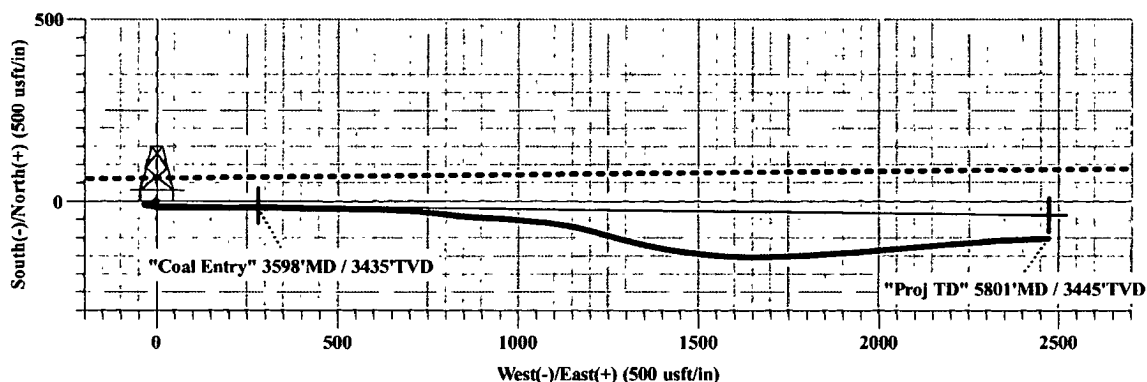


State Bancos #100S STK
Sec32 T32N-R05W - 100S
Rio Arriba Co. NM

30.039.27273

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

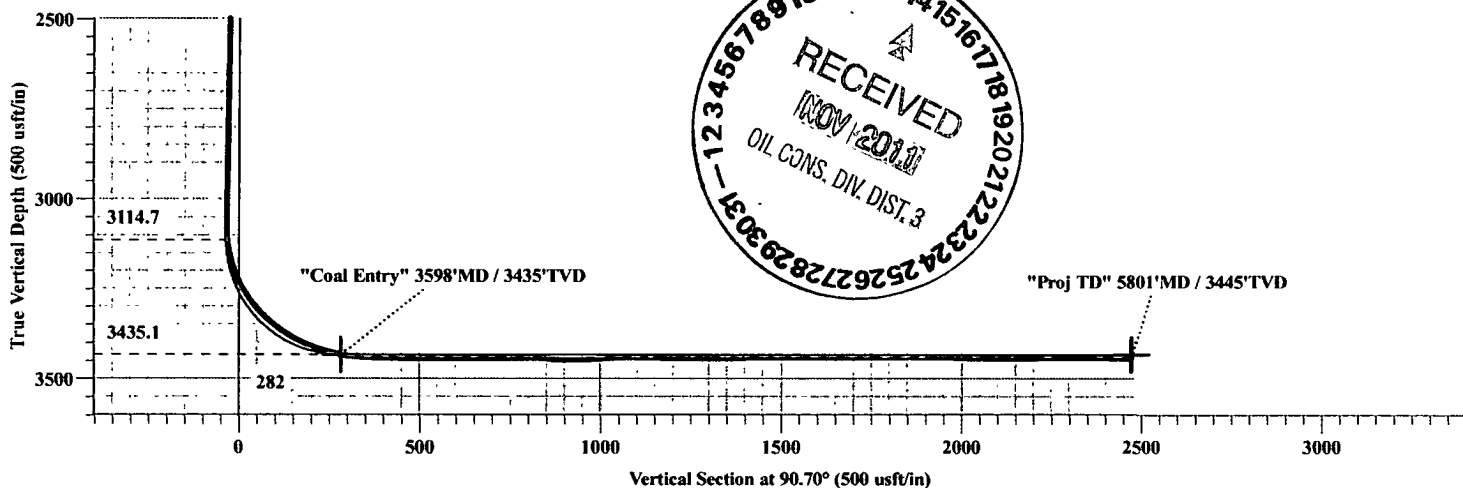
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
LAND-100S	3435.0	-13.1	281.9	2164180.79	1307351.54	Point
TD-100S	3435.0	-39.9	2472.5	2164127.73	1309541.70	Point



EOW
No Hardlines Crossed

WELL DETAILS: State Bancos #100S STK

Northing	Easting	Latitude	Longitude
2164197.26	1307069.81	36° 56' 31.416 N	107° 23' 26.520 W



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
3115.0	0.72	287.35	3114.7	-10.4	-34.6	0.00	0.00	-34.5	
3616.1	90.00	90.70	3435.1	-13.1	281.9	18.10	163.35	282.1	
5806.8	90.00	90.70	3435.0	-39.9	2472.5	0.00	0.00	2472.8	TD-100S

Plan: Design #3 (State Bancos #100S STK/STK)

Energen Resources

Rio Arriba County

Sec32 T32N-R05W - 100S

State Bancos #100S STK

STK

Design: STK

Standard Survey Report

11 October, 2011



Survey Report

Company:	Energen Resources	Local Co-ordinate Reference:	Well State Bancos #100S STK
Project:	Rio Arriba County	TVD Reference:	WELL @ 6746.0usft (Original Well Elev)
Site:	Sec32 T32N-R05W - 100S	MD Reference:	WELL @ 6746.0usft (Original Well Elev)
Well:	State Bancos #100S STK	North Reference:	True
Wellbore:	STK	Survey Calculation Method:	Minimum Curvature
Design:	STK	Database:	EDM 5000.1 Single User Db

Project	Rio Arriba County		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Sec32 T32N-R05W - 100S				
Site Position:		Northing:	2,164,197.26 usft	Latitude:	36° 56' 31.416 N
From:	Lat/Long	Easting:	1,307,069.81 usft	Longitude:	107° 23' 26.520 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.69 °

Well	State Bancos #100S STK					
Well Position	+N/-S	0.0 usft	Northing:	2,164,197.26 usft	Latitude:	36° 56' 31.416 N
	+E/-W	0.0 usft	Easting:	1,307,069.81 usft	Longitude:	107° 23' 26.520 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	6,731.0 usft	

Wellbore	STK				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	09/28/11	(°)	(°)	(nT)
			9.73	63.70	50,869

Design	STK				
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	90.70	

Survey Program	Date	10/11/11		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.0	5,801.0	Survey #1 (STK)	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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.25	282.88	100.0	0.0	-0.2	-0.2	0.25	0.25	0.00	
200.0	0.41	278.49	200.0	0.2	-0.8	-0.8	0.16	0.16	-4.39	
300.0	0.73	285.78	300.0	0.4	-1.7	-1.8	0.33	0.32	7.29	
400.0	0.42	295.49	400.0	0.7	-2.7	-2.7	0.32	-0.31	9.71	
500.0	0.25	286.65	500.0	0.9	-3.2	-3.2	0.18	-0.17	-8.84	
600.0	0.30	275.54	600.0	1.0	-3.7	-3.7	0.07	0.05	-11.11	
700.0	0.50	232.26	700.0	0.8	-4.3	-4.3	0.35	0.20	-43.28	
800.0	0.72	206.72	800.0	-0.1	-4.9	-4.9	0.34	0.22	-25.54	
900.0	0.84	191.56	900.0	-1.3	-5.4	-5.3	0.24	0.12	-15.16	

Survey Report

Company: Energen Resources
 Project: Rio Arriba County
 Site: Sec32 T32N-R05W - 100S
 Well: State Bancos #100S STK
 Wellbore: STK
 Design: STK

Local Co-ordinate Reference: Well State Bancos #100S STK
 TVD Reference: WELL @ 6746.0usft (Original Well Elev)
 MD Reference: WELL @ 6746.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User 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)
1,000.0	0.66	188.81	1,000.0	-2.6	-5.6	-5.6	0.18	-0.18	-2.75
1,100.0	0.89	237.16	1,100.0	-3.6	-6.3	-6.3	0.67	0.23	48.35
1,200.0	0.96	238.06	1,199.9	-4.5	-7.7	-7.6	0.07	0.07	0.90
1,300.0	0.95	238.44	1,299.9	-5.4	-9.1	-9.1	0.01	-0.01	0.38
1,400.0	0.78	261.09	1,399.9	-5.9	-10.5	-10.4	0.38	-0.17	22.65
1,500.0	1.01	274.55	1,499.9	-5.9	-12.0	-12.0	0.31	0.23	13.46
1,600.0	1.00	274.15	1,599.9	-5.8	-13.8	-13.7	0.01	-0.01	-0.40
1,700.0	1.08	265.39	1,699.9	-5.8	-15.6	-15.5	0.18	0.08	-8.76
1,800.0	0.96	252.04	1,799.9	-6.1	-17.3	-17.3	0.27	-0.12	-13.35
1,900.0	0.65	246.87	1,899.8	-6.6	-18.7	-18.6	0.32	-0.31	-5.17
2,000.0	0.69	234.03	1,999.8	-7.2	-19.7	-19.6	0.16	0.04	-12.84
2,100.0	0.61	238.74	2,099.8	-7.8	-20.6	-20.5	0.10	-0.08	4.71
2,200.0	0.91	236.63	2,199.8	-8.5	-21.7	-21.6	0.30	0.30	-2.11
2,300.0	0.95	248.96	2,299.8	-9.3	-23.2	-23.1	0.20	0.04	12.33
2,400.0	0.70	259.94	2,399.8	-9.7	-24.5	-24.4	0.29	-0.25	10.98
2,500.0	0.79	257.90	2,499.8	-9.9	-25.8	-25.7	0.09	0.09	-2.04
2,600.0	0.91	262.28	2,599.8	-10.2	-27.3	-27.2	0.14	0.12	4.38
2,700.0	0.77	252.65	2,699.8	-10.5	-28.7	-28.6	0.20	-0.14	-9.63
2,800.0	0.97	283.55	2,799.8	-10.5	-30.2	-30.0	0.50	0.20	30.90
2,900.0	0.86	258.93	2,899.7	-10.4	-31.7	-31.6	0.40	-0.11	-24.62
3,000.0	0.78	268.45	2,999.7	-10.6	-33.1	-33.0	0.16	-0.08	9.52
3,081.0	0.73	283.55	3,080.7	-10.5	-34.2	-34.1	0.25	-0.06	18.64
3,119.3	6.24	107.58	3,118.9	-11.1	-32.5	-32.3	18.21	14.40	-459.93
3,150.9	13.19	91.35	3,150.1	-11.7	-27.2	-27.1	23.41	21.98	-51.33
3,182.6	16.44	104.36	3,180.7	-12.9	-19.2	-19.1	14.61	10.25	41.04
3,214.4	21.54	100.83	3,210.8	-15.1	-9.1	-8.9	16.41	16.01	-11.08
3,246.3	26.91	95.40	3,239.9	-16.9	3.8	4.0	18.23	16.85	-17.04
3,275.9	32.71	91.66	3,265.5	-17.7	18.5	18.7	20.59	19.61	-12.65
3,306.6	38.16	90.50	3,290.6	-18.1	36.3	36.5	17.87	17.74	-3.77
3,337.4	43.00	90.20	3,313.9	-18.2	56.3	56.5	15.74	15.72	-0.97
3,368.1	47.84	89.78	3,335.5	-18.2	78.2	78.4	15.77	15.74	-1.37
3,399.0	52.14	90.38	3,355.4	-18.2	101.8	102.1	14.00	13.92	1.94
3,429.2	56.45	90.40	3,373.0	-18.4	126.4	126.6	14.26	14.26	0.07
3,459.5	60.94	89.93	3,388.7	-18.4	152.3	152.5	14.88	14.82	-1.55
3,490.3	65.33	90.03	3,402.6	-18.4	179.7	179.9	14.27	14.27	0.33
3,520.8	69.56	89.97	3,414.3	-18.4	207.9	208.1	13.87	13.87	-0.20
3,551.6	74.04	89.87	3,423.9	-18.4	237.1	237.3	14.56	14.55	-0.32
3,582.6	77.12	90.20	3,431.7	-18.4	267.1	267.3	9.99	9.94	1.06
3,598.0	78.94	90.13	3,434.9	-18.5	282.2	282.4	11.83	11.82	-0.43
"Coal Entry" 3598'MD / 3435'TVD									
3,613.0	80.72	90.07	3,437.5	-18.5	297.0	297.2	11.83	11.82	-0.42
3,642.0	84.06	89.52	3,441.3	-18.4	325.7	325.9	11.68	11.53	-1.90
3,673.0	87.14	90.67	3,443.7	-18.4	356.6	356.8	10.60	9.94	3.71
3,704.0	89.43	91.55	3,444.6	-19.0	387.6	387.8	7.91	7.39	2.84

Survey Report

Company:	Energen Resources	Local Co-ordinate Reference:	Well State Bancos #100S STK
Project:	Rio Arriba County	TVD Reference:	WELL @ 6746.0usft (Original Well Elev)
Site:	Sec32 T32N-R05W - 100S	MD Reference:	WELL @ 6746.0usft (Original Well Elev)
Well:	State Bancos #100S STK	North Reference:	True
Wellbore:	STK	Survey Calculation Method:	Minimum Curvature
Design:	STK	Database:	EDM 5000.1 Single User 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)
3,766.0	89.69	91.28	3,445.1	-20.6	449.6	449.8	0.60	0.42	-0.44
3,827.0	90.04	90.93	3,445.3	-21.7	510.6	510.8	0.81	0.57	-0.57
3,888.0	89.60	91.02	3,445.5	-22.8	571.5	571.8	0.74	-0.72	0.15
3,949.0	90.22	92.51	3,445.6	-24.7	632.5	632.8	2.65	1.02	2.44
4,011.0	89.78	92.78	3,445.6	-27.5	694.4	694.7	0.83	-0.71	0.44
4,071.0	91.98	95.76	3,444.6	-32.0	754.3	754.6	6.17	3.67	4.97
4,133.0	88.37	97.17	3,444.4	-39.0	815.9	816.3	6.25	-5.82	2.27
4,194.0	83.80	93.30	3,448.6	-44.5	876.4	876.9	9.81	-7.49	-6.34
4,255.0	92.95	93.74	3,450.3	-48.3	937.2	937.7	15.02	15.00	0.72
4,316.0	94.97	94.80	3,446.1	-52.8	997.9	998.5	3.74	3.31	1.74
4,377.0	90.40	94.80	3,443.3	-57.9	1,058.6	1,059.2	7.49	-7.49	0.00
4,439.0	88.55	99.02	3,443.8	-65.3	1,120.1	1,120.9	7.43	-2.98	6.81
4,500.0	89.78	103.68	3,444.7	-77.3	1,179.9	1,180.8	7.90	2.02	7.64
4,561.0	88.11	105.87	3,445.8	-92.9	1,238.9	1,239.9	4.51	-2.74	3.59
4,623.0	90.66	103.99	3,446.5	-108.9	1,298.8	1,300.0	5.11	4.11	-3.03
4,684.0	91.28	102.12	3,445.5	-122.6	1,358.2	1,359.6	3.23	1.02	-3.07
4,745.0	91.01	99.42	3,444.3	-134.0	1,418.1	1,419.6	4.45	-0.44	-4.43
4,807.0	89.69	96.89	3,443.9	-142.8	1,479.5	1,481.1	4.60	-2.13	-4.08
4,868.0	90.57	94.82	3,443.7	-149.1	1,540.2	1,541.9	3.69	1.44	-3.39
4,928.0	89.25	92.54	3,443.8	-152.9	1,600.0	1,601.8	4.39	-2.20	-3.80
4,990.0	89.87	90.02	3,444.3	-154.3	1,662.0	1,663.8	4.19	1.00	-4.06
5,052.0	91.63	88.30	3,443.5	-153.4	1,724.0	1,725.7	3.97	2.84	-2.77
5,115.0	90.84	86.27	3,442.1	-150.4	1,786.9	1,788.6	3.46	-1.25	-3.22
5,178.0	90.48	86.85	3,441.4	-146.6	1,849.8	1,851.4	1.08	-0.57	0.92
5,242.0	88.90	86.08	3,441.8	-142.7	1,913.7	1,915.3	2.75	-2.47	-1.20
5,305.0	88.46	85.26	3,443.2	-137.9	1,976.5	1,978.0	1.48	-0.70	-1.30
5,368.0	88.37	85.86	3,445.0	-133.0	2,039.2	2,040.7	0.96	-0.14	0.95
5,432.0	89.52	84.44	3,446.1	-127.6	2,103.0	2,104.4	2.85	1.80	-2.22
5,495.0	91.19	84.96	3,445.7	-121.8	2,165.7	2,167.1	2.78	2.65	0.83
5,559.0	91.10	86.09	3,444.5	-116.8	2,229.5	2,230.8	1.77	-0.14	1.77
5,622.0	90.04	85.97	3,443.8	-112.5	2,292.4	2,293.6	1.69	-1.68	-0.19
5,686.0	89.52	86.84	3,444.1	-108.4	2,356.2	2,357.4	1.58	-0.81	1.36
5,717.0	89.43	87.39	3,444.4	-106.9	2,387.2	2,388.3	1.80	-0.29	1.77
5,801.0	89.43	87.39	3,445.2	-103.1	2,471.1	2,472.2	0.00	0.00	0.00

"Proj TD" 5801' MD / 3445' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N-S (usft)	+E-W (usft)	Comment
3,598.0	3,434.9	-18.5	282.2	"Coal Entry" 3598' MD / 3435' TVD
5,801.0	3,445.2	-103.1	2,471.1	"Proj TD" 5801' MD / 3445' TVD

Survey Report

Company:	Energen Resources	Local Co-ordinate Reference:	Well State Bancos #100S STK
Project:	Rio Arriba County	TVD Reference:	WELL @ 6746.0usft (Original Well Elev)
Site:	Sec32 T32N-R05W - 100S	MD Reference:	WELL @ 6746.0usft (Original Well Elev)
Well:	State Bancos #100S STK	North Reference:	True
Wellbore:	STK	Survey Calculation Method:	Minimum Curvature
Design:	STK	Database:	EDM 5000.1 Single User Db

Checked By: _____	Approved By: _____	Date: _____
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