

# **Unit Petroleum**

**Reno County, Kansas [NAD 83]**

**Section 31 T25S-R10W**

**Weller 31 #1H**

**OH**

**Design: OH**

## **Standard Survey Report**

**12 March, 2014**





Unit Petroleum  
 Project: Reno County, Kansas [NAD 83]  
 Site: Section 31 T25S-R10W  
 Well: Weller 31 #1H  
 Wellbore: OH  
 Design: Design #3  
 Lat: 37° 50' 22.101 N  
 Long: 98° 27' 43.233 W  
 Pad GL: 1791.00  
 KB: 20' KB @ 1811.00usft (UDI 303)



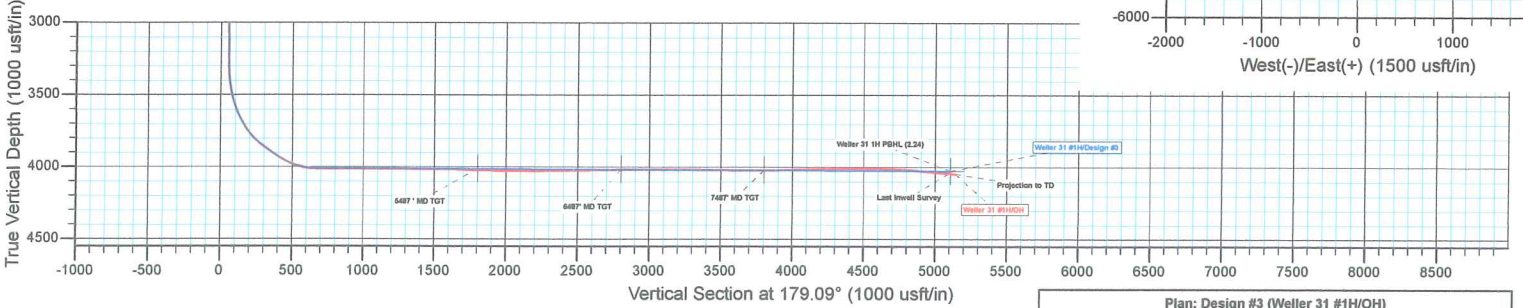
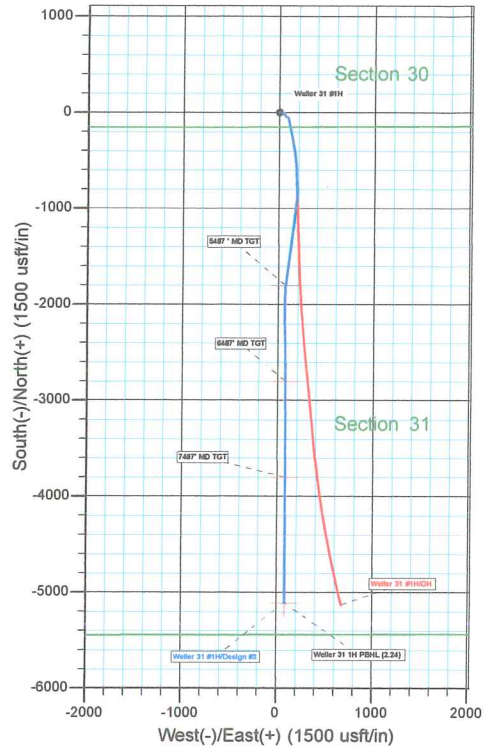
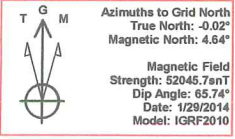
SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect
4444.00	90.60	178.10	4010.33	-765.03	183.34	0.00	0.00	767.84
4487.00	90.60	178.10	4009.88	-308.00	184.76	0.00	0.00	810.83
4872.22	89.93	187.34	4009.02	-992.81	175.99	5.00	94.11	995.48
5487.65	89.93	187.34	4010.00	-1801.57	71.86	0.00	0.00	1802.48
5655.32	89.89	178.96	4010.55	-1968.83	62.66	5.00	-91.64	1969.58
6487.75	89.89	178.96	4014.90	-2781.12	77.45	0.00	0.00	2782.00
6487.10	89.71	179.92	4015.00	-2800.46	77.64	5.00	88.80	2801.34
7487.10	89.71	179.92	4020.00	-3800.45	78.96	0.00	0.00	3801.22
7488.47	89.78	179.91	4020.01	-3801.82	78.97	5.00	-11.40	3802.60
8793.99	89.78	179.91	4025.00	-5107.32	81.01	0.00	0.00	5107.96

WELL DETAILS: Weller 31 #1H						
+N/-S	+E/-W	Northing	Ground Level: Easting	1791.00 Latitude	Longitude	Slot
0.00	0.00	1739380.00	1323304.00	37° 50' 22.101 N	98° 27' 43.233 W	

PROJECT DETAILS: Reno County, Kansas [NAD 83]  
 Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Kansas Southern Zone  
 System Datum: Mean Sea Level

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape Point
5487' MD TGT	4010.00	-1801.57	71.86	1737578.55	1323375.85	Point
6487' MD TGT	4015.00	-2800.46	77.64	1736579.71	1323381.63	Point
7487' MD TGT	4020.00	-3800.45	79.01	1735579.79	1323383.01	Point
Weller 31 1H PBHL (2.24)	4025.00	-5107.32	81.01	1734273.00	1323385.00	Point

**NOTE: All Lease lines and Hard lines are estimates only and are subject to the customers' approval.**



Plan: Design #3 (Weller 31 #1H/OH)  
 Created By: Derek Stephens Date: 7:14, March 12 2014



<b>Company:</b>	Unit Petroleum	<b>Local Co-ordinate Reference:</b>	Well Weller 31 #1H
<b>Project:</b>	Reno County, Kansas [NAD 83]	<b>TVD Reference:</b>	20' KB @ 1811.00usft (UDI 303)
<b>Site:</b>	Section 31 T25S-R10W	<b>MD Reference:</b>	20' KB @ 1811.00usft (UDI 303)
<b>Well:</b>	Weller 31 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Reno County, Kansas [NAD 83]		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Kansas Southern Zone		Using geodetic scale factor

<b>Site</b>	Section 31 T25S-R10W				
<b>Site Position:</b>		<b>Northing:</b>	1,739,380.00 usft	<b>Latitude:</b>	37° 50' 22.101 N
<b>From:</b>	Map	<b>Easting:</b>	1,323,304.00 usft	<b>Longitude:</b>	98° 27' 43.233 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.02 °

<b>Well</b>	Weller 31 #1H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,739,380.00 usft	<b>Latitude:</b>	37° 50' 22.101 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,323,304.00 usft	<b>Longitude:</b>	98° 27' 43.233 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,791.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	1/29/2014	4.66	65.74	52,046

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	179.09	

<b>Survey Program</b>	<b>Date</b>	3/12/2014			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
69.00	3,261.57	Survey #1 (OH)	CB-GYRO-MS	Camera based gyro multishot	
3,323.00	8,846.00	Survey #2 (OH)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
69.31	0.69	98.70	69.31	-0.06	0.41	0.07	1.00	1.00	0.00	0.00
257.09	1.75	64.22	257.05	1.01	4.11	-0.95	0.66	0.56	-18.36	
444.87	2.23	87.90	444.71	2.39	10.35	-2.23	0.50	0.26	12.61	
632.65	2.81	100.23	632.31	1.71	18.53	-1.42	0.42	0.31	6.57	
820.43	3.74	110.57	819.79	-1.26	28.79	1.72	0.58	0.50	5.51	
1,008.21	3.72	115.45	1,007.17	-6.03	40.02	6.66	0.17	-0.01	2.60	
1,195.99	3.02	147.82	1,194.64	-12.83	48.16	13.60	1.06	-0.37	17.24	
1,383.77	2.44	176.32	1,382.21	-21.01	51.05	21.82	0.78	-0.31	15.18	
1,571.55	2.18	147.04	1,569.85	-28.00	53.25	28.84	0.64	-0.14	-15.59	



<b>Company:</b>	Unit Petroleum	<b>Local Co-ordinate Reference:</b>	Well Weller 31 #1H
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<b>Site:</b>	Section 31 T25S-R10W	<b>MD Reference:</b>	20' KB @ 1811.00usft (UDI 303)
<b>Well:</b>	Weller 31 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
1,759.33	2.48	137.52	1,757.47	-33.99	57.94	34.90	0.26	0.16	-5.07
1,947.11	2.50	119.36	1,945.08	-38.99	64.25	40.01	0.42	0.01	-9.67
2,134.89	2.26	121.15	2,132.70	-42.92	70.99	44.04	0.13	-0.13	0.95
2,322.67	1.82	121.57	2,320.36	-46.39	76.70	47.60	0.23	-0.23	0.22
2,510.45	1.31	114.05	2,508.07	-48.83	81.20	50.11	0.29	-0.27	-4.00
2,698.23	0.87	109.89	2,695.81	-50.19	84.50	51.52	0.24	-0.23	-2.22
2,886.01	0.45	127.35	2,883.58	-51.12	86.43	52.48	0.25	-0.22	9.30
3,073.79	0.55	124.39	3,071.35	-52.08	87.76	53.46	0.05	0.05	-1.58
3,261.57	0.53	124.47	3,259.12	-53.08	89.22	54.49	0.01	-0.01	0.04
3,323.00	1.30	153.50	3,320.55	-53.86	89.76	55.28	1.42	1.25	47.26
3,354.00	3.50	160.80	3,351.52	-55.07	90.23	56.49	7.15	7.10	23.55
3,386.00	5.60	163.60	3,383.41	-57.49	90.99	58.93	6.60	6.56	8.75
3,417.00	7.30	164.70	3,414.22	-60.84	91.94	62.29	5.50	5.48	3.55
3,449.00	9.80	167.90	3,445.86	-65.47	93.05	66.93	7.95	7.81	10.00
3,480.00	11.90	168.60	3,476.30	-71.18	94.23	72.67	6.79	6.77	2.26
3,511.00	13.70	168.60	3,506.53	-77.91	95.59	79.42	5.81	5.81	0.00
3,542.00	16.00	168.60	3,536.49	-85.70	97.16	87.23	7.42	7.42	0.00
3,574.00	18.50	168.80	3,567.05	-95.00	99.02	96.56	7.81	7.81	0.63
3,602.00	21.10	168.70	3,593.40	-104.31	100.87	105.89	9.29	9.29	-0.36
3,635.00	23.70	168.50	3,623.90	-116.63	103.35	118.26	7.88	7.88	-0.61
3,666.00	26.60	167.90	3,651.96	-129.53	106.05	131.19	9.39	9.35	-1.94
3,698.00	29.40	167.60	3,680.21	-144.21	109.24	145.92	8.76	8.75	-0.94
3,730.00	32.10	168.50	3,707.71	-160.21	112.62	161.98	8.56	8.44	2.81
3,761.00	35.10	168.30	3,733.53	-177.01	116.07	178.83	9.68	9.68	-0.65
3,792.00	38.50	167.90	3,758.35	-195.18	119.90	197.06	10.99	10.97	-1.29
3,823.00	42.20	168.50	3,781.97	-214.83	124.00	216.76	12.00	11.94	1.94
3,855.00	45.70	169.00	3,805.00	-236.60	128.33	238.61	10.99	10.94	1.56
3,886.00	49.50	169.40	3,825.90	-259.09	132.62	261.16	12.29	12.26	1.29
3,918.00	53.30	169.90	3,845.86	-283.69	137.11	285.82	11.94	11.88	1.56
3,949.00	54.60	170.10	3,864.11	-308.37	141.46	310.57	4.23	4.19	0.65
3,980.00	55.40	170.10	3,881.89	-333.38	145.83	335.65	2.58	2.58	0.00
4,012.00	55.60	170.10	3,900.01	-359.36	150.36	361.70	0.63	0.63	0.00
4,043.00	56.20	170.10	3,917.39	-384.65	154.77	387.06	1.94	1.94	0.00
4,074.00	58.30	170.90	3,934.16	-410.36	159.07	412.83	7.11	6.77	2.58
4,106.00	61.80	172.10	3,950.14	-437.78	163.17	440.31	11.41	10.94	3.75
4,137.00	65.40	173.00	3,963.92	-465.31	166.76	467.90	11.90	11.61	2.90
4,168.00	68.80	174.00	3,975.98	-493.68	169.99	496.31	11.36	10.97	3.23
4,200.00	72.40	174.90	3,986.61	-523.71	172.91	526.39	11.56	11.25	2.81
4,231.00	76.00	175.80	3,995.05	-553.44	175.32	556.15	11.94	11.61	2.90
4,259.00	79.30	176.50	4,001.03	-580.73	177.16	583.46	12.04	11.79	2.50
4,348.00	88.80	178.80	4,010.25	-669.07	180.77	671.85	10.98	10.67	2.58
4,380.00	89.90	178.60	4,010.61	-701.06	181.50	703.85	3.49	3.44	-0.63
4,444.00	90.60	178.10	4,010.33	-765.03	183.34	767.84	1.34	1.09	-0.78



<b>Company:</b>	Unit Petroleum	<b>Local Co-ordinate Reference:</b>	Well Weller 31 #1H
<b>Project:</b>	Reno County, Kansas [NAD 83]	<b>TVD Reference:</b>	20' KB @ 1811.00usft (UDI 303)
<b>Site:</b>	Section 31 T25S-R10W	<b>MD Reference:</b>	20' KB @ 1811.00usft (UDI 303)
<b>Well:</b>	Weller 31 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)
4,540.00	91.10	177.80	4,008.91	-860.96	186.77	863.81	0.61	0.52	-0.31
4,635.00	89.60	178.20	4,008.33	-955.89	190.09	958.79	1.63	-1.58	0.42
4,731.00	89.90	177.70	4,008.75	-1,051.83	193.52	1,054.77	0.61	0.31	-0.52
4,827.00	89.40	178.30	4,009.33	-1,147.77	196.87	1,150.75	0.81	-0.52	0.63
4,922.00	89.70	178.30	4,010.08	-1,242.72	199.69	1,245.73	0.32	0.32	0.00
5,018.00	88.90	178.10	4,011.25	-1,338.67	202.70	1,341.71	0.86	-0.83	-0.21
5,114.00	89.80	178.00	4,012.34	-1,434.61	205.97	1,437.69	0.94	0.94	-0.10
5,210.00	91.20	178.00	4,011.50	-1,530.54	209.32	1,533.67	1.46	1.46	0.00
5,302.00	87.70	177.70	4,012.39	-1,622.46	212.77	1,625.63	3.82	-3.80	-0.33
5,394.00	87.50	177.30	4,016.24	-1,714.29	216.78	1,717.51	0.49	-0.22	-0.43
5,473.59	88.61	176.96	4,018.94	-1,793.74	220.77	1,797.01	1.46	1.40	-0.43
<b>5487' MD TGT</b>									
5,487.00	88.80	176.90	4,019.24	-1,807.12	221.48	1,810.40	1.46	1.40	-0.43
5,579.00	87.90	175.40	4,021.89	-1,898.87	227.66	1,902.24	1.90	-0.98	-1.63
5,672.00	88.90	175.90	4,024.49	-1,991.56	234.71	1,995.04	1.20	1.08	0.54
5,763.00	90.10	175.70	4,025.28	-2,082.32	241.37	2,085.88	1.34	1.32	-0.22
5,855.00	91.20	175.30	4,024.24	-2,174.02	248.59	2,177.69	1.27	1.20	-0.43
5,947.00	90.90	174.80	4,022.55	-2,265.67	256.53	2,269.45	0.63	-0.33	-0.54
6,040.00	90.20	174.90	4,021.66	-2,358.29	264.88	2,362.19	0.76	-0.75	0.11
6,134.00	90.80	174.30	4,020.84	-2,451.86	273.72	2,455.90	0.90	0.64	-0.64
6,224.00	91.40	174.40	4,019.11	-2,541.41	282.58	2,545.57	0.68	0.67	0.11
6,316.00	90.60	174.50	4,017.51	-2,632.96	291.48	2,637.25	0.88	-0.87	0.11
6,407.00	90.70	174.50	4,016.47	-2,723.54	300.20	2,727.96	0.11	0.11	0.00
6,461.06	90.82	174.15	4,015.76	-2,777.33	305.54	2,781.82	0.68	0.22	-0.65
<b>6487' MD TGT</b>									
6,500.00	90.90	173.90	4,015.18	-2,816.05	309.60	2,820.61	0.68	0.22	-0.65
6,591.00	90.90	173.70	4,013.75	-2,906.51	319.42	2,911.21	0.22	0.00	-0.22
6,683.00	89.80	174.10	4,013.18	-2,997.99	329.20	3,002.83	1.27	-1.20	0.43
6,776.00	90.00	174.00	4,013.35	-3,090.48	338.84	3,095.47	0.24	0.22	-0.11
6,869.00	88.90	174.30	4,014.24	-3,182.99	348.32	3,188.12	1.23	-1.18	0.32
6,962.00	89.20	174.60	4,015.78	-3,275.55	357.31	3,280.80	0.46	0.32	0.32
7,054.00	89.40	175.00	4,016.91	-3,367.16	365.65	3,372.53	0.49	0.22	0.43
7,146.00	90.40	174.50	4,017.07	-3,458.77	374.07	3,464.27	1.22	1.09	-0.54
7,237.00	88.90	174.10	4,017.62	-3,549.32	383.10	3,554.95	1.71	-1.65	-0.44
7,332.00	89.40	173.10	4,019.03	-3,643.71	393.69	3,649.50	1.18	0.53	-1.05
7,429.00	90.20	172.50	4,019.37	-3,739.95	405.85	3,745.91	1.03	0.82	-0.62
7,444.29	90.28	172.39	4,019.31	-3,755.10	407.86	3,761.10	0.90	0.52	-0.73
<b>7487' MD TGT</b>									
7,525.00	90.70	171.80	4,018.62	-3,835.04	418.96	3,841.21	0.90	0.52	-0.73
7,621.00	91.30	171.50	4,016.94	-3,930.01	432.90	3,936.38	0.70	0.63	-0.31
7,716.00	90.90	170.70	4,015.12	-4,023.85	447.59	4,030.44	0.94	-0.42	-0.84
7,812.00	91.40	170.80	4,013.19	-4,118.58	463.02	4,125.41	0.53	0.52	0.10
7,907.00	92.00	170.00	4,010.37	-4,212.21	478.86	4,219.27	1.05	0.63	-0.84
8,003.00	90.30	170.20	4,008.44	-4,306.76	495.36	4,314.07	1.78	-1.77	0.21



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<b>Site:</b>	Section 31 T25S-R10W	<b>MD Reference:</b>	20' KB @ 1811.00usft (UDI 303)
<b>Well:</b>	Weller 31 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	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)	
8,099.00	89.90	169.50	4,008.28	-4,401.25	512.28	4,408.82	0.84	-0.42	-0.73	
8,194.00	89.30	168.80	4,008.94	-4,494.55	530.16	4,502.39	0.97	-0.63	-0.74	
8,289.00	89.60	168.40	4,009.85	-4,587.67	548.93	4,595.80	0.53	0.32	-0.42	
8,384.00	88.90	168.00	4,011.10	-4,680.66	568.36	4,689.08	0.85	-0.74	-0.42	
8,479.00	86.40	167.70	4,014.99	-4,773.44	588.34	4,782.17	2.65	-2.63	-0.32	
8,575.00	86.00	167.70	4,021.35	-4,867.03	608.74	4,876.07	0.42	-0.42	0.00	
8,671.00	84.40	166.40	4,029.39	-4,960.26	630.18	4,969.63	2.14	-1.67	-1.35	
8,673.47	84.41	166.34	4,029.63	-4,962.64	630.76	4,972.02	2.34	0.42	-2.32	
<b>Weller 31 1H PBHL (2.24)</b>										
8,766.00	84.80	164.20	4,038.33	-5,051.73	654.18	5,061.47	2.34	0.42	-2.32	
8,801.00	85.10	164.50	4,041.41	-5,085.31	663.58	5,095.19	1.21	0.86	0.86	
<b>Last Inwell Survey</b>										
8,846.00	85.10	164.50	4,045.25	-5,128.51	675.56	5,138.58	0.00	0.00	0.00	
<b>Projection to TD</b>										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,801.00	4,041.41	-5,085.31	663.58	Last Inwell Survey	
8,846.00	4,045.25	-5,128.51	675.56	Projection to TD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_