

Results of Directional Survey

API number:	30-005-29145		
OGRID:		Operator:	CHEVRON U S A INC
		Property:	NEREID 1 FEDERAL # 1H

surface	ULSTR:	P	01	T 15S	R 31E
				660 FSL	100 FEL

BH Loc	ULSTR:	M	01	T 15S	R 31E
13480	MD	8857.8	TVD	604 FSL	378 FWL
					4902 FEL

Top Perf/OH	ULSTR:	P	01	T 15S	R 31E
9623	MD	8923.4	TVD	678 FSL	1049 FEL

Bot Perf/OH	ULSTR:	M	01	T 15S	R 31E
13032	MD	8867.8	TVD	598 FSL	825 FWL
					4455 FEL

	MD	N/S	E/W	VD
	9543	19.39	-868.75	8924.83
TOP PERFS/OH	9623	18.07	-948.71	8923.36
	9633	17.91	-958.71	8923.18
	12973	-62.76	-4295.55	8869.44
BOT PERFS/OH	13032	-61.88	-4354.52	8867.84
	13063	-61.42	-4385.50	8867.00

NEXT TO LAST	13413	-57.68	-4735.38	8859.45
LAST READING	13480	-56.28	-4802.34	8857.81
TD	13480	-56.28	-4802.34	8857.81

Surface Location	660	FS	100	FE
Projected BHL	604	FS	4902	FE
Location of				
Top Perfs/OH	678	FS	1049	FE
Bottom Perfs/OH	598	FS	4455	FE

SUMMARY of Subsurface Locations

Surface Location	P-01-15S-31E	660	FS	100	FE	Vert. Depth
Top Perfs/OH	P-01-15S-31E	678	FS	1049	FE	8923.36
Bottom Perfs/OH	M-01-15S-31E	598	FS	4455	FE	8867.84
Projected TD	M-01-15S-31E	604	FS	4902	FE	8857.81

SEP 09 2013



Chesapeake Operating Inc.

Chaves County, NM (NAD27 NME)

Nereid 1 Federal

#1H

Wellbore #1 / Job #1310232

Survey: Phoenix Pilot Hole MWD Suvey

Phoenix Final Survey Report

10 April, 2013





Phoenix Technology Services

Phoenix Final Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR DB

Project	Chaves County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Nereid 1 Federal		
Site Position:		Northing:	742,364.50 usft
From:	Map	Easting:	673,770.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	33° 2' 22.320228 N
		Longitude:	103° 45' 58.635673 W
		Grid Convergence:	0.31 °

Well	#1H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	33° 2' 22.320228 N
		Longitude:	103° 45' 58.635673 W
		Ground Level:	4,367.00 usft

Wellbore	Wellbore #1 / Job #1310232				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	02/21/13	7.53	60.86	48,909

Design	Surveys (Trinidad 110)			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	239.36

Survey Program	Date 04/10/13				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
135.00	9,060.00	Phoenix Pilot Hole MWD Survey (Wellbore	MWD	MWD - Standard	
8,249.00	13,480.00	Phoenix MWD Surveys (Wellbore #1 / Job	MWD	MWD - Standard	

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	135.00	0.40	132.50	135.00	-0.32	0.35	-0.14	0.30
Phoenix First MWD Survey	292.00	0.70	190.30	291.99	-1.63	0.58	0.33	0.38
	481.00	0.60	185.10	480.98	-3.75	0.29	1.67	0.06
	671.00	0.50	168.20	670.97	-5.56	0.37	2.52	0.10
	861.00	0.40	180.60	860.97	-7.03	0.53	3.13	0.07
	1,051.00	0.30	173.40	1,050.96	-8.19	0.58	3.67	0.06
	1,241.00	0.20	177.60	1,240.96	-9.01	0.65	4.03	0.05
	1,431.00	0.20	145.40	1,430.96	-9.62	0.85	4.17	0.06
	1,623.00	0.10	273.40	1,622.96	-9.88	0.88	4.28	0.14



Phoenix Technology Services

Phoenix Final Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR DB

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,814.00	0.10	296.00	1,813.96	-9.80	0.56	4.51	0.02
2,005.00	0.10	193.00	2,004.96	-9.89	0.37	4.72	0.08
2,196.00	0.50	85.40	2,195.96	-9.99	1.17	4.09	0.28
2,387.00	0.30	100.00	2,386.95	-10.01	2.49	2.96	0.12
2,577.00	0.20	100.80	2,576.95	-10.15	3.30	2.33	0.05
2,769.00	0.30	93.00	2,768.95	-10.24	4.14	1.66	0.05
2,960.00	0.20	58.00	2,959.95	-10.09	4.92	0.91	0.09
3,150.00	0.20	35.30	3,149.94	-9.65	5.39	0.28	0.04
3,341.00	0.20	61.10	3,340.94	-9.21	5.87	-0.36	0.05
3,532.00	0.20	61.10	3,531.94	-8.89	6.46	-1.03	0.00
3,722.00	0.10	33.10	3,721.94	-8.59	6.84	-1.51	0.06
3,912.00	0.30	5.10	3,911.94	-7.96	6.97	-1.94	0.11
3,935.00	0.20	9.40	3,934.94	-7.86	6.99	-2.01	0.44
4,107.00	0.50	27.20	4,106.94	-6.89	7.38	-2.83	0.18
4,296.00	0.80	357.60	4,295.93	-4.84	7.70	-4.16	0.23
4,487.00	1.00	352.20	4,486.90	-1.86	7.42	-5.43	0.11
4,677.00	0.80	352.80	4,676.88	1.10	7.03	-6.61	0.11
4,867.00	1.00	335.00	4,866.85	3.92	6.16	-7.30	0.18
5,058.00	0.80	335.10	5,057.83	6.64	4.89	-7.59	0.10
5,248.00	0.90	328.80	5,247.81	9.12	3.56	-7.71	0.07
5,438.00	0.80	323.50	5,437.79	11.46	2.00	-7.56	0.07
5,629.00	1.10	319.20	5,628.76	13.92	0.01	-7.10	0.16
5,819.00	1.10	347.80	5,818.73	17.08	-1.57	-7.36	0.29
6,010.00	1.10	352.70	6,009.69	20.69	-2.19	-8.66	0.05
6,201.00	1.00	5.20	6,200.66	24.17	-2.27	-10.37	0.13
6,387.00	0.70	2.60	6,386.64	26.92	-2.07	-11.94	0.16
6,568.00	0.90	43.10	6,567.63	29.07	-1.05	-13.91	0.32
6,748.00	0.70	28.80	6,747.61	31.06	0.45	-16.21	0.16
6,928.00	0.70	21.80	6,927.59	33.05	1.38	-18.03	0.05
7,109.00	0.70	28.10	7,108.58	35.05	2.31	-19.85	0.04
7,290.00	0.60	17.50	7,289.57	36.93	3.12	-21.50	0.09
7,470.00	0.90	34.70	7,469.55	38.99	4.21	-23.49	0.21
7,651.00	1.10	57.70	7,650.53	41.09	6.49	-26.52	0.25
7,831.00	1.50	55.00	7,830.48	43.36	9.88	-30.60	0.22
8,012.00	1.50	54.50	8,011.42	46.09	13.75	-35.32	0.01
8,192.00	1.50	54.90	8,191.36	48.82	17.59	-40.01	0.01
8,373.00	1.40	55.30	8,372.30	51.44	21.35	-44.58	0.06
8,554.00	1.80	61.10	8,553.23	54.07	25.65	-49.63	0.24
8,735.00	1.80	58.60	8,734.14	56.93	30.57	-55.31	0.04
8,915.00	1.80	50.60	8,914.05	60.19	35.17	-60.93	0.14
8,996.00	1.60	49.80	8,995.01	61.73	37.01	-63.31	0.25
9,060.00	1.60	49.80	9,058.99	62.88	38.38	-65.07	0.00

Projection to TD, Pilot Hole:



Phoenix Technology Services
Phoenix Final Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR DB

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
135.00	135.00	-0.32	0.35	Phoenix First MWD Survey
9,060.00	9,058.99	62.88	38.38	Projection to TD, Pilot Hole

Checked By: _____	Approved By: _____	Date: _____
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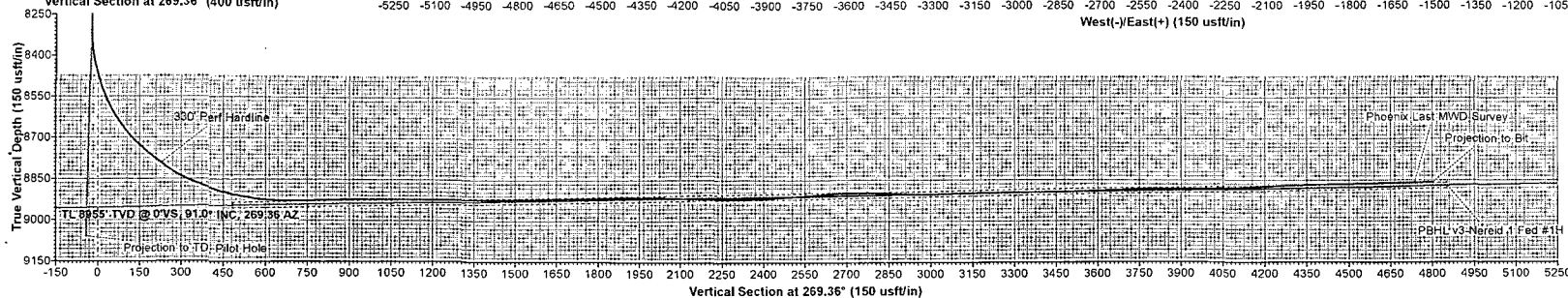
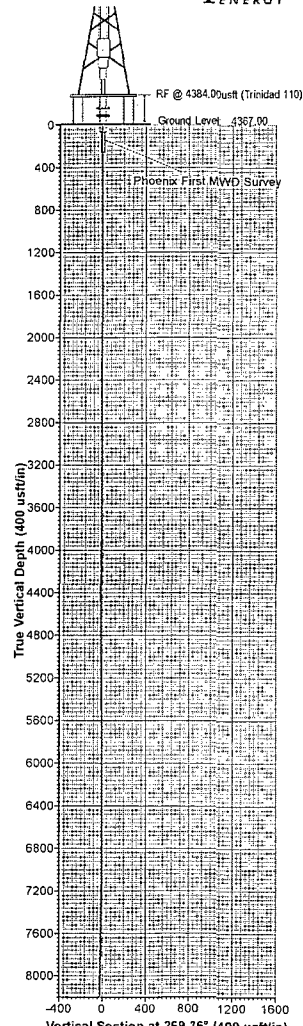
Project: Chaves County, NM (NAD27 NME)
Site: Nereid 1 Federal
Well: #1H
Wellbore: Wellbore #1 / Job #1310232
Design: Plan #3 04-06-13



PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.31°
Magnetic North: 7.22°
Magnetic Field
Strength: 48909.0nT
Dip Angle: 60.86°
Date: 02/21/2013
Model: IGRF2010_14



WELL DETAILS

+N/-S	+E/-W	Northing	Ground Level	Easting	Latitude	Longitude
0.00	0.00	742364.50	4367.00	673770.30	33° 2' 22.320228 N	103° 45' 58.635673 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target	Annotation
1	10445.00	90.90	267.00	8917.51	-10.66	-1770.11	0.00	0.00	1770.12		Tie-on & Start DLS 2.00 TFO 130.30
2	10591.86	89.00	269.24	8917.64	-15.48	-1916.87	2.00	130.30	1916.93		Start 60.00 hold at 10591.86 MD
3	10851.86	89.00	269.24	8918.69	-16.27	-1976.86	0.00	0.00	1976.92		Start DLS 2.00 TFO 0.37
4	10751.79	91.00	269.25	8918.69	-17.59	-2076.77	2.00	0.37	2076.84		Start 2777.88 hold at 10751.79 MD
5	13529.47	91.00	269.25	8870.28	-53.80	-4853.80	0.00	0.00	4854.10	PBHL v3-Nereid 1 Fed #1H	TD at 13529.47

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL v3-Nereid 1 Fed #1H	8870.28	-53.80	-4853.80	742310.70	668916.50	33° 2' 22.043433 N	103° 45' 55.656619 W	Rectangle (Sides: L20.00 W100.00)
- plan hits target center								

PROJECT DETAILS: Chaves County, NM (NAD27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

SITE DETAILS: Nereid 1 Federal

Site Centre Northing: 742364.50
Easting: 673770.30

Positional Uncertainty: 0.00
Convergence: 0.31
Local North: Grid

CASING DETAILS

TVD	MD	Name	Size
400.00		13 3/8" Surface	13-3/8
120.00		20"	20
4000.00		9 5/8" Intermediate	9-5/8
13607.49		5 1/2" Production	5-1/2

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #1H, Grid North

Latitude: 33° 2' 22.320228 N
Longitude: 103° 45' 58.635673 W

Grid East: 673770.30
Grid North: 742364.50
Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14
Sample Date: 21-Feb-13

Magnetic Declination: 7.53°
Dip Angle from Horizontal: 60.86°
Magnetic Field Strength: 48909

To convert a Magnetic Direction to a Grid Direction, Add 7.22°
To convert a Magnetic Direction to a True Direction, Add 7.53° East
To convert a True Direction to a Grid Direction, Subtract 0.31°

LEGEND

— #1H, Wellbore #1 / Job #1310232, Surveys (Trinidad 110) V0
— #1H, Wellbore #1 / Job #1310232, Phoenix Pilot Hole MWD Survey
— Plan #3 04-06-13

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
8876.15	13192.58	TL 8955 TVD @ 0°VS, 91.0° INC, 269.36 AZ	1.00	269.36



Chesapeake Operating Inc.

Chaves County, NM (NAD27 NME)

Nereid 1 Federal

#1H

Wellbore #1 / Job #1310232

Design: Phoenix Curve & Lateral Surveys

Standard Survey Report

10 April, 2013





Phoenix Technology Services

Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR DB

Project:	Chaves County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Nereid 1 Federal		
Site Position:		Northing:	742,364.50 usft
From:	Map	Easting:	673,770.30 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	33° 2' 22.320228 N
		Longitude:	103° 45' 58.635673 W
		Grid Convergence:	0.31 °

Well	#1H				
Well Position	+N/-S	0.00 usft	Northing:	742,364.50 usft	Latitude: 33° 2' 22.320228 N
	+E/-W	0.00 usft	Easting:	673,770.30 usft	Longitude: 103° 45' 58.635673 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level: 4,367.00 usft

Wellbore						Wellbore #1/ Job #1310232					
Magnetics		Model Name		Sample Date		Declination		Dip Angle		Field Strength	
						(°)		(°)		(nT)	
		IGRF2010_14		02/21/13		7.53		60.86		48,909	

Design:		Surveys (Trinidad 110)			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	239.36	

Survey Program	Date	04/10/13		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
135.00	9,060.00	Phoenix Pilot Hole MWD Survey (Wellbore)	MWD	MWD - Standard
8,249.00	13,480.00	Phoenix Curve & Lateral Surveys (Wellbor	MWD	MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.00	0.40	132.50	135.00	-0.32	0.35	-0.14	0.30	0.30	0.00
Phoenix First MWD Survey									
292.00	0.70	190.30	291.99	-1.63	0.58	0.33	0.38	0.19	36.82
481.00	0.60	185.10	480.98	-3.75	0.29	1.67	0.06	-0.05	-2.75
671.00	0.50	168.20	670.97	-5.56	0.37	2.52	0.10	-0.05	-8.89
861.00	0.40	180.60	860.97	-7.03	0.53	3.13	0.07	-0.05	6.53
1,051.00	0.30	173.40	1,050.96	-8.19	0.58	3.67	0.06	-0.05	-3.79
1,241.00	0.20	177.60	1,240.96	-9.01	0.65	4.03	0.05	-0.05	2.21
1,431.00	0.20	145.40	1,430.96	-9.62	0.85	4.17	0.06	0.00	-16.95



Phoenix Technology Services

Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,623.00	0.10	273.40	1,622.96	-9.88	0.88	4.28	0.14	-0.05	66.67
1,814.00	0.10	296.00	1,813.96	-9.80	0.56	4.51	0.02	0.00	11.83
2,005.00	0.10	193.00	2,004.96	-9.89	0.37	4.72	0.08	0.00	-53.93
2,196.00	0.50	85.40	2,195.96	-9.99	1.17	4.09	0.28	0.21	-56.34
2,387.00	0.30	100.00	2,386.95	-10.01	2.49	2.96	0.12	-0.10	7.64
2,577.00	0.20	100.80	2,576.95	-10.15	3.30	2.33	0.05	-0.05	0.42
2,769.00	0.30	93.00	2,768.95	-10.24	4.14	1.66	0.05	0.05	-4.06
2,960.00	0.20	58.00	2,959.95	-10.09	4.92	0.91	0.09	-0.05	-18.32
3,150.00	0.20	35.30	3,149.95	-9.65	5.39	0.28	0.04	0.00	-11.95
3,341.00	0.20	61.10	3,340.94	-9.21	5.87	-0.36	0.05	0.00	13.51
3,532.00	0.20	61.10	3,531.94	-8.89	6.46	-1.03	0.00	0.00	0.00
3,722.00	0.10	33.10	3,721.94	-8.59	6.84	-1.51	0.06	-0.05	-14.74
3,912.00	0.30	5.10	3,911.94	-7.96	6.97	-1.94	0.11	0.11	-14.74
3,935.00	0.20	9.40	3,934.94	-7.86	6.99	-2.01	0.44	-0.43	18.70
4,107.00	0.50	27.20	4,106.94	-6.89	7.38	-2.83	0.18	0.17	10.35
4,296.00	0.80	357.60	4,295.93	-4.84	7.70	-4.16	0.23	0.16	-15.66
4,487.00	1.00	352.20	4,486.90	-1.86	7.42	-5.43	0.11	0.10	-2.83
4,677.00	0.80	352.80	4,676.88	1.10	7.03	-6.61	0.11	-0.11	0.32
4,867.00	1.00	335.00	4,866.86	3.92	6.16	-7.30	0.18	0.11	-9.37
5,058.00	0.80	335.10	5,057.83	6.64	4.89	-7.59	0.10	-0.10	0.05
5,248.00	0.90	328.80	5,247.81	9.12	3.56	-7.71	0.07	0.05	-3.32
5,438.00	0.80	323.50	5,437.79	11.46	2.00	-7.56	0.07	-0.05	-2.79
5,629.00	1.10	319.20	5,628.76	13.92	0.01	-7.10	0.16	0.16	-2.25
5,819.00	1.10	347.80	5,818.73	17.08	-1.57	-7.36	0.29	0.00	15.05
6,010.00	1.10	352.70	6,009.69	20.69	-2.19	-8.66	0.05	0.00	2.57
6,201.00	1.00	5.20	6,200.66	24.17	-2.27	-10.37	0.13	-0.05	6.54
6,387.00	0.70	2.60	6,386.64	26.92	-2.07	-11.94	0.16	-0.16	-1.40
6,568.00	0.90	43.10	6,567.63	29.07	-1.05	-13.91	0.32	0.11	22.38
6,748.00	0.70	28.80	6,747.61	31.06	0.45	-16.21	0.16	-0.11	-7.94
6,928.00	0.70	21.80	6,927.59	33.05	1.38	-18.03	0.05	0.00	-3.89
7,109.00	0.70	28.10	7,108.58	35.05	2.31	-19.85	0.04	0.00	3.48
7,290.00	0.60	17.50	7,289.57	36.93	3.12	-21.50	0.09	-0.06	-5.86
7,470.00	0.90	34.70	7,469.55	38.99	4.21	-23.49	0.21	0.17	9.56
7,651.00	1.10	57.70	7,650.53	41.09	6.49	-26.52	0.25	0.11	12.71
7,831.00	1.50	55.00	7,830.48	43.36	9.88	-30.60	0.22	0.22	-1.50
8,012.00	1.50	54.50	8,011.42	46.09	13.75	-35.32	0.01	0.00	-0.28
8,192.00	1.50	54.90	8,191.36	48.82	17.59	-40.01	0.01	0.00	0.22
8,249.00	1.40	51.40	8,248.34	49.68	18.75	-41.45	0.23	-0.18	-6.14
8,294.00	0.90	29.90	8,293.33	50.33	19.35	-42.30	1.45	-1.11	-47.78
8,339.00	2.90	298.50	8,338.31	51.18	18.53	-42.02	6.79	4.44	-203.11
8,384.00	6.30	277.00	8,383.16	52.02	15.08	-39.48	8.34	7.56	-47.78
8,429.00	12.10	272.30	8,427.56	52.51	7.91	-33.57	12.99	12.89	-10.44
8,474.00	17.40	272.20	8,471.06	52.96	-3.54	-23.95	11.78	11.78	-0.22



Phoenix Technology Services

Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid, 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR-DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,520.00	19.30	272.00	8,514.72	53.49	-18.01	-11.77	4.13	4.13	-0.43
8,565.00	22.90	269.00	8,556.70	53.60	-34.20	2.11	8.35	8.00	-6.67
8,610.00	29.10	264.40	8,597.13	52.38	-53.87	19.65	14.48	13.78	-10.22
8,655.00	32.80	262.80	8,635.72	49.78	-76.86	40.76	8.42	8.22	-3.56
8,700.00	37.70	262.60	8,672.46	46.48	-102.61	64.60	10.89	10.89	-0.44
8,730.00	42.40	262.30	8,695.41	43.94	-121.74	82.35	15.68	15.67	-1.00
8,775.00	47.60	261.90	8,727.22	39.56	-153.25	111.69	11.57	11.56	-0.89
8,820.00	50.20	263.20	8,756.80	35.17	-166.87	142.85	6.17	5.78	2.89
8,865.00	52.30	264.10	8,784.97	31.30	-221.75	174.84	4.92	4.67	2.00
8,875.45	52.87	264.40	8,791.32	30.47	-230.00	182.37	5.89	5.42	2.90
330' Perf. Hardline									
8,911.00	54.80	265.40	8,812.30	27.92	-258.59	208.26	5.89	5.44	2.81
8,956.00	60.70	266.70	8,836.30	25.31	-296.54	242.24	13.34	13.11	2.89
9,001.00	66.60	268.40	8,856.26	23.60	-336.81	277.75	13.54	13.11	3.78
9,046.00	70.00	269.10	8,872.90	22.70	-378.60	314.18	7.69	7.56	1.56
9,091.00	72.00	269.30	8,887.55	22.10	-421.14	351.08	4.46	4.44	0.44
9,136.00	74.50	269.00	8,900.52	21.46	-464.23	388.48	5.59	5.56	-0.67
9,182.00	79.50	268.90	8,910.86	20.64	-509.03	427.44	10.87	10.87	-0.22
9,227.00	80.90	268.50	8,918.52	19.63	-553.36	466.09	3.23	3.11	-0.89
9,272.00	84.00	269.40	8,924.43	18.82	-597.95	504.88	7.17	6.89	2.00
9,317.00	88.00	271.10	8,927.57	19.02	-642.83	543.39	9.65	8.89	3.78
9,362.00	89.50	270.90	8,928.55	19.80	-687.81	581.69	3.36	3.33	-0.44
9,452.00	91.60	270.00	8,927.69	20.51	-777.80	658.76	2.54	2.33	-1.00
9,543.00	92.00	269.20	8,924.83	19.87	-868.75	737.33	0.98	0.44	-0.88
9,633.00	90.10	268.30	8,923.18	17.91	-958.71	815.73	2.34	-2.11	-1.00
9,723.00	90.30	269.40	8,922.87	16.10	-1,048.69	894.07	1.24	0.22	1.22
9,814.00	89.30	267.80	8,923.19	13.88	-1,139.66	973.47	2.07	-1.10	-1.76
9,904.00	90.20	268.10	8,923.58	10.66	-1,229.60	1,052.50	1.05	1.00	0.33
9,994.00	90.90	268.50	8,922.72	7.99	-1,319.55	1,131.25	0.90	0.78	0.44
10,084.00	89.90	268.00	8,922.09	5.24	-1,409.51	1,210.05	1.24	-1.11	-0.56
10,174.00	90.00	267.50	8,922.17	1.71	-1,499.44	1,289.23	0.57	0.11	-0.56
10,264.00	91.20	267.80	8,921.22	-1.98	-1,589.36	1,368.47	1.37	1.33	0.33
10,355.00	91.30	267.10	8,919.24	-6.03	-1,680.24	1,448.73	0.78	0.11	-0.77
10,445.00	90.90	267.00	8,917.51	-10.66	-1,770.11	1,528.41	0.46	-0.44	-0.11
10,535.00	91.90	266.40	8,915.31	-15.84	-1,859.93	1,608.33	1.30	1.11	-0.67
10,626.00	89.40	268.90	8,914.28	-19.57	-1,950.83	1,688.44	3.88	-2.75	2.75
10,716.00	87.90	268.60	8,916.40	-21.53	-2,040.78	1,766.84	1.70	-1.67	-0.33
10,806.00	88.30	268.70	8,919.38	-23.65	-2,130.71	1,845.29	0.46	0.44	0.11
10,896.00	89.80	269.30	8,920.88	-25.22	-2,220.68	1,923.50	1.80	1.67	0.67
10,987.00	89.80	268.90	8,921.19	-26.65	-2,311.67	2,002.51	0.44	0.00	-0.44
11,077.00	93.30	269.50	8,918.76	-27.91	-2,401.61	2,080.54	3.95	3.89	0.67
11,168.00	94.70	269.80	8,912.41	-28.46	-2,492.39	2,158.92	1.57	1.54	0.33
11,258.00	94.40	269.70	8,905.27	-28.85	-2,582.10	2,236.31	0.35	-0.33	-0.11
11,348.00	92.40	269.00	8,899.93	-29.87	-2,671.93	2,314.12	2.35	-2.22	-0.78



Phoenix Technology Services

Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well #1H
Project:	Chaves County, NM (NAD27 NME)	TVD Reference:	RF @ 4384.00usft (Trinidad 110)
Site:	Nereid 1 Federal	MD Reference:	RF @ 4384.00usft (Trinidad 110)
Well:	#1H	North Reference:	Grid
Wellbore:	Wellbore #1 / Job #1310232	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Trinidad 110)	Database:	GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,438.00	89.60	269.10	8,898.36	-31.36	-2,761.90	2,392.28	3.11	-3.11	0.11
11,529.00	88.60	269.20	8,899.79	-32.71	-2,852.88	2,471.25	1.10	-1.10	0.11
11,619.00	88.30	268.50	8,902.23	-34.52	-2,942.82	2,549.56	0.85	-0.33	-0.78
11,709.00	90.90	268.90	8,902.86	-36.56	-3,032.79	2,628.01	2.92	2.89	0.44
11,799.00	92.40	269.60	8,900.26	-37.74	-3,122.74	2,706.00	1.84	1.67	0.78
11,889.00	91.00	268.50	8,897.59	-39.23	-3,212.69	2,784.15	1.98	-1.56	-1.22
11,979.00	91.00	268.10	8,896.02	-41.90	-3,302.63	2,862.90	0.44	0.00	-0.44
12,070.00	89.20	266.80	8,895.86	-45.95	-3,393.54	2,943.17	2.44	-1.98	-1.43
12,160.00	91.80	267.90	8,895.08	-50.11	-3,483.43	3,022.63	3.14	2.89	1.22
12,250.00	92.80	268.10	8,891.47	-53.25	-3,573.30	3,101.56	1.13	1.11	0.22
12,341.00	92.10	266.70	8,887.58	-57.37	-3,664.12	3,181.80	1.72	-0.77	-1.54
12,431.00	92.10	267.90	8,884.28	-61.61	-3,753.96	3,261.25	1.33	0.00	1.33
12,521.00	90.20	268.50	8,882.47	-64.43	-3,843.89	3,340.07	2.21	-2.11	0.67
12,611.00	90.20	268.60	8,882.16	-66.71	-3,933.86	3,418.64	0.11	0.00	0.11
12,701.00	91.60	271.10	8,880.74	-66.95	-4,023.84	3,496.18	3.18	1.56	2.78
12,792.00	91.60	270.70	8,878.20	-65.52	-4,114.80	3,573.71	0.44	0.00	-0.44
12,882.00	93.30	270.80	8,874.36	-64.34	-4,204.70	3,650.46	1.89	1.89	0.11
12,973.00	92.90	271.20	8,869.44	-62.76	-4,295.55	3,727.82	0.62	-0.44	0.44
13,063.00	90.20	270.50	8,867.00	-61.42	-4,385.50	3,804.53	3.10	-3.00	-0.78
13,153.00	91.60	271.00	8,865.59	-60.24	-4,475.48	3,881.35	1.65	1.56	0.56
13,243.00	92.30	270.60	8,862.53	-58.99	-4,565.42	3,958.09	0.90	0.78	-0.44
13,333.00	90.20	270.00	8,860.56	-58.52	-4,655.39	4,035.26	2.43	-2.33	-0.67
13,413.00	91.40	271.20	8,859.45	-57.68	-4,735.38	4,103.65	2.12	1.50	1.50
Phoenix Last MWD Survey									
13,480.00	91.40	271.20	8,857.81	-56.28	-4,802.34	4,160.55	0.00	0.00	0.00
Projection to Bit									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
135.00	135.00	-0.32	0.35	Phoenix First MWD Survey
8,875.45	8,791.32	30.47	-230.00	330' Perf Hardline
13,413.00	8,859.45	-57.68	-4,735.38	Phoenix Last MWD Survey
13,480.00	8,857.81	-56.28	-4,802.34	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____