



XTO ENERGY, INC.

**Eddy County, NM
Sec 36, T22S, R30E
James Ranch Unit #146H**

Wellbore #1 *30-013-42756*

Design: Wellbore #1

QES Survey Report

14 September, 2017

**NM OIL CONSERVATION
ARTESIA DISTRICT**

MAR 19 2018

RECEIVED





Survey Report



Company	XTO ENERGY INC	Local Co-ordinate Reference	Well James Ranch Unit #146H
Project	Eddy County NM	TVD Reference	RKB @ 3339 0usft (Frontier #27)
Site	Sec 36 T22S R30E	MD Reference	RKB @ 3339 0usft (Frontier #27)
Well	James Ranch Unit #146H	North Reference	Grnd
Wellbore	Wellbore #1	Survey Calculation Method	Minimum Curvature
Design	Wellbore #1	Database	EDM 5000 1 Single User Db

Project	Eddy County NM		
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	Sec 36 T22S R30E				
Site Position		Northing	489 009 50 usft	Latitude	32° 20' 36 188 N
From	Map	Easting	656 459 00 usft	Longitude	103° 49' 36 206 W
Position Uncertainty	0 0 usft	Slot Radius	13-3/16 "	Grid Convergence	0 27 °

Well	James Ranch Unit #146H					
Well Position	+N-S	0 0 usft	Northing	489 009 50 usft	Latitude	32° 20' 36 184 N
	+E-W	0 0 usft	Easting	656 549 00 usft	Longitude	103° 49' 35 157 W
Position Uncertainty	0 0 usft		Wellhead Elevation	usft	Ground Level	3 312 0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2015	8/11/2017	(°)	(°)	(nT)
			7 07	60 13	47 967 28235470

Design	Wellbore #1				
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	96 58

Survey Program	Date	9/14/2017			
From	To	Survey (Wellbore)	Tool Name	Description	
184 0	547 0	XTO Surveys (Wellbore #1)	MWD	OWSG MWD - Standard	
620 0	16 355 0	MWD Surveys (Wellbore #1)	MWD	OWSG 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	
184 0	0 10	355 00	184 0	0 2	0 0	0 0	0 05	0 05	0 00	
261 0	0 30	140 00	261 0	0 1	0 1	0 1	0 50	0 26	188 31	
357 0	0 20	205 00	357 0	-0 3	0 2	0 2	0 29	-0 10	67 71	
451 0	0 30	175 00	451 0	-0 7	0 2	0 2	0 17	0 11	31 91	
XTO Tie-in @ 547 0' MD / TVD										
547 0	0 40	192 00	547 0	-1 2	0 1	0 2	0 15	0 10	17 71	
620 0	0 50	211 10	620 0	-1 8	-0 1	0 1	0 25	0 14	26 16	
652 0	0 40	213 70	652 0	2 0	-0 2	0 0	0 32	-0 31	8 13	
747 0	0 50	222 60	747 0	-2 6	-0 7	-0 4	0 13	0 11	9 37	



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Well	James Ranch Unit #146H	North Reference	Grid
Wellbore	Wellbore #1	Survey Calculation Method	Minimum Curvature
Design	Wellbore #1	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)	
842 0	0 60	234 30	842 0	-3 2	-1 4	1 0	0 16	0 11	12 32	
935 0	0 80	232 80	935 0	-3 8	-2 3	-1 9	0 22	0 22	-1 61	
1 030 0	1 00	233 10	1 030 0	-4 7	-3 5	2 9	0 21	0 21	0 32	
1 125 0	1 10	219 30	1 125 0	5 9	-4 7	-4 0	0 29	0 11	-14 53	
1 220 0	1 10	211 10	1 219 9	-7 4	5 8	-4 9	0 17	0 00	-8 63	
1 315 0	1 20	217 40	1 314 9	9 0	6 9	5 8	0 17	0 11	6 63	
1 410 0	1 20	213 00	1 409 9	-10 6	-8 0	-6 7	0 10	0 00	-4 63	
1 503 0	1 40	204 40	1 502 9	-12 5	9 0	7 5	0 30	0 22	9 25	
1 599 0	1 90	204 60	1 598 8	-15 0	10 2	-8 4	0 52	0 52	0 21	
1 695 0	1 20	159 60	1 694 8	-17 4	10 5	-8 4	1 41	-0 73	-46 88	
1 790 0	1 30	145 70	1 789 8	-19 2	9 5	-7 3	0 34	0 11	-14 63	
1 885 0	0 80	215 40	1 884 8	-20 6	9 3	-6 9	1 33	-0 53	73 37	
1 981 0	1 10	229 10	1 980 7	-21 8	10 4	-7 8	0 39	0 31	14 27	
2 075 0	1 50	209 70	2 074 7	-23 4	-11 7	-8 9	0 63	0 43	-20 64	
2 170 0	0 10	237 50	2 169 7	-24 6	12 4	-9 5	1 49	-1 47	29 26	
2 265 0	0 30	16 80	2 264 7	-24 4	12 4	-9 5	0 40	0 21	146 63	
2 360 0	0 30	14 50	2 359 7	-23 9	12 2	-9 4	0 01	0 00	2 42	
2 456 0	0 30	342 50	2 455 7	-23 4	12 2	-9 5	0 17	0 00	33 33	
2 552 0	0 30	344 80	2 551 7	-22 9	12 4	-9 7	0 01	0 00	2 40	
2 647 0	0 30	357 00	2 646 7	-22 4	-12 5	-9 8	0 07	0 00	12 84	
2 742 0	0 40	41 20	2 741 7	-21 9	-12 2	-9 6	0 29	0 11	46 53	
2 838 0	0 30	63 20	2 837 7	-21 6	-11 8	-9 2	0 17	-0 10	22 92	
2 933 0	0 40	78 40	2 932 7	-21 4	-11 3	-8 7	0 14	0 11	16 00	
3 028 0	0 90	99 50	3 027 7	-21 4	10 2	-7 7	0 57	0 53	22 21	
3 124 0	1 70	118 30	3 123 7	-22 2	-8 2	-5 6	0 93	0 83	19 58	
3 218 0	2 40	121 50	3 217 6	-23 9	5 3	-2 5	0 75	0 74	3 40	
3 314 0	1 70	100 80	3 313 5	-25 3	-2 2	0 7	1 05	-0 73	-21 56	
3 408 0	1 90	115 30	3 407 5	-26 2	0 6	3 6	0 53	0 21	15 43	
3 502 0	1 80	139 10	3 501 5	-28 0	3 0	6 2	0 82	-0 11	25 32	
3 598 0	2 00	178 60	3 597 4	-30 8	4 0	7 5	1 35	0 21	41 15	
3 693 0	0 40	135 50	3 692 4	-32 7	4 3	8 0	1 82	1 68	-45 37	
3 789 0	0 70	109 80	3 788 4	-33 1	5 1	8 8	0 40	0 31	26 77	
3 884 0	0 70	104 50	3 883 4	-33 4	6 2	10 0	0 07	0 00	-5 58	
3 954 0	0 40	115 00	3 953 4	-33 7	6 8	10 6	0 45	-0 43	15 00	
4 050 0	1 20	73 90	4 049 4	-33 5	8 1	11 9	0 98	0 83	-42 81	
4 146 0	0 50	70 40	4 145 3	-33 1	9 4	13 2	0 73	-0 73	-3 65	
4 241 0	0 50	110 50	4 240 3	-33 1	10 2	13 9	0 36	0 00	42 21	
4 336 0	0 70	103 70	4 335 3	-33 4	11 2	14 9	0 22	0 21	-7 16	
4 432 0	0 50	105 20	4 431 3	33 6	12 1	15 9	0 21	-0 21	1 56	
4 527 0	0 60	84 10	4 526 3	33 7	13 0	16 8	0 24	0 11	22 21	
4 622 0	0 30	87 30	4 621 3	33 6	13 8	17 5	0 32	-0 32	3 37	
4 716 0	0 40	100 60	4 715 3	33 7	14 3	18 1	0 14	0 11	14 15	
4 811 0	0 50	85 10	4 810 3	33 7	15 1	18 9	0 16	0 11	16 32	



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Wellbore	Wellbore #1	Survey Calculation Method	Minimum Curvature
Design	Wellbore #1	Database	EDM 5000 1 Single User 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)
4 905 0	0 40	103 00	4 904 3	-33 7	15 8	19 6	0 18	-0 11	19 04
5 001 0	0 40	74 20	5 000 3	-33 7	16 5	20 2	0 21	0 00	-30 00
5 095 0	0 40	74 90	5 094 3	33 6	17 1	20 8	0 01	0 00	0 74
5 191 0	0 40	102 00	5 190 3	33 5	17 7	21 5	0 20	0 00	28 23
5 285 0	0 20	75 80	5 284 3	-33 6	18 2	22 0	0 25	-0 21	27 87
5 379 0	0 40	88 30	5 378 3	33 5	18 7	22 4	0 22	0 21	13 30
5 472 0	0 30	107 00	5 471 3	33 6	19 3	23 0	0 16	-0 11	20 11
5 567 0	0 50	245 90	5 566 3	33 8	19 1	22 9	0 79	0 21	146 21
5 663 0	0 40	215 00	5 662 3	34 3	18 6	22 4	0 27	-0 10	-32 19
5 758 0	0 60	224 80	5 757 3	34 9	18 0	21 9	0 23	0 21	10 32
5 853 0	0 50	244 40	5 852 3	35 4	17 3	21 2	0 22	-0 11	20 63
5 948 0	0 60	234 60	5 947 3	-35 9	16 5	20 5	0 14	0 11	10 32
6 043 0	0 50	231 90	6 042 3	36 4	15 8	19 9	0 11	-0 11	2 84
6 137 0	0 40	242 50	6 136 3	-36 8	15 2	19 3	0 14	-0 11	11 28
6 233 0	0 70	236 40	6 232 3	-37 3	14 4	18 6	0 32	0 31	-6 35
6 328 0	0 80	238 60	6 327 3	-38 0	13 3	17 6	0 11	0 11	2 32
6 424 0	0 80	229 00	6 423 3	38 8	12 3	16 6	0 14	0 00	10 00
6 518 0	0 80	237 20	6 517 3	39 6	11 2	15 7	0 12	0 00	8 72
6 614 0	0 80	234 30	6 613 2	-40 3	10 1	14 7	0 04	0 00	3 02
6 708 0	0 80	246 00	6 707 2	-41 0	9 0	13 6	0 17	0 00	12 45
6 803 0	1 00	241 30	6 802 2	-41 6	7 6	12 4	0 22	0 21	-4 95
6 897 0	1 00	245 40	6 896 2	-42 4	6 2	11 0	0 08	0 00	4 36
6 992 0	1 00	238 50	6 991 2	-43 1	4 7	9 6	0 13	0 00	-7 26
7 086 0	0 80	236 00	7 085 2	-43 9	3 5	8 5	0 22	-0 21	-2 66
7 182 0	0 90	209 60	7 181 2	-45 0	2 5	7 7	0 42	0 10	-27 50
7 277 0	0 90	214 90	7 276 2	-46 2	1 7	7 0	0 09	0 00	5 58
7 372 0	1 50	193 00	7 371 1	-48 1	1 0	6 5	0 78	0 63	-23 05
7 466 0	1 60	200 60	7 465 1	-50 5	0 3	6 1	0 24	0 11	8 09
7 561 0	1 30	203 20	7 560 1	52 7	0 6	5 5	0 32	-0 32	2 74
7 656 0	1 80	174 40	7 655 0	55 2	-0 9	5 5	0 96	0 53	-30 32
7 751 0	1 40	199 10	7 750 0	57 8	1 1	5 5	0 83	-0 42	26 00
7 846 0	1 60	176 20	7 845 0	-60 2	1 4	5 5	0 66	0 21	-24 11
7 941 0	1 80	146 10	7 939 9	-62 8	-0 5	6 7	0 95	0 21	31 68
8 036 0	1 10	149 30	8 034 9	64 8	0 8	8 2	0 74	-0 74	3 37
8 132 0	1 50	130 30	8 130 9	-66 4	2 2	9 8	0 61	0 42	19 79
8 227 0	2 70	150 20	8 225 8	-69 1	4 3	12 2	1 46	1 26	20 95
8 322 0	2 30	155 60	8 320 7	-72 8	6 2	14 5	0 49	-0 42	5 68
8 417 0	1 90	156 20	8 415 7	76 0	7 6	16 3	0 42	-0 42	0 63
8 510 0	1 60	136 10	8 508 6	-78 3	9 2	18 1	0 73	-0 32	21 61
8 606 0	2 00	132 20	8 604 6	-80 4	11 3	20 5	0 44	0 42	-4 06
8 702 0	1 20	183 30	8 700 5	-82 5	12 5	21 9	1 62	-0 83	53 23
8 798 0	1 70	191 50	8 796 5	-84 9	12 2	21 8	0 56	0 52	8 54
8 894 0	1 60	183 20	8 892 5	-87 7	11 8	21 8	0 27	-0 10	-8 65



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Well	James Ranch Unit #146H	North Reference	Grnd
Wellbore	Wellbore #1	Survey Calculation Method	Minimum Curvature
Design	Wellbore #1	Database	EDM 5000 1 Single User 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)
8 988 0	1 80	207 20	8 986 4	-90 3	11 1	21 3	0 78	0 21	25 53
9 084 0	1 80	222 90	9 082 4	-92 7	9 3	19 9	0 51	0 00	16 35
9 179 0	2 30	238 90	9 177 3	-94 8	6 7	17 5	0 80	0 53	16 84
9 274 0	2 10	234 50	9 272 2	-96 8	3 6	14 7	0 28	-0 21	-4 63
9 370 0	2 00	220 40	9 368 2	99 1	1 1	12 5	0 53	-0 10	-14 69
9 465 0	0 80	213 20	9 463 2	-100 9	-0 3	11 3	1 27	-1 26	7 58
9 561 0	1 20	220 20	9 559 1	-102 3	-1 3	10 4	0 43	0 42	7 29
9 656 0	1 40	187 80	9 654 1	-104 2	-2 1	9 8	0 79	0 21	34 11
9 752 0	2 10	174 00	9 750 1	-107 1	-2 1	10 2	0 85	0 73	-14 38
9 848 0	1 80	180 00	9 846 0	-110 3	-1 9	10 7	0 38	-0 31	6 25
9 944 0	2 50	191 00	9 942 0	-113 9	-2 3	10 8	0 84	0 73	11 46
10 039 0	1 80	210 60	10 036 9	-117 2	-3 5	10 0	1 06	-0 74	20 63
10 134 0	1 30	202 30	10 131 8	-119 5	-4 6	9 1	0 58	-0 53	-8 74
10 205 0	1 50	185 20	10 202 8	-121 2	-5 0	8 9	0 65	0 28	24 08
10 249 0	1 90	180 10	10 246 8	122 5	5 1	9 0	0 97	0 91	11 59
10 297 0	6 20	156 70	10 294 7	-125 7	-4 1	10 4	9 42	8 96	-48 75
10 345 0	12 00	150 60	10 342 1	-132 4	-0 6	14 6	12 23	12 08	-12 71
10 392 0	17 10	147 10	10 387 5	142 5	5 6	21 9	11 01	10 85	-7 45
10 438 0	20 00	146 20	10 431 1	-154 7	13 6	31 3	6 33	6 30	1 96
10 486 0	23 90	148 90	10 475 7	169 8	23 2	42 5	8 39	8 13	5 63
10 532 0	26 50	150 50	10 517 3	-186 7	33 1	54 3	5 84	5 65	3 48
10 580 0	30 40	150 40	10 559 5	-206 6	44 4	67 8	8 13	8 13	-0 21
10 628 0	34 50	149 30	10 600 0	228 9	57 3	83 2	8 63	8 54	-2 29
10 676 0	38 50	148 50	10 638 5	253 3	72 1	100 6	8 39	8 33	-1 67
10 723 0	41 60	147 10	10 674 5	278 9	88 2	119 6	6 87	6 60	-2 98
10 771 0	45 70	144 60	10 709 2	306 3	106 8	141 2	9 27	8 54	5 21
10 818 0	48 50	140 40	10 741 2	333 6	127 8	165 2	8 85	5 96	-8 94
10 916 0	53 80	131 00	10 802 8	387 9	181 1	224 4	9 21	5 41	9 59
10 968 0	60 00	124 60	10 831 2	-414 5	215 5	261 6	15 75	11 92	-12 31
11 015 0	62 70	119 10	10 853 7	-436 2	250 6	298 9	11 76	5 74	-11 70
11 063 0	63 90	117 20	10 875 3	-456 5	288 4	338 8	4 33	2 50	-3 96
11 110 0	64 80	117 40	10 895 6	-475 9	326 0	378 4	1 95	1 91	0 43
11 158 0	65 30	116 70	10 915 9	-495 7	364 8	419 2	1 68	1 04	1 46
11 205 0	65 60	116 30	10 935 4	-514 8	403 0	459 4	1 00	0 64	-0 85
11 253 0	66 00	115 50	10 955 1	-533 9	442 4	500 7	1 73	0 83	1 67
11 301 0	66 90	112 30	10 974 3	-551 7	482 7	542 7	6 39	1 88	-6 67
11 349 0	68 40	108 90	10 992 5	-567 3	524 2	585 8	7 26	3 13	7 08
11,396 0	70 00	106 20	11 009 2	-580 6	566 1	628 9	6 36	3 40	5 74
11 444 0	71 70	104 10	11 025 0	-592 4	609 9	673 8	5 44	3 54	-4 38
11 491 0	72 70	102 60	11 039 3	-602 7	653 4	718 2	3 71	2 13	3 19
11 539 0	73 20	99 60	11 053 4	-611 6	698 4	763 9	6 07	1 04	-6 25
11 587 0	73 60	98 80	11 067 1	-618 9	743 8	809 9	1 80	0 83	1 67
11 635 0	73 70	98 00	11 080 6	-625 6	789 4	855 9	1 61	0 21	1 67
11 682 0	73 80	96 90	11 093 8	-631 5	834 1	901 0	2 26	0 21	2 34



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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)	
11 730 0	74 30	93 50	11 107 0	-635 7	880 1	947 2	6 89	1 04	-7 08	
11 776 0	76 40	88 90	11 118 6	-636 6	924 6	991 5	10 70	4 57	-10 00	
11 824 0	80 80	87 00	11 128 1	-634 9	971 6	1 038 0	9 95	9 17	-3 96	
11 872 0	86 30	86 30	11 133 5	-632 1	1 019 2	1 084 9	11 55	11 46	1 46	
11 920 0	90 90	85 90	11 134 7	-628 9	1 067 0	1 132 1	9 62	9 58	-0 83	
11 969 0	91 60	88 10	11 133 6	-626 3	1 115 9	1 180 4	4 71	1 43	4 49	
12 064 0	91 00	89 20	11 131 5	-624 1	1 210 9	1 274 5	1 32	-0 63	1 16	
12 158 0	89 40	88 60	11 131 1	-622 3	1 304 9	1 367 6	1 82	1 70	-0 64	
12 254 0	89 80	90 10	11 131 8	-621 2	1 400 9	1 462 8	1 62	0 42	1 56	
12 349 0	90 50	89 80	11 131 5	-621 1	1 495 9	1 557 2	0 80	0 74	-0 32	
12 446 0	89 60	89 90	11 131 5	-620 8	1 592 9	1 653 5	0 93	-0 93	0 10	
12 540 0	88 50	90 50	11 133 0	-621 2	1 686 8	1 746 9	1 33	1 17	0 64	
12 637 0	88 40	90 20	11 135 6	-621 8	1 783 8	1 843 3	0 33	-0 10	-0 31	
12 732 0	88 80	89 00	11 138 0	-621 1	1 878 8	1 937 6	1 33	0 42	-1 26	
12 827 0	89 10	87 40	11 139 7	-618 1	1 973 7	2 031 6	1 71	0 32	-1 68	
12 922 0	88 80	89 40	11 141 4	-615 5	2 068 7	2 125 6	2 13	-0 32	2 11	
13 016 0	87 60	91 30	11 144 4	-616 0	2 162 6	2 219 0	2 39	1 28	2 02	
13 111 0	87 80	91 00	11 148 2	-617 9	2 257 5	2 313 5	0 38	0 21	-0 32	
13 206 0	87 20	92 00	11 152 4	-620 4	2 352 4	2 408 0	1 23	-0 63	1 05	
13 302 0	88 40	91 60	11 156 0	-623 4	2 448 3	2 503 6	1 32	1 25	-0 42	
13 396 0	89 10	91 00	11 158 1	-625 6	2 542 2	2 597 2	0 98	0 74	-0 64	
13 491 0	87 10	92 60	11 161 2	628 5	2 637 1	2 691 8	2 70	2 11	1 68	
13 586 0	87 10	91 90	11 166 0	632 3	2 731 9	2 786 4	0 74	0 00	-0 74	
13 681 0	87 90	91 10	11 170 2	-634 7	2 826 8	2 880 9	1 19	0 84	-0 84	
13 776 0	88 60	90 20	11 173 1	-635 8	2 921 7	2 975 4	1 20	0 74	-0 95	
13 871 0	89 10	89 40	11 175 0	-635 5	3 016 7	3 069 7	0 99	0 53	-0 84	
13,966 0	87 90	90 10	11 177 5	-635 1	3 111 7	3 164 0	1 46	-1 26	0 74	
14 062 0	88 30	90 20	11 180 7	-635 3	3 207 6	3 259 3	0 43	0 42	0 10	
14 157 0	88 50	89 60	11 183 3	-635 2	3 302 6	3 353 6	0 67	0 21	-0 63	
14 254 0	88 70	89 70	11 185 7	-634 6	3 399 6	3 449 9	0 23	0 21	0 10	
14 348 0	89 20	89 60	11 187 4	-634 0	3 493 5	3 543 2	0 54	0 53	-0 11	
14 443 0	89 60	89 10	11 188 4	-632 9	3 588 5	3 637 4	0 67	0 42	-0 53	
14 538 0	90 10	89 10	11 188 7	-631 4	3 683 5	3 731 6	0 53	0 53	0 00	
14 633 0	90 10	88 50	11 188 5	-629 4	3 778 5	3 825 7	0 63	0 00	-0 63	
14 728 0	87 70	88 30	11 190 3	-626 8	3 873 4	3 919 7	2 54	-2 53	-0 21	
14 823 0	87 50	88 30	11 194 3	-624 0	3 968 3	4 013 7	0 21	-0 21	0 00	
14 917 0	88 20	88 10	11 197 8	-621 0	4 062 2	4 106 6	0 77	0 74	-0 21	
15 014 0	87 10	90 20	11 201 8	-619 6	4 159 1	4 202 7	2 44	1 13	2 16	
15 108 0	87 40	89 40	11 206 3	619 3	4 253 0	4 295 9	0 91	0 32	-0 85	
15 203 0	88 50	89 10	11 209 7	-618 0	4 347 9	4 390 1	1 20	1 16	-0 32	
15 298 0	87 30	90 00	11 213 2	-617 3	4 442 8	4 484 3	1 58	1 26	0 95	
15 393 0	88 10	89 30	11 217 0	-616 7	4 537 8	4 578 5	1 12	0 84	-0 74	
15 488 0	89 10	89 10	11 219 3	-615 4	4 632 7	4 672 7	1 07	1 05	-0 21	



Survey Report



Company	XTO ENERGY INC	Local Co-ordinate Reference	Well James Ranch Unit #146H
Project	Eddy County NM	TVD Reference	RKB @ 3339 0usft (Frontier #27)
Site	Sec 36 T22S R30E	MD Reference	RKB @ 3339 0usft (Frontier #27)
Well	James Ranch Unit #146H	North Reference	Gnd
Wellbore	Wellbore #1	Survey Calculation Method	Minimum Curvature
Design	Wellbore #1	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)	
15 583 0	89 30	90 50	11 220 6	-615 0	4 727 7	4 767 0	1 49	0 21	1 47	
15 678 0	90 60	90 70	11 220 7	-616 0	4 822 7	4 861 5	1 38	1 37	0 21	
15 773 0	90 50	91 70	11 219 8	-618 0	4 917 7	4 956 1	1 06	-0 11	1 05	
15 867 0	91 50	91 70	11 218 2	-620 8	5 011 6	5 049 7	1 06	1 06	0 00	
15 963 0	91 30	92 60	11 215 8	-624 4	5 107 5	5 145 4	0 96	-0 21	0 94	
16 058 0	88 90	90 90	11 215 7	-627 3	5 202 5	5 240 1	3 10	-2 53	1 79	
16 153 0	87 80	89 80	11 218 4	627 9	5 297 4	5 334 5	1 64	1 16	1 16	
16 248 0	87 60	89 10	11 222 2	-627 0	5 392 3	5 428 7	0 77	-0 21	-0 74	
Bit Projection										
16 355 0	87 60	89 10	11 226 7	-625 3	5 499 2	5 534 7	0 00	0 00	0 00	

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
547 0	547 0	1 2	0 1	XTO Tie-In @ 547 0 MD / TVD	
16 355 0	11 226 7	-625 3	5 499 2	Bit Projection	