

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	DEVON ENERGY	Local Co-ordinate Reference:	Well Serene sisters 25 Federal #1H
Project:	Tamano	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Serene sisters 25 Federal #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0711630	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711630	Database:	EDM-Regulatory

Project		Tamano	
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	Eddy County, NM				
Site Position:		Northing:	627,962 86 usft	Latitude:	32° 43' 31 099 N
From:	Lat/Long	Easting:	658,591 75 usft	Longitude:	103° 49' 3 506 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0 28 °

Well	Serene sisters 25 Federal #1H, Directional (Pathfinder)					
Well Position	+N/-S	0 0 usft	Northing:	627,962 86 usft	Latitude:	32° 43' 31 099 N
	+E/-W	0 0 usft	Easting:	658,591 75 usft	Longitude:	103° 49' 3 506 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft

Wellbore	VH - Job #32K0711630				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/2/2011	7 73	60 61	48,913

Design		VH - Job #32K0711630			
Audit Notes:					
Version:		1 0	Phase:		ACTUAL
			Tie On Depth:		0 0
Vertical Section:		Depth From (TVD)	+N/-S	+E/-W	Direction
		(usft)	(usft)	(usft)	(°)
		0 0	0 0	0 0	172 84

Survey Program		Date	8/28/2011		
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
100 0	7,575 0	Actual (VH - Job #32K0711630)	Keeper	Keeper Gyro	

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0
100 0	0 44	280 92	100 0	0 1	-0 4	280 92	0 4
200 0	0 45	286 28	200 0	0 3	-1 1	282 73	1 2
300 0	0 35	280 14	300 0	0 4	-1 8	283 06	1 9
400 0	0 39	273 23	400 0	0 5	-2 4	281 37	2 5
500 0	0 41	270 90	500 0	0 5	-3 1	279 33	3 2
600 0	0 55	272 37	600 0	0 5	-4 0	277 76	4 0
700 0	0 75	267 25	700 0	0 5	-5 1	275 93	5 1
800 0	0 74	277 12	800 0	0 6	-6 4	275 17	6 4
900 0	0 69	271.67	900 0	0 7	-7 7	275 06	7 7
1,000 0	0 55	278 73	1,000 0	0 8	-8 7	275 03	8 8
1,100 0	0 35	291 75	1,100 0	1 0	-9 5	275 74	9 5

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Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Serene sisters 25 Federal #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0711630	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711630	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	0 36	298 58	1,200 0	1 2	-10 0	276 91	10 1
1,300 0	0 44	291 30	1,299 9	1 5	-10 7	278 03	10 8
1,400 0	0 27	350 81	1,399 9	1 9	-11 1	279 63	11 2
1,500 0	0 38	352 25	1,499 9	2 4	-11 2	282 33	11 4
1,600 0	0 36	354 34	1,599 9	3 1	-11 2	285 34	11 7
1,700 0	0 40	357 16	1,699 9	3 7	-11 3	288 35	11 9
1,800 0	0 52	16 91	1,799 9	4 5	-11 2	292 06	12 1
1,900 0	0 67	24 26	1,899 9	5 5	-10 8	296 96	12 1
2,000 0	0 98	31 89	1,999 9	6 8	-10 1	303 75	12 2
2,100 0	1 25	39 59	2,099 9	8 3	-9 0	312 88	12 2
2,200 0	1 53	46 15	2,199 9	10 1	-7 3	324 10	12 4
2,300 0	1 43	43 87	2,299 8	11 9	-5 5	335 32	13 1
2,400 0	1 35	39 60	2,399 8	13 7	-3 9	344 29	14 2
2,500 0	1 23	35 99	2,499 8	15 5	-2 5	350 92	15 7
2,600 0	1 10	28 98	2,599 8	17 2	-1 4	355 41	17 3
2,700 0	1 06	21 58	2,699 7	18 9	-0 6	358 26	18 9
2,800 0	1 02	20 41	2,799 7	20 6	0 1	0 21	20 6
2,900 0	0 84	14 84	2,899 7	22 1	0 6	1 49	22 1
3,000 0	0 81	8 89	2,999 7	23 5	0 9	2 12	23 6
3,100 0	0 74	8 07	3,099 7	24 9	1 1	2 47	24 9
3,200 0	0 55	349 64	3,199 7	26 0	1 1	2 37	26 0
3,300 0	0 54	1 28	3,299 7	26 9	1 0	2 13	27 0
3,400 0	0 53	348 48	3,399 7	27 9	0 9	1 89	27 9
3,500 0	0 71	347 60	3,499 7	28 9	0 7	1 37	28 9
3,600 0	0 67	352 62	3,599 7	30 1	0 5	0 92	30 1
3,700 0	0 76	359 83	3,699 7	31 3	0 4	0 75	31 3
3,800 0	0 78	350 75	3,799 7	32 7	0 3	0 52	32 7
3,900 0	0 98	344 44	3,899 6	34 2	0 0	359 93	34 2
4,000 0	0 86	345 83	3,999 6	35 7	-0 5	359 27	35 7
4,100 0	0 86	352 82	4,099 6	37 2	-0 7	358 87	37 2
4,200 0	0 94	347 75	4,199 6	38 7	-1 0	358 52	38 8
4,300 0	0 89	353 74	4,299 6	40 3	-1 3	358 21	40 3
4,400 0	0 79	356 86	4,399 6	41 8	-1 4	358 11	41 8
4,500 0	0 83	356 93	4,499 6	43 2	-1 5	358 07	43 2
4,600 0	0 92	359 00	4,599 6	44 7	-1 5	358 06	44 7
4,700 0	0 94	6 87	4,699 5	46 3	-1 4	358 24	46 4
4,800 0	0 90	15 69	4,799 5	47 9	-1 1	358 66	47 9
4,900 0	0 84	6 31	4,899 5	49 4	-0 8	359 04	49 4
5,000 0	0 86	1 12	4,999 5	50 9	-0 7	359 18	50 9
5,100 0	0 89	0 73	5,099 5	52 4	-0 7	359 23	52 4
5,200 0	0 92	0 88	5,199 5	54 0	-0 7	359 28	54 0
5,300 0	0 56	5 36	5,299 5	55 3	-0 6	359 35	55 3
5,400 0	0 51	20 30	5,399 5	56 2	-0 4	359 57	56 2
5,500 0	0 48	35 16	5,499 5	56 9	0 0	359 97	56 9

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Project:	Tamano	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Serene sisters 25 Federal #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0711630	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0711630	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600.0	0 57	29 22	5,599.5	57.7	0.5	0.45	57.7
5,700.0	0 67	37 70	5,699.5	58.6	1.1	1.03	58.6
5,800.0	0 96	49 13	5,799.5	59.6	2.0	1.97	59.6
5,900.0	1 09	47 41	5,899.4	60.8	3.4	3.18	60.9
6,000.0	1 51	56 45	5,999.4	62.2	5.2	4.76	62.4
6,100.0	2 04	60 75	6,099.4	63.8	7.8	7.00	64.3
6,200.0	2 26	60 77	6,199.3	65.6	11.1	9.61	66.5
6,300.0	2 26	46 79	6,299.2	67.9	14.3	11.86	69.4
6,400.0	2 08	44 08	6,399.1	70.6	17.0	13.51	72.6
6,500.0	1 33	42 06	6,499.1	72.7	19.0	14.64	75.2
6,600.0	1 39	2 97	6,599.1	74.8	19.8	14.85	77.4
6,700.0	1 47	354 27	6,699.0	77.3	19.8	14.35	79.8
6,800.0	1 58	349 78	6,799.0	79.9	19.4	13.64	82.3
6,900.0	1 59	349 77	6,899.0	82.7	18.9	12.89	84.8
7,000.0	1.75	339 46	6,998.9	85.4	18.1	11.98	87.4
7,100.0	1 92	337 55	7,098.9	88.4	17.0	10.85	90.0
7,200.0	1 89	336 30	7,198.8	91.5	15.7	9.71	92.8
7,300.0	1 84	331 42	7,298.8	94.4	14.2	8.57	95.5
7,400.0	1 79	331 77	7,398.7	97.2	12.7	7.45	98.0
7,500.0	1 58	330 80	7,498.7	99.8	11.3	6.46	100.4
7,575.0	1 68	331 94	7,573.6	101.6	10.3	5.78	102.2



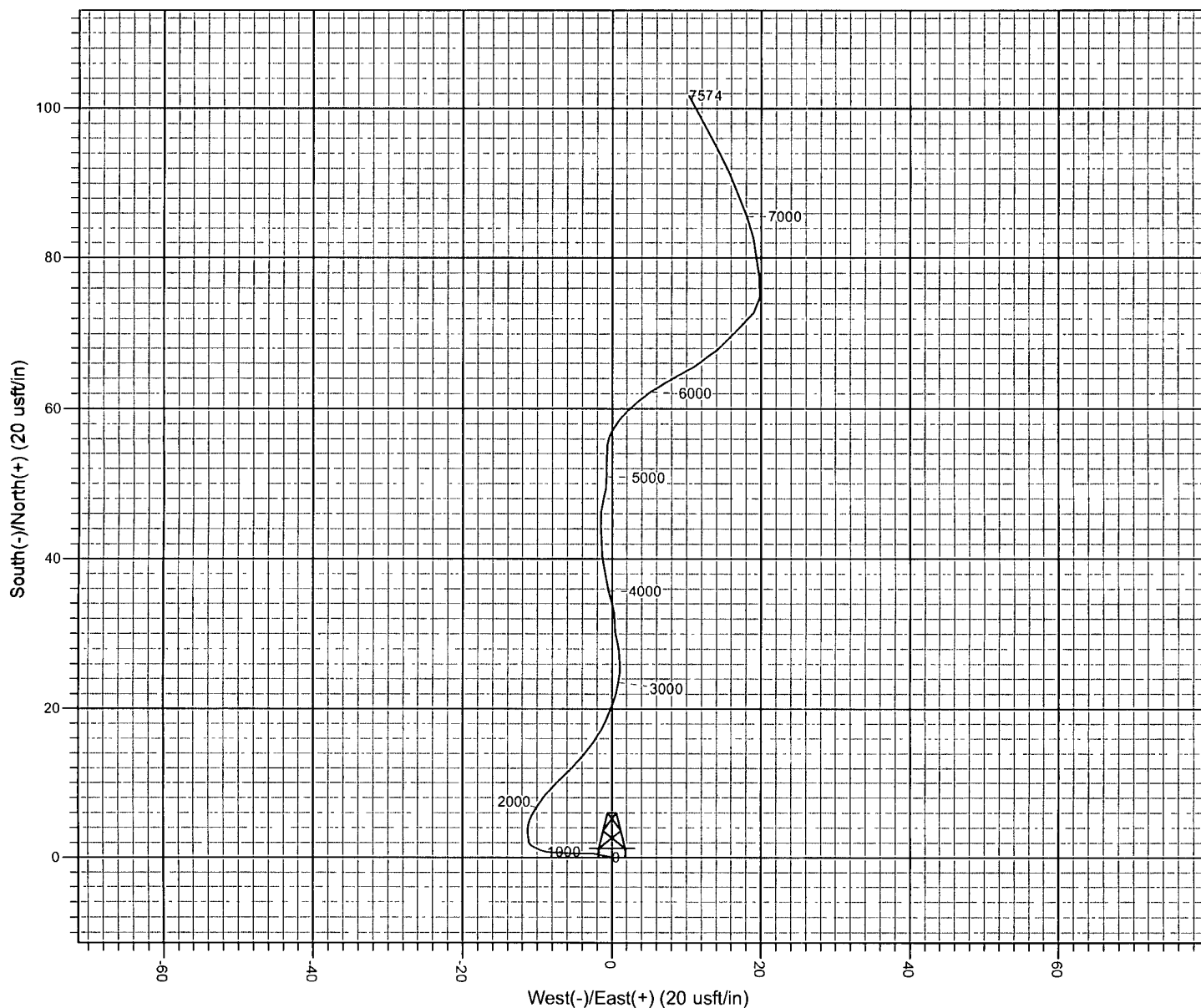
Project: Tamano
 Eddy County, NM
 Well: Serene sisters 25 Federal #1H
 Wellbore: VH - Job #32K0711630
 Design: VH - Job #32K0711630



Azimuths to Grid North
 True North: -0 28°
 Magnetic North 7 45°
 Magnetic Field
 Strength 48912 8snT
 Dip Angle 60 61°
 Date 7/2/2011
 Model IGRF2010

WELL DETAILS: Serene sisters 25 Federal #1H
 WELL @ 0.0usft (Original Well Elev)
 Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	627962.86	658591.75	32° 43' 31.099 N	103° 49' 3.506 W	



PROJECT DETAILS: Tamano
 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: Eddy County, NM
 Site Centre Latitude: 32° 43' 31.099 N
 Longitude: 103° 49' 3.506 W
 Positional Uncertainty: 0.0
 Convergence: 0.28
 Local North: Grid

Pathfinder

6213 WCR 112
Midland, Texas 79106
Tel (432)687-1647
Fax (432)687-1544



30-015-38314

July 21, 2011

Devon Energy
20 N. Broadway
Oklahoma City, OK

RE: Devon Energy
Serene Sisters 25 Federal #1H
API: 30-015-38314
Eddy County, NM
RIG: H&P 300
FIELD: Bone Spring; Tamano
PES FILE NO.: 700002946-WT-WT

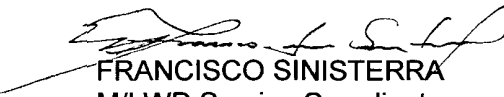
To whom it may concern:

We hereby certify that the enclosed Original Field Survey Data contained in this report represents to the best of our knowledge, a true and accurate survey of the well at the time the survey was run.

DIRECTIONAL SURVEY DATA
1 – Original survey report
2 – Survey report copies

We appreciate the opportunity to work with you and we look forward to your business support. If you have any questions, I can be reached at (432) 687-1647

Sincerely,



FRANCISCO SINISTERRA
M/LWD Service Coordinator
PathFinder Energy Services

ML:sh



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

DEVON ENERGY

SERENE SISTERS 25 FEDERAL #1H

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) DAVID PHILLIPS
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 07-02-11 TO 07-15-11
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

DEVON ENERGY
SERENE SISTERS 25 FEDERAL #1H
EDDY COUNTY, NM
RIG: H&P 300
9. SURVEY CERTIFIED FROM: 7652 TO 12857 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 4659.42 FEET ON A BEARING OF 172.91 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 12909 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


FRANCISCO SINISTERRA
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 07/02/2011
Date Completed: 07/15/2011

DEVON ENERGY CORPORATION
SERENE SISTERS 25 FEDERAL #1H
EDDY COUNTY, NM
Rig:H&P 300
PathFinder Office Supervisor: STEVE BIBB
PathFinder Field Engineers:DAVID PHILLIPS
JAMES HORRALL

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.43.30.5059 N LON:103.49.2.9377 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 699974.6400 Y: 627923.7300
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.45° EAST TO GRID
Vertical Section Plane: 172.84
Survey Vert. Reference: 26.00' Rotary Table To Ground
Altitude:3698.80' Ground To MSL

Measured Depth	12909.00	(feet)
Inclination	90.31	(deg)
Azimuth	180.51	(deg)
True Vertical Depth	8293.73	(feet)
Vertical Section	4659.41	(feet)
Survey X cord	700549.35	(feet)
Survey Y cord	623299.89	(feet)
Survey Lat	32.71242386 N	(deg)
Survey Lon	103.81568737 W	(deg)
Rectangular Corr. N/S	4623.84 S	(feet)
Rectangular Corr. E/W	574.71 E	(feet)
Closure Distance	4659.42	(feet)
Direction of Closure	172.91	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
SERENE SISTERS 25 FEDERAL #1H
EDDY COUNTY, NM

Rig:H&P 300

PathFinder Office Supervisor: STEVE BIBB

PathFinder Field Engineers: DAVID PHILLIPS
JAMES HORRALL

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.43.30.5059 N LON:103.49.2.9377 W

GRID Reference:NAD83 new mexico east Transverse Mercator

Ref GRID Coord: X: 699974.6400 Y: 627923.7300

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.45° EAST TO GRID

Vertical Section Plane: 172.84

Survey Vert. Reference: 26.00' Rotary Table To Ground

Altitude:3698.80' Ground To MSL

Survey Calculations by RX5 V6.03E using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
TIED INTO GYRO DATA SURVEYS AT 7617.09'MD.										
7617.09	1.68	331.94	7615.71	0.00	-100.72	102.73 N	9.70 E	103.19@	5.39	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
7652.00	5.01	132.84	7650.58	34.91	-100.03	102.14 N	10.58 E	102.69@	5.91	18.96
7684.00	8.62	132.30	7682.35	32.00	-97.14	99.58 N	13.38 E	100.47@	7.65	11.28
7714.00	9.76	135.77	7711.97	30.00	-93.40	96.24 N	16.81 E	97.70@	9.91	4.22
7747.00	10.20	133.68	7744.47	33.00	-88.90	92.22 N	20.88 E	94.56@	12.76	1.73
7778.00	12.75	129.79	7774.85	31.00	-84.27	88.14 N	25.49 E	91.75@	16.13	8.59
7809.00	16.09	131.55	7804.87	31.00	-78.54	83.10 N	31.34 E	88.81@	20.66	10.87
7841.00	20.84	135.15	7835.21	32.00	-70.70	76.12 N	38.68 E	85.38@	26.94	15.26
7873.00	24.09	136.65	7864.78	32.00	-60.92	67.33 N	47.17 E	82.21@	35.02	10.31
7903.00	26.29	135.95	7891.92	30.00	-50.67	58.10 N	56.00 E	80.69@	43.94	7.40
7936.00	29.63	134.36	7921.07	33.00	-38.43	47.14 N	66.91 E	81.85@	54.84	10.37
7967.00	32.54	133.74	7947.61	31.00	-25.96	36.02 N	78.42 E	86.30@	65.33	9.44
7998.00	34.73	133.30	7973.42	31.00	-12.68	24.19 N	90.87 E	94.04@	75.09	7.11
8031.00	37.20	132.94	8000.13	33.00	2.23	10.95 N	105.02 E	105.59@	84.05	7.51
8062.00	39.57	134.05	8024.43	31.00	17.11	2.30 S	118.98 E	119.00@	91.11	7.96
8094.00	41.94	135.36	8048.67	32.00	33.55	17.00 S	133.82 E	134.89@	97.24	7.87
8125.00	45.20	136.23	8071.13	31.00	50.60	32.32 S	148.71 E	152.18@	102.26	10.69
8157.00	48.89	137.22	8092.93	32.00	69.52	49.37 S	164.76 E	172.00@	106.68	11.75
8188.00	52.67	137.37	8112.52	31.00	89.06	67.02 S	181.04 E	193.05@	110.31	12.20
8220.00	55.40	137.03	8131.32	32.00	110.10	86.02 S	198.64 E	216.46@	113.41	8.57
8251.00	58.12	135.81	8148.31	31.00	130.96	104.79 S	216.51 E	240.54@	115.83	9.37
8282.00	61.91	135.48	8163.80	31.00	152.35	123.99 S	235.28 E	265.95@	117.79	12.26
8315.00	65.60	135.87	8178.39	33.00	175.93	145.16 S	255.96 E	294.26@	119.56	11.23
8346.00	68.32	136.13	8190.52	31.00	198.76	165.68 S	275.77 E	321.72@	121.00	8.81

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
SERENE SISTERS 25 FEDERAL #1H
EDDY COUNTY, NM
RIG:H&P 300

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8377.00	71.14	136.83	8201.26	31.00	222.18	186.76 S	295.80 E	349.82@	122.27	9.34
8403.00	73.69	137.26	8209.11	26.00	242.28	204.90 S	312.68 E	373.84@	123.24	9.93
8434.00	77.03	138.05	8216.95	31.00	266.79	227.07 S	332.88 E	402.95@	124.30	11.05
8465.00	79.32	137.97	8223.30	31.00	291.69	249.62 S	353.18 E	432.49@	125.25	7.39
8497.00	82.04	137.44	8228.48	32.00	317.51	272.97 S	374.43 E	463.37@	126.09	8.66
8559.00	86.00	138.23	8234.94	62.00	368.01	318.67 S	415.81 E	523.88@	127.47	6.51
8654.00	89.34	145.70	8238.81	95.00	449.42	393.38 S	474.24 E	616.16@	129.68	8.61
8749.00	91.10	154.14	8238.44	95.00	536.83	475.50 S	521.81 E	705.97@	132.34	9.07
8843.00	90.92	162.66	8236.78	94.00	627.77	562.81 S	556.38 E	791.40@	135.33	9.06
8938.00	91.10	171.27	8235.10	95.00	722.16	655.26 S	577.78 E	873.61@	138.60	9.06
9032.00	92.33	180.71	8232.28	94.00	815.87	748.88 S	584.34 E	949.88@	142.04	10.12
9127.00	89.08	183.85	8231.11	95.00	909.55	843.77 S	580.57 E	1024.21@	145.47	4.76
9223.00	88.02	183.73	8233.54	96.00	1003.77	939.53 S	574.22 E	1101.11@	148.57	1.11
9317.00	87.58	183.99	8237.15	94.00	1095.97	1033.25 S	567.90 E	1179.03@	151.21	0.54
9412.00	87.67	182.07	8241.09	95.00	1189.39	1128.03 S	562.88 E	1260.67@	153.48	2.02
9506.00	87.32	181.39	8245.20	94.00	1282.17	1221.89 S	560.05 E	1344.13@	155.38	0.81
9601.00	87.58	177.96	8249.43	95.00	1376.39	1316.78 S	560.59 E	1431.15@	156.94	3.62
9695.00	88.11	179.45	8252.96	94.00	1469.83	1410.69 S	562.71 E	1518.78@	158.25	1.68
9790.00	88.02	179.98	8256.17	95.00	1564.09	1505.64 S	563.18 E	1607.52@	159.49	0.57
9885.00	87.85	179.89	8259.59	95.00	1658.30	1600.57 S	563.29 E	1696.80@	160.61	0.20
9979.00	87.76	180.15	8263.19	94.00	1751.50	1694.50 S	563.26 E	1785.67@	161.61	0.29
10074.00	89.60	178.57	8265.38	95.00	1845.85	1789.47 S	564.32 E	1876.34@	162.50	2.55
10168.00	89.60	179.45	8266.04	94.00	1939.30	1883.45 S	565.94 E	1966.64@	163.28	0.94
10263.00	89.52	179.72	8266.77	95.00	2033.64	1978.44 S	566.63 E	2057.99@	164.02	0.30
10357.00	89.34	180.15	8267.70	94.00	2126.92	2072.44 S	566.74 E	2148.53@	164.71	0.50
10452.00	89.43	180.95	8268.72	95.00	2221.05	2167.43 S	565.82 E	2240.07@	165.37	0.85
10546.00	89.52	180.77	8269.58	94.00	2314.13	2261.41 S	564.41 E	2330.78@	165.99	0.21
10641.00	90.04	181.21	8269.95	95.00	2408.17	2356.40 S	562.77 E	2422.67@	166.57	0.72

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY CORPORATION
SERENE SISTERS 25 FEDERAL #1H
EDDY COUNTY, NM
RIG:H&P 300

Page 03/03

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
10736.00	89.34	180.07	8270.46	95.00	2502.28	2451.39 S	561.71 E	2514.92@	167.09	1.41
10830.00	88.20	177.43	8272.48	94.00	2595.75	2545.33 S	563.76 E	2607.02@	167.51	3.06
10925.00	87.32	177.69	8276.19	95.00	2690.36	2640.18 S	567.80 E	2700.54@	167.86	0.97
11019.00	88.81	179.01	8279.37	94.00	2783.87	2734.08 S	570.51 E	2792.97@	168.21	2.12
11114.00	88.64	179.36	8281.48	95.00	2878.26	2829.04 S	571.86 E	2886.26@	168.57	0.41
11209.00	88.55	179.10	8283.81	95.00	2972.64	2924.01 S	573.13 E	2979.65@	168.91	0.29
11303.00	88.37	179.36	8286.34	94.00	3066.02	3017.96 S	574.40 E	3072.14@	169.22	0.34
11398.00	89.34	179.10	8288.23	95.00	3160.41	3112.94 S	575.67 E	3165.72@	169.52	1.06
11492.00	89.69	180.07	8289.03	94.00	3253.76	3206.93 S	576.35 E	3258.31@	169.81	1.10
11587.00	89.60	179.89	8289.62	95.00	3348.02	3301.93 S	576.39 E	3351.86@	170.10	0.21
11681.00	89.43	179.45	8290.41	94.00	3441.35	3395.92 S	576.93 E	3444.58@	170.36	0.50
11776.00	89.34	179.89	8291.43	95.00	3535.67	3490.91 S	577.47 E	3538.36@	170.61	0.47
11870.00	89.87	179.98	8292.08	94.00	3628.95	3584.91 S	577.58 E	3631.14@	170.85	0.57
11965.00	89.25	180.07	8292.81	95.00	3723.20	3679.91 S	577.54 E	3724.95@	171.08	0.66
12060.00	89.52	180.24	8293.83	95.00	3817.42	3774.90 S	577.28 E	3818.79@	171.31	0.34
12154.00	89.52	180.77	8294.62	94.00	3910.58	3868.90 S	576.45 E	3911.60@	171.53	0.56
12249.00	90.04	180.68	8294.98	95.00	4004.68	3963.89 S	575.25 E	4005.41@	171.74	0.56
12343.00	90.48	181.47	8294.56	94.00	4097.71	4057.87 S	573.49 E	4098.19@	171.96	0.96
12439.00	89.60	179.01	8294.49	96.00	4192.90	4153.86 S	573.09 E	4193.21@	172.14	2.72
12533.00	89.96	179.45	8294.85	94.00	4286.31	4247.85 S	574.35 E	4286.50@	172.30	0.60
12628.00	89.78	179.63	8295.07	95.00	4380.66	4342.85 S	575.11 E	4380.76@	172.46	0.27
12722.00	90.40	179.80	8294.92	94.00	4473.99	4436.84 S	575.58 E	4474.02@	172.61	0.68
12816.00	90.40	180.33	8294.26	94.00	4567.24	4530.84 S	575.47 E	4567.24@	172.76	0.56
12857.00	90.31	180.51	8294.01	41.00	4607.88	4571.84 S	575.17 E	4607.88@	172.83	0.49
STRAIGHT LINE PROJECTION TO BIT AT 12909'MD.										
12909.00	90.31	180.51	8293.73	52.00	4659.41	4623.84 S	574.71 E	4659.42@	172.91	0.00



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	DEVON ENERGY		
LEASE / WELL No.:	SERENE SISTERS 25 FEDERAL #1H		
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY COUNTY	NM	USA
RIG:	H&P 300		
API WELL No:	30-015-38314		
JOB No:	700002946 WT-WT		
P O. / AFE No			
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat.	7.45	LWD Calculated:	7.45
		Agreed Upon:	7.45
X =	699974.640000	Feet	Y = 627923.730000
			Feet
SITE LATITUDE:	32 72	SITE LONGITUDE:	103 81
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☒	ZONE:	
PROPOSED DRIFT DIRECTION:	172.84		
KELLY BUSHING ELEVATION:	26'		
ALTITUDE:	3698.8	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	7617.09		
DRIFT ANGLE:	1.68		
DRIFT DIRECTION:	331.94		
TRUE VERTICAL DEPTH:	7615.71		
VERTICAL SECTION	100.72		
RECTANGULAR COORDINATE (N / S) .	102 73		
RECTANGULAR COORDINATE (E / W)	9 7		
CLOSURE DISTANCE / DIRECTION:	103.19	5.39	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	Scientific		
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

KICKOFF DEPTH:	TOTAL DEPTH:
KICKOFF ANGLE:	MAX ANGLE:

PES Engineers. _____ DAVID PHILLIPS

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: 1-Jul-2011

Friday, July 15, 2011
2:52 AM

Job Number: 70002946-WT-WT	State/Country: NM
Company: DEVON	Declination:
Lease/Well: SERENCE SISTERS 25 FEDERAL	Grid: 1
Location: EDDY COUNTY	File name: C:\WINSERVE\2946.SVY
Rig Name: H&P 300	Date/Time: 15-Jul-11 / 02:52
RKB:	Curve Name: C:\DOCUME~1\G\DESKTOP\ISERENE~1\PLAN#3-1\5
G.L. or M.S.L.:	

Scientific Drilling

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 172.84
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.44	280.92	100.00	.07	-.38	-.12	.38	280.92	.44
200.00	.45	286.28	200.00	.26	-1.13	-.39	1.16	282.73	.04
300.00	.35	280.14	299.99	.42	-1.81	-.64	1.86	283.06	.11
400.00	.39	273.23	399.99	.49	-2.45	-.79	2.50	281.37	.06
500.00	.41	270.90	499.99	.52	-3.15	-.91	3.19	279.33	.03
600.00	.55	272.37	599.99	.54	-3.98	-1.03	4.02	277.76	.14
700.00	.75	267.25	699.98	.53	-5.12	-1.16	5.14	275.93	.21
800.00	.74	277.12	799.97	.58	-6.41	-1.37	6.44	275.17	.13
900.00	.69	271.67	899.96	.68	-7.65	-1.63	7.68	275.06	.08
1000.00	.55	278.73	999.96	.77	-8.73	-1.85	8.76	275.03	.16
1100.00	.35	291.75	1099.95	.95	-9.49	-2.13	9.54	275.74	.22
1200.00	.36	298.58	1199.95	1.22	-10.05	-2.46	10.12	276.91	.04
1300.00	.44	291.30	1299.95	1.51	-10.68	-2.83	10.79	278.03	.09
1400.00	.27	350.81	1399.95	1.88	-11.08	-3.25	11.24	279.63	.38
1500.00	.38	352.25	1499.95	2.44	-11.16	-3.81	11.42	282.33	.11
1600.00	.36	354.34	1599.94	3.08	-11.24	-4.46	11.65	285.34	.02
1700.00	.40	357.16	1699.94	3.74	-11.28	-5.12	11.89	288.35	.04
1800.00	.52	16.91	1799.94	4.53	-11.17	-5.88	12.05	292.06	.20
1900.00	.67	24.26	1899.93	5.49	-10.80	-6.80	12.11	296.96	.17
2000.00	.98	31.89	1999.92	6.75	-10.10	-7.96	12.15	303.75	.33
2100.00	1.25	39.59	2099.90	8.32	-8.96	-9.37	12.22	312.88	.31
2200.00	1.53	46.15	2199.87	10.08	-7.30	-10.92	12.45	324.10	.32
2300.00	1.43	43.87	2299.84	11.91	-5.47	-12.50	13.11	335.32	.12
2400.00	1.35	39.60	2399.81	13.72	-3.86	-14.09	14.25	344.29	.13

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
2500.00	1.23	35.99	2499.79	15.49	-2.48	-15.68	15.69	350.92	.14
2600.00	1.10	28.98	2599.77	17.20	-1.38	-17.24	17.25	355.41	.19
2700.00	1.06	21.58	2699.75	18.90	-.57	-18.82	18.91	358.26	.14
2800.00	1.02	20.41	2799.73	20.59	.08	-20.42	20.59	.21	.05
2900.00	.84	14.84	2899.72	22.14	.57	-21.89	22.14	1.49	.20
3000.00	.81	8.89	2999.71	23.54	.87	-23.25	23.56	2.12	.09
3100.00	.74	8.07	3099.70	24.88	1.07	-24.55	24.90	2.47	.07
3200.00	.55	349.64	3199.69	25.99	1.08	-25.66	26.01	2.37	.28
3300.00	.54	1.28	3299.69	26.94	1.00	-26.60	26.95	2.13	.11
3400.00	.53	348.48	3399.68	27.86	.92	-27.53	27.88	1.89	.12
3500.00	.71	347.60	3499.68	28.92	.69	-28.61	28.93	1.37	.18
3600.00	.67	352.62	3599.67	30.10	.48	-29.81	30.11	.92	.07
3700.00	.76	359.83	3699.66	31.35	.41	-31.05	31.35	.75	.13
3800.00	.78	350.75	3799.65	32.68	.30	-32.39	32.68	.52	.12
3900.00	.98	344.44	3899.64	34.18	-.04	-33.92	34.18	359.93	.22
4000.00	.86	345.83	3999.63	35.73	-.46	-35.51	35.73	359.27	.12
4100.00	.86	352.82	4099.62	37.20	-.73	-37.00	37.21	358.87	.10
4200.00	.94	347.75	4199.61	38.75	-1.00	-38.57	38.76	358.52	.11
4300.00	.89	353.74	4299.59	40.32	-1.26	-40.16	40.34	358.21	.11
4400.00	.79	356.86	4399.58	41.78	-1.38	-41.63	41.80	358.11	.11
4500.00	.83	356.93	4499.57	43.19	-1.46	-43.04	43.22	358.07	.04
4600.00	.92	359.00	4599.56	44.72	-1.51	-44.56	44.74	358.06	.10
4700.00	.94	6.87	4699.55	46.34	-1.43	-46.15	46.36	358.24	.13
4800.00	.90	15.69	4799.53	47.91	-1.12	-47.87	47.92	358.66	.15
4900.00	.84	6.31	4899.52	49.39	-.82	-49.11	49.40	359.04	.15
5000.00	.86	1.12	4999.51	50.87	-.73	-50.56	50.87	359.18	.08
5100.00	.89	.73	5099.50	52.40	-.70	-52.08	52.40	359.23	.03
5200.00	.92	.88	5199.49	53.98	-.68	-53.64	53.98	359.28	.03
5300.00	.56	5.36	5299.48	55.27	-.62	-54.91	55.27	359.35	.36
5400.00	.51	20.30	5399.47	56.17	-.42	-55.78	56.17	359.57	.15
5500.00	.48	35.16	5499.47	56.93	-.03	-56.49	56.93	359.97	.13
5600.00	.57	29.22	5599.47	57.71	.46	-57.20	57.71	.45	.11
5700.00	.67	37.70	5699.46	58.60	1.06	-58.01	58.61	1.03	.14
5800.00	.96	49.13	5799.45	59.61	2.05	-58.89	59.65	1.97	.33
5900.00	1.09	47.41	5899.44	60.80	3.38	-59.91	60.90	3.18	.13
6000.00	1.51	56.45	5999.41	62.18	5.18	-61.05	62.39	4.76	.47
6100.00	2.04	60.75	6099.36	63.77	7.83	-62.30	64.25	7.00	.55
6200.00	2.26	60.77	6199.29	65.61	11.10	-63.71	66.54	9.61	.22
6300.00	2.26	46.79	6299.21	67.92	14.26	-65.61	69.40	11.86	.55
6400.00	2.08	44.08	6399.14	70.57	16.96	-67.91	72.58	13.51	.21
6500.00	1.33	42.06	6499.10	72.74	19.00	-69.80	75.18	14.64	.75
6600.00	1.39	2.97	6599.07	74.81	19.84	-71.76	77.40	14.85	.91
6700.00	1.47	354.27	6699.04	77.30	19.78	-74.23	79.79	14.35	.23
6800.00	1.58	349.78	6799.00	79.93	19.40	-76.89	82.25	13.64	.16
6900.00	1.59	349.77	6898.97	82.65	18.91	-79.65	84.79	12.89	.01

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
7000.00	1.75	339.46	6998.92	85.45	18.13	-82.52	87.35	11.98	.34
7100.00	1.92	337.55	7098.87	88.43	16.95	-85.62	90.04	10.85	.18
7200.00	1.89	336.30	7198.82	91.49	15.65	-88.82	92.82	9.71	.05
7300.00	1.84	331.42	7298.76	94.41	14.22	-91.90	95.47	8.57	.17
7400.00	1.79	331.77	7398.71	97.19	12.71	-94.85	98.02	7.45	.05
7500.00	1.58	330.80	7498.67	99.77	11.30	-97.58	100.41	6.46	.21
7575.00	1.68	331.94	7573.64	101.64	10.28	-99.57	102.16	5.78	.14
7600.00	1.68	331.94	7598.63	102.29	9.94	-100.25	102.77	5.55	.00
7617.09	1.68	331.94	7615.71	102.73	9.70	-100.72	103.19	5.39	.00
7652.00	5.01	132.84	7650.59	102.15	10.58	-100.03	102.69	5.91	18.96
7684.00	8.62	132.30	7682.36	99.58	13.38	-97.14	100.48	7.65	11.28
7714.00	9.76	135.77	7711.97	96.25	16.82	-93.40	97.70	9.91	4.22
7747.00	10.20	133.68	7744.47	92.22	20.88	-88.90	94.56	12.76	1.73
7778.00	12.75	129.79	7774.85	88.14	25.49	-84.27	91.75	16.13	8.59
7809.00	16.09	131.55	7804.87	83.10	31.34	-78.55	88.81	20.66	10.87
7841.00	20.84	135.15	7835.21	76.12	38.68	-70.70	85.38	26.94	15.26
7873.00	24.09	136.65	7864.78	67.33	47.18	-60.93	82.21	35.02	10.31
7903.00	26.29	135.95	7891.93	58.10	56.00	-50.67	80.70	43.94	7.40
7936.00	29.63	134.36	7921.07	47.14	66.92	-38.44	81.86	54.83	10.37
7967.00	32.54	133.74	7947.62	36.02	78.42	-25.96	86.30	65.33	9.44
7998.00	34.73	133.30	7973.43	24.20	90.87	-12.68	94.04	75.09	7.11
8031.00	37.20	132.94	8000.13	10.95	105.02	2.22	105.59	84.05	7.51
8062.00	39.57	134.05	8024.43	-2.30	118.98	17.11	119.00	91.11	7.96
8094.00	41.94	135.36	8048.67	-17.00	133.82	33.54	134.90	97.24	7.87
8125.00	45.20	136.23	8071.13	-32.31	148.71	50.60	152.18	102.26	10.69
8157.00	48.89	137.22	8092.93	-49.37	164.76	69.52	172.00	106.68	11.75
8188.00	52.67	137.37	8112.53	-67.01	181.04	89.06	193.05	110.31	12.20
8220.00	55.40	137.03	8131.32	-86.01	198.64	110.10	216.46	113.41	8.57
8251.00	58.12	135.81	8148.31	-104.79	216.52	130.96	240.54	115.83	9.37
8282.00	61.91	135.48	8163.80	-123.99	235.28	152.34	265.95	117.79	12.26
8315.00	65.60	135.87	8178.39	-145.16	255.96	175.93	294.26	119.56	11.23
8346.00	68.32	136.13	8190.52	-165.68	275.77	198.76	321.71	121.00	8.81
8377.00	71.14	136.83	8201.26	-186.76	295.80	222.17	349.82	122.27	9.34
8403.00	73.69	137.26	8209.12	-204.90	312.68	242.28	373.84	123.24	9.93
8434.00	77.03	138.05	8216.95	-227.07	332.88	266.79	402.95	124.30	11.05
8465.00	79.32	137.97	8223.30	-249.62	353.18	291.69	432.49	125.25	7.39
8497.00	82.04	137.44	8228.48	-272.97	374.43	317.51	463.37	126.09	8.66
8559.00	86.00	138.23	8234.94	-318.67	415.81	368.01	523.88	127.47	6.51
8654.00	89.34	145.70	8238.81	-393.37	474.24	449.42	616.15	129.68	8.61
8749.00	91.10	154.14	8238.44	-475.50	521.81	536.83	705.97	132.34	9.07
8843.00	90.92	162.66	8236.78	-562.81	556.38	627.76	791.39	135.33	9.06
8938.00	91.10	171.27	8235.11	-655.26	577.78	722.16	873.61	138.60	9.06
9032.00	92.33	180.71	8232.29	-748.88	584.35	815.87	949.88	142.04	10.12
9127.00	89.08	183.85	8231.12	-843.77	580.57	909.55	1024.21	145.47	4.76
9223.00	88.02	183.73	8233.55	-939.53	574.22	1003.77	1101.11	148.57	1.11

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
9317.00	87.58	183.99	8237.15	-1033.24	567.90	1095.97	1179.03	151.21	.54
9412.00	87.67	182.07	8241.09	-1128.03	562.88	1189.39	1260.67	153.48	2.02
9506.00	87.32	181.39	8245.20	-1221.89	560.05	1282.17	1344.13	155.38	.81
9601.00	87.58	177.96	8249.43	-1316.78	560.59	1376.39	1431.14	156.94	3.62
9695.00	88.11	179.45	8252.96	-1410.69	562.71	1469.82	1518.78	158.25	1.68
9790.00	88.02	179.98	8256.17	-1505.63	563.18	1564.09	1607.51	159.49	.57
9885.00	87.85	179.89	8259.59	-1600.57	563.29	1658.30	1696.80	160.61	.20
9979.00	87.76	180.15	8263.19	-1694.50	563.26	1751.49	1785.66	161.61	.29
10074.00	89.60	178.57	8265.38	-1789.46	564.32	1845.85	1876.34	162.50	2.55
10168.00	89.60	179.45	8266.04	-1883.45	565.94	1939.30	1966.64	163.28	.94
10263.00	89.52	179.72	8266.77	-1978.44	566.63	2033.64	2057.98	164.02	.30
10357.00	89.34	180.15	8267.70	-2072.44	566.74	2126.91	2148.53	164.71	.50
10452.00	89.43	180.95	8268.72	-2167.43	565.82	2221.05	2240.07	165.37	.85
10546.00	89.52	180.77	8269.58	-2261.41	564.41	2314.13	2330.78	165.99	.21
10641.00	90.04	181.21	8269.95	-2356.40	562.77	2408.16	2422.67	166.57	.72
10736.00	89.34	180.07	8270.46	-2451.39	561.71	2502.28	2514.92	167.09	1.41
10830.00	88.20	177.43	8272.48	-2545.33	563.76	2595.75	2607.02	167.51	3.06
10925.00	87.32	177.69	8276.19	-2640.17	567.80	2690.36	2700.54	167.86	.97
11019.00	88.81	179.01	8279.37	-2734.08	570.51	2783.86	2792.96	168.21	2.12
11114.00	88.64	179.36	8281.48	-2829.04	571.86	2878.26	2886.26	168.57	.41
11209.00	88.55	179.10	8283.81	-2924.00	573.13	2972.64	2979.65	168.91	.29
11303.00	88.37	179.36	8286.34	-3017.96	574.40	3066.02	3072.14	169.22	.34
11398.00	89.34	179.10	8288.24	-3112.93	575.67	3160.41	3165.72	169.52	1.06
11492.00	89.69	180.07	8289.03	-3206.93	576.35	3253.76	3258.31	169.81	1.10
11587.00	89.60	179.89	8289.62	-3301.92	576.39	3348.02	3351.85	170.10	.21
11681.00	89.43	179.45	8290.42	-3395.92	576.93	3441.35	3444.58	170.36	.50
11776.00	89.34	179.89	8291.44	-3490.91	577.48	3535.67	3538.35	170.61	.47
11870.00	89.87	179.98	8292.08	-3584.91	577.58	3628.94	3631.14	170.85	.57
11965.00	89.25	180.07	8292.81	-3679.91	577.54	3723.20	3724.95	171.08	.66
12060.00	89.52	180.24	8293.83	-3774.90	577.28	3817.42	3818.79	171.31	.34
12154.00	89.52	180.77	8294.62	-3868.89	576.46	3910.57	3911.60	171.53	.56
12249.00	90.04	180.68	8294.99	-3963.88	575.25	4004.67	4005.41	171.74	.56
12343.00	90.48	181.47	8294.56	-4057.87	573.49	4097.70	4098.19	171.96	.96
12439.00	89.60	179.01	8294.49	-4153.86	573.09	4192.89	4193.20	172.14	2.72
12533.00	89.96	179.45	8294.85	-4247.85	574.35	4286.31	4286.50	172.30	.60
12628.00	89.78	179.63	8295.07	-4342.84	575.11	4380.66	4380.76	172.46	.27
12722.00	90.40	179.80	8294.92	-4436.84	575.58	4473.98	4474.02	172.61	.68
12816.00	90.40	180.33	8294.27	-4530.84	575.47	4567.23	4567.24	172.76	.56
12857.00	90.31	180.51	8294.01	-4571.84	575.17	4607.88	4607.88	172.83	.49
PTB									
12909.00	90.31	180.51	8293.73	-4623.83	574.71	4659.41	4659.41	172.91	.00



A Schlumberger Company **PathFinder Energy Services, Inc.**
Magnetic & Grid Calculations

DEVON ENERGY
SERENE SISTERS 25 FEDERAL #1H
EDDY COUNTY, NEW MEXICO
Rig:HP 300

Tue Jun 28 16:55:45 2011

Coordinates

Latitude: 32.725141 N (32 deg. 43 min. 30.5059 sec.)
Longitude: 103.817483 W (-103 deg. 49 min. 2.9377 sec.)
Elevation: 3723.80 feet.
Calculation Date: Jun/28/2011

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6075 degrees
Total Magnetic Field: 0.48886 gauss
Magnetic Declination: 7.732707 degrees
Horizontal Intensity: 0.239925 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.732707 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 699974.6400 feet
Y: 627923.7300 feet
True to Grid: (convergence) -0.278879 degrees
Magnetic to Grid: 7.453828 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.453828 Degr.

Field
copy

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

DEVON ENERGY PRODUCTION COMPANY LP
SERENE SISTERS 25 FEDERAL #1H
TAMANO; BONE SPRING

Sat Jul 02 16:29:52 2011

Coordinates

Latitude: 32.725141 N (32 deg. 43 min. 30.5059 sec.)
Longitude: 103.817483 W (-103 deg. 49 min. 2.9377 sec.)
Elevation: 3723.80 feet.
Calculation Date: Jul/02/2011

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6072 degrees
Total Magnetic Field: 0.48884 gauss
Magnetic Declination: 7.731364 degrees
Horizontal Intensity: 0.239922 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.731364 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 699974.6400 feet
Y: 627923.7300 feet
True to Grid: (convergence) -0.278879 degrees
Magnetic to Grid: 7.452485 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.452485 Degr.