



EP Energy E&P Company, L.P.

**Crocket Co, Tx
University East 4110
BH
Wellbore #1**

Design: Surveys

Completion Report

13 January, 2015



RYAN DIRECTIONAL SERVICES, INC.

A NABORS COMPANY

Company:	EP Energy E&P Company, L.P.	Local Co-ordinate Reference:	Well BH
Project:	Crocket Co, Tx	TVD Reference:	RKB @ 2663.00ft (Original Well Elev)
Site:	University East 4110	MD Reference:	RKB @ 2663.00ft (Original Well Elev)
Well:	BH	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	RyanUSA_Compass

Project		Crocket Co, Tx, Crocket Co, Tx	
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Site	University East 4110				
Site Position:		Northing:	493,716.18 usft	Latitude:	31° 1' 17.73 N
From:	Map	Easting:	1,742,471.02 usft	Longitude:	101° 9' 19.82 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.42 °

Well		BH					
Well Position	+N-S	0.00 ft	Northing:	493,715.87 usft	Latitude:	31° 1' 17.73 N	
	+E-W	0.00 ft	Easting:	1,742,491.11 usft	Longitude:	101° 9' 19.59 W	
Position Uncertainty		0.00 ft	Wellhead Elevation:		0.00 ft	Ground Level:	2,633.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/24/2014	6.01	59.35	47,746

Design		Surveys			
Audit Notes:					
Version: 1.0		Phase: ACTUAL		Tie On Depth: 0.00	
Vertical Section:		Depth From (TVD) (ft)		+N-S (ft)	
		0.00		0.00	
				+E-W (ft)	
				0.00	
				Direction (°)	
				0.18	

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Survey Program		Date 1/13/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
50.00	850.00	Survey #1 (Wellbore #1)	Gyro	Gyro
1,044.00	14,649.00	Survey #2 (Wellbore #1)	Ryan-MWD+BGGM	OWSG MWD - BGGM

Survey												
MD (ft)	Incl (°)	Azm (°)	TVD (ft)	N/S (ft)	E/W (ft)	VS (ft)	DLS (°/100ft)	Closure Distance (ft)	Closure Azimuth (°)			
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
50.00	0.28	75.96	50.00	0.03	0.12	0.03	0.56	0.12	75.96			
100.00	0.21	84.10	100.00	0.07	0.33	0.07	0.16	0.34	78.18			
150.00	0.20	117.95	150.00	0.04	0.50	0.04	0.24	0.50	85.71			
200.00	0.20	59.34	200.00	0.04	0.65	0.04	0.39	0.65	86.40			
250.00	0.44	35.81	250.00	0.24	0.84	0.24	0.54	0.87	73.92			
300.00	0.48	42.40	300.00	0.55	1.09	0.55	0.13	1.22	63.16			
350.00	0.56	34.23	349.99	0.91	1.37	0.91	0.22	1.64	56.43			
400.00	0.64	45.95	399.99	1.30	1.71	1.31	0.29	2.15	52.61			
450.00	0.71	40.88	449.99	1.73	2.11	1.74	0.18	2.73	50.61			
500.00	0.91	45.70	499.98	2.24	2.60	2.25	0.42	3.43	49.17			
550.00	1.02	36.69	549.98	2.88	3.15	2.89	0.37	4.26	47.55			
600.00	1.22	37.74	599.97	3.66	3.74	3.67	0.40	5.23	45.64			
650.00	1.39	45.17	649.95	4.50	4.49	4.52	0.48	6.36	44.94			
700.00	1.49	46.58	699.94	5.38	5.40	5.40	0.21	7.62	45.09			
750.00	1.50	49.17	749.92	6.25	6.36	6.27	0.14	8.92	45.50			
800.00	1.47	50.45	799.90	7.09	7.35	7.11	0.09	10.21	46.05			
850.00	1.26	56.83	849.89	7.80	8.31	7.83	0.52	11.40	46.81			
1,044.00	0.80	58.00	1,043.86	9.68	11.24	9.72	0.24	14.84	49.26			
1,075.00	0.90	84.60	1,074.85	9.82	11.67	9.86	1.30	15.25	49.91			
1,168.00	3.20	121.90	1,167.79	8.52	14.60	8.56	2.73	16.90	59.74			

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Survey										
MD (ft)	Incl (°)	Azm (°)	TVD (ft)	N/S (ft)	E/W (ft)	VS (ft)	DLS (°/100ft)	Closure Distance (ft)	Closure Azimuth (°)	
1,260.00	6.10	130.70	1,259.48	3.97	20.49	4.04	3.24	20.87	79.03	
1,354.00	8.40	136.30	1,352.72	-4.25	29.02	-4.16	2.56	29.33	98.33	
1,447.00	8.10	138.20	1,444.76	-14.04	38.08	-13.92	0.44	40.59	110.25	
1,540.00	9.80	145.70	1,536.63	-25.47	46.91	-25.32	2.21	53.37	118.50	
1,632.00	9.70	146.90	1,627.30	-38.43	55.55	-38.25	0.25	67.55	124.67	
1,727.00	9.10	145.20	1,721.02	-51.30	64.21	-51.10	0.70	82.19	128.62	
1,820.00	8.80	144.50	1,812.89	-63.13	72.54	-62.91	0.34	96.16	131.03	
1,914.00	9.00	144.50	1,905.76	-74.97	80.98	-74.72	0.21	110.36	132.79	
2,007.00	8.20	144.40	1,997.71	-86.29	89.07	-86.01	0.86	124.01	134.09	
2,100.00	6.90	143.90	2,089.91	-96.19	96.22	-95.89	1.40	136.06	134.99	
2,194.00	4.50	133.30	2,183.44	-103.29	102.23	-102.97	2.78	145.33	135.29	
2,286.00	1.40	123.50	2,275.30	-106.38	105.80	-106.05	3.40	150.03	135.16	
2,379.00	1.00	330.70	2,368.30	-106.30	106.35	-105.97	2.51	150.37	134.99	
2,472.00	0.70	329.00	2,461.28	-105.11	105.66	-104.78	0.32	149.03	134.85	
2,657.00	0.80	70.20	2,646.28	-103.70	106.29	-103.37	0.63	148.50	134.29	
2,845.00	1.40	90.10	2,834.24	-103.26	109.82	-102.92	0.37	150.74	133.24	
3,030.00	0.70	122.30	3,019.21	-103.87	113.04	-103.51	0.48	153.51	132.58	
3,217.00	0.90	90.90	3,206.19	-104.50	115.47	-104.14	0.25	155.74	132.15	
3,403.00	0.00	4.90	3,392.18	-104.53	116.93	-104.16	0.48	156.84	131.79	
3,591.00	0.70	87.00	3,580.18	-104.47	118.08	-104.09	0.37	157.66	131.50	
3,776.00	0.60	162.00	3,765.17	-105.33	119.51	-104.95	0.43	159.30	131.39	
3,962.00	0.80	226.30	3,951.16	-107.15	118.87	-106.78	0.41	160.03	132.03	
4,148.00	1.10	197.30	4,137.13	-109.75	117.40	-109.38	0.30	160.71	133.07	
4,334.00	1.10	225.60	4,323.10	-112.71	115.59	-112.34	0.29	161.44	134.28	
4,519.00	0.50	294.20	4,508.09	-113.62	113.59	-113.26	0.56	160.66	135.01	
4,705.00	3.10	217.90	4,693.99	-117.25	109.76	-116.91	1.62	160.61	136.89	
4,890.00	1.00	310.30	4,878.89	-120.16	105.45	-119.83	1.78	159.87	138.73	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Survey									
MD (ft)	Incl (°)	Azm (°)	TVD (ft)	N/S (ft)	E/W (ft)	VS (ft)	DLS (°/100ft)	Closure Distance (ft)	Closure Azimuth (°)
5,076.00	0.60	302.30	5,064.87	-118.59	103.39	-118.26	0.22	157.33	138.92
5,263.00	0.10	269.90	5,251.87	-118.07	102.40	-117.74	0.28	156.29	139.06
5,450.00	0.40	200.70	5,438.87	-118.68	102.01	-118.36	0.20	156.49	139.32
5,637.00	1.20	28.40	5,625.86	-117.56	102.71	-117.24	0.85	156.11	138.86
5,822.00	1.30	31.80	5,810.81	-114.08	104.73	-113.75	0.07	154.86	137.45
5,880.00	1.20	36.80	5,868.80	-113.03	105.44	-112.70	0.25	154.58	136.99
5,941.00	3.30	10.90	5,929.75	-110.80	106.16	-110.46	3.74	153.44	136.22
5,973.00	8.90	2.90	5,961.56	-107.42	106.46	-107.08	17.66	151.23	135.26
6,003.00	14.60	1.20	5,990.92	-101.31	106.66	-100.98	19.03	147.10	133.53
6,035.00	19.10	358.50	6,021.53	-92.04	106.60	-91.71	14.27	140.84	130.81
6,066.00	21.80	358.00	6,050.58	-81.22	106.27	-80.88	8.73	133.75	127.39
6,097.00	24.40	357.70	6,079.09	-69.06	105.81	-68.73	8.40	126.36	123.13
6,128.00	28.30	358.20	6,106.86	-55.32	105.32	-54.99	12.60	118.97	117.71
6,159.00	32.30	359.00	6,133.62	-39.68	104.95	-39.35	12.97	112.20	110.71
6,190.00	36.00	359.90	6,159.27	-22.29	104.79	-21.96	12.05	107.13	102.01
6,221.00	39.70	1.20	6,183.75	-3.27	104.98	-2.94	12.21	105.03	91.78
6,252.00	42.70	2.30	6,207.07	17.14	105.61	17.47	9.96	106.99	80.78
6,283.00	45.60	3.00	6,229.31	38.70	106.61	39.04	9.49	113.42	70.05
6,315.00	48.60	2.50	6,251.09	62.12	107.73	62.45	9.44	124.36	60.03
6,346.00	49.80	1.90	6,271.35	85.56	108.63	85.91	4.14	138.28	51.77
6,377.00	52.60	1.60	6,290.77	109.71	109.37	110.05	9.06	154.91	44.91
6,408.00	57.50	0.80	6,308.52	135.11	109.89	135.45	15.95	174.16	39.12
6,439.00	62.30	359.10	6,324.07	161.92	109.86	162.26	16.19	195.67	34.16
6,470.00	66.50	358.20	6,337.46	189.86	109.20	190.20	13.80	219.02	29.91
6,501.00	69.50	357.70	6,349.07	218.58	108.17	218.92	9.79	243.88	26.33
6,532.00	72.10	357.60	6,359.26	247.83	106.97	248.16	8.39	269.93	23.35
6,563.00	75.10	358.40	6,368.02	277.54	105.93	277.88	9.99	297.07	20.89

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Survey										
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6,593.00	79.10	359.40	6,374.71	306.78	105.37	307.11	13.72	324.37	18.96	
6,613.00	81.20	0.50	6,378.13	326.48	105.36	326.81	11.82	343.06	17.89	
6,675.00	88.50	1.30	6,383.70	388.18	106.33	388.51	11.84	402.48	15.32	
6,768.00	94.10	1.80	6,381.59	481.08	108.84	481.42	6.05	493.24	12.75	
6,861.00	93.80	359.10	6,375.18	573.85	109.57	574.19	2.91	584.22	10.81	
6,954.00	91.00	359.30	6,371.28	666.75	108.27	667.09	3.02	675.49	9.22	
7,047.00	90.90	358.00	6,369.74	759.71	106.08	760.04	1.40	767.08	7.95	
7,141.00	91.20	359.00	6,368.02	853.66	103.62	853.98	1.11	859.93	6.92	
7,233.00	89.20	359.20	6,367.70	945.65	102.18	945.96	2.18	951.15	6.17	
7,327.00	92.00	358.40	6,366.71	1,039.61	100.21	1,039.92	3.10	1,044.43	5.51	
7,422.00	92.70	0.40	6,362.82	1,134.52	99.21	1,134.82	2.23	1,138.85	5.00	
7,514.00	91.60	0.10	6,359.37	1,226.45	99.62	1,226.76	1.24	1,230.49	4.64	
7,607.00	89.40	0.10	6,358.56	1,319.44	99.78	1,319.75	2.37	1,323.21	4.32	
7,702.00	91.70	359.40	6,357.64	1,414.43	99.36	1,414.74	2.53	1,417.92	4.02	
7,795.00	92.40	1.30	6,354.32	1,507.36	99.93	1,507.67	2.18	1,510.67	3.79	
7,888.00	88.80	359.80	6,353.34	1,600.34	100.82	1,600.65	4.19	1,603.51	3.60	
7,981.00	88.90	359.70	6,355.21	1,693.32	100.42	1,693.62	0.15	1,696.29	3.39	
8,075.00	90.50	0.60	6,355.70	1,787.31	100.66	1,787.62	1.95	1,790.14	3.22	
8,167.00	90.70	359.00	6,354.74	1,879.30	100.34	1,879.61	1.75	1,881.98	3.06	
8,260.00	88.50	356.70	6,355.39	1,972.22	96.85	1,972.52	3.42	1,974.60	2.81	
8,352.00	88.60	359.20	6,357.72	2,064.13	93.56	2,064.41	2.72	2,066.25	2.60	
8,446.00	91.90	1.80	6,357.31	2,158.10	94.38	2,158.39	4.47	2,160.16	2.50	
8,539.00	92.30	1.20	6,353.90	2,251.01	96.82	2,251.30	0.78	2,253.09	2.46	
8,632.00	91.30	0.60	6,350.98	2,343.95	98.28	2,344.25	1.25	2,346.01	2.40	
8,727.00	87.30	356.60	6,352.14	2,438.87	95.96	2,439.16	5.95	2,440.76	2.25	
8,819.00	89.10	359.50	6,355.03	2,530.76	92.83	2,531.04	3.71	2,532.46	2.10	
8,914.00	92.40	2.20	6,353.78	2,625.72	94.24	2,626.00	4.49	2,627.41	2.06	

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9,006.00	88.60	359.60	6,352.98	2,717.68	95.68	2,717.97	5.00	2,719.37	2.02	
9,100.00	89.10	359.50	6,354.87	2,811.66	94.95	2,811.94	0.54	2,813.26	1.93	
9,193.00	90.30	359.70	6,355.36	2,904.65	94.30	2,904.94	1.31	2,906.18	1.86	
9,285.00	88.70	359.80	6,356.16	2,996.65	93.89	2,996.93	1.74	2,998.12	1.79	
9,379.00	90.50	2.00	6,356.81	3,090.62	95.37	3,090.91	3.02	3,092.09	1.77	
9,471.00	89.60	359.40	6,356.73	3,182.61	96.50	3,182.89	2.99	3,184.07	1.74	
9,564.00	90.10	356.70	6,356.98	3,275.54	93.33	3,275.82	2.95	3,276.87	1.63	
9,657.00	90.90	356.90	6,356.17	3,368.40	88.14	3,368.66	0.89	3,369.55	1.50	
9,750.00	89.50	356.00	6,355.84	3,461.21	82.38	3,461.45	1.79	3,462.19	1.36	
9,842.00	90.60	359.70	6,355.76	3,553.13	78.93	3,553.36	4.20	3,554.01	1.27	
9,935.00	88.70	1.40	6,356.33	3,646.12	79.82	3,646.35	2.74	3,646.99	1.25	
10,028.00	90.40	2.90	6,357.06	3,739.04	83.31	3,739.29	2.44	3,739.97	1.28	
10,120.00	93.60	1.90	6,353.85	3,830.89	87.16	3,831.15	3.64	3,831.88	1.30	
10,213.00	93.30	3.30	6,348.25	3,923.63	91.37	3,923.89	1.54	3,924.69	1.33	
10,305.00	92.30	3.90	6,343.76	4,015.33	97.14	4,015.62	1.27	4,016.51	1.39	
10,398.00	90.10	2.20	6,341.81	4,108.17	102.09	4,108.47	2.99	4,109.44	1.42	
10,491.00	89.30	3.60	6,342.30	4,201.05	106.79	4,201.36	1.73	4,202.41	1.46	
10,585.00	89.20	3.80	6,343.53	4,294.84	112.86	4,295.18	0.24	4,296.33	1.51	
10,678.00	89.90	4.60	6,344.26	4,387.59	119.67	4,387.95	1.14	4,389.22	1.56	
10,772.00	89.80	4.20	6,344.50	4,481.31	126.88	4,481.69	0.44	4,483.11	1.62	
10,865.00	89.20	0.60	6,345.32	4,574.21	130.78	4,574.60	3.92	4,576.08	1.64	
10,958.00	89.50	0.70	6,346.37	4,667.20	131.83	4,667.59	0.34	4,669.06	1.62	
11,051.00	89.80	1.30	6,346.94	4,760.18	133.45	4,760.58	0.72	4,762.05	1.61	
11,143.00	89.40	1.30	6,347.58	4,852.16	135.54	4,852.56	0.43	4,854.05	1.60	
11,237.00	89.90	0.80	6,348.16	4,946.14	137.26	4,946.55	0.75	4,948.04	1.59	
11,331.00	89.10	0.90	6,348.98	5,040.12	138.66	5,040.54	0.86	5,042.03	1.58	
11,424.00	89.80	2.00	6,349.87	5,133.09	141.01	5,133.51	1.40	5,135.03	1.57	

Company:	EP Energy E&P Company, L.P.	Local Co-ordinate Reference:	Well BH
Project:	Crocket Co, Tx	TVD Reference:	RKB @ 2663.00ft (Original Well Elev)
Site:	University East 4110	MD Reference:	RKB @ 2663.00ft (Original Well Elev)
Well:	BH	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	RyanUSA_Compass

Survey										
MD (ft)	Incl (°)	Azm (°)	TVD (ft)	N/S (ft)	E/W (ft)	VS (ft)	DLS (°/100ft)	Closure Distance (ft)	Closure Azimuth (°)	
11,517.00	89.90	0.60	6,350.11	5,226.06	143.12	5,226.49	1.51	5,228.02	1.57	
11,609.00	89.90	0.10	6,350.27	5,318.06	143.68	5,318.49	0.54	5,320.00	1.55	
11,702.00	89.10	359.20	6,351.08	5,411.05	143.12	5,411.48	1.29	5,412.95	1.52	
11,795.00	89.30	0.30	6,352.38	5,504.04	142.71	5,504.46	1.20	5,505.89	1.49	
11,889.00	89.60	1.30	6,353.29	5,598.03	144.02	5,598.45	1.11	5,599.88	1.47	
11,981.00	89.90	359.70	6,353.69	5,690.02	144.82	5,690.45	1.77	5,691.86	1.46	
12,074.00	89.70	359.30	6,354.01	5,783.02	144.01	5,783.44	0.48	5,784.81	1.43	
12,167.00	89.40	357.60	6,354.74	5,875.97	141.50	5,876.39	1.86	5,877.68	1.38	
12,261.00	90.10	358.20	6,355.15	5,969.91	138.05	5,970.31	0.98	5,971.51	1.32	
12,355.00	89.10	356.70	6,355.81	6,063.81	133.87	6,064.20	1.92	6,065.29	1.26	
12,447.00	89.50	358.30	6,356.93	6,155.71	129.86	6,156.09	1.79	6,157.08	1.21	
12,542.00	89.70	359.90	6,357.60	6,250.70	128.37	6,251.07	1.70	6,252.01	1.18	
12,635.00	89.80	2.00	6,358.00	6,343.68	129.91	6,344.05	2.26	6,345.01	1.17	
12,730.00	89.60	0.60	6,358.50	6,438.65	132.06	6,439.03	1.49	6,440.00	1.18	
12,823.00	89.10	356.50	6,359.55	6,531.59	129.71	6,531.97	4.44	6,532.88	1.14	
12,917.00	88.40	355.60	6,361.61	6,625.35	123.24	6,625.70	1.21	6,626.49	1.07	
13,011.00	89.30	357.20	6,363.49	6,719.14	117.34	6,719.47	1.95	6,720.16	1.00	
13,104.00	89.30	0.40	6,364.63	6,812.10	115.39	6,812.43	3.44	6,813.08	0.97	
13,198.00	88.30	359.80	6,366.60	6,906.08	115.55	6,906.40	1.24	6,907.04	0.96	
13,292.00	90.30	2.70	6,367.75	7,000.03	117.60	7,000.37	3.75	7,001.02	0.96	
13,384.00	90.20	2.30	6,367.34	7,091.94	121.62	7,092.29	0.45	7,092.99	0.98	
13,477.00	88.10	0.50	6,368.72	7,184.90	123.89	7,185.25	2.97	7,185.96	0.99	
13,570.00	90.60	2.00	6,369.78	7,277.86	125.92	7,278.22	3.13	7,278.95	0.99	
13,664.00	90.50	1.00	6,368.88	7,371.82	128.38	7,372.19	1.07	7,372.94	1.00	
13,757.00	90.80	0.60	6,367.82	7,464.80	129.68	7,465.17	0.54	7,465.93	1.00	
13,850.00	89.10	0.10	6,367.90	7,557.80	130.25	7,558.17	1.91	7,558.92	0.99	
13,944.00	89.50	358.80	6,369.05	7,651.79	129.34	7,652.15	1.45	7,652.88	0.97	

Company:	EP Energy E&P Company, L.P.	Local Co-ordinate Reference:	Well BH
Project:	Crocket Co, Tx	TVD Reference:	RKB @ 2663.00ft (Original Well Elev)
Site:	University East 4110	MD Reference:	RKB @ 2663.00ft (Original Well Elev)
Well:	BH	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	RyanUSA_Compass

Survey									
MD (ft)	Incl (°)	Azm (°)	TVD (ft)	N/S (ft)	E/W (ft)	VS (ft)	DLS (°/100ft)	Closure Distance (ft)	Closure Azimuth (°)
14,037.00	87.50	359.90	6,371.49	7,744.74	128.29	7,745.11	2.45	7,745.80	0.95
14,129.00	88.10	0.50	6,375.02	7,836.67	128.61	7,837.04	0.92	7,837.73	0.94
14,223.00	88.30	0.10	6,377.97	7,930.62	129.10	7,930.99	0.48	7,931.67	0.93
14,317.00	88.60	0.70	6,380.51	8,024.59	129.76	8,024.95	0.71	8,025.64	0.93
14,409.00	88.30	1.40	6,383.00	8,116.54	131.44	8,116.91	0.83	8,117.60	0.93
14,503.00	88.20	1.00	6,385.87	8,210.47	133.41	8,210.85	0.44	8,211.56	0.93
14,599.00	88.20	1.40	6,388.89	8,306.40	135.42	8,306.79	0.42	8,307.51	0.93
Last Survey Taken									
14,649.00	88.20	1.40	6,390.46	8,356.36	136.64	8,356.75	0.00	8,357.48	0.94
Projection to Bit									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
14,599.00	6,388.89	8,306.40	135.42	Last Survey Taken
14,649.00	6,390.46	8,356.36	136.64	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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