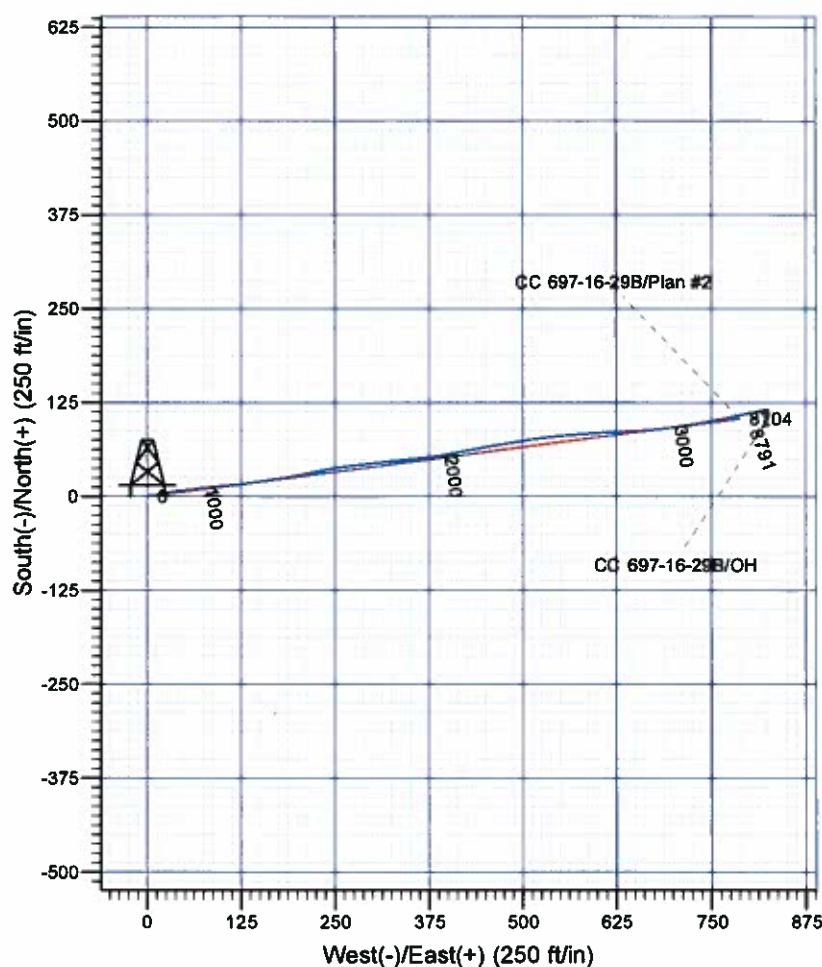
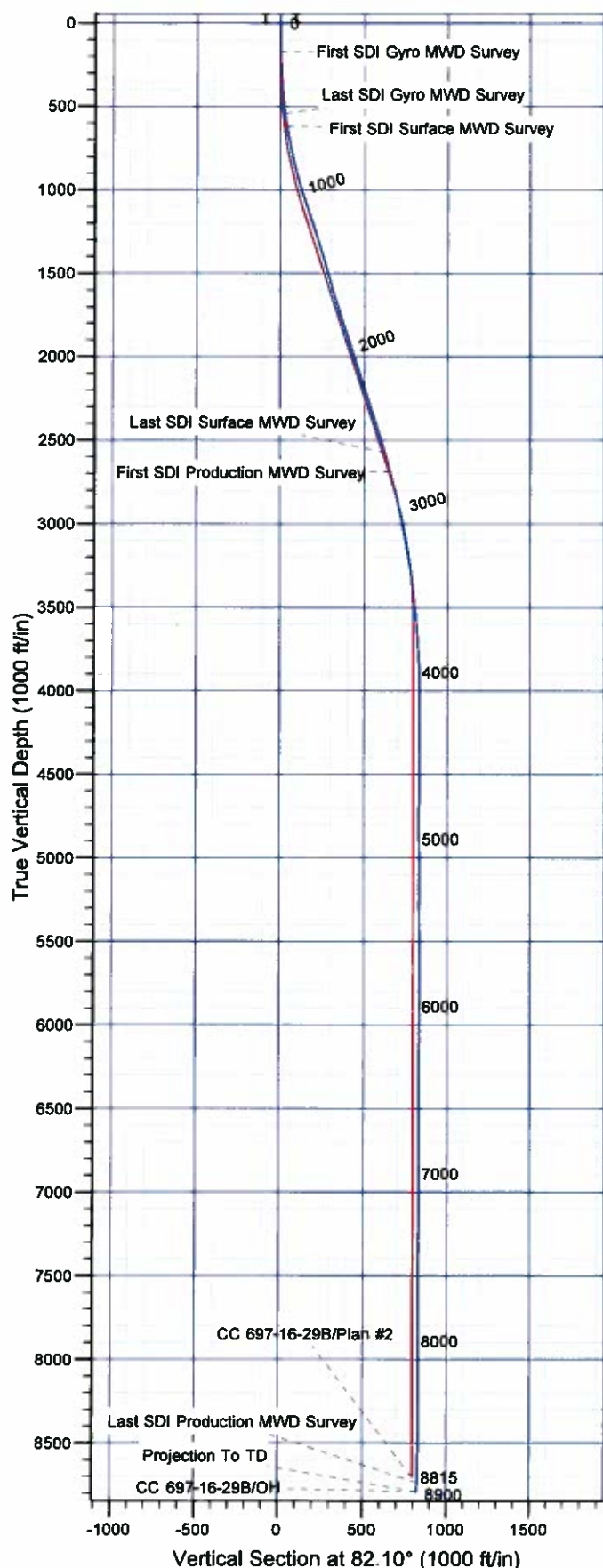




Scientific Drilling

Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 697-16-28 Pad
Well: CC 697-16-29B
Wellbore: OH
Design: OH



Well Details: CC 697-16-29B

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	626931.26	1231492.92	39° 31' 23.186 N	108° 13' 28.752 W	O

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-16-29B - Slot O, True North
Vertical (TVD) Reference: GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Section (VS) Reference: Slot - O(0.00N, 0.00E)
Measured Depth Reference: GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD27

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Colorado Central 502

System Datum: Mean Sea Level

Plan: OH

16:34, September 15 2011
Created By: Rex Hall

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 697-16-28 Pad

CC 697-16-29B - Slot O

OH

Design: OH

Standard Survey Report

15 September, 2011

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-29B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Site:	Cascade Creek 697-16-28 Pad	MD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Well:	CC 697-16-29B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Project	Garfield County, CO NAD27		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site	Cascade Creek 697-16-28 Pad, Sec. 16 T6N R97W				
Site Position:		Northing:	626,970.66 usft	Latitude:	39° 31' 23.545 N
From:	Map	Easting:	1,231,458.32 usft	Longitude:	108° 13' 29.208 W
Position Uncertainty:	0.00 ft	Slot Radius:	0.000 in	Grid Convergence:	-1.72 °

Well	CC 697-16-29B - Slot O				
Well Position	+N/-S	0.00 ft	Northing:	626,931.26 usft	Latitude: 39° 31' 23.166 N
	+E/-W	0.00 ft	Easting:	1,231,492.91 usft	Longitude: 108° 13' 28.752 W
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level: 8,297.00 ft

Wellbore	OH				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	02/04/11	10.48	65.74	52,284

Design	OH				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	82.10

Survey Program		Date	09/15/11		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
173.00	541.00	Survey #1 - Gyro Survey (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
619.00	2,661.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,780.00	8,900.00	Survey #3 - Production MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
173.00	1.06	62.67	172.99	0.73	1.42	1.51	0.61	0.61	0.00
First SDI Gyro MWD Survey									
265.00	2.64	85.25	264.94	1.30	4.29	4.43	1.86	1.72	24.54
356.00	3.96	84.46	355.79	1.78	9.51	9.66	1.45	1.45	-0.87
448.00	5.63	81.21	447.46	2.77	17.13	17.35	1.84	1.82	-3.53
541.00	7.30	75.41	539.87	4.96	27.35	27.78	1.93	1.80	-6.24
Last SDI Gyro MWD Survey									

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-29B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Site:	Cascade Creek 697-16-28 Pad	MD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Well:	CC 697-16-29B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
619.00	9.15	82.18	617.06	7.05	38.30	38.90	2.67	2.37	8.68
First SDI Surface MWD Survey									
713.00	10.82	84.73	709.64	8.88	54.49	55.19	1.84	1.78	2.71
805.00	11.96	81.91	799.83	11.01	72.52	73.35	1.38	1.24	-3.07
894.00	13.81	84.90	886.58	13.26	92.24	93.18	2.21	2.08	3.36
987.00	16.88	84.55	976.26	15.53	116.74	117.77	3.30	3.30	-0.38
1,080.00	17.85	81.21	1,065.02	18.99	144.27	145.51	1.50	1.04	-3.59
1,174.00	18.03	81.47	1,154.45	23.35	172.89	174.46	0.21	0.19	0.28
1,269.00	18.64	78.66	1,244.63	28.51	202.32	204.32	1.13	0.64	-2.96
1,363.00	17.06	78.57	1,334.10	34.20	230.56	233.08	1.68	-1.68	-0.10
1,458.00	16.00	82.27	1,425.17	38.72	257.20	260.08	1.57	-1.12	3.89
1,552.00	15.74	82.97	1,515.59	42.02	282.69	285.78	0.34	-0.28	0.74
1,647.00	17.15	84.02	1,606.70	45.06	309.41	312.67	1.52	1.48	1.11
1,741.00	17.76	83.14	1,696.37	48.22	337.43	340.85	0.71	0.65	-0.94
1,836.00	18.11	84.29	1,786.76	51.42	366.50	370.09	0.52	0.37	1.21
1,930.00	17.50	79.72	1,876.26	55.39	394.95	398.81	1.62	-0.65	-4.86
2,025.00	17.76	78.57	1,966.80	60.81	423.20	427.55	0.46	0.27	-1.21
2,119.00	17.50	80.60	2,056.38	65.96	451.20	455.98	0.71	-0.28	2.16
2,214.00	18.64	80.07	2,146.70	70.91	480.25	485.44	1.21	1.20	-0.56
2,308.00	17.76	81.56	2,235.99	75.61	509.23	514.79	1.06	-0.94	1.59
2,403.00	18.73	83.32	2,326.22	79.51	538.71	544.52	1.17	1.02	1.85
2,498.00	17.23	85.52	2,416.58	82.38	567.89	573.82	1.73	-1.58	2.32
2,592.00	16.97	86.57	2,506.42	84.29	595.46	601.39	0.43	-0.28	1.12
2,661.00	16.09	87.28	2,572.57	85.35	615.06	620.96	1.31	-1.28	1.03
Last SDI Surface MWD Survey									
2,780.00	15.09	87.42	2,687.19	86.83	647.01	652.80	0.84	-0.84	0.12
First SDI Production MWD Survey									
2,875.00	13.81	84.02	2,779.18	88.57	670.64	676.45	1.62	-1.35	-3.58
2,969.00	13.01	83.32	2,870.62	90.97	692.31	698.24	0.87	-0.85	-0.74
3,064.00	10.99	80.77	2,963.54	93.66	711.87	717.99	2.20	-2.13	-2.68
3,158.00	10.64	79.80	3,055.87	96.64	729.25	735.61	0.42	-0.37	-1.03
3,253.00	9.85	78.49	3,149.35	99.81	745.85	752.49	0.87	-0.83	-1.38
3,347.00	9.58	79.45	3,242.01	102.85	761.42	768.33	0.33	-0.29	1.02
3,442.00	7.47	78.49	3,335.95	105.53	775.24	782.39	2.23	-2.22	-1.01
3,536.00	6.86	78.40	3,429.22	107.87	786.73	794.09	0.65	-0.65	-0.10
3,631.00	6.33	77.61	3,523.59	110.14	797.40	804.97	0.57	-0.56	-0.83
3,725.00	3.87	81.83	3,617.21	111.70	805.60	813.31	2.65	-2.62	4.49
3,820.00	3.78	76.73	3,712.00	112.88	811.82	819.63	0.37	-0.09	-5.37
3,914.00	3.96	76.03	3,805.78	114.37	817.99	825.95	0.20	0.19	-0.74
4,009.00	2.46	77.34	3,900.63	115.61	823.16	831.24	1.58	-1.58	1.38
4,103.00	0.62	196.35	3,994.60	115.56	824.99	833.04	2.99	-1.96	126.61
4,198.00	0.70	187.03	4,089.60	114.50	824.77	832.68	0.14	0.08	-9.81
4,292.00	0.44	172.44	4,183.59	113.57	824.75	832.53	0.31	-0.28	-15.52
4,387.00	0.88	167.78	4,278.59	112.49	824.95	832.58	0.47	0.46	-4.91

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-29B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Site:	Cascade Creek 697-16-28 Pad	MD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Well:	CC 697-16-29B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,481.00	0.97	152.67	4,372.57	111.08	825.47	832.90	0.28	0.10	-16.07
4,576.00	1.14	174.02	4,467.56	109.43	825.94	833.14	0.45	0.18	22.47
4,671.00	1.14	288.19	4,562.55	108.78	825.14	832.26	2.01	0.00	120.18
4,765.00	1.85	240.12	4,656.52	108.32	822.93	830.01	1.47	0.76	-51.14
4,860.00	1.93	200.48	4,751.47	106.05	821.04	827.83	1.35	0.08	-41.73
4,954.00	1.49	138.08	4,845.44	103.66	821.31	827.76	1.93	-0.47	-66.38
5,049.00	0.44	30.94	4,940.43	103.06	822.32	828.68	1.76	-1.11	-112.78
5,143.00	0.70	20.13	5,034.42	103.90	822.70	829.18	0.30	0.28	-11.50
5,237.00	0.09	91.32	5,128.42	104.44	822.97	829.52	0.72	-0.65	75.73
5,332.00	0.35	68.99	5,223.42	104.54	823.32	829.88	0.28	0.27	-23.51
5,427.00	0.44	20.04	5,318.42	104.99	823.72	830.33	0.36	0.09	-51.53
5,521.00	0.44	30.15	5,412.41	105.64	824.02	830.72	0.08	0.00	10.76
5,616.00	0.35	43.51	5,507.41	106.17	824.40	831.17	0.13	-0.09	14.06
5,710.00	0.44	48.25	5,601.41	106.62	824.87	831.70	0.10	0.10	5.04
5,805.00	0.18	91.41	5,696.41	106.86	825.29	832.15	0.35	-0.27	45.43
5,899.00	0.18	121.38	5,790.41	106.78	825.57	832.41	0.10	0.00	31.88
5,994.00	0.09	244.60	5,885.41	106.67	825.63	832.45	0.25	-0.09	129.71
6,088.00	0.26	233.88	5,979.41	106.51	825.39	832.19	0.18	0.18	-11.40
6,183.00	0.62	245.21	6,074.40	106.17	824.75	831.51	0.39	0.38	11.93
6,277.00	0.70	238.62	6,168.40	105.65	823.79	830.50	0.12	0.09	-7.01
6,372.00	1.06	259.54	6,263.39	105.19	822.43	829.09	0.50	0.38	22.02
6,466.00	0.53	100.55	6,357.38	104.95	822.01	828.63	1.67	-0.56	-169.14
6,561.00	0.62	81.47	6,452.38	104.95	822.95	829.56	0.22	0.09	-20.08
6,655.00	0.44	156.82	6,546.37	104.69	823.59	830.17	0.70	-0.19	79.95
6,750.00	0.35	184.13	6,641.37	104.07	823.72	830.20	0.22	-0.09	28.96
6,844.00	0.53	160.40	6,735.37	103.37	823.84	830.23	0.27	0.19	-25.24
6,939.00	0.44	199.42	6,830.37	102.62	823.87	830.15	0.35	-0.09	41.07
7,033.00	0.44	56.78	6,924.37	102.47	824.05	830.31	0.89	0.00	-151.74
7,128.00	0.53	53.61	7,019.36	102.93	824.71	831.03	0.10	0.09	-3.34
7,223.00	0.18	237.83	7,114.36	103.12	824.94	831.28	0.75	-0.37	-185.03
7,317.00	0.53	254.62	7,208.36	102.92	824.39	830.71	0.38	0.37	17.86
7,412.00	0.97	228.52	7,303.35	102.27	823.37	829.61	0.58	0.46	-27.47
7,506.00	0.26	11.25	7,397.35	101.95	822.81	829.02	1.26	-0.76	151.84
7,600.00	0.53	185.01	7,491.35	101.73	822.82	828.99	0.84	0.29	184.85
7,695.00	0.79	184.57	7,586.34	100.64	822.73	828.75	0.27	0.27	-0.46
7,789.00	0.88	201.18	7,680.33	99.32	822.41	828.26	0.27	0.10	17.67
7,884.00	0.79	158.64	7,775.32	98.03	822.39	828.06	0.64	-0.09	-44.78
7,979.00	0.97	149.41	7,870.31	96.73	823.04	828.52	0.24	0.19	-9.72
8,073.00	0.26	42.01	7,964.31	96.20	823.58	828.99	1.15	-0.76	-114.26
8,167.00	0.70	90.97	8,058.30	96.35	824.30	829.72	0.60	0.47	52.09
8,262.00	0.70	136.93	8,153.30	95.92	825.28	830.63	0.58	0.00	48.38
8,356.00	0.44	130.25	8,247.29	95.26	825.94	831.20	0.29	-0.28	-7.11
8,451.00	0.26	249.70	8,342.29	94.95	826.02	831.23	0.64	-0.19	125.74

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-29B - Slot O
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Site:	Cascade Creek 697-16-28 Pad	MD Reference:	GL 8297' & RKB 30' @ 8327.00ft (H&P 353)
Well:	CC 697-16-29B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,545.00	0.62	273.69	8,436.29	94.91	825.31	830.53	0.42	0.38	25.52
8,639.00	0.97	254.36	8,530.28	94.73	824.04	829.24	0.46	0.37	-20.56
8,734.00	1.14	257.26	8,625.26	94.31	822.34	827.50	0.19	0.18	3.05
8,846.00	1.85	250.84	8,737.22	93.47	819.55	824.62	0.65	0.63	-5.73
Last SDI Production MWD Survey									
8,900.00	1.85	250.84	8,791.19	92.89	817.90	822.91	0.00	0.00	0.00
Projection To TD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
173.00	172.99	0.73	1.42	First SDI Gyro MWD Survey
541.00	539.87	4.96	27.35	Last SDI Gyro MWD Survey
619.00	617.06	7.05	38.30	First SDI Surface MWD Survey
2,661.00	2,572.57	85.35	615.06	Last SDI Surface MWD Survey
2,780.00	2,687.19	86.83	647.01	First SDI Production MWD Survey
8,846.00	8,737.22	93.47	819.55	Last SDI Production MWD Survey
8,900.00	8,791.19	92.89	817.90	Projection To TD

Checked By: _____	Approved By: _____	Date: _____
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