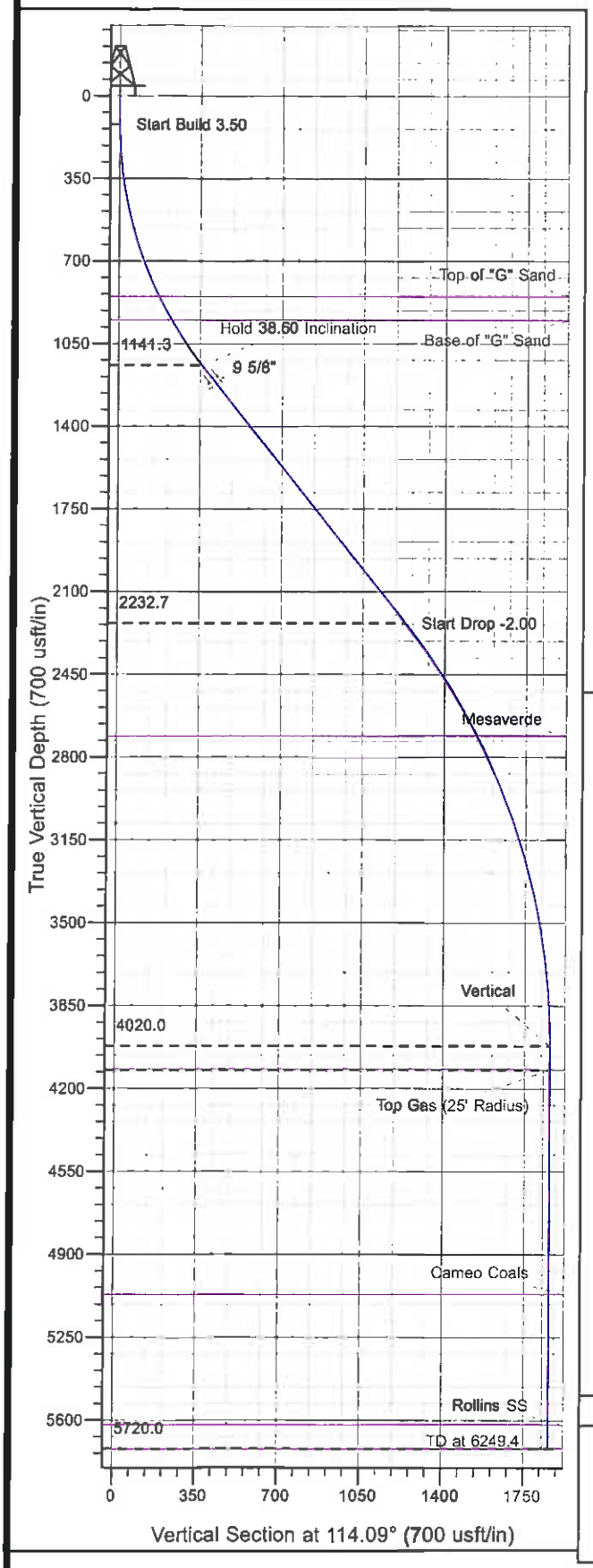
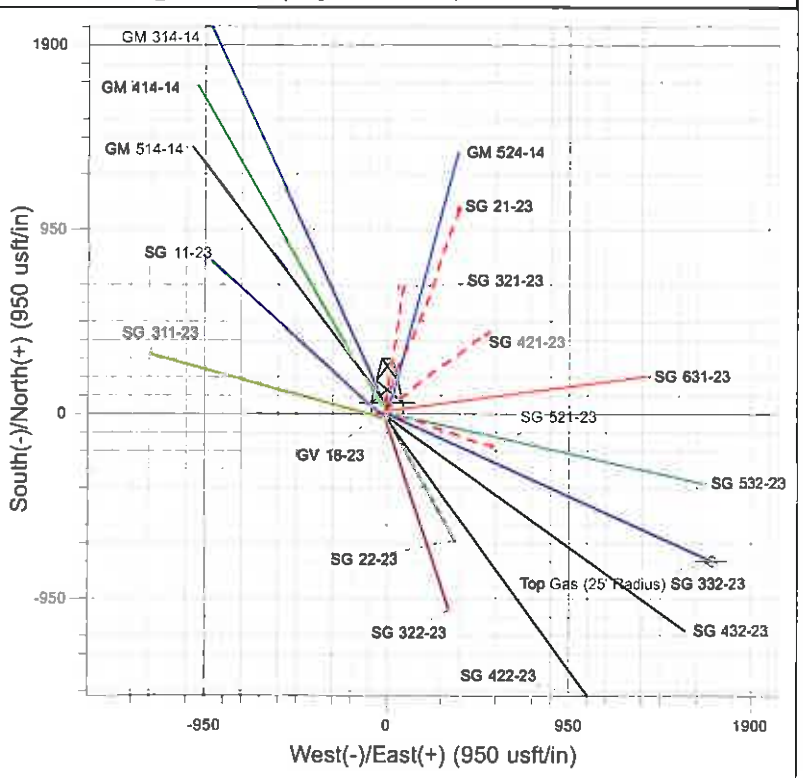
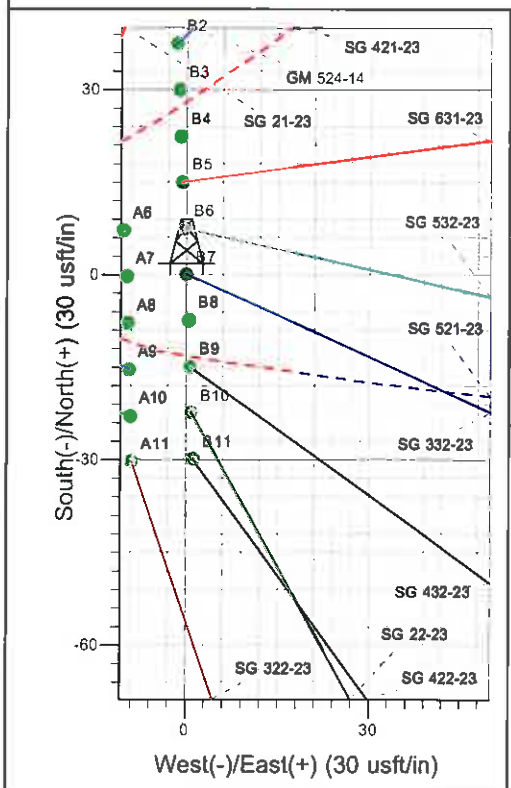
Well Name: SG 332-23
Surface Location: GV 18-23 Pad
North American Datum 1983 , US State Plane 1983 , Colorado Central Zone
Ground Elevation: 5134.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1590876.60	2270839.50	39° 25' 38.196 N	108° 4' 53.997 W	B7

WELL @ 5158.0usft (Original Well Elev)







Project: SG 23-07S-096W
Site: GV 18-23 Pad
Well: SG 332-23
Design #1 06Apr11 kjs

Azimuths to True North
Magnetic North: 10.38°

Magnetic Field
Strength: 52260.2snT
Dip Angle: 65.68°
Date: 4/6/2011
Model: IGRF2005-10

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
120.0	120.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 3.50
1141.3	1222.8	38.60	114.09	-146.0	326.5	357.6	357.6	Hold 38.60 Inclination
2232.7	2619.4	38.60	114.09	-501.6	1121.9	1228.9	1228.9	Start Drop -2.00
4020.0	4549.4	0.00	0.00	-757.0	1693.3	1854.8	1854.8	Vertical
4120.0	4649.4	0.00	0.00	-757.0	1693.3	1854.8	1854.8	Top Gas
5720.0	6249.4	0.00	0.00	-757.0	1693.3	1854.8	1854.8	TD at 6249.4

PICEANCE VLY NAD 83

SG 23-07S-096W
GV 18-23 Pad
SG 332-23 - Slot B7

Wellbore #1

Plan: Design #1 06Apr11 kjs

Standard Planning Report - Geographic

03 June, 2011

Williams

Planning Report - Geographic

Database:	Compass R5000 WIN AUTH	Local Co-ordinate Reference:	Well SG 332-23 - Slot B7
Company:	PICEANCE VLY NAD 83	TVD Reference:	WELL @ 5158.0usft (Original Well Elev)
Project:	SG 23-07S-096W	MD Reference:	WELL @ 5158.0usft (Original Well Elev)
Site:	GV 18-23 Pad	North Reference:	True
Well:	SG 332-23	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 06Apr11 kjs		

Project SG 23-07S-096W, Garfield County, CO, 23-07S-096W

Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site GV 18-23 Pad

Site Position:		Northing:	1,590,884.00 usft	Latitude:	39° 25' 38.266 N
From:	Map	Easting:	2,270,829.40 usft	Longitude:	108° 4' 54.128 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	-1.628 °

Well SG 332-23 - Slot B7

Well Position	+N/-S	0.0 usft	Northing:	1,590,876.59 usft	Latitude:	39° 25' 38.196 N
	+E/-W	0.0 usft	Easting:	2,270,839.50 usft	Longitude:	108° 4' 53.997 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,134.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	4/6/2011	10.382	65.684	52,260

Design Design #1 06Apr11 kjs

Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	114.09

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.000	
120.0	0.00	0.00	120.0	0.0	0.0	0.00	0.00	0.00	0.000	
1,222.8	38.60	114.09	1,141.3	-146.0	326.5	3.50	3.50	0.00	114.088	
2,619.4	38.60	114.09	2,232.7	-501.6	1,121.9	0.00	0.00	0.00	0.000	
4,549.4	0.00	0.00	4,020.0	-757.0	1,693.3	2.00	-2.00	0.00	180.000	
4,649.4	0.00	0.00	4,120.0	-757.0	1,693.3	0.00	0.00	0.00	0.000	Top Gas (25' Radius)
6,249.4	0.00	0.00	5,720.0	-757.0	1,693.3	0.00	0.00	0.00	0.000	

Database:	Compass R5000 WIN AUTH	**Local Co-ordinate Reference:**	Well SG 332-23 - Slot B7
Company:	PICEANCE VLY NAD 83	**TVD Reference:**	WELL @ 5158.0usft (Original Well Elev)
Project:	SG 23-07S-096W	**MD Reference:**	WELL @ 5158.0usft (Original Well Elev)
Site:	GV 18-23 Pad	**North Reference:**	True
Well:	SG 332-23	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 06Apr11 kjs		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,590,876.59	2,270,839.50	39° 25' 38.196 N	108° 4' 53.997 W
120.0	0.00	0.00	120.0	0.0	0.0	1,590,876.59	2,270,839.50	39° 25' 38.196 N	108° 4' 53.997 W
Start Build 3.50									
876.7	26.48	114.09	850.0	-70.1	156.8	1,590,802.06	2,270,994.26	39° 25' 37.503 N	108° 4' 51.998 W
Top of "G" Sand									
990.4	30.47	114.09	950.0	-92.2	206.3	1,590,778.53	2,271,043.12	39° 25' 37.284 N	108° 4' 51.367 W
Base of "G" Sand									
1,222.8	38.60	114.09	1,141.3	-146.0	326.5	1,590,721.41	2,271,161.71	39° 25' 36.753 N	108° 4' 49.836 W
Hold 38.60 Inclination									
1,323.0	38.60	114.09	1,219.6	-171.5	383.5	1,590,694.30	2,271,218.00	39° 25' 36.501 N	108° 4' 49.109 W
9 5/8"									
2,619.4	38.60	114.09	2,232.7	-501.6	1,121.9	1,590,343.37	2,271,946.64	39° 25' 33.238 N	108° 4' 39.700 W
Start Drop -2.00									
3,188.8	27.21	114.09	2,710.0	-627.6	1,403.8	1,590,209.37	2,272,224.86	39° 25' 31.992 N	108° 4' 36.107 W
Mesaverde									
4,549.4	0.00	0.00	4,020.0	-757.0	1,693.3	1,590,071.80	2,272,510.50	39° 25' 30.713 N	108° 4' 32.419 W
Vertical									
4,649.4	0.00	0.00	4,120.0	-757.0	1,693.3	1,590,071.80	2,272,510.50	39° 25' 30.713 N	108° 4' 32.419 W
Top Gas - Approx. Top Gas									
5,599.4	0.00	0.00	5,070.0	-757.0	1,693.3	1,590,071.80	2,272,510.50	39° 25' 30.713 N	108° 4' 32.419 W
Cameo Coals									
6,149.4	0.00	0.00	5,620.0	-757.0	1,693.3	1,590,071.80	2,272,510.50	39° 25' 30.713 N	108° 4' 32.419 W
Rollins SS									
6,249.4	0.00	0.00	5,720.0	-757.0	1,693.3	1,590,071.80	2,272,510.50	39° 25' 30.713 N	108° 4' 32.419 W
TD at 6249.4 - TD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Top Gas (25' Radius) S(- plan hits target center - Circle (radius 25.0)	0.00	0.00	4,120.0	-757.0	1,693.3	1,590,071.80	2,272,510.50	39° 25' 30.713 N	108° 4' 32.419 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,323.0	1,219.6	9 5/8"	9.625	12.250

Database:	Compass R5000 WIN AUTH	**Local Co-ordinate Reference:**	Well SG 332-23 - Slot B7
Company:	PICEANCE VLY NAD 83	**TVD Reference:**	WELL @ 5158.0usft (Original Well Elev)
Project:	SG 23-07S-096W	**MD Reference:**	WELL @ 5158.0usft (Original Well Elev)
Site:	GV 18-23 Pad	**North Reference:**	True
Well:	SG 332-23	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 06Apr11 kjs		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
876.7	850.0	Top of "G" Sand			
990.4	950.0	Base of "G" Sand			
3,188.8	2,710.0	Mesaverde			
4,649.4	4,120.0	Approx. Top Gas			
5,599.4	5,070.0	Cameo Coals			
6,149.4	5,620.0	Rollins SS			
6,249.4	5,720.0	TD			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
120.0	120.0	0.0	0.0	Start Build 3.50
1,222.8	1,141.3	-146.0	326.5	Hold 38.60 Inclination
2,619.4	2,232.7	-501.6	1,121.9	Start Drop -2.00
4,549.4	4,020.0	-757.0	1,693.3	Vertical
4,649.4	4,120.0	-757.0	1,693.3	Top Gas
6,249.4	5,720.0	-757.0	1,693.3	TD at 6249.4