

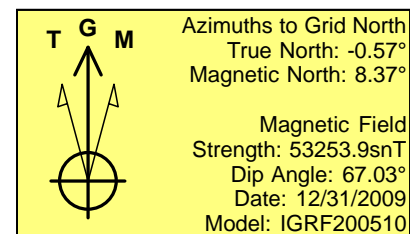
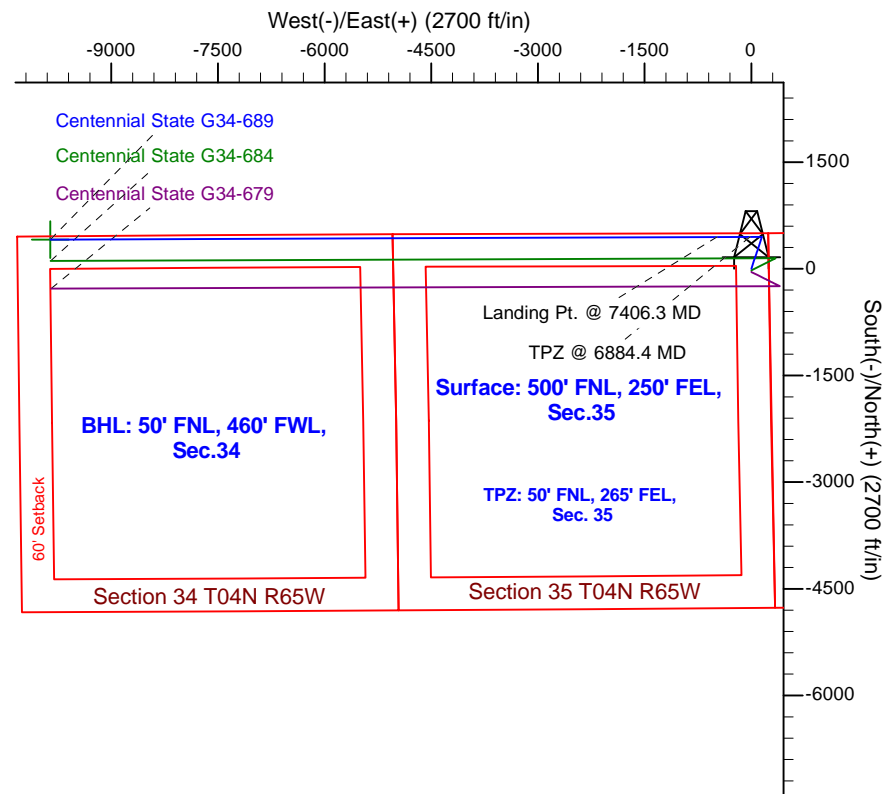
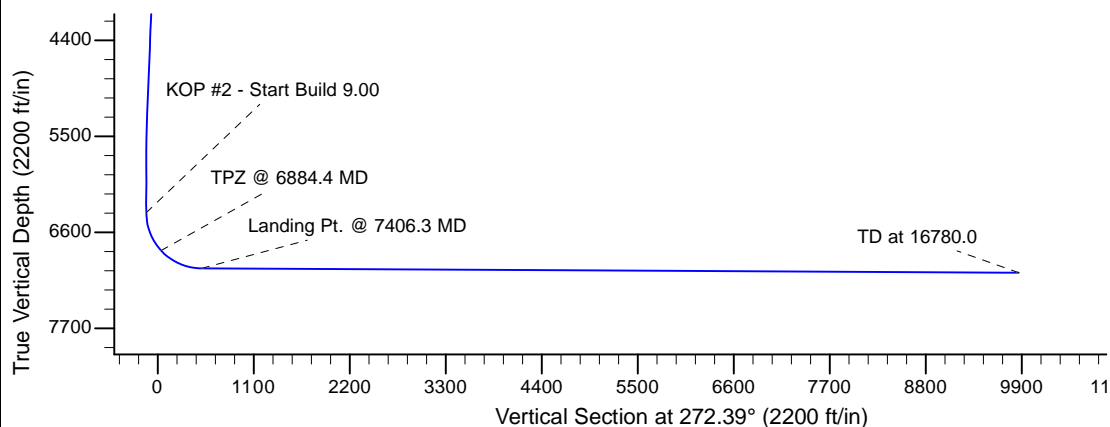
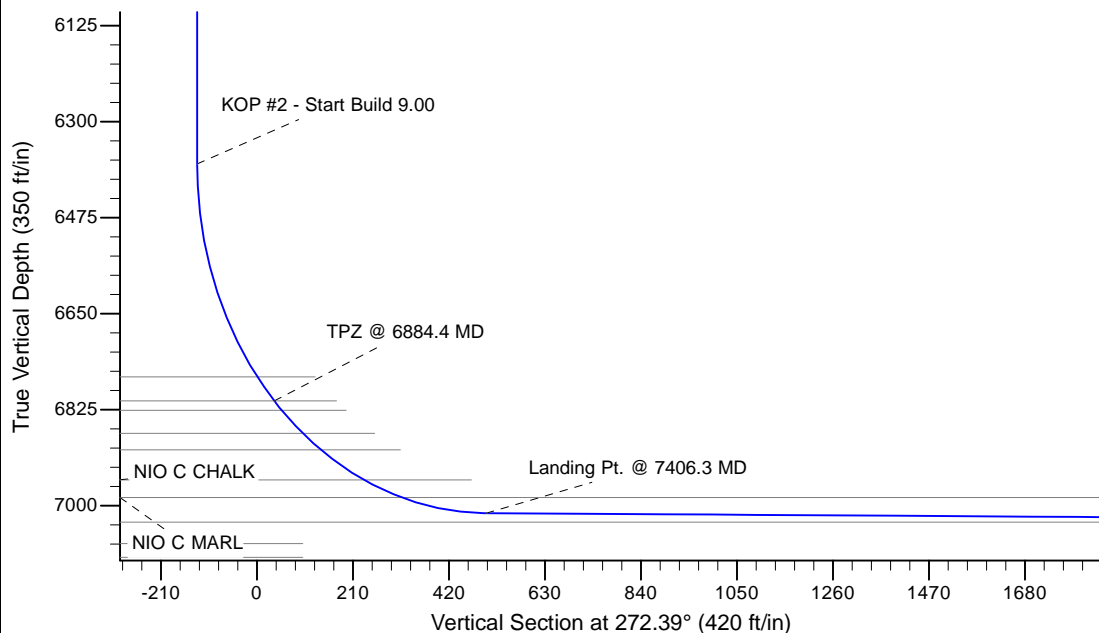
Project: Bronco
 Site: G Section 35-T4N-R65W Weld County, CO
 Well: Centennial State G34-689
 Wellbore: Original Drilling
 Design: APD - Rev 2

Northern Region - DJ Basin

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Northern Zone
 System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2410.3	8.21	18.43	2408.9	27.8	9.3	2.00	18.43	-8.1	
4	5322.3	8.21	18.43	5291.1	422.2	140.7	0.00	0.00	-123.0	
5	5732.6	0.00	0.00	5700.0	450.0	150.0	2.00	180.00	-131.1	
6	6409.6	0.00	0.00	6377.0	450.0	150.0	0.00	0.00	-131.1	
7	7406.3	89.70	269.78	7013.6	447.5	-483.3	9.00	269.78	501.5	
8	16780.0	89.70	269.78	7062.7	410.8	-9856.8	0.00	0.00	9865.3	Centennial State G34-689 BHL 50'FNL, 460'FWL



WELL DETAILS: Centennial State G34-689

	Ground Level: 4772.0		
North	East	Lat	Long
0.0	0.0	1344091.02	3244985.99
		40.2745999	-104.6219800

Plan: APD - Rev 2 (Centennial State G34-689/Original Drilling)

Created By: Shailey Jewell Date: 15:07, February 27 2017

OK to submit with 2A as per Noble Drilling
2/27/2017 3:24

Northern Region - DJ Basin

Bronco

G Section 35

Centennial State G34-689

Original Drilling

APD - Rev 2

Anticollision Summary Report

27 February, 2017

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Centennial State G34-689
Project:	Bronco	TVD Reference:	WELL @ 4802.0ft
Reference Site:	G Section 35	MD Reference:	WELL @ 4802.0ft
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Centennial State G34-689	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Produccction
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference	APD - Rev 2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,880.8 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.79 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	2/27/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	16,780.0	APD - Rev 2 (Original Drilling)	MWD+IFR1+MS_WY	Fixed:v2:Rockies, crustal dec + 3-axis correction

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
G Section 34						
Aristocrat Angus Ranches #1 - Wellbore #1 - Wellbore #						Out of range
Beaman G34-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,377.4	7,019.3	1,403.2	1,261.7	9.911	CC
Beaman G34-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,400.0	7,018.2	1,403.4	1,261.5	9.888	ES
Beaman G34-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,500.0	7,013.1	1,408.6	1,265.4	9.841	SF
Beaman G34-18 - Wellbore #1 - Wellbore #1 - As Drilled	14,449.9	6,984.9	816.7	654.8	5.045	CC, ES
Beaman G34-18 - Wellbore #1 - Wellbore #1 - As Drilled	14,500.0	6,984.6	818.3	655.9	5.040	SF
Beaman G34-99HZ - Original Drilling - Original Drilling - A	12,971.6	7,438.9	1,059.9	898.9	6.585	CC
Beaman G34-99HZ - Original Drilling - Original Drilling - A	16,718.8	11,194.5	1,105.8	701.2	2.733	ES, SF
Beaman G35-31 - Wellbore #1 - Wellbore #1 - As Drilled	12,130.9	6,969.3	1,172.5	1,054.1	9.905	CC, ES
Beaman G35-31 - Wellbore #1 - Wellbore #1 - As Drilled	12,200.0	6,968.4	1,174.5	1,055.2	9.846	SF
Beebe 10-34 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Bochius Pooling Unit 1 - Wellbore #1 - Wellbore #1 - As	12,632.6	6,971.8	609.7	481.8	4.766	CC, ES, SF
Bockius 34-1G - Wellbore #1 - Wellbore #1 - As Drilled	12,549.8	6,972.0	471.0	344.9	3.736	CC, ES, SF
Bockius 34-2G - Wellbore #1 - Wellbore #1 - As Drilled	13,852.9	6,990.8	445.5	295.1	2.962	CC, ES, SF
Bockius 34-8G - Wellbore #1 - Wellbore #1 - As Drilled	12,558.2	6,982.2	1,754.3	1,628.1	13.896	CC
Bockius 34-8G - Wellbore #1 - Wellbore #1 - As Drilled	12,600.0	6,982.9	1,754.8	1,627.9	13.826	ES
Bockius 34-8G - Wellbore #1 - Wellbore #1 - As Drilled	12,800.0	6,986.5	1,770.9	1,641.6	13.696	SF
Bockius 37-07G - Wellbore #1 - Wellbore #1 - As Drilled	14,215.2	6,966.3	1,741.5	1,584.5	11.095	CC, ES
Bockius 37-07G - Wellbore #1 - Wellbore #1 - As Drilled	14,400.0	6,965.9	1,751.3	1,592.0	10.993	SF
Champ G34-06X - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Cornelius 23-34 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
HSR - Aristocrat 12-34A - Wellbore #1 - Wellbore #1 - As						Out of range
HSR - Carney 15-34 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
HSR - Gun Club 09-34 - Wellbore #1 - Wellbore #1 - As D						Out of range
HSR - Gun Club 16-34 - Wellbore #1 - Wellbore #1 - As D						Out of range
HSR - Houston 13-34A - Wellbore #1 - Wellbore #1 - As						Out of range
HSR - Kemper 10-34 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
HSR - Merritt 11-34A - Wellbore #1 - Wellbore #1 - As Dr						Out of range
HSR - Owens 14-34 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
Moser 34-3G - Wellbore #1 - Wellbore #1 - As Drilled	15,285.6	6,999.3	602.9	425.7	3.403	CC, ES
Moser 34-3G - Wellbore #1 - Wellbore #1 - As Drilled	15,300.0	6,999.5	603.1	425.7	3.401	SF
Moser 34-4G - Wellbore #1 - Wellbore #1 - As Drilled	16,392.4	7,021.6	408.5	210.4	2.062	CC, ES
Moser 34-4G - Wellbore #1 - Wellbore #1 - As Drilled	16,400.0	7,021.6	408.6	210.4	2.062	SF
Moser 34-5G - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Moser 34-6G - Wellbore #1 - Wellbore #1 - As Drilled	15,726.0	6,940.9	1,487.2	1,302.1	8.036	CC, ES
Moser 34-6G - Wellbore #1 - Wellbore #1 - As Drilled	15,800.0	6,939.7	1,489.1	1,303.0	8.002	SF
Moser G34-30 - Wellbore #1 - Wellbore #1 - As Drilled	16,780.0	7,035.8	305.5	211.7	3.259	CC, ES, SF

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Centennial State G34-689
Project:	Bronco	TVD Reference:	WELL @ 4802.0ft
Reference Site:	G Section 35	MD Reference:	WELL @ 4802.0ft
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Centennial State G34-689	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Produccction
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
G Section 34						
Moser PC G34-65HN - Original Drilling - As Drilled						Out of range
G Section 35						
Centennial State G34-612 - Original Drilling - APD - Rev						Out of range
Centennial State G34-618 - Original Drilling - APD - Rev						Out of range
Centennial State G34-626 - Original Drilling - APD - Rev						Out of range
Centennial State G34-635 - Original Drilling - APD - Rev						Out of range
Centennial State G34-645 - Original Drilling - APD - Rev						Out of range
Centennial State G34-660 - Original Drilling - APD - Rev	1,812.5	1,823.5	1,093.2	1,082.2	99.443	CC
Centennial State G34-660 - Original Drilling - APD - Rev	1,900.0	1,909.2	1,093.2	1,081.7	94.787	ES
Centennial State G34-660 - Original Drilling - APD - Rev	6,200.0	6,038.5	1,876.9	1,838.5	48.862	SF
Centennial State G34-666 - Original Drilling - APD - Rev	2,000.0	2,012.0	1,071.4	1,059.2	88.019	CC, ES
Centennial State G34-666 - Original Drilling - APD - Rev	16,780.0	17,016.5	1,450.5	1,071.4	3.826	SF
Centennial State G34-675 - Original Drilling - APD - Rev	2,241.2	2,337.7	1,043.3	1,029.4	75.127	CC
Centennial State G34-675 - Original Drilling - APD - Rev	12,060.7	12,306.0	1,105.3	902.6	5.452	ES, SF
Centennial State G34-679 - Original Drilling - APD - Rev	2,000.0	1,999.0	43.7	31.6	3.605	CC, ES
Centennial State G34-679 - Original Drilling - APD - Rev	16,780.0	17,022.1	688.8	309.6	1.817	SF
Centennial State G34-684 - Original Drilling - APD - Rev	2,000.0	2,001.0	21.9	9.7	1.801	CC
Centennial State G34-684 - Original Drilling - APD - Rev	16,780.0	16,863.2	322.6	-34.0	0.905	Level 1, ES, SF
CPC Mark 35-01 - Wellbore #1 - Wellbore #1 - As Drilled	8,518.3	6,966.4	759.3	704.8	13.910	CC, ES
CPC Mark 35-01 - Wellbore #1 - Wellbore #1 - As Drilled	8,600.0	6,966.1	763.7	708.3	13.782	SF
CPC Mark 35-02 - Wellbore #1 - Wellbore #1 - As Drilled	0.0	0.0	1,533.4			
CPC Mark 35-02 - Wellbore #1 - Wellbore #1 - As Drilled	1,100.0	1,080.9	1,538.1	1,532.3	262.844	ES
CPC Mark 35-02 - Wellbore #1 - Wellbore #1 - As Drilled	4,500.0	4,476.4	1,872.6	1,847.6	74.827	SF
Mark 11-35 - Wellbore #1 - 150' Drift						Out of range
Mark 11-35 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Mark 12-35 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Mark 14-35 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Mark 35-11 - Original Drilling - Original Drilling - As Drilled	1,906.9	1,867.0	248.4	238.2	24.348	CC
Mark 35-11 - Original Drilling - Original Drilling - As Drilled	2,000.0	1,959.2	248.6	237.9	23.195	ES
Mark 35-11 - Original Drilling - Original Drilling - As Drilled	7,228.5	6,943.8	488.8	449.2	12.341	SF
Mark 35-13 - Wellbore #1 - Wellbore #1 - As Drilled	8,576.3	6,984.7	1,805.5	1,749.5	32.268	CC
Mark 35-13 - Wellbore #1 - Wellbore #1 - As Drilled	8,600.0	6,984.4	1,805.6	1,749.4	32.086	ES
Mark 35-13 - Wellbore #1 - Wellbore #1 - As Drilled	9,100.0	6,977.5	1,879.9	1,817.9	30.312	SF
Mark 35-15 - Wellbore #1 - Wellbore #1 - As Drilled	8,000.0	6,979.6	992.5	945.3	21.027	CC
Mark 35-15 - Wellbore #1 - Wellbore #1 - As Drilled	8,000.0	6,979.6	992.5	945.3	21.027	ES
Mark 35-15 - Wellbore #1 - Wellbore #1 - As Drilled	8,200.0	6,981.0	1,012.5	963.4	20.615	SF
Mark E Unit 1 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Ocoma G35-03 - Wellbore #1 - Wellbore #1 - As Drilled	10,103.9	6,960.3	498.6	417.2	6.127	CC, ES, SF
Ocoma G35-04 - Wellbore #1 - Wellbore #1 - As Drilled	11,334.6	6,956.6	832.1	728.5	8.034	CC, ES
Ocoma G35-04 - Wellbore #1 - Wellbore #1 - As Drilled	11,400.0	6,956.2	834.7	730.4	8.005	SF
Ocoma G35-05 - Wellbore #1 - Wellbore #1 - As Drilled	11,352.2	7,016.4	1,845.1	1,741.0	17.721	CC
Ocoma G35-05 - Wellbore #1 - Wellbore #1 - As Drilled	11,400.0	7,017.0	1,845.7	1,740.9	17.598	ES
Ocoma G35-05 - Wellbore #1 - Wellbore #1 - As Drilled	11,600.0	7,019.3	1,861.7	1,754.2	17.321	SF
Ocoma G35-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Ocoma G35-09 - Wellbore #1 - 150' Drift						Out of range
Ocoma G35-09 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Ocoma G35-10 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Ocoma G35-15 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Ocoma G35-16 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Ocoma G35-23 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Staind G35-19 - Wellbore #1 - Wellbore #1 - As Drilled	10,634.3	7,076.8	1,276.6	1,184.1	13.805	CC, ES
Staind G35-19 - Wellbore #1 - Wellbore #1 - As Drilled	10,800.0	7,077.1	1,287.3	1,192.9	13.637	SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Centennial State G34-689
Project:	Bronco	TVD Reference:	WELL @ 4802.0ft
Reference Site:	G Section 35	MD Reference:	WELL @ 4802.0ft
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Centennial State G34-689	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Produccction
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

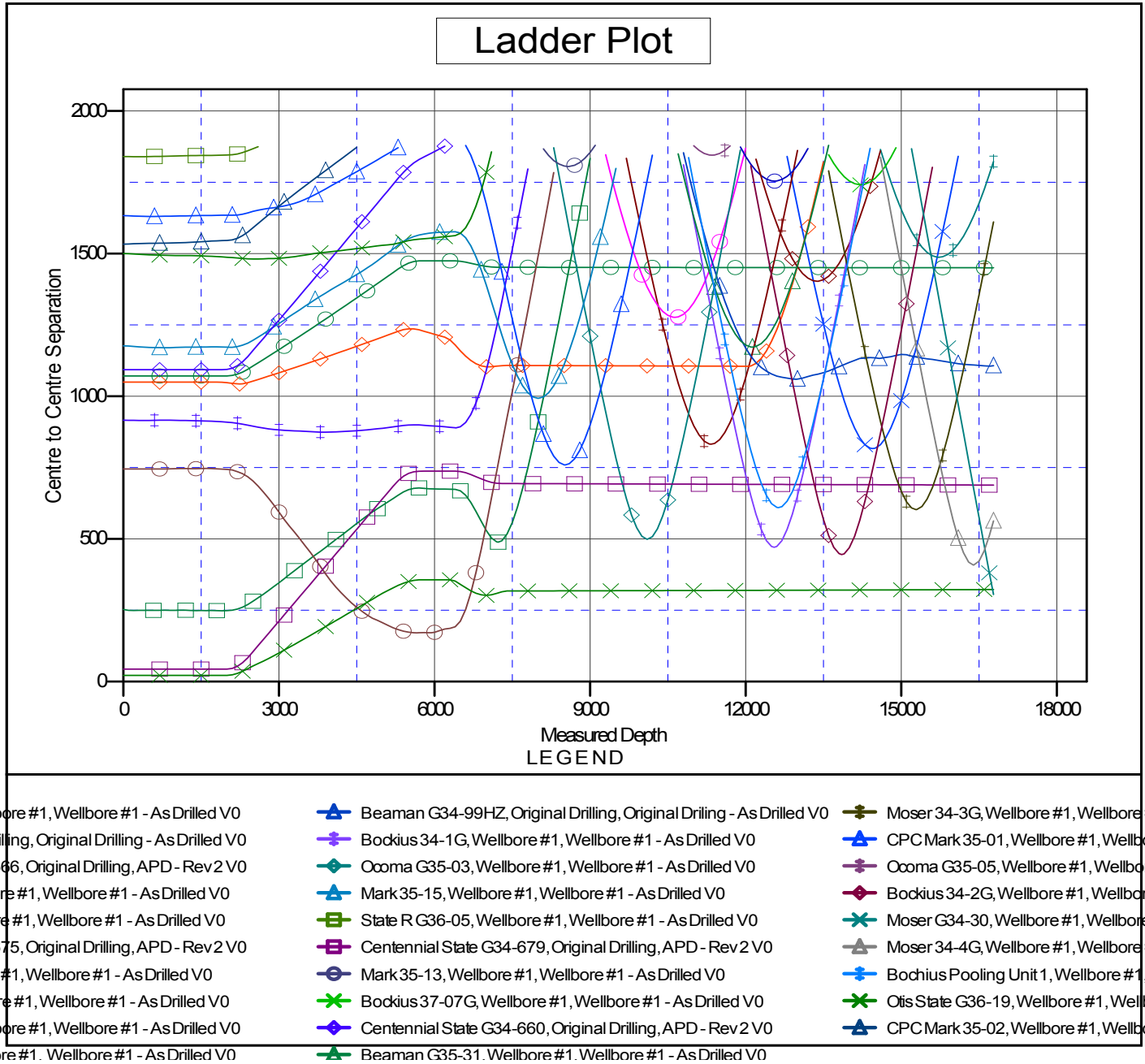
Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
G Section 36						
Gerrity State G36-01 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-02 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-07 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-08 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-09 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-10 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-15 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-16 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-17 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Gerrity State G36-23 - Wellbore #1 - Wellbore #1 - As Dr						Out of range
Mark State PC G36-79HN - Original Drilling - Original Dri	5,661.0	5,656.0	170.8	152.9	9.525	CC
Mark State PC G36-79HN - Original Drilling - Original Dri	5,937.1	5,933.3	171.3	152.6	9.164	ES
Mark State PC G36-79HN - Original Drilling - Original Dri	6,000.0	5,988.2	172.7	153.8	9.148	SF
Otis State G36-19 - Wellbore #1 - Wellbore #1 - As Drille	2,540.1	2,536.9	1,481.0	1,467.1	106.326	CC
Otis State G36-19 - Wellbore #1 - Wellbore #1 - As Drille	2,900.0	2,896.6	1,482.8	1,466.9	93.132	ES
Otis State G36-19 - Wellbore #1 - Wellbore #1 - As Drille	6,600.0	6,510.4	1,591.0	1,554.6	43.774	SF
Pedro State C31-79HN - Wellbore #1 - Original Drilling						Out of range
Pedro State G36-18 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
Pedro State G36-20 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
Pedro State G36-21 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
Pedro State G36-22 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
Pedro State G36-24 - Wellbore #1 - Wellbore #1 - As Dri						Out of range
Pedro State H01-30D - Wellbore #1 - Wellbore #1 - As D						Out of range
Shelton G36-27 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State 04 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State R G36-03 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State R G36-04 - Wellbore #1 - Wellbore #1 - As Drilled	3,878.9	3,862.0	874.3	852.7	40.548	CC
State R G36-04 - Wellbore #1 - Wellbore #1 - As Drilled	4,000.0	3,979.9	874.6	852.4	39.284	ES
State R G36-04 - Wellbore #1 - Wellbore #1 - As Drilled	6,500.0	6,463.7	893.0	856.6	24.527	SF
State R G36-05 - Wellbore #1 - Wellbore #1 - As Drilled	295.7	285.7	1,839.9	1,838.6	1,401.609	CC
State R G36-05 - Wellbore #1 - Wellbore #1 - As Drilled	2,000.0	1,986.5	1,845.5	1,834.7	170.118	ES
State R G36-05 - Wellbore #1 - Wellbore #1 - As Drilled	2,600.0	2,635.0	1,874.7	1,860.4	131.471	SF
State R G36-06 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State R G36-11 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State R G36-12 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State R G36-13 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
State R G36-14 - Wellbore #1 - Wellbore #1 - As Drilled						Out of range

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Centennial State G34-689
Project:	Bronco	TVD Reference:	WELL @ 4802.0ft
Reference Site:	G Section 35	MD Reference:	WELL @ 4802.0ft
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Centennial State G34-689	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4802.0ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Centennial State G34-689
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.57°



CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Centennial State G34-689
Project:	Bronco	TVD Reference:	WELL @ 4802.0ft
Reference Site:	G Section 35	MD Reference:	WELL @ 4802.0ft
Site Error:	0.0 ft	North Reference:	Grid
Reference Well:	Centennial State G34-689	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.79 sigma
Reference Wellbore	Original Drilling	Database:	EDM Production
Reference Design:	APD - Rev 2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4802.0ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.5000000

Coordinates are relative to: Centennial State G34-689
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.57°

