

# NEW CACHE FH 8-12D PLAN #1

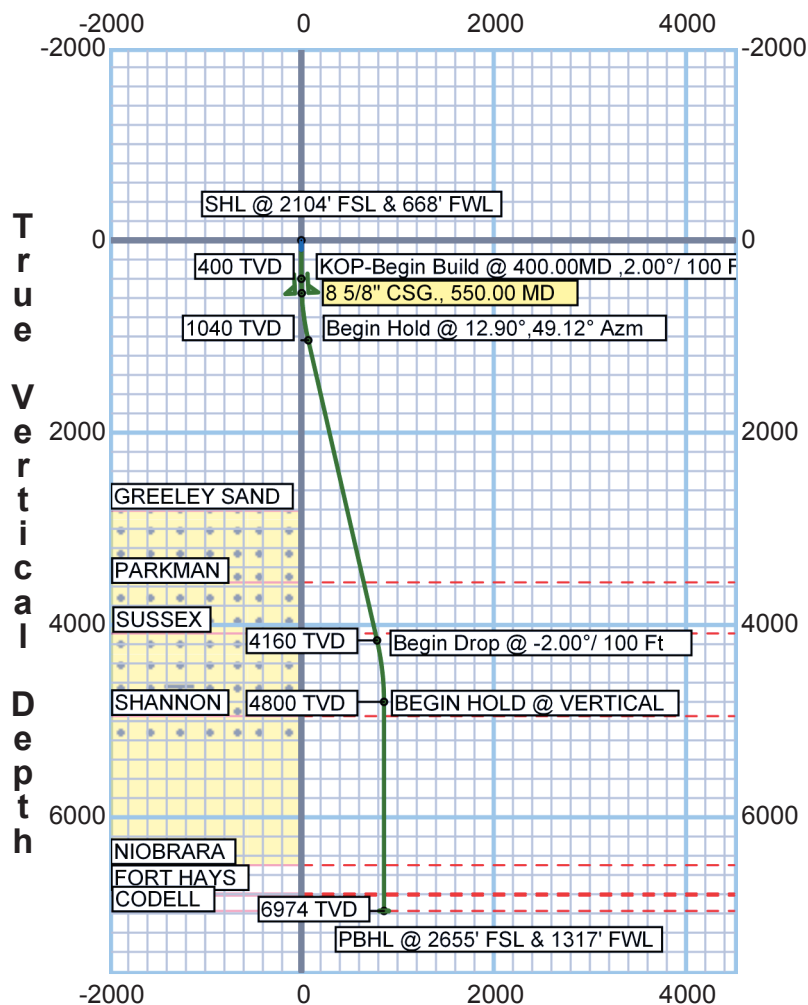


Job ID : NEW CACHE FH NWSW PAD  
 Company : GREAT WESTERN O&G  
 Lease/Well : NEW CACHE FH 18-12D/NEW CACHE FH 8/12D  
 Location : NWSW SEC.8-T6N-R63W  
 API JOB # : PENDING  
 State/Province : COLORADO  
 County/Parish : WELD  
 Comment : PLAN 1

Latitude : 40°29'58.3008" N  
 Longitude : -104°28'4.4616" W  
 Northing : 1426488.89  
 Easting : 3287017.66  
 System Zone : US State Plane 1983  
 Projection Type : LAMBERT  
 Elevation (To MSL) : 4693 ft  
 RKB : 14 ft

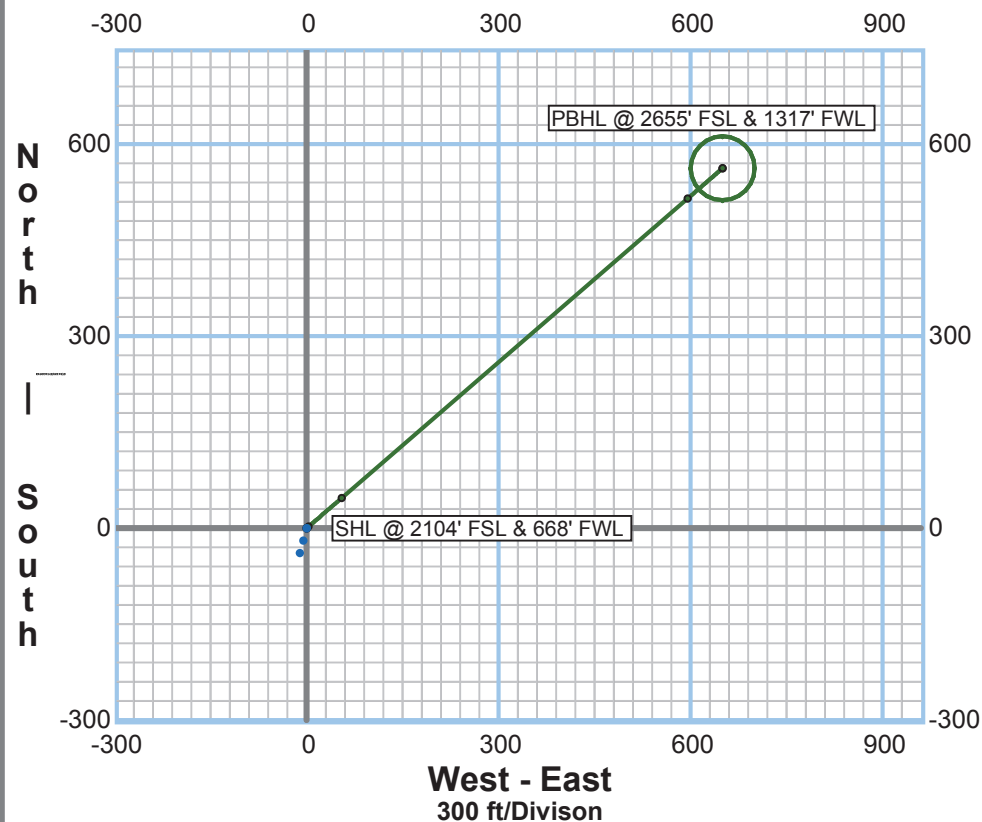


## Vertical Section Plot



**Vertical Section (49.12°)**  
 2000 ft/Division

## Horizontal Plot



## CRITICAL POINTS - NEW CACHE FH 8-12D PROPOSAL

MD	Inc	Azm	TVD	EW	NS	VS	CI	Cldir	WR	BR	DLS
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
550.00	3.00	49.12	549.93	2.97	2.57	3.93	3.93	49.11	0.00	2.00	2.00
1045.12	12.90	49.12	1039.68	54.69	47.34	72.33	72.33	49.12	0.00	1.95	1.95
4246.59	12.90	49.12	4160.35	595.08	515.11	787.06	787.06	49.12	0.00	0.00	0.00
4891.38	0.00	54.52	4799.71	649.75	562.43	859.36	859.36	49.12	107.97	-2.00	2.00
7065.68	0.00	54.52	6974.00	649.88	562.52	859.52	859.52	49.12	0.00	0.00	0.00

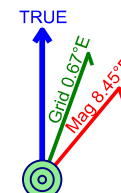


Job Number: NEW CACHE FH NWSW PAD  
Company: GREAT WESTERN O&G  
Lease/Well: NEW CACHE FH 18-12D/NEW CACHE FH 8-12D  
Location: NWSW SEC.8-T6N-R63W  
Rig Name: CADE 25  
State/County: COLORADO/ WELD  
Country: USA  
API Number: PENDING

Elevation (To MSL): 4693.00 ft  
RKB: 14.00 ft  
Projection System: US State Plane 1983  
Projection Group: Colorado Northern Zone  
Projection Datum: GRS80  
Magnetic Declination: 8.45  
Grid Convergence: 0.66684 E  
Date: Tuesday, December 18, 2012

Calculated by HawkEye Software  
Minimum Curvature Method  
Vertical Section Plane 49.12°

Northing (US ft): 1426488.89 Easting (US ft): 3287017.66  
Latitude: 40°29'58.3008" N Longitude: -104°28'4.4616" W  
Well Location: 2116.36 FSL, 655.72 FWL, Section 8, T6N, R63W, Meridian 06, Weld County, CO  
Direction Reference: True North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS °/100Ft	Build Rate °/100Ft	Walk Rate °/100Ft	Latitude Dec. Deg	Longitude Dec. Deg
<b>SHL @ 2104' FSL &amp; 668' FWL</b> <b>Casing 8 5/8"</b>											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.4995280	-104.4679060
<b>KOP-Begin Build @ 400.00MD ,2.00°/ 100 Ft</b>											
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	40.4995280	-104.4679060
<b>8 5/8" CASING</b>											
550.00	3.00	49.12	549.93	2.57	2.97	3.93	2.00	2.00	0.00	40.4995351	-104.4678953
<b>Begin Hold @ 12.90°,49.12° Azm</b>											
1045.12	12.90	49.12	1039.68	47.34	54.69	72.33	1.95	1.95	0.00	40.4996579	-104.4677093
<b>Begin Drop @ -2.00°/ 100 Ft</b>											
4246.59	12.90	49.12	4160.35	515.11	595.08	787.06	0.00	0.00	0.00	40.5009419	-104.4657661
<b>BEGIN HOLD @ VERTICAL</b>											
4891.38	0.00	54.52	4799.71	562.43	649.75	859.36	2.00	-2.00	107.97	40.5010718	-104.4655696
<b>PBHL @ 2655' FSL &amp; 1317' FWL</b> <b>NEW CACHE FH 8-12D TARGET</b>											
7065.68	0.00	54.52	6974.00	562.52	649.88	859.52	0.00	0.00	0.00	40.5010721	-104.4655691

#### TARGET DATA

Name	Shape	Easting (Ft)	Northing (Ft)	Subsea TVD (Ft)	NS (Ft)	EW (Ft)	Side A (Ft)	Side B (Ft)	Diameter (Ft)
NEW CACHE FH 8-12D TARGET	CYLINDER	3287660.95	1427058.94	2267.00	562.52	649.88	100.00	100.00	100.00

#### CASING DATA

Size (in)	Weight (Lbs/Ft)	ID (in)	OD (in)	Top MD (Ft)	Set MD (Ft)
8 5/8	24.00	8.10	9.63	0.00	550.00

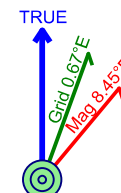


Job Number: NEW CACHE FH NWSW PAD  
Company: GREAT WESTERN O&G  
Lease/Well: NEW CACHE FH 18-12D/NEW CACHE FH 8/12D  
Location: NWSW SEC.8-T6N-R63W  
Rig Name: CADE 25  
State/County: COLORADO/ WELD  
Country: USA  
API Number: PENDING

Elevation (To MSL): 4693.00 ft  
RKB: 14.00 ft  
Projection System: US State Plane 1983  
Projection Group: Colorado Northern Zone  
Projection Datum: GRS80  
Magnetic Declination: 8.45  
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Direction Reference: True North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS °/100Ft	Build Rate °/100Ft	Walk Rate °/100Ft	Latitude Dec. Deg	Longitude Dec. Deg
<b>SHL @ 2104' FSL &amp; 668' FWL 8 5/8" Casing 8 5/8"</b>											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.4995280	-104.4679060
<b>KOP-Begin Build @ 400.00MD ,2.00°/ 100 Ft</b>											
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	40.4995280	-104.4679060
420.00	0.40	49.11	420.00	0.05	0.05	0.07	2.00	2.00	245.55	40.4995281	-104.4679058
440.00	0.80	49.11	440.00	0.18	0.21	0.28	2.00	2.00	0.03	40.4995285	-104.4679052
460.00	1.20	49.12	460.00	0.41	0.48	0.63	2.00	2.00	0.01	40.4995291	-104.4679043
480.00	1.60	49.12	479.99	0.73	0.84	1.12	2.00	2.00	0.00	40.4995300	-104.4679029
500.00	2.00	49.12	499.98	1.14	1.32	1.75	2.00	2.00	0.00	40.4995311	-104.4679012
520.00	2.40	49.12	519.96	1.65	1.90	2.51	2.00	2.00	0.00	40.4995325	-104.4678992
540.00	2.80	49.12	539.94	2.24	2.59	3.42	2.00	2.00	0.00	40.4995341	-104.4678967
<b>8 5/8" CASING</b>											
550.00	3.00	49.12	549.93	2.57	2.97	3.93	2.00	2.00	0.00	40.4995351	-104.4678953
560.00	3.20	49.12	559.92	2.92	3.38	4.47	2.00	2.00	0.00	40.4995360	-104.4678938
580.00	3.60	49.12	579.88	3.70	4.27	5.65	2.00	2.00	0.00	40.4995382	-104.4678906
600.00	4.00	49.12	599.84	4.57	5.28	6.98	2.00	2.00	0.00	40.4995405	-104.4678870
620.00	4.40	49.12	619.78	5.53	6.38	8.44	2.00	2.00	0.00	40.4995432	-104.4678830
640.00	4.80	49.12	639.72	6.58	7.60	10.05	2.00	2.00	0.00	40.4995461	-104.4678787
660.00	5.20	49.12	659.64	7.72	8.91	11.79	2.00	2.00	0.00	40.4995492	-104.4678739
680.00	5.60	49.12	679.55	8.95	10.34	13.67	2.00	2.00	0.00	40.4995526	-104.4678688
700.00	6.00	49.12	699.45	10.27	11.87	15.69	2.00	2.00	0.00	40.4995562	-104.4678633
720.00	6.40	49.12	719.33	11.69	13.50	17.85	2.00	2.00	0.00	40.4995601	-104.4678574
740.00	6.80	49.12	739.20	13.19	15.24	20.15	2.00	2.00	0.00	40.4995642	-104.4678512
760.00	7.20	49.12	759.05	14.79	17.08	22.59	2.00	2.00	0.00	40.4995686	-104.4678446
780.00	7.60	49.12	778.89	16.47	19.03	25.17	2.00	2.00	0.00	40.4995732	-104.4678376
800.00	8.00	49.12	798.70	18.25	21.08	27.88	2.00	2.00	0.00	40.4995781	-104.4678302
820.00	8.40	49.12	818.50	20.11	23.24	30.73	2.00	2.00	0.00	40.4995832	-104.4678224
840.00	8.80	49.12	838.27	22.07	25.50	33.72	2.00	2.00	0.00	40.4995886	-104.4678143

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS %/100Ft	Build Rate %/100Ft	Walk Rate %/100Ft	Latitude Dec. Deg	Longitude Dec. Deg
860.00	9.20	49.12	858.03	24.12	27.86	36.85	2.00	2.00	0.00	40.4995942	-104.4678058
880.00	9.60	49.12	877.76	26.26	30.33	40.12	2.00	2.00	0.00	40.4996001	-104.4677969
900.00	10.00	49.12	897.47	28.49	32.91	43.52	2.00	2.00	0.00	40.4996062	-104.4677877
920.00	10.40	49.12	917.15	30.80	35.58	47.07	2.00	2.00	0.00	40.4996126	-104.4677780
940.00	10.80	49.12	936.81	33.21	38.37	50.74	2.00	2.00	0.00	40.4996192	-104.4677680
960.00	11.20	49.12	956.44	35.71	41.25	54.56	2.00	2.00	0.00	40.4996260	-104.4677577
980.00	11.60	49.12	976.05	38.30	44.24	58.51	2.00	2.00	0.00	40.4996331	-104.4677469
1000.00	12.00	49.12	995.62	40.97	47.33	62.60	2.00	2.00	0.00	40.4996405	-104.4677358
1020.00	12.40	49.12	1015.17	43.74	50.53	66.83	2.00	2.00	0.00	40.4996481	-104.4677243
1040.00	12.80	49.12	1034.69	46.59	53.83	71.19	2.00	2.00	0.00	40.4996559	-104.4677124
<b>Begin Hold @ 12.90°,49.12° Azm</b>											
1045.12	12.90	49.12	1039.68	47.34	54.69	72.33	1.95	1.95	0.00	40.4996579	-104.4677093
<b>Begin Drop @ -2.00% / 100 Ft</b>											
4246.59	12.90	49.12	4160.35	515.11	595.08	787.06	0.00	0.00	0.00	40.5009419	-104.4657661
4266.59	12.50	49.12	4179.86	517.99	598.41	791.46	2.00	-2.00	0.00	40.5009498	-104.4657542
4286.59	12.10	49.12	4199.40	520.78	601.63	795.72	2.00	-2.00	0.00	40.5009575	-104.4657426
4306.59	11.70	49.12	4218.97	523.48	604.75	799.84	2.00	-2.00	0.00	40.5009649	-104.4657314
4326.59	11.30	49.12	4238.57	526.09	607.76	803.83	2.00	-2.00	0.00	40.5009721	-104.4657205
4346.59	10.90	49.12	4258.20	528.61	610.67	807.68	2.00	-2.00	0.00	40.5009790	-104.4657101
4366.59	10.50	49.12	4277.85	531.04	613.48	811.39	2.00	-2.00	0.00	40.5009857	-104.4657000
4386.59	10.10	49.12	4297.53	533.38	616.18	814.97	2.00	-2.00	0.00	40.5009921	-104.4656903
4406.59	9.70	49.12	4317.23	535.63	618.78	818.41	2.00	-2.00	0.00	40.5009983	-104.4656809
4426.59	9.30	49.12	4336.95	537.79	621.28	821.71	2.00	-2.00	0.00	40.5010042	-104.4656719
4446.59	8.90	49.12	4356.70	539.86	623.67	824.87	2.00	-2.00	0.00	40.5010099	-104.4656633
4466.59	8.50	49.12	4376.47	541.84	625.96	827.90	2.00	-2.00	0.00	40.5010153	-104.4656551
4486.59	8.10	49.12	4396.26	543.73	628.14	830.78	2.00	-2.00	0.00	40.5010205	-104.4656473
4506.59	7.70	49.12	4416.07	545.53	630.22	833.53	2.00	-2.00	0.00	40.5010254	-104.4656398
4526.59	7.30	49.12	4435.90	547.24	632.19	836.14	2.00	-2.00	0.00	40.5010301	-104.4656327
4546.59	6.90	49.12	4455.75	548.85	634.06	838.62	2.00	-2.00	0.00	40.5010346	-104.4656260
4566.59	6.50	49.12	4475.61	550.38	635.83	840.95	2.00	-2.00	0.00	40.5010387	-104.4656196
4586.59	6.10	49.12	4495.49	551.82	637.49	843.14	2.00	-2.00	0.00	40.5010427	-104.4656137
4606.59	5.70	49.12	4515.38	553.16	639.04	845.20	2.00	-2.00	0.00	40.5010464	-104.4656081
4626.59	5.30	49.12	4535.29	554.42	640.49	847.12	2.00	-2.00	0.00	40.5010498	-104.4656029
4646.59	4.90	49.12	4555.21	555.58	641.83	848.89	2.00	-2.00	0.00	40.5010530	-104.4655980
4666.59	4.50	49.12	4575.15	556.65	643.07	850.53	2.00	-2.00	0.00	40.5010560	-104.4655936
4686.59	4.10	49.12	4595.09	557.64	644.21	852.03	2.00	-2.00	0.00	40.5010587	-104.4655895
4706.59	3.70	49.12	4615.04	558.53	645.23	853.39	2.00	-2.00	0.00	40.5010611	-104.4655858
4726.59	3.30	49.13	4635.01	559.32	646.16	854.61	2.00	-2.00	0.00	40.5010633	-104.4655825
4746.59	2.90	49.13	4654.98	560.03	646.98	855.70	2.00	-2.00	0.00	40.5010652	-104.4655795
4766.59	2.50	49.13	4674.95	560.65	647.69	856.64	2.00	-2.00	0.01	40.5010669	-104.4655770
4786.59	2.10	49.13	4694.94	561.17	648.30	857.44	2.00	-2.00	0.01	40.5010684	-104.4655748
4806.59	1.70	49.13	4714.93	561.61	648.80	858.10	2.00	-2.00	0.01	40.5010696	-104.4655730

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	DLS °/100Ft	Build Rate °/100Ft	Walk Rate °/100Ft	Latitude Dec. Deg	Longitude Dec. Deg
4826.59	1.30	49.14	4734.92	561.95	649.19	858.63	2.00	-2.00	0.02	40.5010705	-104.4655716
4846.59	0.90	49.14	4754.92	562.20	649.48	859.01	2.00	-2.00	0.04	40.5010712	-104.4655705
4866.59	0.50	49.16	4774.91	562.36	649.67	859.25	2.00	-2.00	0.10	40.5010716	-104.4655698
4886.59	0.10	49.34	4794.91	562.43	649.75	859.36	2.00	-2.00	0.90	40.5010718	-104.4655696
BEGIN HOLD @ VERTICAL											
4891.38	0.00	54.52	4799.71	562.43	649.75	859.36	2.00	-2.00	107.97	40.5010718	-104.4655696
PBHL @ 2655' FSL & 1317' FWL    NEW CACHE FH 8-12D TARGET											
7065.68	0.00	54.52	6974.00	562.52	649.88	859.52	0.00	0.00	0.00	40.5010721	-104.4655691
TARGET DATA											
Name		Shape	Easting (Ft)	Northing (Ft)	Subsea TVD (Ft)	NS (Ft)	EW (Ft)	Side A (Ft)	Side B (Ft)	Diameter (Ft)	
NEW CACHE FH 8-12D TARGET		CYLINDER	3287660.95	1427058.94	2267.00	562.52	649.88	100.00	100.00	100.00	
CASING DATA											
Size (in)		Weight (Lbs/Ft)	ID (in)	OD (in)	Top MD (Ft)		Set MD (Ft)				
8 5/8		24.00	8.10	9.63	0.00		550.00				
LITHOLOGY DATA											
Name		Description	Pattern	Subsea Top (Ft)	Subsea Bottom (Ft)	Dip Angle (deg)	Dip Direction (deg)				
GREELEY SAND		GREELEY SAND	SAND	2813.00	3557.00	0.00	0.00				
PARKMAN		PARKMAN	SANDSTON	3557.00	4088.00	0.00	0.00				
SUSSEX		SUSSEX	SANDSTON	4088.00	4948.00	0.00	0.00				
SHANNON		SHANNON	SANDSTON	4948.00	6498.00	0.00	0.00				
NIOBRARA		NIOBRARA	CHALK	6498.00	6793.00	0.00	0.00				
FORT HAYS		FORT HAYS	LIMESTON	6793.00	6814.00	0.00	0.00				
CODELL		CODELL	SANDSTON	6814.00	6974.00	0.00	0.00				



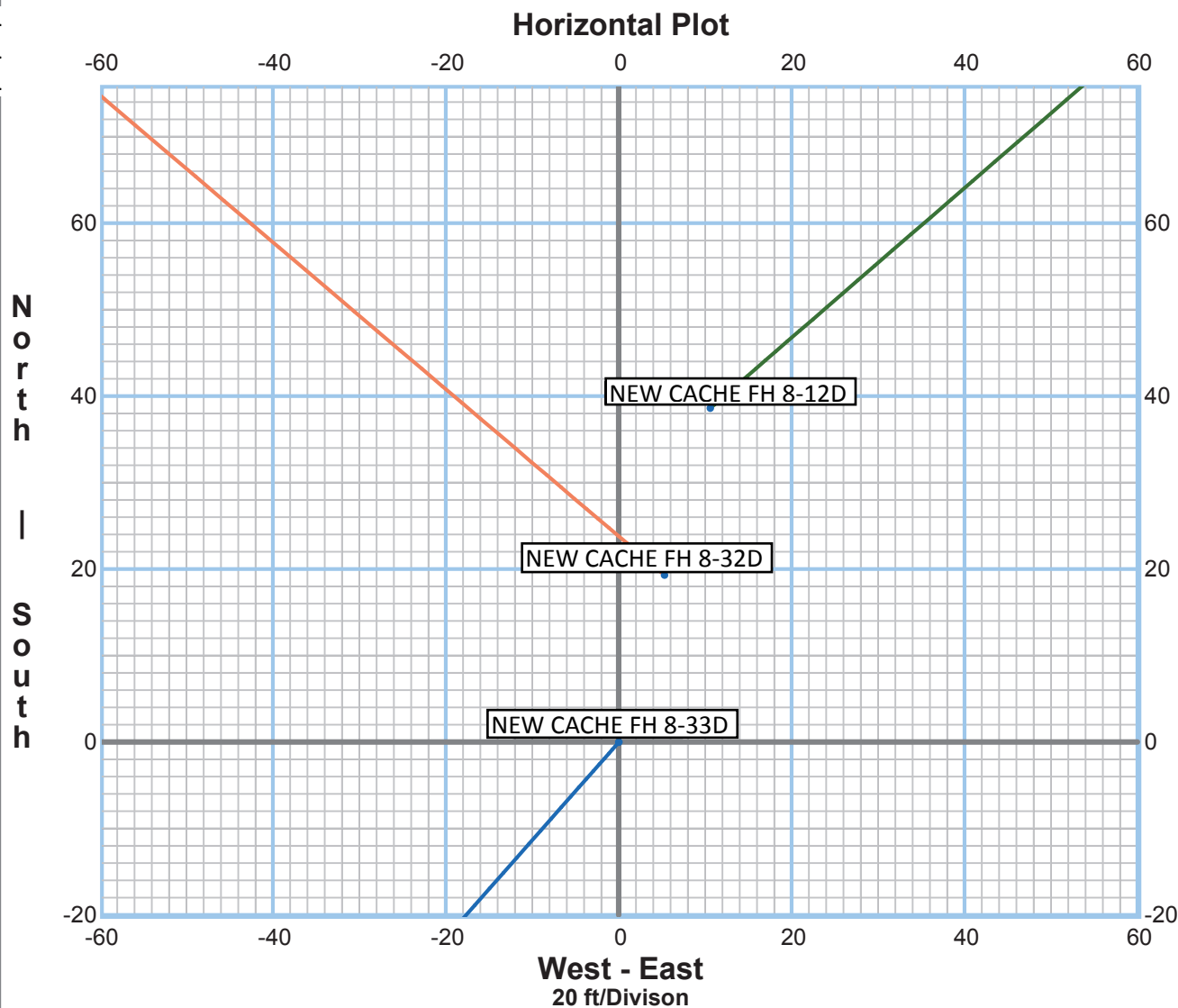
Job ID : NEW CACHE FH NWSW PAD  
Company : GREAT WESTERN O&G  
Lease/Well : NEW CACHE FH 8-12\_SPIDER\_ZOOM  
Location : NWSW SEC.8-T6N-R63W  
API JOB # : PENDING  
State/Province : COLORADO  
County/Parish : WELD  
Comment : PLAN 1

Latitude : 40°29'57.9192" N  
Longitude : -104°28'4.5984" W  
Northing : 1426450.15  
Easting : 3287007.54  
System Zone : US State Plane 1983  
Projection Type : LAMBERT  
Elevation (To MSL) : 4693 ft  
RKB : 14 ft



**CURVES LEGEND :**

- NEW CACHE FH 8-12D PROPOSAL
- NEW CACHE FH 8-32D PROPOSAL
- NEW CACHE FH 8-33D PROPOSAL





Job ID : NEW CACHE FH NWSW PAD  
Company : GREAT WESTERN O&G  
Lease/Well : NEW CACHE FH 8-12D\_PAD  
Location : NWSW SEC.8-T6N-R63W  
API JOB # : PENDING  
State/Province : COLORADO  
County/Parish : WELD  
Comment : PLAN 1\_SPIDER\_PLOT

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**CURVES LEGEND :**

- NEW CACHE FH 8-12D PROPOSAL
- NEW CACHE FH 8-32D PROPOSAL
- NEW CACHE FH 8-33D PROPOSAL

