

SMS uScan Measurements of Reflectivity of INT Primary Mirror before CO2 cleaning.
 Accumulating dust since water washing late November 2011

Lambda	0.67					
Incident An	25					
BW Limits	1	0.01				
Θs->	0	50				
Φs->	0	180 REFL				
	Scatt 0,0	Scatt50,180		RMS(Å)	TIME	DATE
				surf. rough		
1	1.70E-02	8.75E-03	0.788 omit	98.5	09:41:55	05-16-1912
2	1.80E-02	8.90E-03	0.78	102	09:42:41	05-16-1912
3	1.80E-02	8.93E-03	0.778	102.2	09:42:46	05-16-1912
4	1.76E-02	1.05E-02	0.777	100.4	09:43:08	05-16-1912
5	1.78E-02	1.05E-02	0.778	100.6	09:43:13	05-16-1912
6	1.57E-02	8.06E-03	0.788	94.4	09:43:30	05-16-1912
7	1.57E-02	8.06E-03	0.787	94.5	09:43:35	05-16-1912
8	1.93E-02	1.19E-02	0.773	105.1	09:43:55	05-16-1912
9	1.93E-02	1.19E-02	0.772	105.2	09:44:01	05-16-1912
10	1.46E-02	7.74E-03	0.797	90.4	09:44:30	05-16-1912
11	1.46E-02	7.72E-03	0.796	90.4	09:44:36	05-16-1912
12	1.79E-02	8.44E-03	0.783	101.7	09:44:58	05-16-1912
13	1.78E-02	8.47E-03	0.782	101.6	09:45:04	05-16-1912
14	1.53E-02	8.10E-03	0.787	93.3	09:45:51	05-16-1912
15	1.53E-02	8.10E-03	0.788	93.2	09:45:57	05-16-1912
16	1.78E-02	9.31E-03	0.778	101.1	09:46:17	05-16-1912
17	1.77E-02	9.31E-03	0.777	101.1	09:46:23	05-16-1912
mean	1.70E-02	9.12E-03	0.783	98.575		
std err			0.003			

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Lambda	0.67					
Incident An	25					
BW Limits	1	0.01				
Θs->	0	50				
Φs->	0	180	REFL			
				RMS(Å)	TIME	DATE
				surf. rough		
1	1.10E-02	2.22E-03	0.818	88.8	12:09:12	05-16-1912
2	1.09E-02	2.21E-03	0.819	88.7	12:09:16	05-16-1912
3	7.93E-03	1.90E-03	0.816	72.4	12:09:24	05-16-1912
4	7.94E-03	1.91E-03	0.814	72.6	12:09:29	05-16-1912
5	1.18E-02	3.60E-03	0.816	84.5	12:09:36	05-16-1912
6	1.17E-02	3.58E-03	0.815	84.4	12:09:42	05-16-1912
7	1.12E-02	2.38E-03	0.812 omit	88.6	12:09:51	05-16-1912
8	1.12E-02	2.38E-03	0.819	88.4	12:09:56	05-16-1912
9	1.12E-02	2.38E-03	0.819	88.3	12:10:02	05-16-1912
10	7.25E-03	1.37E-03	0.834	73.1	12:10:22	05-16-1912
11	7.26E-03	1.36E-03	0.833	73.3	12:10:28	05-16-1912
12	6.27E-03	1.44E-03	0.83	64.5	12:10:37	05-16-1912
13	6.28E-03	1.44E-03	0.833	64.5	12:10:41	05-16-1912
14	1.86E-02	4.77E-03	0.79	111.1	12:10:51	05-16-1912
15	1.86E-02	4.79E-03	0.79	111	12:10:56	05-16-1912
16	3.70E-03	8.10E-04	0.838	49.9	12:11:03	05-16-1912
17	3.70E-03	8.08E-04	0.833	50.1	12:11:08	05-16-1912
18	1.51E-02	3.17E-03	0.801	104.4	12:11:30	05-16-1912
19	1.52E-02	3.19E-03	0.802	104.4	12:11:34	05-16-1912
20	7.61E-03	1.38E-03	0.819	76.5	12:11:43	05-16-1912
21	7.60E-03	1.38E-03	0.821	76.4	12:11:49	05-16-1912
22	7.60E-03	1.38E-03	0.819	76.5	12:11:56	05-16-1912
23	7.53E-03	1.59E-03	0.823	72.6	12:12:08	05-16-1912
24	7.53E-03	1.59E-03	0.824	72.6	12:12:13	05-16-1912
25	7.00E-03	1.87E-03	0.828 omit	66.2	12:12:20	05-16-1912
			0.818917			
26	8.65E-03	1.81E-03	0.821	78	15:47:52	05-16-1912
27	8.74E-03	1.83E-03	0.823	78.2	15:47:57	05-16-1912
28	7.84E-03	1.91E-03	0.825	71.4	15:48:06	05-16-1912
29	7.86E-03	1.91E-03	0.826	71.4	15:48:11	05-16-1912
30	4.57E-03	7.41E-04	0.837	61.1	15:48:28	05-16-1912
31	4.56E-03	7.39E-04	0.834	61.1	15:48:33	05-16-1912
32	4.62E-03	9.14E-04	0.835	57.5	15:48:41	05-16-1912
33	4.64E-03	9.18E-04	0.835	57.6	15:48:46	05-16-1912
34	4.34E-03	8.00E-04	0.827 omit	57.2	15:48:56	05-16-1912
35	4.33E-03	7.98E-04	0.834 omit	56.9	15:49:01	05-16-1912
36	7.60E-03	1.81E-03	0.821	70.8	15:49:07	05-16-1912
37	7.58E-03	1.82E-03	0.822	70.6	15:49:12	05-16-1912
38	1.32E-02	2.29E-03	0.793	103.6	15:49:19	05-16-1912
39	1.31E-02	2.29E-03	0.793	103.3	15:49:24	05-16-1912

40	5.99E-03	1.16E-03	0.823	66.4	15:49:38 05-16-1912
41	6.02E-03	1.15E-03	0.824	66.6	15:49:43 05-16-1912
42	6.41E-03	6.38E-04	0.819	95.6	15:49:50 05-16-1912
43	6.41E-03	6.33E-04	0.818	96.1	15:49:55 05-16-1912
44	7.80E-03	1.43E-03	0.82	77.1	15:50:01 05-16-1912
45	7.80E-03	1.43E-03	0.82	77.1	15:50:06 05-16-1912
46	1.83E-02	4.98E-03	0.79	109	15:50:15 05-16-1912
47	1.83E-02	4.98E-03	0.792	108.8	15:50:20 05-16-1912
48	9.95E-03	2.79E-03	0.818	78.6	15:50:27 05-16-1912
49	9.93E-03	2.79E-03	0.817	78.6	15:50:32 05-16-1912
50	2.25E-02	7.94E-03	0.774	117.7	15:50:40 05-16-1912
51	2.25E-02	7.92E-03	0.776	117.5	15:50:45 05-16-1912
52	2.24E-02	7.90E-03	0.774	117.3	15:50:52 05-16-1912
53	8.61E-03	2.10E-03	0.823	74.8	15:51:00 05-16-1912
54	8.61E-03	2.10E-03	0.823	74.9	15:51:05 05-16-1912
55	1.12E-02	2.62E-03	0.818 omit	86.4	15:51:18 05-16-1912
means	9.95E-03	2.39E-03	0.813926	81.794	
std err			0.00344		

CT7 Measurements of the INT Primary Mirror 16/05/2012 15:45

Each measurement at a different location; successive ones may be close (Dust Index correlates)

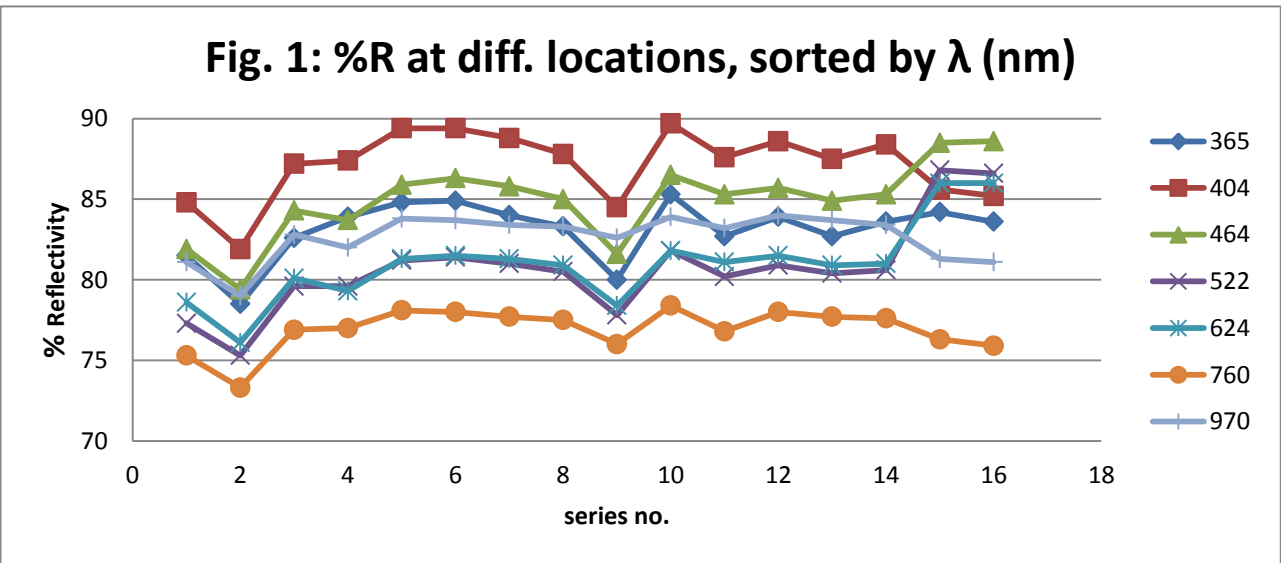
Lower values at individual wavelengths, due to movement, have not occurred (see Fig 1.)

Longer wavelengths show less variability. Dip at 760nm (Fig.2) not observed in other mirrors

Sensor Temperature 24.3 increasing throughout, to 26.6 degC

Measurements highlighted in red are higher in mid-range wavelengths - omitted

order measd.	1	2	5	6	7	3	4	corresponding Dust Index measurements							
wavelength	365	404	464	522	624	760	970								
1	81.5	84.8	81.9	77.3	78.6	75.3	81.1	lo	23.5	15.1	11.2	10.9	12.5	10.4	11
2	78.5	81.9	79.4	75.3	76.1	73.3	79	lo	26.1	15.7	13.8	15	16.1	14.9	14.5
3	82.6	87.2	84.3	79.6	80.1	76.9	82.8		19.7	13	8.6	8.6	10.9	9.7	9.3
4	83.9	87.4	83.7	79.6	79.3	77	82		17.3	12.5	8.7	11.1	11.4	9.6	11
5	84.8	89.4	85.9	81.2	81.3	78.1	83.8		15.4	9.9	7.1	7.2	8.4	7.7	7.1
6	84.9	89.4	86.3	81.4	81.5	78	83.7		15.1	9.2	6.5	6.6	7.7	6.9	6.5
7	84	88.8	85.8	81	81.3	77.7	83.4		16.6	10.1	6.9	7.1	8.3	7.7	7
8	83.3	87.8	85	80.5	80.9	77.5	83.3		16.5	10.7	7.2	7.4	8.8	8	7.5
9	80	84.5	81.6	77.8	78.4	76	82.6	lo	21.6	14.7	9.9	9.8	13	11.7	11.4
10	85.3	89.7	86.5	81.8	81.8	78.4	83.9	hi	13.6	8.5	5.8	5.9	6.9	6.2	5.8
11	82.7	87.6	85.3	80.2	81.1	76.8	83.2		17.2	10.7	7.5	7.4	8.5	8	7.1
12	83.9	88.6	85.7	80.9	81.5	78	84		15.9	10	6.4	6.2	8	7.2	6.4
13	82.7	87.5	84.9	80.4	80.9	77.7	83.7		17.8	11.6	6.7	6.9	9.3	8.1	7.2
14	83.6	88.4	85.3	80.6	81	77.6	83.4		15.7	10	7	7.2	8.2	7.6	6.9
15	84.2	85.6	88.5	86.8	86	76.3	81.3	X	7.8	5	3.2	3.3	3.6	3.1	2.3
16	83.6	85.2	88.6	86.6	86	75.9	81.1	X	7.6	4.3	3.2	3.2	3.1	2.9	2.1
mean	83.0	87.4	84.4	79.8	80.3	77.0	82.9	omitting red							
stdev	1.9	2.2	2.1	1.8	1.6	1.4	1.4								
best mean	83.8	88.3	85.3	80.7	81.0	77.6	83.4	omitting yellow and red							
best stdev	0.9	0.9	0.8	0.7	0.7	0.5	0.6								



CT7 measurements of INT primary mirror before cleaning

primary, low battery

21.7	20/05/2012 10:09	1	78.6	81.2	71.5	76.3	78.2
22	20/05/2012 10:10	2	74.7	76.7	69	74.1	74
22.4	20/05/2012 10:11	3	80.4	84	72.1	76.9	80
22.6	20/05/2012 10:11	4	78.2	83.3	71	77.1	81.6
22.8	20/05/2012 10:12	5	80.5	84.1	72.7	77.2	81.7

Secondary

25	20/05/2012 11:17	6	74.8	78.1	68.3	75.2	75.9
25.1	20/05/2012 11:17	7	79.3	81.7	71.5	75.9	77.7
25.3	20/05/2012 11:18	8	81.6	85.1	73.6	78.6	81.5
25.4	20/05/2012 11:18	9	78.8	83.3	69.3	76.9	79.9
25.6	20/05/2012 11:18	10	77.4	80.8	69.5	73.5	77.4

74.1	74.2	22.5	15.3	13.9	16.7	15.1	13.8	14.5
70.3	71.2	30.4	16	18.4	19.8	17.4	18.1	15.3
75.5	75.4	18.9	12.4	12.8	15.4	12.1	11.3	12.7
75.7	76.8	19.9	12.8	14.6	16	10.9	11.6	11.7
76.2	76.7	17.9	11.7	11.9	15.1	10.4	10.6	11.4
70.6	72.8	28.5	15.8	18.4	18.6	16.7	17.4	15.1
73.9	73.6	19.8	14.2	13.9	16.6	14	13.4	14.3
77	76.6	17.3	11.6	11.8	14.2	10.6	10.6	11.7
73.8	75	20.9	13	16.1	15.9	11.9	13.3	12.8
72.8	72.7	19.5	13.8	14.6	17.8	13	13	14.2

Fig. 2: Spectral variation of Reflectivity INT Primary

