5 December 2011

The TCS Periscope 1 mirror was measured using the Zygo interferometer against Flat C in the 2x configuration. The reference data file "O:\aLIGOmet\CAL\Flat_C\F2x\av_P01-P14" was subtracted. The mirror is thin and was supported on a v-block. Usually we see the effect of the v-block as a high at the two support locations. However, the wrong wavelength measurement may be misleading us.

The mirror was measured at 1064 nm. The phase response of a coating designed for CO_2 may appear different measured at 1064 than it would if measured at the proper wavelength. Contrast was good, the coating appears golden to the eye.

The occlusion at 7 o'clock is part of a clean room wipe, used to cover the v-block.

LIGO Periscope 1 Piston, Tilt and Power subtracted									
		+57.87 nm							
		-39.66							
Phase response Measured at 1064nm									
PV 97.538 r	m Removed: PST TLT PWH	R 							
rms 12.080 r	m Trimmed: 0 RadCrv	-3342.40 m							
Power 325.196 r	nm Filter: Off								
Size X 93.1 m	nm Size Y 93.1	mm							
Tiltx 32.505 r	1m Tref.X -1.315	nm							
Tilty -127.824 r	1m Tref.Y 17.197	nm							
Ast.X 17.039 r	um 2Ast.X -4.078	nm							
Ast.Y 12.585 r	nm 2Ast.Y -0.224	nm							
ComaX 0.627 r.	um 2ComaX 0.502	nm							
	nm 2ComaY 2.366	nm							
Sph Ab -1.316	nm 2Sph Ab 4.032	nm							

Figure 1: Full aperture view

LIGO Periscope 1	: Piston, Tilt and Power subtracted
	+14.36
	-24.91
Phase response Measured at	1064nm, dots are likely dust
PV 39.269 nm	Removed: PST TLT PWR
rms 4.690 nm	Trimmed: 0 RadCrv -3144.63 m
Power 100.306 nm	Filter: Off
Size X 50.1 mm	Size Y 50.1 mm
Tiltx 17.566 nm	Tref.X -1.313 nm
Tilty -74.631 nm	Tref.Y -0.117 nm
Ast.X 9.507 nm	2Ast.X -0.713 nm
Ast.Y 4.211 nm	2Ast.Y -0.217 nm
ComaX -0.936 nm	2ComaX 0.306 nm
ComaY 3.226 nm	2ComaY 0.058 nm
Sph Ab -0.806 nm	2Sph Ab -0.163 nm

Figure 2: 50mm aperture

LIGO	Perisc	ope 1: Pi	ston, Ti	lt and P	ower sul	btracted	
							+62.84
			•				nm -69.84
Phase respon	se Measur	red at 1064	nm, dots	are like	ly dust		
PV 132	.683 n	m Rem	oved: PS1	r TLT			5
rms 29	.248 n	m Tri	.mmed: 0	RadCrv	-3144.6	3 m	
Power 100	.306 n	m Fil	ter:	Off			
Size X S	50.1 m	m Siz	e Y	50.1 r	nm		
Tiltx 17	.566 n	m Tre	f.X -	-1.313	rım		
Tilty -74	.631 n	m Tre	f.Y -	-0.117	nm		
Ast.X 9	.507 n	m 2As	t.X -	-0.713	nm		
Ast.Y 4	.211 n	m 2As	t.Y -	-0.217	nm		
ComaX -0	.936 n	m 2Cc	maX	0.306	nm		
ComaY 3	.226 n	m 200	maY	0.058	nm		
Sph Ab -	D.806	nm 2Sp	h Ab	-0.163	nm		

Figure 3: 50mm aperture, piston and tilt subtracted (power included)