Palomar Adaptive Optics Test Plan

Title	**NGS AO Checkout** (12/06 v2)
Date	Every AO engineering night
Lead	A. Bouchez
Time requested	20 minutes. Start after 6º twilight.
Required conditions	N/A

Purpose

Verify acceptable performance of the NGS AO system for subsequent engineering tests, and measuring seeing, on-axis Strehl and isoplanatic angle.

Test procedure

1. Choose a binary star near zenith from the list below.
2. Acquire the primary with the AO system with an initial frame rate of 500Hz. Adjust the frame rate to get 100-200 cts/subap on the WFS.
3. Take a wavefront sensor sky.
4. Perform both coarse and fine WFS-DM registration.
5. Verify that `co_default2` is loaded and that focus offloading is on.
6. Close the TT and DM loops.
7. Create a flat map on the star.
   7.1. IDL> `ao_make_dm_flat_map, filename`
   7.2. Set the flat map to default when complete.
8. While waiting for the flat map, check signal levels on PHARO:
   8.1. Initial setup: 25mas FOV, filter Ks, ND 1%, standard cross, 2s integration.
   8.2. Adjust the exposure time and filter to get 10-15k peak counts on brighter star.
9. With the loops closed, adjust tel. pointing to center both stars in the PHARO FOV.
10. Open the TT and DM loops.
11. Repeat the lenslet to DM registration.
12. Offset to sky and take a new WFS background.
13. Record 3 PHARO sky frames.
14. Offset back to star and close TT and DM loops.
15. Record 3 images with PHARO. Note the directory, frame numbers, and Strehl.
16. Open the DM loop only.
17. Record 1 image with PHARO, 30s integration. Note frame number and FWHM.
18. Record the telescope focus.

Results (use one column per night)

UT date			
Weather conditions			
PHARO directory			
Target WDS #			
13. Sky frames			
15. Closed-loop frames			
15. Closed-loop Strehl			
17. Open-loop frame			
17. Open-loop FWHM			
18. Telescope focus			

Star list

Result of a VizieR search of the Washinton Double Star Catalogue (I/237) with the following constraints: (**DE2000**: "**18:20:00..48:20:00**") AND (**Sep1**: "**8..15**") AND (**Sep2**: "**8..15**") AND (**MagA**: "**5..7.5**") AND (**MagB**: "**>8**")

This list is available in the Palomar format at: `/export/home/pharo/lgs/wds2.lst`

The digit in the first column provides a link to the Vizier page on the star.

Full	recno	RA2000 "h:m:s"	DE2000 "d:m:s"	pa1 deg	Sep1 arcsec	MagA mag	MagB mag
1	1632	00 32.8	+28 17	160	8.7	6.30	11.26
2	4755	01 41.3	+25 45	32	11.3	6.30	10.90
3	6043	02 09.6	+42 51	183	10.9	7.20	11.00
4	7194	02 38.3	+37 44	260	9.2	6.16	11.30
5	8161	03 01.5	+32 25	8	8.2	6.90	8.40
6	10866	04 09.6	+31 39	174	12.8	6.90	14.10
7	11686	04 28.9	+30 22	36	14.2	6.38	8.28
8	13555	05 09.8	+28 02	27	11.8	6.00	8.65
9	13915	05 15.4	+32 41	342	12.6	5.02	11.10
10	15769	05 43.0	+33 19	204	11.5	6.80	11.80
11	21453	06 51.6	+21 46	355	10.6	5.27	14.00
12	23030	07 06.2	+24 52	50	14.1	7.10	11.10
13	24579	07 22.0	+36 46	9	10.6	5.13	11.70
14	25336	07 29.8	+27 55	289	13.9	5.00	13.60
15	37648	11 38.7	+45 07	266	10.5	6.46	8.39
16	39044	12 17.5	+28 56	275	8.2	5.70	10.20
17	39405	12 28.1	+44 48	161	10.4	7.50	8.12
18	40881	13 10.9	+21 14	316	10.9	6.82	10.80
19	40900	13 11.5	+21 55	288	10.6	6.82	10.90
20	42896	14 06.7	+34 47	71	14.2	7.00	10.20
21	52744	18 01.6	+33 19	202	13.3	6.15	13.30
22	52898	18 03.9	+26 39	193	12.4	7.00	12.00
23	57496	19 03.9	+34 09	295	11.1	7.30	12.80
24	57902	19 08.8	+34 46	271	12.9	7.00	8.60
25	60632	19 41.3	+30 43	29	9.1	7.30	13.40
26	61322	19 49.0	+19 09	311	8.6	5.04	9.03
27	64828	20 24.2	+29 00	134	13.0	7.20	11.20
28	67000	20 47.2	+34 22	194	12.4	5.20	11.50
29	67003	20 47.3	+45 35	75	14.0	6.40	12.40
30	68168	21 03.5	+24 00	299	13.1	7.40	13.40
31	68328	21 05.7	+47 48	315	10.4	7.45	12.00
32	69741	21 24.1	+25 19	330	8.5	6.20	12.20
33	74560	22 46.0	+19 15	270	8.7	7.47	10.80
34	75567	23 07.4	+20 35	335	13.5	6.70	10.40