

Reflectivity of WHT Primary Mirror

SMS Reflectance and Scattering measurements, WHT M1 from before & after C02 cleaning 20 May 2010

	Scatter	Scatter	Reflectance		Surface Roughness		
Θs->	0	50					
Φs->	0	180	REFL	comment	RMS(Å)	TIME	DATE
1	3.08E-003	1.84E-005	0.001	lid on	>1177	09:54:01	05-20-1910
2	3.04E-003	1.79E-003	0.903	ref mirror	38.7	09:54:26	05-20-1910
3	3.05E-003	1.81E-003	0.903		38.7	09:54:33	05-20-1910
4	3.06E-003	1.82E-003	0.903		38.8	09:54:38	05-20-1910
5	2.12E-003	1.09E-003	0.904		32.4	09:54:47	05-20-1910
6	2.12E-003	1.09E-003	0.903		32.5	09:54:51	05-20-1910
7	2.13E-003	1.10E-003	0.903		32.5	09:54:56	05-20-1910
8	1.64E-003	8.90E-004	0.903		28.5	09:55:04	05-20-1910
9	1.65E-003	8.94E-004	0.901	all consistent	28.6	09:55:08	05-20-1910

average for reference mirror Refl % 90.288

Before cleaning:

M1 meas: 2 or 3 at same location, reject those differing >2% R

10	5.41E-003	2.20E-003	0.817		55.3	09:58:14	05-20-1910
11	5.40E-003	2.20E-003	0.816		55.3	09:58:20	05-20-1910
12	5.91E-003	3.90E-003	0.804		57	09:58:32	05-20-1910
13	5.91E-003	3.90E-003	0.806		56.9	09:58:37	05-20-1910
14	6.32E-003	2.86E-003	0.814		59.5	09:58:48	05-20-1910
15	6.31E-003	2.86E-003	0.812		59.5	09:58:53	05-20-1910
16	5.37E-003	2.10E-003	0.808		55.7	09:59:06	05-20-1910
17	5.40E-003	2.11E-003	0.812		55.7	09:59:11	05-20-1910
18	5.00E-003	2.04E-003	0.815		53.3	09:59:22	05-20-1910
19	4.99E-003	2.03E-003	0.812		53.3	09:59:28	05-20-1910
20	6.47E-003	2.49E-003	0.821		60.7	09:59:38	05-20-1910
21	7.88E-003	2.58E-003	0.820		68.3	09:59:43	05-20-1910
22	7.74E-003	2.96E-003	0.797	skip	67.4	09:59:54	05-20-1910
23	7.52E-003	2.82E-003	0.806		66.2	09:59:59	05-20-1910
24	7.55E-003	2.85E-003	0.803		66.4	10:00:04	05-20-1910
25	9.13E-003	3.78E-003	0.799		72.6	10:00:18	05-20-1910
26	9.12E-003	3.78E-003	0.799		72.6	10:00:23	05-20-1910
27	7.81E-003	2.70E-003	0.787	skip	68.9	10:00:37	05-20-1910
28	8.53E-003	4.27E-003	0.800		69.3	10:21:25	05-20-1910
29	8.51E-003	4.27E-003	0.800		69.2	10:21:30	05-20-1910
30	8.57E-003	4.07E-003	0.776		70.7	10:21:39	05-20-1910
31	8.50E-003	4.03E-003	0.776		70.4	10:21:44	05-20-1910
32	6.89E-003	2.73E-003	0.805		63.1	10:21:56	05-20-1910
33	6.87E-003	2.73E-003	0.805		63	10:22:01	05-20-1910
34	6.27E-003	2.22E-003	0.810	skip	60.7	10:22:12	05-20-1910
35	6.16E-003	2.22E-003	0.822	skip	59.6	10:22:16	05-20-1910
36	5.94E-003	2.56E-003	0.808	skip	58.1	10:22:27	05-20-1910

averages 6.89E-003 2.79E-003 Refl % 80.573 59.37

std error % 5.883 8.729 0.338

Note: the error calc takes multiple measures at 1 location as a single independent estimate

Reference Mirror measurements again:

37	3.48E-003	1.41E-003	0.899		42.3	11:25:25	05-20-1910
38	3.49E-003	1.42E-003	0.898		42.4	11:25:30	05-20-1910

Reflectivity of WHT Primary Mirror

39	3.50E-003	1.42E-003	0.898	42.5	11:25:35	05-20-1910
40	3.51E-003	1.43E-003	0.898	42.5	11:25:40	05-20-1910
41	1.93E-003	1.01E-003	0.906	30.9	11:25:47	05-20-1910
42	1.93E-003	1.01E-003	0.905	30.9	11:25:51	05-20-1910
43	1.94E-003	1.01E-003	0.906	30.9	11:25:56	05-20-1910
44	3.72E-003	1.13E-003	0.903	45.2	11:26:04	05-20-1910
45	3.73E-003	1.13E-003	0.901	45.2	11:26:09	05-20-1910
average				0.902		
std err				0.002		
M1 reflectance as % of Reference mirror				0.894		
M1 reflectance as % of max., i.e. after Aluminz:				0.92		

After CO2 cleaning: M1, followed by ref mirror values

Theta-s	0	50					
Phi-s	0	180	REFL	comment	RMS(□)	TIME	DATE
1	3.57E-003	8.47E-004	0.767	Port 1 (top)	50.3	11:36:18	05-20-1910
2	3.57E-003	8.45E-004	0.770		50.2	11:36:23	05-20-1910
3	3.57E-003	8.45E-004	0.771	triplet	50.2	11:36:28	05-20-1910
4	2.94E-003	6.95E-004	0.791		45	11:36:40	05-20-1910
5	2.94E-003	6.95E-004	0.788		45.1	11:36:45	05-20-1910
6	2.94E-003	6.94E-004	0.787	triplet	45.1	11:36:50	05-20-1910
7	3.44E-003	1.44E-003	0.816	Port 2	44.1	11:37:04	05-20-1910
8	3.45E-003	1.46E-003	0.815		44.1	11:37:09	05-20-1910
9	4.63E-003	1.36E-003	0.816		53.3	11:38:05	05-20-1910
10	4.63E-003	1.36E-003	0.816		53.2	11:38:10	05-20-1910
11	3.84E-003	9.72E-004	0.806		50.1	11:38:21	05-20-1910
12	3.84E-003	9.73E-004	0.808		50	11:38:25	05-20-1910
13	5.32E-003	1.53E-003	0.809		57.6	11:38:40	05-20-1910
14	5.33E-003	1.54E-003	0.810		57.6	11:38:45	05-20-1910
15	2.39E-003	3.95E-004	0.802	Port 3 (down)	44.8	11:39:40	05-20-1910
16	2.39E-003	3.95E-004	0.801		44.8	11:39:44	05-20-1910
17	2.39E-003	3.95E-004	0.800	triplet	44.9	11:39:49	05-20-1910
18	2.99E-003	6.03E-004	0.810		46.7	11:40:00	05-20-1910
19	2.99E-003	6.05E-004	0.811		46.6	11:40:05	05-20-1910
20	2.99E-003	6.06E-004	0.812	triplet	46.6	11:40:09	05-20-1910
21	2.61E-003	5.20E-004	0.807	Port 4	43.8	11:40:19	05-20-1910
22	2.61E-003	5.20E-004	0.806		43.8	11:40:24	05-20-1910
23	2.75E-003	3.90E-004	0.865	inconsist	49.4	11:41:28	05-20-1910
24	2.73E-003	3.93E-004	0.884	skip	48.3	11:41:33	05-20-1910
25	2.73E-003	4.00E-004	0.869	skip	48.4	11:41:40	05-20-1910
26	2.24E-003	3.73E-004	0.789		43.7	11:41:52	05-20-1910
27	2.24E-003	3.73E-004	0.789		43.6	11:41:57	05-20-1910
28	2.97E-003	6.73E-004	0.799	inconsist	45.4	11:42:08	05-20-1910
averages	3.33E-003	8.78E-004	Refl %	80.086		48.06	
std err %	8.1602464	9.69		0.48			
improvement	1.91	3.12		none		1.32	
(from cleaning)							
Ref Mirror	29	1.01E-003	8.05E-004	0.904	22.2	12:07:42	05-20-1910
	30	1.01E-003	8.13E-004	0.904	22.2	12:07:46	05-20-1910
	31	2.33E-003	1.86E-003	0.890	34	12:07:55	05-20-1910
	32	2.33E-003	1.87E-003	0.892	34	12:08:00	05-20-1910
	33	3.54E-003	1.31E-003	0.895	43.2	12:08:19	05-20-1910

Reflectivity of WHT Primary Mirror

average

0.897

0.005

Ref value is equal (within error) to that BEFORE cleaning