYNTHETIC MUD	12.5
12	12.25		OPEN HOLE	2440	2440								
8.8	8.75		OPEN HOLE	6529	6529								

DISPL. VOLUME		DISPL. FLUID		CAL. PSI	CAL. MAX PSI	OP. MAX	MAX TBO PSI		MAX CSG PSI		MIX WATER
VOLUME	UOM	TYPE	WGT.	BUMP PLUG	TO REV	80. PSI	RATED	Operator	RATED	Operator	TANK
346	BBLs	H2O	8.34	2600	0	0	0	0	7352	6000	TANK

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING:

PRESSURE/RATE DETAIL						EXPLANATION	
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>	
	PIPE	ANNULUS				TEST LINES	7200 PSI
						CIRCULATING WELL - RIG <input checked="" type="checkbox"/> BJ <input checked="" type="checkbox"/>	
00:20						ARRIVE AT LOCATION 10-19-2014	
01:00						PRE-JOB RIG-IN SAFETY MEETING	
01:15						RIG-IN	
02:00						FOUND OUT CEMENT HEAD TOO SMALL FOR PLUG	
03:00						NEW CEMENT HEAD ARRIVED	
04:00						PRE-JOB SAFETY MEETING	
05:10	700		5	5	H2O	LINE-FILL	
05:14	0				H2O	PRESSURE TEST FOUND LEAK	
05:25	700		5	2	H2O	LINE-FILL	
05:28	0				H2O	PRESSURE TEST 7200#	
05:30	800		5	100	ULTRAFLL	PRE-FLUSH 13.0#	
05:50	1100		5.9	616	SLURRY	14.5# 50/50 PREMIUM NE-1 .3% R-3 .3% MPA-170	
07:34	0		5	10	H2O	SHUT-DOWN WASH-OUT LINES	
07:42	400		1	3	SUGAR/H2O	SUGAR WATER	
07:44	0					SHUT-DOWN RELEASE PLUG + 2 WIPER BLADES	
07:45	1000		3	1	H2O/HALIF	DISPLACEMENT	

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PRESSURE/RATE DETAIL					EXPLANATION	
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	
	PIPE	ANNULUS				
						SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>
						TEST LINES 7200 PSI
						CIRCULATING WELL - RIG <input checked="" type="checkbox"/> BJ <input checked="" type="checkbox"/>
07:46	2200		5.2	348	H2O	START DISPLACEMENT
08:52	5200					SHUT-DOWN
08:54	670					BLEED-OFF PRESSURE 10BBL RETURN
08:59	1986					CLOSE-IN BUILT PRESSURE BACK-UP
09:02	3500		4.5	10	H2O	RE-BUMP PLUG
09:05	5060				H2O	SHUT-DOWN
09:07	0					BLEED-OFF PRESSURE 5BBL. RETURN
09:10	2000		2.5	5	H2O	RE-BUMP FOR BLEED-OFF VERIFICATION
09:12	5300				H2O	SHUT-DOWN
09:14	0					BLEED-OFF 5BBL. RETURN
09:15						POST-JOB RIG-OUT SAFETY MEETING
09:30						RIG-OUT

BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR SIGNATURE:
<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	2800	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	0	1060	0	Y <input checked="" type="checkbox"/> N	

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CEMENT JOB REPORT



CUSTOMER NORTHEAST NATURAL ENER LEASE & WELL NAME BEACH 4H - API 47081016880000 DISTRICT Clarksburg	DATE 29-JUL-14 F.R.# 10011088457 LOCATION CLAY DRILLING CONTRACTOR RIG #	SERV. SUPV. Brian Lough COUNTY-PARISH-BLOCK Monongalia West Virginia TYPE OF JOB Intermediate
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SIZE & TYPE OF PLUGS	LIST: CSG HARDWARE	MECHANICAL BARRIERS	MD	TVD	HANGER TYPES	MD	TVD
9-5/8" Top Cem Plug, Nitri cvr, Phen	Guide Shoe, Cement Nose, 9-5/8 I Float Collar, AI Flap, 9-5/8 - 8rd	NONE			NONE		

MATERIALS FURNISHED BY BJ	LAB REPORT NO.	PHYSICAL SLURRY PROPERTIES					
		SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT	WATER GP8	PUMP TIME HR:MIN	Bbl SLURRY
PROCESS H2O			8.34				160
6% GEL W/ FLAKE			8.6				25
PREM NE-1+1.5%CACL	807	15.2	1.28	5.78	03:23	181	110.62
H2O		8.34				177	
Available Mix Water <u>300</u> Bbl. Available Displ. Fluid <u>500</u> Bbl.		TOTAL				633	110.62

HOLE			TBG CSG D.P.						COLLAR DEPTH			
SIZE	% EXCESS	DEPTH	ID	OD	WGT	TYPE	MD	TVD	GRADE	SHOE	FLOAT	STAGE
17.5	30	2432	8.835	9.826	40	CSG	2378	2378	J-55	2378	2397	

LAST CASINO				PKB GMT RET BR PLINER				PERF DEPTH		TOP CONN		WELL FLUID	
ID	OD	WGT	TYPE	MD	TVD	BRAND & TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT
13.13.38	65	CSG		1276	1276	NO PACKER				9.625	8 RD	OTHER	0

DISPL VOLUME		DISPL FLUID		QAL PSI	QAL MAX PSI	OP MAX	MAX TBG PSI		MAX CSG PSI		MIX WATER
VOLUME	UOM	TYPE	WGT	BUMP PLUG	TO REV	BQ. PSI	RATED	Operat	RATED	Operat	
177	BBLs	H2O	8.34	834	0	0	0	0	3160	2000	TANK

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING:

PRESSURE/RATE DETAIL					EXPLANATION	
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>
	PIPE	ANNULUS				TEST LINES 3450 PSI
						CIRCULATING WELL - RIG <input type="checkbox"/> BJ <input checked="" type="checkbox"/>
05:50						ARRIVE ON LOC. JOB TIME 0600 HRS
06:00						STAGE TRUCKS. WAIT ON RIG
08:10						PRE JOB SAFETY MEETING
08:30						SPOT EQUIPMENT
08:50						RIG IN TO WELL
09:50						SAFETY MEETING WITH RIG CREW
10:15	90		6	3	H2O	LINE FILL
10:16					H2O	PRESSURE TEST TO 3000 PSI
10:18	117		6	100	H2O	PUMP PROCESSED H2O
10:39	119		5.6	25	GEL	PUMP 6% GEL W/FLAKE
10:50	102		5.8	10	H2O	PUMP H2O
10:53	210		5.7	176	CMT	807 SKS OF PREM-NE+1.5% CACL
10:59	228		5.5		CMT	CIRCULATE WELL 222 BBL INTO JOB
11:24						SHUT DOWN / DROP PLUG
11:25	840		5.7	177	H2O	PUMP DISPLACEMENT
11:56	1280		2.5		H2O	LAND PLUG / HOLD 5 MIN
12:01	0					RELEASE PRESS. CHECK FLOAT

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PRESSURE/RATE/DETAIL						EXPLANATION	
TIME HR:MIN.	PRESSURE - PSI PIPE ANNULUS		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>	
						TEST LINES 3450 PSI	
						CIRCULATING WELL - RIG BJ <input checked="" type="checkbox"/>	
BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR SIGNATURE
<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	834	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	17	481	0	Y <input checked="" type="checkbox"/> N	

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CEMENT JOB REPORT



CUSTOMER NORTHEAST NATURAL ENER	DATE 25-JUL-14	F.R. # 10011085771	SERV. SUPV. Jason H Matheny
LEASE & WELL NAME BEACH #4H - API 47081016660000	LOCATION CLAY	COUNTY-PARISH-BLOCK Monongalia West Virginia	
DISTRICT Clarksburg	DRILLING CONTRACTOR RIG # PERFORMANCE 2	TYPE OF JOB Surface	

SIZE & TYPE OF PLUGS	LIST-CSG-HARDWARE	MECHANICAL BARRIERS	MD	TVD	HANGER TYPES	MD	TVD
BJ Cement Plug, Rubber, Top 13-3/8	Guide Shoe, Cement Nose 13-3/8 In						

MATERIALS FURNISHED BY BJ	LAB REPORT NO.	PHYSICAL SLURRY PROPERTIES						
		SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER
WATER AHEAD		0	8.34	0	0	00:00	190	
GEL/FLAKE		0	8.56	0	0	00:00	25	
H2O		0	8.34	0	0	00:00	10	
PNE-1 2% CaCl2		1,004	15.2	1.27	5.77	04:12	227.1	137.94
H2O		0	8.34	0	0	00:00	190.7	
600# GEL		0	0	0	0	00:00	0	
200# SUGAR		0	0	0	0	00:00	0	
200# FLAKE		0	0	0	0	00:00	0	
1 13.375 TRP		0	0	0	0	00:00	0	

Available Mix Water 400 Bbl. Available Displ. Fluid 400 Bbl. TOTAL 642.8 137.94

HOLE										TGB-CSG-D.P.					COLLAR DEPTHS		
SIZE	% EXCESS	DEPTH	ID	OD	WGT.	TYPE	MD	TVD	GRADE	SHOE	FLOAT	STAGE					
17.5	30	1364	12.82	13.375	54.5	CSG	1279	1279	J-55	1279	1235						

LAST CASING					PKR-CMT RET-BR PL-LINER				PERF. DEPTH			TOP CONN		WELL FLUID	
ID	OD	WGT.	TYPE	MD	TVD	BRAND & TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT.		
23	24	94.6	CSG	50	50	NO-PACKER	0	0	0	13.375	BRD	OTHER	0		

DISPL. VOLUME		DISPL. FLUID		CAL. PSI		CAL. MAX PSI		OP. MAX		MAX TGB PSI		MAX CSG PSI		MIX WATER
VOLUME	UOM	TYPE	WGT.	BUMP PLUG	TO REV.	SQ. PSI	RATED	Operator	RATED	Operator	RATED	Operator	TANKS	
190.7	BBLS	H2O	8.34	481	0	0	0	0	2711	750			TANKS	

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING:

PRESSURE/RATE DETAIL						EXPLANATION	
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>	
	PIPE	ANNULUS				TEST LINES	2200 PSI
14:00	0	0	0	0	0		ARRIVED ON LOCATION
18:22	181	0	7.4	190	H2O		WATER AHEAD
19:00	200	0	5	25	GEL/FLAKE		PRE-FLUSH
19:18	250	0	5	10	H2O		SPACER
19:20	340	0	5	224	SLURRY		PNE-1 + 2% CaCl2
20:04	0	0	0	0	H2O		S/D RELEASE PLUG
20:06	200	0	7	0	H2O		START DISPLACEMENT
20:46	700	0	0	190.4	H2O		ENDISPLACEMENT
20:50	0	0	0	0	N/A		BLEED OFF/RIG OUT

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BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR
<input checked="" type="checkbox"/> Y	N 600	<input checked="" type="checkbox"/> Y	N 60	664.2	0	Y <input checked="" type="checkbox"/> N	<i>Jason Matheny</i>

06/05/2015

ACTUAL WELLPATH REPORT (CSV version)

Prepared by Baker Hughes

Software System: WellArchitect® 4.0.1

REFERENCE WELLPATH IDENTIFICATION

Operator NORTHEAST NATURAL ENERGY, LLC

Area Monongalia County, WV

Field Monongalia

Facility Beach Pad

Slot 4

Well Beach 4H

Wellbore Beach 4H AWB

Wellpath Beach 4H AWP Proj: 15624'

Sidetrack (none)

REPORT SETUP INFORMATION

Projection NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet

North Refe Grid

Scale 0.999942

Convergen 0.42° West

Software S WellArchitect® 4.0.1

User Hareluk

Report Ger 21/Oct/2014 at 11:37:41 AM

DataBase/WellArchitectEasternDB/ev1415.xml

WELLPATH	Local North [ft]	Local East [ft]	Easting [US ft]	Northing [US ft]	Latitude	Longitude
Slot Locatic	16.5	36.4	1784952	439318.3	39°42'15.5"	80°09'08.596"W
Facility Ref			1784915	439301.8	39°42'15.4"	80°09'09.060"W
Field Refer			1777686	440640.7	39°42'28.1"	80°10'41.690"W

WELLPATH DATUM

Calculation Minimum curvature

Horizontal Slot

Vertical Re Pioneer 63 (RKB)

MD Refere Pioneer 63 (RKB)

Field Vertic Mean Sea Level

Pioneer 63 18.00ft

Pioneer 63 1376.70ft

Pioneer 63 18.00ft

Section Ori N 0.00, E 0.00 ft

Section Azi 149.71°

WELLPATH DATA † = interpolated/extrapolated station

MD	Course Len	Inclination	Azimuth	TVD	Vert Sect	North
[ft]	[ft]	[°]	[°]	[ft]	[ft]	[ft]

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0	0	0	158.83	0	0	0	0
18	18	0	158.83	18	0	0	0
108	90	0.4	158.83	108	0.31	-0.29	0.11
208	100	0.25	128.64	208	0.86	-0.75	0.41
308	100	0.22	129.39	308	1.24	-1.01	0.73
408	100	0.23	136.55	408	1.62	-1.28	1.02
508	100	0.3	199.37	508	1.98	-1.67	1.07
608	100	0.17	206.56	607.99	2.23	-2.05	0.91
708	100	0.18	233.94	707.99	2.33	-2.28	0.72
808	100	0.3	223.67	807.99	2.42	-2.56	0.41
908	100	0.24	241.27	907.99	2.48	-2.85	0.05
1008	100	0.09	306.08	1007.99	2.41	-2.9	-0.2
1108	100	0.33	296.69	1107.99	2.09	-2.73	-0.52
1208	100	0.16	293.58	1207.99	1.74	-2.54	-0.91
1308	100	0.47	301.72	1307.99	1.26	-2.27	-1.38
1408	100	0.6	277.44	1407.98	0.58	-1.99	-2.25
1508	100	0.45	294.86	1507.98	-0.06	-1.76	-3.13
1608	100	0.84	271.35	1607.97	-0.77	-1.57	-4.22
1708	100	0.91	241.87	1707.96	-1.18	-1.93	-5.65
1808	100	0.79	251.69	1807.95	-1.36	-2.52	-7
1908	100	1.13	236.89	1907.94	-1.45	-3.28	-8.48
2008	100	1.1	215.83	2007.92	-1.01	-4.59	-9.87
2108	100	1.22	209.99	2107.9	-0.1	-6.29	-10.97
2208	100	1.52	195.2	2207.87	1.36	-8.5	-11.85
2308	100	1.45	190.48	2307.84	3.25	-11.02	-12.42
2408	100	1.34	182.7	2407.81	5.19	-13.43	-12.71
2508	100	0.85	173.45	2507.79	6.85	-15.34	-12.68
2608	100	0.68	181.52	2607.78	8.03	-16.67	-12.61
2708	100	0.52	220.37	2707.77	8.69	-17.61	-12.92
2808	100	0.31	221.93	2807.77	8.92	-18.15	-13.39
2908	100	0.66	201.53	2907.77	9.36	-18.89	-13.79
3008	100	0.45	222.95	3007.76	9.83	-19.71	-14.27
3108	100	0.26	225.83	3107.76	9.99	-20.16	-14.7
3208	100	0.56	237.53	3207.76	10.07	-20.58	-15.27
3308	100	0.3	206.2	3307.76	10.23	-21.08	-15.8
3408	100	0.63	189.39	3407.75	10.8	-21.85	-16.4
3508	100	0.45	175.36	3507.75	11.58	-22.79	-16.96
3608	100	0.76	165.62	3607.74	12.57	-23.82	-17.53
3708	100	0.62	164.85	3707.74	13.73	-24.99	-18.1
3808	100	0.7	167.92	3807.73	14.83	-26.11	-18.68
3908	100	0.38	160.31	3907.72	15.74	-27.01	-19.26
4008	100	0.53	165.72	4007.72	16.51	-27.78	-19.84
4108	100	0.3	178.43	4107.72	17.18	-28.48	-20.42
4208	100	0.12	189.5	4207.72	17.49	-28.85	-21.0
4308	100	0.35	156.64	4307.72	17.87	-29.23	-21.58
4408	100	0.15	164	4407.72	18.3	-29.64	-22.16
4508	100	0.07	89.77	4507.72	18.46	-29.77	-22.74

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4608	100	0.06	33.07	4607.72	18.47	-29.72	-14.27
4708	100	0.38	349.06	4707.71	18.13	-29.35	-14.3
4808	100	0.45	339.51	4807.71	17.43	-28.66	-14.5
4908	100	0.44	359.6	4907.71	16.71	-27.91	-14.64
5008	100	0.61	8.09	5007.7	15.96	-27	-14.57
5108	100	0.77	27.31	5107.7	15.19	-25.87	-14.18
5208	100	1.05	39.12	5207.68	14.5	-24.56	-13.3
5308	100	1.52	37.87	5307.66	13.69	-22.81	-11.91
5408	100	2.18	27.04	5407.61	12.17	-20.06	-10.23
5508	100	2.32	18.37	5507.53	9.8	-16.45	-8.72
5608	100	2.51	16.32	5607.44	6.96	-12.43	-7.47
5708	100	2.46	13.14	5707.35	3.9	-8.24	-6.37
5808	100	2.59	11.64	5807.25	0.66	-3.93	-5.42
5908	100	2.4	356.98	5907.16	-2.88	0.37	-5.08
6008	100	2.53	340.64	6007.07	-6.91	4.54	-5.92
6108	100	2.88	316.18	6106.96	-11.52	8.44	-8.39
6208	100	3.39	314.15	6206.81	-16.81	12.31	-12.25
6308	100	4.86	312.48	6306.55	-23.71	17.23	-17.5
6408	100	7.54	310.75	6405.95	-33.96	24.38	-25.6
6508	100	10.01	312.32	6504.77	-48.46	34.51	-36.99
6523	15	10.43	313.47	6519.54	-51.01	36.32	-38.94
6561	38	9.41	317.08	6556.97	-57.34	40.97	-43.55
6624	63	8.61	317.62	6619.19	-66.98	48.22	-50.24
6687	63	7.33	316.3	6681.58	-75.5	54.61	-56.2
6750	63	5.75	313.04	6744.17	-82.43	59.67	-61.28
6813	63	4.95	309.93	6806.89	-88.01	63.57	-65.67
6876	63	4.86	306.89	6869.66	-93.03	66.91	-69.89
6938	62	5	302.7	6931.43	-97.86	69.95	-74.26
7001	63	4.83	299.6	6994.2	-102.6	72.74	-78.88
7065	64	5	296.58	7057.97	-107.26	75.32	-83.72
7127	62	4.98	292.34	7119.73	-111.67	77.55	-88.62
7190	63	4.72	291.78	7182.51	-115.88	79.56	-93.56
7254	64	5.02	293.24	7246.27	-120.21	81.64	-98.58
7317	63	5	294.16	7309.03	-124.66	83.85	-103.61
7380	63	5.03	295.28	7371.79	-129.17	86.15	-108.62
7443	63	4.98	293.37	7434.55	-133.65	88.42	-113.62
7506	63	4.08	268.78	7497.36	-136.95	89.45	-118.38
7569	63	4.7	195.61	7560.22	-136.24	86.92	-121.31
7632	63	7.79	181.18	7622.84	-130.8	80.16	-122.1
7696	64	11.23	182.24	7685.95	-121.84	69.59	-122.46
7758	62	14.17	181.1	7746.43	-110.27	55.97	-122.81
7821	63	19.68	179.02	7806.68	-94.43	37.64	-122.78
7884	63	25.57	175.52	7864.81	-72.92	13.46	-121.53
7948	64	32.02	172.82	7920.87	-44.85	-17.18	-118.33
8011	63	38.63	168.77	7972.24	-10.86	-53.08	-112.4
8074	63	44.27	163.09	8019.46	29.17	-93.46	-102.17
8136	62	50.61	158.68	8061.39	73.94	-136.53	-87.14

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8200	64	56.25	153.79	8099.52	124.97	-183.5	-66.37
8262	62	62.39	147.79	8131.16	178.22	-229.94	-40.31
8325	63	68.09	144.87	8157.54	235.3	-277.51	-8.58
8389	64	73.56	144.03	8178.55	295.47	-326.67	26.56
8452	63	76.84	143.21	8194.64	356.03	-375.7	62.68
8516	64	83.31	143.44	8205.67	418.64	-426.23	100.32
8579	63	88.92	143.81	8209.94	481.12	-476.82	137.58
8598	19	89.97	143.94	8210.12	500.02	-492.17	148.78
8642	44	90.06	144.6	8210.11	543.82	-527.89	174.47
8705	63	90.06	144.66	8210.04	606.57	-579.26	210.94
8768	63	90.86	145.51	8209.54	669.37	-630.92	247
8831	63	91.02	146.25	8208.5	732.22	-683.06	282.33
8895	64	91.57	146.78	8207.06	796.1	-736.43	317.63
8958	63	91.23	147.45	8205.52	859.02	-789.32	351.83
9022	64	91.38	147.83	8204.06	922.96	-843.36	386.07
9084	62	91.2	149.15	8202.66	984.93	-896.21	418.47
9147	63	91.02	150.93	8201.44	1047.91	-950.78	449.92
9210	63	91.17	151.62	8200.24	1110.88	-1006.01	480.2
9273	63	91.17	149.56	8198.95	1173.85	-1060.88	511.13
9336	63	91.91	149.88	8197.26	1236.83	-1115.26	542.88
9399	63	92.49	149.33	8194.84	1299.78	-1169.57	574.73
9463	64	96.42	150.71	8189.87	1363.57	-1224.82	606.61
9526	63	94.75	149.6	8183.74	1426.27	-1279.2	637.81
9590	64	92.92	148.24	8179.46	1490.12	-1333.89	670.78
9653	63	93.29	148.05	8176.05	1553	-1387.32	703.98
9717	64	93.29	148.57	8172.37	1616.87	-1441.69	737.54
9778	61	93.17	148.13	8168.94	1677.76	-1493.53	769.5
9841	63	92.18	147.04	8166	1740.65	-1546.66	803.23
9905	64	91.75	145.79	8163.8	1804.5	-1599.94	838.62
9967	62	92.71	146.3	8161.39	1866.33	-1651.33	873.22
10030	63	92.37	148.97	8158.6	1929.22	-1704.49	906.91
10093	63	92.52	149.46	8155.91	1992.16	-1758.56	939.12
10157	64	92.43	149.62	8153.15	2056.1	-1813.68	971.53
10220	63	91.88	151.12	8150.78	2119.05	-1868.4	1002.66
10283	63	91.66	151.68	8148.83	2181.99	-1923.68	1032.8
10346	63	91.48	152.25	8147.1	2244.92	-1979.27	1062.4
10409	63	91.38	152.1	8145.53	2307.84	-2034.97	1091.8
10472	63	91.45	151.31	8143.98	2370.78	-2090.42	1121.65
10535	63	91.48	151.76	8142.37	2433.73	-2145.79	1151.67
10599	64	90.86	151.24	8141.06	2497.68	-2202.02	1182.2
10662	63	90.89	150.41	8140.1	2560.66	-2257.02	1212.91
10725	63	90.95	149.86	8139.09	2623.65	-2311.65	1244.28
10788	63	90.71	149.12	8138.17	2686.65	-2365.92	1276.26
10851	63	90.49	149.12	8137.51	2749.64	-2419.99	1308.59
10914	63	90.74	150.13	8136.84	2812.63	-2474.33	1340.44
10977	63	89.85	150.41	8136.51	2875.63	-2529.04	1371.68
11040	63	89.72	150.79	8136.75	2938.62	-2583.93	1402.61

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11104	64	90.03	151.77	8136.89	3002.6	-2640.05	1433.36
11167	63	89.29	153.33	8137.26	3065.52	-2695.96	1462.4
11230	63	88.68	153.35	8138.38	3128.38	-2752.25	1490.67
11293	63	88.92	152.31	8139.7	3191.27	-2808.28	1519.43
11357	64	88.92	149.69	8140.9	3255.24	-2864.24	1550.45
11420	63	88.95	148.53	8142.08	3318.22	-2918.3	1582.79
11483	63	89.48	148.35	8142.94	3381.2	-2971.97	1615.76
11546	63	89.51	148.77	8143.49	3444.19	-3025.72	1648.62
11608	62	89.48	148.53	8144.04	3506.17	-3078.67	1680.87
11671	63	89.48	147.57	8144.61	3569.14	-3132.12	1714.21
11734	63	88.98	146.71	8145.46	3632.07	-3185.04	1748.39
11797	63	88.95	147.8	8146.6	3695	-3238.02	1782.46
11860	63	88.95	149.51	8147.75	3757.98	-3291.81	1815.22
11924	64	89.54	150.88	8148.59	3821.97	-3347.34	1847.03
11986	62	89.38	150.38	8149.18	3883.96	-3401.37	1877.44
12049	63	89.38	150.37	8149.86	3946.95	-3456.13	1908.58
12112	63	89.45	151.2	8150.5	4009.94	-3511.11	1939.33
12175	63	89.42	151.44	8151.12	4072.91	-3566.38	1969.56
12238	63	89.38	151.27	8151.78	4135.88	-3621.66	1999.76
12300	62	89.35	150.64	8152.47	4197.86	-3675.86	2029.86
12363	63	90	150.54	8152.83	4260.85	-3730.74	2060.79
12426	63	90.31	150.09	8152.66	4323.85	-3785.48	2091.99
12489	63	90.46	149.85	8152.24	4386.85	-3840.02	2123.52
12552	63	90.74	149.76	8151.58	4449.84	-3894.47	2155.2
12615	63	90.68	150.69	8150.79	4512.83	-3949.14	2186.49
12678	63	90.71	150.15	8150.03	4575.82	-4003.93	2217.58
12741	63	90.8	149.12	8149.2	4638.82	-4058.28	2249.43
12804	63	90.71	147.9	8148.37	4701.8	-4112	2282.33
12868	64	90.74	147.65	8147.56	4765.76	-4166.13	2316.46
12931	63	90.74	149.07	8146.75	4828.73	-4219.76	2349.5
12993	62	90.89	150.23	8145.86	4890.72	-4273.26	2380.82
13057	64	90.92	150.64	8144.85	4954.71	-4328.92	2412.4
13120	63	91.14	148.92	8143.72	5017.7	-4383.35	2444.1
13183	63	90.98	148.92	8142.56	5080.68	-4437.3	2476.62
13246	63	91.08	147.27	8141.42	5143.64	-4490.77	2509.91
13309	63	90.95	146.1	8140.31	5206.55	-4543.41	2544.51
13372	63	91.01	147.82	8139.23	5269.46	-4596.21	2578.85
13436	64	91.02	149.28	8138.1	5333.44	-4650.8	2612.23
13499	63	90.92	148.19	8137.03	5396.42	-4704.64	2644.93
13562	63	90.92	148.35	8136.02	5459.39	-4758.22	2678.05
13625	63	90.74	147.86	8135.11	5522.36	-4811.7	2711.34
13688	63	90.86	148.32	8134.23	5585.33	-4865.17	2744.64
13751	63	90.98	149.65	8133.21	5648.31	-4919.16	2777.09
13815	64	91.02	151.17	8132.1	5712.3	-4974.8	2808.69
13878	63	90.95	152.05	8131.01	5775.25	-5030.21	2838.64
13940	62	91.02	152.29	8129.95	5837.18	-5085.03	2867.58
14003	63	91.02	151.99	8128.83	5900.12	-5140.72	2897.01

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14066	63	91.02	150.02	8127.71	5963.09	-5195.82	2927.55
14129	63	91.08	148.53	8126.55	6026.07	-5249.96	2959.73
14192	63	90.98	148.96	8125.42	6089.06	-5303.81	2992.41
14255	63	90.34	149.57	8124.69	6152.05	-5357.96	3024.61
14318	63	90.4	149.18	8124.29	6215.05	-5412.17	3056.7
14382	64	90.4	150.4	8123.84	6279.04	-5467.47	3088.9
14445	63	90.31	151.22	8123.45	6342.03	-5522.47	3119.62
14508	63	90.4	150.99	8123.06	6405.01	-5577.63	3150.07
14571	63	90.46	150.86	8122.59	6467.99	-5632.69	3180.68
14634	63	90.37	150.64	8122.13	6530.98	-5687.65	3211.46
14697	63	91.23	149.62	8121.25	6593.97	-5742.28	3242.83
14761	64	91.02	148.78	8119.99	6657.96	-5797.24	3275.6
14824	63	90.95	148.38	8118.91	6720.94	-5850.99	3308.44
14888	64	90.55	149.53	8118.07	6784.92	-5905.82	3341.44
14951	63	90.65	149.68	8117.41	6847.92	-5960.16	3373.31
15014	63	90.58	150.03	8116.74	6910.92	-6014.64	3404.95
15077	63	90.52	150.17	8116.13	6973.91	-6069.25	3436.35
15140	63	90.55	149.37	8115.54	7036.91	-6123.68	3468.07
15203	63	90.83	149.62	8114.78	7099.9	-6177.95	3500.05
15267	64	90.95	150.34	8113.79	7163.89	-6233.36	3532.06
15330	63	90.83	149.48	8112.81	7226.89	-6287.86	3563.64
15393	63	90.83	148.34	8111.9	7289.87	-6341.81	3596.17
15456	63	90.83	147.64	8110.99	7352.84	-6395.22	3629.56
15519	63	90.77	147.96	8110.11	7415.8	-6448.53	3663.13
15582	63	90.86	149.16	8109.21	7478.77	-6502.27	3695.99
15599	17	90.86	149.66	8108.96	7495.77	-6516.9	3704.64
15624	25	90.86	149.66	8108.58	7520.77	-6538.48	3717.26

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude
Beach 4H LP Rev-1		8195	-472.9	164.99	1785116	438845.4	39°42'10.9	80°09'06.4
Beach 4H PBHL Rev-1		8195	-6542.59	3710.22	1788662	432776.1	39°41'11.1	80°08'20.5
Beach 4H HL Pt 01		8215	-7101.25	1383.4	1786335	432217.5	39°41'05.4	80°08'50.2
Beach 4H HL Pt 02		8215	-7228.01	1690.95	1786642	432090.7	39°41'04.2	80°08'46.2
Beach 4H HL Pt 03		8215	-7450.4	2253.58	1787205	431868.4	39°41'02.1	80°08'39.0
Beach 4H HL Pt 04		8215	-7606.95	2563.75	1787515	431711.8	39°41'00.5	80°08'35.0
Beach 4H HL Pt 05		8215	-7634.03	3198.53	1788150	431684.7	39°41'00.3	80°08'28.9
Beach 4H HL Pt 06		8215	-7670.78	3770.37	1788722	431648	39°41'00.0	80°08'19.6
Beach 4H HL Pt 07		8215	-7586.81	4252.07	1789203	431732	39°41'00.9	80°08'13.5
Beach 4H HL Pt 08		8215	-7649.05	4621.24	1789572	431669.7	39°41'00.3	80°08'08.7
Beach 4H HL Pt 09		8215	-7621.17	5230.66	1790182	431697.6	39°41'00.6	80°08'00.9

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WELLPATH COMPOSITION Ref Wellbore: Beach 4H AWB Ref Wellpath: Beach 4H AWP Proj: 15624'

Log Name/ Start MD [ft]	End MD [ft]	Pos Unc Model
01_VES Gy	18	6523 Generic gyro - northseeking (Standard)

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02_BH AT (6523 15599 NaviTrak (AT Curve Short Spaced)
Projection 15599 15624 Blind Drilling (std)

COMMENTS

Wellpath general comments

API: 47-061-01666-0000

Rig: Pioneer 63

BHI Job #: 6692669

Duration: 10.11.2014 – 10.18.2014

VES Gyro (108' - 6523')

BH AT Curve 8.5in Section (6523') (6561' - 15599')

MD Projected at TD: 15624'

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Grid East Grid North Latitude Longitude Closure Dis Closure Dir DLS
[US ft] [US ft] [ft] [°] [°/100ft]

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1784952	439318.3	39°42'15.5"	80°09'08.5"	0	0	0
1784952	439318.3	39°42'15.5"	80°09'08.5"	0	0	0
1784952	439318	39°42'15.5"	80°09'08.5"	0.31	158.83	0.44
1784952	439317.6	39°42'15.5"	80°09'08.5"	0.86	151.491	0.22
1784952	439317.3	39°42'15.5"	80°09'08.5"	1.25	144.264	0.03
1784953	439317	39°42'15.5"	80°09'08.5"	1.63	141.59	0.03
1784953	439316.6	39°42'15.5"	80°09'08.5"	1.98	147.488	0.28
1784952	439316.3	39°42'15.5"	80°09'08.5"	2.25	156.018	0.13
1784952	439316	39°42'15.5"	80°09'08.5"	2.39	162.463	0.08
1784952	439315.7	39°42'15.5"	80°09'08.5"	2.59	170.854	0.13
1784952	439315.5	39°42'15.5"	80°09'08.5"	2.85	179.042	0.1
1784951	439315.4	39°42'15.5"	80°09'08.5"	2.91	183.929	0.22
1784951	439315.6	39°42'15.5"	80°09'08.6"	2.78	190.795	0.24
1784951	439315.8	39°42'15.5"	80°09'08.6"	2.7	199.598	0.17
1784950	439316	39°42'15.5"	80°09'08.6"	2.66	211.32	0.31
1784949	439316.3	39°42'15.5"	80°09'08.6"	3	228.538	0.26
1784948	439316.5	39°42'15.5"	80°09'08.6"	3.59	240.682	0.22
1784947	439316.7	39°42'15.5"	80°09'08.6"	4.5	249.534	0.46
1784946	439316.4	39°42'15.5"	80°09'08.6"	5.97	251.132	0.45
1784945	439315.8	39°42'15.5"	80°09'08.6"	7.44	250.2	0.19
1784943	439315	39°42'15.5"	80°09'08.7"	9.09	248.883	0.42
1784942	439313.7	39°42'15.5"	80°09'08.7"	10.89	245.046	0.41
1784941	439312	39°42'15.5"	80°09'08.7"	12.64	240.146	0.17
1784940	439309.8	39°42'15.4"	80°09'08.7"	14.58	234.351	0.46
1784939	439307.3	39°42'15.4"	80°09'08.7"	16.61	228.426	0.14
1784939	439304.9	39°42'15.4"	80°09'08.7"	18.49	223.415	0.22
1784939	439303	39°42'15.4"	80°09'08.7"	19.9	219.58	0.52
1784939	439301.6	39°42'15.4"	80°09'08.7"	20.9	217.111	0.2
1784939	439300.7	39°42'15.4"	80°09'08.7"	21.84	216.272	0.43
1784938	439300.2	39°42'15.3"	80°09'08.7"	22.56	216.422	0.21
1784938	439299.4	39°42'15.3"	80°09'08.7"	23.39	216.123	0.38
1784937	439298.6	39°42'15.3"	80°09'08.7"	24.33	215.892	0.29
1784937	439298.1	39°42'15.3"	80°09'08.7"	24.95	216.092	0.19
1784936	439297.7	39°42'15.3"	80°09'08.7"	25.63	216.578	0.31
1784936	439297.2	39°42'15.3"	80°09'08.7"	26.34	216.855	0.34
1784936	439296.5	39°42'15.3"	80°09'08.7"	27.09	216.216	0.35
1784935	439295.5	39°42'15.3"	80°09'08.8"	27.88	215.178	0.22
1784936	439294.5	39°42'15.3"	80°09'08.7"	28.62	213.664	0.33
1784936	439293.3	39°42'15.3"	80°09'08.7"	29.43	211.911	0.14
1784936	439292.2	39°42'15.3"	80°09'08.7"	30.25	210.358	0.09
1784936	439291.3	39°42'15.3"	80°09'08.7"	30.92	209.123	0.33
1784937	439290.5	39°42'15.3"	80°09'08.7"	31.48	208.09	0.16
1784937	439289.8	39°42'15.2"	80°09'08.7"	32.06	207.302	0.25
1784937	439289.5	39°42'15.2"	80°09'08.7"	32.39	207.021	0.18
1784937	439289.1	39°42'15.2"	80°09'08.7"	32.68	206.553	0.26
1784937	439288.7	39°42'15.2"	80°09'08.7"	32.98	205.994	0.2
1784937	439288.5	39°42'15.2"	80°09'08.7"	33.05	205.747	0.15

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1784937	439288.6	39°42'15.2	80°09'08.7	32.97	205.64	0.06
1784937	439289	39°42'15.2	80°09'08.7	32.65	205.975	0.34
1784937	439289.6	39°42'15.2	80°09'08.7	32.12	206.838	0.1
1784937	439290.4	39°42'15.3	80°09'08.7	31.51	207.682	0.16
1784937	439291.3	39°42'15.3	80°09'08.7	30.68	208.353	0.19
1784937	439292.4	39°42'15.3	80°09'08.7	29.51	208.735	0.28
1784938	439293.7	39°42'15.3	80°09'08.7	27.93	208.431	0.34
1784940	439295.5	39°42'15.3	80°09'08.7	25.73	207.568	0.47
1784941	439298.2	39°42'15.3	80°09'08.7	22.52	207.009	0.74
1784943	439301.9	39°42'15.4	80°09'08.7	18.62	207.941	0.37
1784944	439305.9	39°42'15.4	80°09'08.6	14.5	211.015	0.21
1784945	439310.1	39°42'15.4	80°09'08.6	10.41	217.713	0.15
1784946	439314.4	39°42'15.5	80°09'08.6	6.7	234.056	0.15
1784946	439318.7	39°42'15.5	80°09'08.6	5.09	274.173	0.66
1784946	439322.8	39°42'15.6	80°09'08.6	7.46	307.502	0.71
1784943	439326.7	39°42'15.6	80°09'08.7	11.9	315.159	1.2
1784939	439330.6	39°42'15.6	80°09'08.7	17.37	315.135	0.52
1784934	439335.5	39°42'15.7	80°09'08.8	24.56	314.558	1.47
1784926	439342.7	39°42'15.8	80°09'08.9	35.35	313.603	2.69
1784915	439352.8	39°42'15.9	80°09'09.0	50.59	313.012	2.48
1784913	439354.6	39°42'15.9	80°09'09.0	53.25	313.007	3.11
1784908	439359.3	39°42'15.9	80°09'09.1	59.79	313.245	3.14
1784901	439366.5	39°42'16.0	80°09'09.2	69.64	313.825	1.28
1784895	439372.9	39°42'16.1	80°09'09.3	78.36	314.18	2.05
1784890	439378	39°42'16.1	80°09'09.3	85.53	314.237	2.58
1784886	439381.9	39°42'16.2	80°09'09.4	91.4	314.068	1.35
1784882	439385.2	39°42'16.2	80°09'09.4	96.76	313.754	0.44
1784877	439388.3	39°42'16.2	80°09'09.5	102.02	313.287	0.62
1784873	439391	39°42'16.2	80°09'09.6	107.3	312.683	0.5
1784868	439393.6	39°42'16.3	80°09'09.6	112.61	311.979	0.48
1784863	439395.9	39°42'16.3	80°09'09.7	117.76	311.19	0.6
1784858	439397.9	39°42'16.3	80°09'09.8	122.81	310.376	0.42
1784853	439399.9	39°42'16.3	80°09'09.8	127.99	309.63	0.51
1784848	439402.1	39°42'16.3	80°09'09.9	133.29	308.981	0.13
1784843	439404.5	39°42'16.4	80°09'09.9	138.63	308.421	0.16
1784838	439406.7	39°42'16.4	80°09'10.0	143.97	307.888	0.28
1784833	439407.8	39°42'16.4	80°09'10.1	148.37	307.077	3.36
1784830	439405.2	39°42'16.4	80°09'10.1	149.24	305.621	8.34
1784829	439398.5	39°42'16.3	80°09'10.1	146.06	303.287	5.46
1784829	439387.9	39°42'16.2	80°09'10.1	140.83	299.616	5.38
1784829	439374.3	39°42'16.1	80°09'10.1	134.96	294.501	4.76
1784829	439355.9	39°42'15.9	80°09'10.1	128.42	287.044	8.8
1784830	439331.8	39°42'15.7	80°09'10.1	122.27	276.319	9.59
1784833	439301.1	39°42'15.3	80°09'10.1	119.57	261.739	10.28
1784839	439265.2	39°42'15.0	80°09'10.0	124.31	244.721	11.13
1784849	439224.9	39°42'14.6	80°09'09.8	138.46	227.549	10.75
1784864	439181.8	39°42'14.2	80°09'09.6	161.97	212.548	11.49

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1784885	439134.8	39°42'13.7	80°09'09.4	195.14	199.886	10.73
1784911	439088.4	39°42'13.3	80°09'09.0	233.45	189.942	12.93
1784943	439040.8	39°42'12.8	80°09'08.6	277.64	181.771	9.98
1784978	438991.7	39°42'12.3	80°09'08.2	327.75	175.352	8.64
1785014	438942.6	39°42'11.8	80°09'07.7	380.89	170.528	5.36
1785052	438892.1	39°42'11.3	80°09'07.2	437.88	166.756	10.12
1785089	438841.5	39°42'10.8	80°09'06.7	496.27	163.905	8.92
1785100	438826.2	39°42'10.7	80°09'06.6	514.16	163.18	5.57
1785126	438790.5	39°42'10.3	80°09'06.3	555.97	161.711	1.51
1785162	438739.1	39°42'09.8	80°09'05.8	616.47	159.99	0.1
1785198	438687.4	39°42'09.3	80°09'05.3	677.54	158.62	1.85
1785234	438635.3	39°42'08.8	80°09'04.9	739.11	157.543	1.2
1785269	438581.9	39°42'08.3	80°09'04.4	802.01	156.669	1.19
1785303	438529	39°42'07.8	80°09'04.0	864.18	155.976	1.19
1785338	438475	39°42'07.2	80°09'03.5	927.53	155.403	0.64
1785370	438422.2	39°42'06.7	80°09'03.1	989.09	154.971	2.15
1785401	438367.6	39°42'06.2	80°09'02.7	1051.86	154.676	2.84
1785432	438312.4	39°42'05.6	80°09'02.3	1114.74	154.484	1.12
1785463	438257.5	39°42'05.1	80°09'01.9	1177.59	154.276	3.27
1785494	438203.1	39°42'04.5	80°09'01.5	1240.38	154.044	1.28
1785526	438148.8	39°42'04.0	80°09'01.1	1303.15	153.83	1.27
1785558	438093.6	39°42'03.5	80°09'00.7	1366.81	153.652	6.51
1785589	438039.2	39°42'02.9	80°09'00.3	1429.39	153.499	3.18
1785622	437984.5	39°42'02.4	80°08'59.8	1493.05	153.303	3.56
1785655	437931.1	39°42'01.9	80°08'59.4	1555.71	153.095	0.66
1785689	437876.7	39°42'01.3	80°08'59.0	1619.39	152.907	0.81
1785721	437824.9	39°42'00.8	80°08'58.6	1680.11	152.742	0.75
1785755	437771.7	39°42'00.3	80°08'58.1	1742.8	152.556	2.34
1785790	437718.5	39°41'59.8	80°08'57.7	1806.4	152.339	2.06
1785825	437667.1	39°41'59.3	80°08'57.2	1867.99	152.13	1.75
1785858	437613.9	39°41'58.7	80°08'56.8	1930.74	151.984	4.27
1785891	437559.9	39°41'58.2	80°08'56.4	1993.61	151.897	0.81
1785923	437504.7	39°41'57.7	80°08'55.9	2057.5	151.823	0.29
1785954	437450	39°41'57.1	80°08'55.5	2120.43	151.78	2.53
1785984	437394.7	39°41'56.6	80°08'55.2	2183.4	151.769	0.95
1786014	437339.2	39°41'56.0	80°08'54.8	2246.38	151.775	0.95
1786043	437283.5	39°41'55.5	80°08'54.4	2309.35	151.786	0.29
1786073	437228	39°41'54.9	80°08'54.0	2372.33	151.783	1.26
1786103	437172.6	39°41'54.4	80°08'53.6	2435.31	151.777	0.72
1786134	437116.4	39°41'53.9	80°08'53.2	2499.3	151.77	1.26
1786164	437061.4	39°41'53.3	80°08'52.8	2562.28	151.747	1.32
1786196	437006.8	39°41'52.8	80°08'52.4	2625.25	151.708	0.88
1786228	436952.5	39°41'52.2	80°08'52.0	2688.2	151.656	1.23
1786260	436898.5	39°41'51.7	80°08'51.6	2751.13	151.598	0.35
1786292	436844.1	39°41'51.2	80°08'51.2	2814.09	151.554	1.65
1786323	436789.4	39°41'50.6	80°08'50.8	2877.07	151.526	1.48
1786354	436734.5	39°41'50.1	80°08'50.4	2940.07	151.506	0.64

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1786385	436678.4	39°41'49.5	80°08'50.0	3004.06	151.501	1.61
1786414	436622.5	39°41'49.0	80°08'49.6	3067.05	151.523	2.74
1786442	436566.2	39°41'48.4	80°08'49.2	3130.01	151.559	0.97
1786471	436510.2	39°41'47.9	80°08'48.8	3192.98	151.584	1.69
1786502	436454.2	39°41'47.3	80°08'48.4	3256.96	151.573	4.09
1786534	436400.2	39°41'46.8	80°08'48.0	3319.89	151.526	1.84
1786567	436346.5	39°41'46.3	80°08'47.6	3382.79	151.469	0.89
1786600	436292.8	39°41'45.7	80°08'47.2	3445.71	151.415	0.67
1786632	436239.8	39°41'45.2	80°08'46.8	3507.64	151.367	0.39
1786666	436186.4	39°41'44.7	80°08'46.3	3570.53	151.308	1.52
1786700	436133.5	39°41'44.2	80°08'45.9	3633.36	151.236	1.58
1786734	436080.5	39°41'43.7	80°08'45.4	3696.2	151.168	1.73
1786767	436026.7	39°41'43.1	80°08'45.0	3759.13	151.126	2.71
1786798	435971.2	39°41'42.6	80°08'44.6	3823.11	151.11	2.33
1786829	435917.1	39°41'42.0	80°08'44.2	3885.11	151.103	0.85
1786860	435862.4	39°41'41.5	80°08'43.8	3948.1	151.091	0.02
1786891	435807.4	39°41'41.0	80°08'43.4	4011.09	151.086	1.32
1786921	435752.1	39°41'40.4	80°08'43.0	4074.09	151.09	0.38
1786951	435696.9	39°41'39.9	80°08'42.6	4137.09	151.094	0.28
1786981	435642.7	39°41'39.3	80°08'42.2	4199.08	151.092	1.02
1787012	435587.8	39°41'38.8	80°08'41.8	4262.08	151.085	1.04
1787043	435533.1	39°41'38.3	80°08'41.4	4325.07	151.073	0.87
1787075	435478.5	39°41'37.7	80°08'41.0	4388.06	151.058	0.45
1787107	435424.1	39°41'37.2	80°08'40.6	4451.04	151.04	0.47
1787138	435369.4	39°41'36.7	80°08'40.2	4514.03	151.028	1.48
1787169	435314.6	39°41'36.1	80°08'39.8	4577.02	151.02	0.86
1787201	435260.3	39°41'35.6	80°08'39.4	4640	151.001	1.64
1787234	435206.6	39°41'35.1	80°08'39.0	4702.93	150.968	1.94
1787268	435152.4	39°41'34.5	80°08'38.5	4766.83	150.925	0.39
1787301	435098.8	39°41'34.0	80°08'38.1	4829.76	150.892	2.25
1787332	435045.3	39°41'33.5	80°08'37.7	4891.74	150.876	1.89
1787364	434989.6	39°41'32.9	80°08'37.3	4955.73	150.87	0.64
1787395	434935.2	39°41'32.4	80°08'36.9	5018.7	150.856	2.75
1787428	434881.3	39°41'31.9	80°08'36.5	5081.66	150.832	0.25
1787461	434827.8	39°41'31.3	80°08'36.0	5144.57	150.799	2.62
1787496	434775.2	39°41'30.8	80°08'35.6	5207.4	150.749	1.87
1787530	434722.4	39°41'30.3	80°08'35.1	5270.25	150.704	2.73
1787564	434667.8	39°41'29.8	80°08'34.7	5334.2	150.678	2.28
1787596	434614	39°41'29.2	80°08'34.3	5397.15	150.656	1.74
1787629	434560.4	39°41'28.7	80°08'33.8	5460.09	150.628	0.25
1787663	434506.9	39°41'28.2	80°08'33.4	5523.02	150.599	0.83
1787696	434453.4	39°41'27.6	80°08'33.0	5585.96	150.571	0.75
1787728	434399.4	39°41'27.1	80°08'32.6	5648.92	150.553	2.12
1787760	434343.8	39°41'26.6	80°08'32.2	5712.91	150.552	2.38
1787790	434288.4	39°41'26.0	80°08'31.8	5775.89	150.563	1.4
1787819	434233.6	39°41'25.5	80°08'31.4	5837.86	150.58	0.4
1787848	434177.9	39°41'24.9	80°08'31.0	5900.82	150.597	0.48

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1787879	434122.8	39°41'24.4	80°08'30.6	5963.81	150.601	3.13
1787911	434068.7	39°41'23.9	80°08'30.2	6026.78	150.587	2.37
1787944	434014.8	39°41'23.3	80°08'29.8	6089.74	150.568	0.7
1787976	433960.7	39°41'22.8	80°08'29.4	6152.72	150.555	1.4
1788008	433906.5	39°41'22.3	80°08'28.9	6215.7	150.543	0.63
1788040	433851.2	39°41'21.7	80°08'28.5	6279.69	150.535	1.91
1788071	433796.2	39°41'21.2	80°08'28.1	6342.69	150.538	1.31
1788101	433741	39°41'20.6	80°08'27.7	6405.69	150.544	0.39
1788132	433686	39°41'20.1	80°08'27.3	6468.68	150.547	0.23
1788163	433631	39°41'19.5	80°08'26.9	6531.68	150.549	0.38
1788194	433576.4	39°41'19.0	80°08'26.5	6594.67	150.545	2.12
1788227	433521.4	39°41'18.5	80°08'26.1	6658.64	150.532	1.35
1788260	433467.7	39°41'17.9	80°08'25.7	6721.6	150.514	0.64
1788293	433412.8	39°41'17.4	80°08'25.3	6785.57	150.499	1.9
1788325	433358.5	39°41'16.9	80°08'24.8	6848.56	150.491	0.29
1788356	433304	39°41'16.3	80°08'24.4	6911.55	150.485	0.57
1788388	433249.4	39°41'15.8	80°08'24.0	6974.54	150.482	0.24
1788419	433195	39°41'15.3	80°08'23.6	7037.54	150.475	1.27
1788451	433140.7	39°41'14.7	80°08'23.2	7100.52	150.467	0.6
1788483	433085.3	39°41'14.2	80°08'22.8	7164.51	150.462	1.14
1788515	433030.8	39°41'13.6	80°08'22.4	7227.5	150.458	1.38
1788547	432976.9	39°41'13.1	80°08'22.0	7290.47	150.444	1.81
1788581	432923.5	39°41'12.6	80°08'21.5	7353.41	150.423	1.11
1788614	432870.2	39°41'12.1	80°08'21.1	7416.33	150.401	0.52
1788647	432816.4	39°41'11.5	80°08'20.7	7479.29	150.385	1.91
1788656	432801.8	39°41'11.4	80°08'20.6	7496.29	150.383	2.94
1788669	432780.2	39°41'11.2	80°08'20.4	7521.29	150.381	0

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