Palomar Adaptive Optics Test Plan

Title	NGS AO Checkout
Date	Every AO engineering night
Lead	A. Bouchez
Time requested	20 minutes during evening twilight.
Required conditions	Sufficiently clear to close loops on V=9 star.

Purpose

To verify acceptable performance of the NGS AO system for subsequent engineering tests. This includes estimating the primary mirror figure, 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. All are 7<V<9, and 250 Hz framerate is probably right with the sodium dichroic.
3. Load co_default2.
4. Take a wavefront sensor sky, perform both coarse and fine WFS-DM registration, and close the AO loops.
5. Create a flat map on the star.
6. While waiting for flat map, check signal levels on PHARO:
   6.1. Setup: 25mas FOV, Ks, ND 1%, standard cross, 2s integration.
   6.2. Adjust exposure time to get 10-15k peak counts on brighter star.
7. With loops closed, adjust telescope pointing to include both stars in FOV.
8. Open loops, repeat lenslet to DM registration.
9. Take a new WFS background if performing the experiment in twilight.
10. Close loops.
11. Offset 60" to sky, record sky frame.
12. Offset back to star.
13. Record 3 images with PHARO. Note directory, frame numbers, and Strehl.
14. Open the DM loop only.
15. Record 1 image with PHARO, 30s integration. Note frame number and FWHM.
16. Record telescope focus.

Results and conclusions

UT date			
Weather conditions			
PHARO directory			
11. Sky frames			
13. Closed-loop frames			
13. Closed-loop Strehl			
15. Open-loop frame			
15. Open-loop FWHM			
16. Telescope focus			

Notes:

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**: "**7..9**") AND (**MagB**: "**>10**")

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

Full	recno	RA2000 "h:m:s"	DE2000 "d:m:s"	pa1 deg	Sep1 arcsec	MagA mag	MagB mag
1	1035	00 21.0	+43 43	94	9.6	8.40	12.50
2	2736	00 55.6	+34 33	71	10.9	8.80	11.80
3	6043	02 09.6	+42 51	183	10.9	7.20	11.00
4	9379	03 33.9	+32 05	142	13.4	8.80	12.00
5	9646	03 41.9	+43 31	342	8.3	7.90	14.40
6	17651	06 10.8	+33 00	332	14.1	8.20	12.00
7	18330	06 19.8	+22 07	290	10.0	9.00	12.80
8	18992	06 28.7	+35 16	97	13.0	8.70	11.60
9	21554	06 52.8	+47 12	153	12.4	8.00	13.50
10	21919	06 56.2	+34 28	37	11.8	8.20	12.20
11	22350	07 00.2	+42 59	167	9.3	9.00	10.80
12	23030	07 06.2	+24 52	50	14.1	7.10	11.10
13	24539	07 21.5	+25 14	160	10.4	8.70	13.00
14	36038	10 54.5	+20 46	5	8.4	8.40	11.90
15	42315	13 49.6	+34 59	23	10.7	9.00	10.50
16	42896	14 06.7	+34 47	71	14.2	7.00	10.20
17	44533	14 52.5	+18 44	161	9.1	8.00	12.00
18	45409	15 17.1	+41 17	121	9.3	8.40	12.40
19	48692	16 40.9	+21 57	183	11.8	7.90	12.40
20	49837	17 07.5	+35 57	197	12.5	9.00	11.00
21	51808	17 46.7	+35 38	92	11.0	8.80	11.80
22	52898	18 03.9	+26 39	193	12.4	7.00	12.00
23	53545	18 12.6	+31 35	174	11.6	8.90	11.00
24	54773	18 29.2	+29 33	186	11.5	7.70	12.60
25	55703	18 40.9	+31 32	162	9.0	8.54	11.54
26	56066	18 45.2	+38 19	22	10.4	7.70	10.40
27	57496	19 03.9	+34 09	295	11.1	7.30	12.80
28	59236	19 26.5	+40 08	221	9.8	8.40	13.70
29	60632	19 41.3	+30 43	29	9.1	7.30	13.40
30	62317	19 59.5	+24 43	175	14.4	8.30	10.70
31	62922	20 06.0	+35 46	111	9.4	8.20	12.00
32	62923	20 06.0	+35 46	299	11.3	8.20	14.80
33	63423	20 11.3	+21 21	64	13.2	8.10	12.10
34	63792	20 14.2	+35 22	231	11.8	7.59	10.50
35	64828	20 24.2	+29 00	134	13.0	7.20	11.20
36	66315	20 39.6	+21 43	315	9.2	8.66	10.53
37	67730	20 57.4	+20 10	268	8.0	8.30	12.80
38	68168	21 03.5	+24 00	299	13.1	7.40	13.40
39	68328	21 05.7	+47 48	315	10.4	7.45	12.00
40	68472	21 07.2	+36 57	285	10.4	8.15	10.50
41	70580	21 39.5	+41 44	158	13.9	7.56	12.10
42	72417	22 10.1	+32 21	131	13.1	7.90	12.10
43	74560	22 46.0	+19 15	270	8.7	7.47	10.80
44	75273	23 00.4	+41 07	295	14.0	8.80	10.50
45	75662	23 09.6	+24 16	100	12.2	8.70	12.60
46	75690	23 10.0	+36 51	334	12.4	8.20	14.70