

21 Dec 02: cont'd

acmi. 6567 scan. good one. nodwait too short?  
0.5" steps\*  
Change to 1247.5. Gain = 50. CWF peaked.6568 stare made. Oops!  
.6569 stopped at 4. all good.  
except low on slit.

move to TW Hya -34° Dec!

twya. 6570 auto guiding. sky variation. nothing obvious.

END OF RUN

Start of June 2003

Test subdirectory

17 JUNE UT

c2h2.0002 240  $\mu$ m slit 729.2  $\text{cm}^{-1}$  Q branch  
long gas cell pumped out. 1 sec.c2h2.0003 150  $\mu$ m wide slit nominal focus position  
.0004 2 turns in. object = gas cell +2  
.0005 2 turns out from nominal -2  
.0006 nominal 0 } may be outgassing

.0007 flushed, refilled, + pumping while taking data. good focus.

.0008 flushed, refilled, + pumping during data

9 180  $\mu$ m slit10 240  $\mu$ m slit11 360  $\mu$ m slit540  $\mu$ m slit

vac.0012 Flushed + pumping

13 540  $\mu$ m14 360  $\mu$ m

15 240

16 180

150

c2h2over.0017 1318  $\text{cm}^{-1}$  H<sub>2</sub>O + C<sub>2</sub>H<sub>2</sub> 4 sec. 150  $\mu$ m

18 180

19 240

20 360

21 540

h2o.0022 419.1  $\text{cm}^{-1}$  H<sub>2</sub>O (3 lines) 1 sec 540

soifer filter: V=7596

23 360

24 spot on filter. slit not moving in same 240

25 180

26 150

18 June 2003 (UT) JL, SL, PS, MA

• SINE SATURATION

pup. 1001

pupil made with bad alignment looking for aluminum foil tape on spider

many hexapod from  
~~u = -1.25~~

u = 0.0125  
v = 0.0067

not command gives all commands

pup. 1002  
pup. 1003

centered but hexapod not good  
hexapod collimated  
TIME CHANGED from 0.16 to 0.11

Documentation on site map  
The command is hmov u# with no space

New values  
u 0.0133  
v 0.0109

PUP. 1004

(α B00)

seeing some dome (WEST SIDE)

PUP. 1005

(α B00)

DOME GONE

PUP. 1006

+64 from ZENITH

DEC = 60  
" NORTH 45"

SIGNIFICANT CHANGE FROM PUPIL CENTER (FINE AFTER RETURNING TO ZENITH)

PUP. 1007

ZENITH

little dome in way

PUP. 1008

45° S of ZENITH

SHIFT IN OPPOSITE DIRECTION

89, 37 edge of secondary (S)  
87, 23 " " pupil  
101, 188 opposite end of pup (N)  
95, 119 center of hole (secondary)

PUP. 1009

ZENITH

93, 112 center 2nd hole  
97, 27 S edge of secondary ?  
102, 192 N edge " " ?

dome TARP in way

IMAGE SEQ.

PUP. 1010

~~PUP. 1011~~

~~ABO. 1011~~

FEATURE (OBJ)

OPERATOR ERROR

~~ARCTURUS~~

ARCTURUS

(IMAGING ~~MODE~~)  
(NOO MODE)

(~~CHANGED FOCUS~~ → -3.6)

Z = 4.3 (11.4)

5" NOO

T = 276.8

MODE = MEO

MG 1 = FEATURE

NOTES

(NO DOME) (MOVED 1" S)

WNO = 816

MODE = NOO

~~INST MODE~~

glook: tilt = -0.077

med res

IT = 0.169 s

5 COARDS

10" N NOO

NOT A GOOD FLAT

~~NOO~~ NNOO = 8

NSUM = 1

SWITCHING TO WNO 411.3 cm<sup>-1</sup>

8pix slit

ABO. 1012

ABO. 1013

ABO. 1014

411.3 cm<sup>-1</sup> nsum = 4 Z = -5.3

negative star effect. Hard to get good focus.

Not sure about wavelength.

rx B00. 1015

ne v

Z = -5.4

MODE = HIGH RES

ITIME = 0.5

Z = -5.6

rx B00. 1016

may be hard to calibrate (NO LINES!)

rx B00. 1017

MOVED ECHELON DISP. SCREW DRIVER: 1/2 TURN

NSUM = 4

WNO = 409.0; hope to see 409.5 in center of

~~WNO 2000 wrong, should see 409 center order~~

→ Hor. 1018

WNO = 780.424 Z = -4.6

centered echelon disp. screwdriver.

5" NOO PLATE SCALE MEASUREMENT

guide thru PL 6

change to 534.5 cm<sup>-1</sup> [S III] nod 0 10

sher. 1019 platescale measurement

sher. 1020 ~~ERROR~~ drifting off

sher. 1021 z = -4.4  
TIME = 2, 2404 slit ~ 5 1/2" long  
WFO = 1369, ORDER = 7  
NOD 3" N

gain = 50  
CHANGING FLATS → 8 BLACK for Moon  
" MARBFATS "

sher. 1022 losing negative beam (too far N)

MOON. 1023 SO<sub>2</sub> 1369 cm<sup>-1</sup>  
nod 30" N  
TIME = 2 flat sequence of  
8 blacks, 8 skys  
+ 1 spare?

MOON. 1024 "

MOON. 1025 "

shifted echelle - seeing to Red

1.542 MARS. 1026 MARS  
nod 30" N  
(USING BLACK, STAINY SEQUENCE)

MARS. 1027 "

Seems kind of off, very close to limb (SE?)

MARS. 1028

Mars 2 1/2 x fainter than Black  
Upped # NODS = 16

MARS. 1029

ERROR: MIRROR left in (1<sup>st</sup> flats)  
BAD SET

1.377 MOON. 1030

AIRMASS = 1.385

BEAM #  
662.3 N } changed to  
358.8 E } 670.0 N

MOON. 1031

CHANGING MARBFAT routine = 4 Blacks, 4 shiny

1.319 MARS. 1032

MARS. 1033

STARTING @ 3:22 #ST

after margin:  
6(b, sky, shiny, sky

MARS. 1034

MARS  
"

MOVED. ~ 2" E, 5" N

MARS. 1035

CSO 350 is 3.9  
They say this is z = 0.17

1.246 MARS. 1036

Humidity ~ 32%

MARS. 1037

AIRMASS = 1.238

MARS. 1038

offset still good. No change in coord.

MARS. 1039

no change tracking was close

change focus to z = -4.5

1.300 MOON. 1040

MOON. 1041

no change. z = 0.135 (from 350)

MOON. 1042

offset slighter to N, seemed to be in a hotspot in previous frame

MOON. 1043

no change. last moon sequence.

1.215 MARS. 1044

AIR MASS = 1.215  
NRND = 16  
ITIME = 2  
TEMP = 225.0

moved 2.1 W at end

Mars. 1045

~~2" to W~~

MARS. 1046

Move 2" to W

MARS. 1047

MOVE 2" W

1.235 MARS. 1048

Move 2" W

MARS. 1049

2" W  
? S

MARS. 1050

2" W

MARS. 1051

no change.  
Last set.

June 19 2003 (UT)

JL, SH, MR, HJ, JJ

pup. 2000

redo pupil mode at zenith after realigning  
HEX mirror fine (didn't reset values)

TEMPERATURE = 22.4 °C

06:26:05 UT

Z = -4.1

α Boo. 2001

ARCTURUS, feature Mg I  
ITIME = 1 | PURE GABASZ offset guiding

2.3 mm H<sub>2</sub>O α Boo. 2002

NO guiding

α Boo. 2003

SCAN 3.5 E w 0.5 W steps  
Z = -4.4

07:02:17 α Boo. 2004  
α Boo. 2005

FREE FICE  
SCAN: MOVING DURING SCAN

α Sco. 2006

[Ne II] 780.424 shifted blue to include  
779.3 H<sub>2</sub>O betw. orders 780.504 in red near  
α Sco start 10" W scan 28 x 0.7" E  
4 scans  
shift 1.4" S after scan 2  
another 1.4" S after scan 3

α Sco. 2007

seeing pretty poor

γ C. 2008

start 35" W 16" S of \*2 scan 90 steps = 63" E  
move telescope 1.7" E 0.8" N at end to return  
guide \* to cross

γ C. 2009

35" W 11" S move tel 0.7" E 1.3" N to recal

.2010

35" W 6" S add .0010 N rate move 1" W at end

.2011

35" W 1" S offset w/ prog in hdr

.2012

35" W 4" N doing cpl during card

.2013

35" W 9" N

.2014

35" W 14" N  
Z = -4.6

.2015

35" W 21" S moved 2" W 1" S back to + at end

.2016

35" W 26" S 2" W

α Sco. 2017

10" W 28 points scan 4 seemed broad on star

2018

"

Jan 19 (cont'd)

asco. 2019

seeing much better now  
scan w/ echelon shifted to red to bring  
blue order over 0 779.3 centered in order

gc. 2020

35" W 16" S at #2 (approximately)  
had to go 3" S at end

gc. 2021

35" W 21" S

change to 1233 cm<sup>-1</sup> using 180 μm fixed slit  
and CVF. Focus -4.5. Moved echelon to center of blaze.

epagr. 2022

flat maybe is corrupted with next file  
because sequence number didn't update

Go to Mars. Use MarsFlat routine with 6 blacks + stings

Mars. 2022

flat corrupted with epagr flat.  
stopped after 1 scan

skipped 2023  
for now.

Mars. 2024

moved 2" W before this file.  
25 12 W with 0.5 E steps  
Looked like 3 good skys at start of first scan,  
but maybe not only 1 good sky

Mars. 2025

moved 1" W before this file  
changed offset to 13 W 25  
didn't quite get off it.

2026

start coming on around 8. Not quite off at end.  
suspect south drift on telescope

2027

recentered visually. had to move 3" W and 3" S (!)  
increased North rate slightly  
change to Mars North 13 W 2 N  
coming on around 7.  
slit is filled

2028

looks good

2029

off well at start. NS good at end.

Go to moon

Drive near N pole for flux 2x Mars

moon. 2030

rad mode

moon. 2031

2032

2033

Go back to Mars

Mars. 2034

-13 E -2 N offset 0.5 E steps  
not completely off at end.

.2035

moved 1.5 E before this one  
way off at start. didn't get off planet at end  
stopped after 2  
some residual signal after fly back

2036

checked visually before. way off East. Adjust rates.  
came on ~4

2037

looked good After this moved ~1.5 S + W?

visually centered. Goto Mars North -13 E +2 N

2038

looks good.

Note: A possible hot  
region noticed in 2037  
doesn't seem to move in 2038

2039

looks good

2040

coming on too quickly. stopped after 2 scans  
moved 2.6 W and 2 S when checking visually  
coming on ~5

2041

Go to Moon. North Pole. 3 nsm. 4 nads

2042

2043

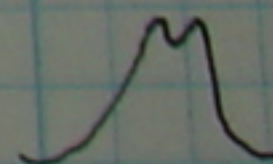
2044

2045

Back to Mars. Try scanning across south pole. Same parameters

Mars. 2046

orders getting clipped. flexure in x-disp chamber?  
good 1<sup>st</sup> scan.  
scan 4 has odd double peak cloud monitor



Jun 19 (cont'd)

Mars. 2047 South Pole. came on ~ 5. continuum shift in middle. I think they are sky variations. we didn't see them before sunrise.

June 20 2003 JL, MR, SH  
flat. 3000 [NeV] 409.9 cm<sup>-1</sup> at v = 995 km/s

Found that KBr is probably emitting.  
Black ~ 32000 cats  
sky ~ 21000  
shiny ~ 22000  
seeing better tonight

Z = -4.2  
nod mode  
move to SIV V = 516 km/s 951.4 shifted red 2 orders  
1.4" slit. Z = -4.2. Gain = 50

aboo. 3001 good

go to M83. Using Besolin & Kennicutt (astro-ph) image, chose slit on A+B. Nodding off slit

M83. 3002 & nothing  
3003 2E from 3002 maybe something  
4 still at 2E. no nope. nothing.  
5 2W from 3002. nothing.

asc. 3006 [Ne II] 780.424 cm<sup>-1</sup>  
echelon screwdriver shifted to red to bring blue order over 779.3 cm<sup>-1</sup> centered.  
Z = -4.6 first 2 pairs good  
computer hung up after that.

3002 skipped due to operator error

3008 scan: 10" w offset 28 x 0.7 E 1s 2 conds  
came on fairly late.  
computer hung around 99 in scan.

asc. 3009 moved 3" E before scan  
seemed ok, although a little late

Go to GC via star 2 (1950) 17 42 30.0 -28 59 02

gc. 3010 35" W 56" S GCscan -40 90 x 0.7  
had to move telescope 2.8" E x 2.0" N sky more stable than last night  
.3011 35" W 51" S GCscan -35 1" S at end  
.3012 35" W 46" S GCscan -30 seems to have some emission at start

3013 35" W 41" S GCscan -25 moved 1" E  
emission at start  
computer hung after 150 occasional computer slow downs  
repeat

3014 35" W 41" S GC Scan -25 guide star good  
3015 35" W 36" S GC Scan -20 starting to get red emission

3016 35" W 31" S GC Scan -15 moved 1" W 1" N  
17 35" W 26" S GC Scan -10 3" W 1" S  
18 35" W 11" S GC Scan +5 good at end < 1" in both  
19 35" W 6" S GC Scan +10 < 1" both

20 35" W 1" S GC Scan +15 strong emission in off.  
3" S at end. adjusted rate  
emission in off position  
see a change in echelon dispersion during scan.  
moved -1" W at end  
21 35" W 4" N GC Scan +20 needed 1.5s 1.5w at end

Move to Chi Cyg. Use 10" W + 28 x 0.7" scans

cyg. 3022 seems well centered. T = 275.1 K

Change to 1240 cm<sup>-1</sup>. 1.1" slit. order = 7.  
Z = -4.5 moved echelon screwdriver so blaze moved red.

ccyg. 3023

Go to Mars scan 53 x 0.5"

Mars. 3024 13" W 2" S Mars South forgot Mars flat stopped after 1  
Mars. 3025 13" W 2" S Mars South doing Mars flats  
came on ~ 5.  
off 2.5 W + 3 N at end. adjust rates.

June 20, (cont'd)

Mars. 3026 13" W 2" S scan 4 53 x 0.5 position at end is good  
come on ~7  
low level emission at end

.3027 13" W 2" S Temp = 274.7  
Finally remembered to check CVF. Probably not perfect, but acceptable until we do a moon.

.3028 13" W 2" S still some low level emission at end.  
off 3" E and 2" N  
adjust rates. Differential refraction?

3029 13" W 2" S  
came on a little late  
moved 3" E

Goto Moon's North limb. 30" nod

one CVF { moon. 3030  
          .3031  
new CVF { .3032 adjusted CVF before this one  
          3033

Goto Mars North 13" W 2" N

Mars. 3034 came on ~8. A little emission at end. 0.7" E at end

.3035 computer hung for ~15s around 198

.3036 came on ~10 A little emission at end.  
moved 3" E + 2" S at end.

.3037 changed offset to 12" W 2" N. moved ~1" S + W at end  
Emission at end down from ~90 to ~20 on sidebar

.3038 ~1" off W + S at end

Goto Moon's North Limb

moon. 3039

3040

41

42

Back to Mars South 12" W 2" S

Mars. 3043 on it ~5. Locked good at end

.3044

.3045 1" W. 4" S offset at end. adjusted rates.

Mars. 3046 Mars South 12" W 2" S on it ~5

switch to Mars North 12" W 2" N

Mars. 3047 on it ~4 plenty at end. on it very well

.3048 change to 13" W 2" N. on it ~4

.3049 off by ~2.5" S at end

.3050 moved 1" S + 1" W at end

June 21, 2003 JL, SH, TE, DG, MA

T=277.1 Start at 814 cm<sup>-1</sup> with echelon tipped so 814.5190 at high freq end of order. z = -4.5 Gain = 25

aboo.4000 good ± 500 counts on sidebar  
4001 good adjusted boresight for nod mode

move to Vesta (asteroid 4)

vesta.4002 ± 300 some guiding. High on slit. moved 0.5" S at end  
.4003 some guiding, including along slit.  
.4004 good on pair 5. More NS guiding

move to 2 Boo. Too faint to test auto guiding

Try RX Boo. Temp = 276.1 z = -4.6

rxboo.4005 offset guiding. seemed fine.

Back to 2 Boo

eboo.4006 offset guiding. Faint. ± 8  
.4007 some bounce. high on slit. move 0.5" S at end  
4008 some bounce  
4009

Move to α Sco z = -4.7 Temp = 275.8

asco.4010 guiding at first

Move to AS209 Guide star at 243.9 E ON

-7:10 UT as209.4011 offset guiding. bounce. peaking ~ pair 9-13  
move ~~0.5" N~~ 1" N and reduce nod to 3.5 N

7:15 UT .4012 good set. slight bounce. 3.2 min per  
.4013

7:25 .4014  
.4015 some bad bounce  
4016 ± 2.5 on side bar  
4017

as209.4018 some bad bounce ~ pair 6. ± 2.5  
4019 still bouncing  
4020 ± 2.5  
4021

22 moved 0.5" S after this one.  
23

24 change nsum to 8. ± 2.5. sky variation larger  
use subsky = true 4.25 min per file  
25 off star a bit. try peaking ~ 12-14  
26  
27

8:27 UT  
8:33  
z ~ 0.06

Goto α Sco

asco.4028 nsum = 3 nod = 4 z = -4.7 Temp = 275.7

Goto Elias 29 check pointing before hand.  
no guide star. Moved ~ 3 N to peak. Guide by hand

9:03 UT el29.4029 peaking at start ± 30 at pair 6 Lost at end.  
9:10 4030 move 0.5" S at start. some guiding. high on slit  
31 Move 0.5" S at start. move another 0.5" S during pair 2  
32 guiding. Lost it at end  
9:30 33 change focus to -4.75 during 6. guiding. ± 28  
34 moved 0.3" S pair 4. guiding ~ 6-8. Losing it at end.  
35  
36 Guiding. Lost it on pair 3. Good ~ 6. ± 30

Go to Vega. Not all that bright.

alyr.4037 ± 20  
4038 guide N ~ 1" before pair 7. good at 9

Go to Nemisis (Ait 129) ± 30

Nem.4039 not great. stopped after 7

Go to W33A + 36 km/s V(LSR!) ± 25-30 z = -4.7

w33α.4040 offset guiding AA = 18:14:39.9 -17:51:59  
.4041 Had to go 5.5" W



✓ 33x. 4042 0.5" S of 4041 Buffer toggle error in pair 3  
 4043  
 44  
 45  
 46  
 47  
 48

} all seem ok. offset guiding.

Switch to 1000 cm<sup>-1</sup>. Store a flat to try & get a wavelength scale. Center echelon orders.

flat. 4049  
 epagr. 4050 just to get scale

Change gain to 50 z = -4.5

epagr. 4051 still trying to get scale. order 5 centered at 1000.6 cm<sup>-1</sup>  
 adjust boresight for center of slit

Go to Mars. Read in Mars flat routine. 2s int Time.  
 scan 13" W 2" S 0.5" E x 53 steps points ~7" slit

mars. 4052 came on ~4 moved 2.2 W 3.8 N afterwards  
 4053 came on ~4  
 4054 1" N at end Temp = 276.7  
 4055 z = -4.4 (guess)  
 4056 4.4" E 1.2" N at end.  
 4057 1" W

change to Mars North 13" W 2" N ~7" slit

4058  
 4059 1" N at end  
 4060  
 4061 good position at end.

Go to Moon North Pole

moon. 4062 buffer toggle error in flat 6  
 Need to get further off Moon.

change nod to 60" N

z ~ 0.06  
 moon. 4063  
 4064  
 4065  
 4066

Back to Mars North 13" W 2" N

Mars. 4067 came on it <sup>very</sup> late. After 2nd scan, move 3" E  
 computer hung after frame 115.  
 4068 on ~4. computer hung after 88.

4069 Mars South Pole 13" W 6" S  
 may not have been off at start 1" W at end  
 change offset to 14" W 6" S  
 came on it by 4  
 glitch ~25

4070 may be losing last order 2" W 1" S at end  
 Temp = 276.3 z = -4.5  
 on it ~4

4071 1" W at end  
 4072 change offset 15" W 6" S

4073 coming on ~6" 1.2" S 0.9" E  
 looks good

Go to Moon North Pole

moon. 4074  
 4075  
 4076  
 4077  
 4078

Done

June 22 2003 MC, JL, ST

Focus z = -5.3

05:48 UT  
T = 27.5 C

aleo. 5000

[We V] + 995  
med res mode

K mirror off. (by ~~0.5~~)

checked harden  $\lambda$  positioning  
409.5  $\rightarrow$  409.9

244; -173 offset galactocentric coords

T = 278.6

14151.5001  
14151.5002  
14151.5003

not enough number of rods (8)  
upped to 16

14151.5004  
.5005

moving 1" west to see if  
signal increases. No visible diff. If anything, worse.  
moving back to 0 offset, + then  
offsetting 1" E.

.5006

went back to 0 offset. No visible  
signal in E offset either.

.5007  
.5008  
.5009  
.5010  
.5011  
.5012  
.5013

Strange glitch  
Pos beam ~ 90  
Neg beam ~ 60

glitch ~ pair 9

Go to Vesta.

vesta. 5014

Guiding along slit through pair 4  
Tried to place in same position as 4151  
Peaking EW

5015

Guiding NS through 5

Go to  $\alpha$  Sco

asco. 5016  
.5017

garbage  
temperature at 278, but we haven't refocused.  
After this one, redo with z = -5.3 still so  
done with 25  $\mu$ m

Change to hi-med mode for H<sub>2</sub> S(1) J=3-1 587.03

ADJUSTED both chambers' alignments. Moved echelon  
paraboloid 586.2 is in middle of axis.

Changed Focus: z = -4.9

asco. 5018

Reversed pos + neg beams. WENGE  
NFRAME changed rather than NSUM.  
GARBAGE

.5019

Go to  $\sigma$  Libra

Siglib. 5020

Bounce peaking  
Not very good.

8:20 UT

Siglib. 5021

pair 10 is good z ~ 0.06

Go to Elias 29

Back to  $\alpha$  Sco

Bounce still high, difficulty finding signal

asco. 5022

z = -4.6

Go to Elias 29

OK

hand  
guiding

el29. 5023

Difficulty getting good signal  
pair 4 good

.5024

basically good adjust rates

.5025

.5026

good  
guiding through pair 3

5027

28

June 22, 2003 (cont'd)

el 29. 5029

Temp = 4.4C change focus to -4.7  
 5030 peaking  $\pm 14$  best  
 31 good  
~~32~~  
 33 spike in pair 6 near  $H_2$   $\lambda$   
 buffer toggle on last pair  
 34

Go to Nemesis. almost 2x as bright as Elias 29

nem. 5035 nsum=8 guiding EW at end  
 5036 good  
 37 good  
 38

Change to 950  $\text{cm}^{-1}$ . 1.4" slit. centered echelon,  
 Gain = 50.

Go to Chi Cyg for focus  $Z = -4.2$  nod OE 4N

Cyg. 5039 peaking

Go to  $\gamma$  Aql for flux calibrator

gaql. 5040 stopped after 8

Go to Neptune nsum=8

nep. 5041 offset guiding.  $\sim 0.5''$  EW off at end

. 5042

. 5043 right on.

5044

5045

5046  $\sim 0.5''$  of EW  $\leftarrow$  NS

47

48

49

50

Go button hit twice. seems ok.

51 Perfect

52

nep. 5053

5054 glitch in pair 5

55

56

57 0.6E 0.55

58

~~59~~

60

61

62 perfect

63

64

65

66

67

68

Change to 1232  $\text{cm}^{-1}$ . Peak CVF.  $Z = -4.3$  on EP Aq

epagr. 5069 move S after 1<sup>st</sup>. peaking

Change boresight. Back to Neptune.

nep. 5070

Too bright for offset guiding

peaking up at start

guiding. got off. adjust rates.

5071

nsum=4

may have lost it at pair 5.

stopped after 8. put mirror in. adjust rates.

5072

 $\rightarrow 0.5$  off. adjust rates

73

weaker at end

74

may be losing negative beam by pair 3

Guide S in pair 5 &amp; in pair 8,9

stopped after 11 pairs

Go to  $\beta$  Peg

bpeg. 5075

peaking early. losing signal on pair 11  
stop at pair 13.

change to  $814 \text{ cm}^{-1}$  Gain = 25  $z = -4.6$

bpeg. 5076

can't get to Mira because of sun.

June 23 2003 sh, MK, JL

Go to Ar V +995 km/s. <sup>760.7</sup> Medium Res mode  
Need to go fast, so try and use 128 rd rst rd mode.  
Adjusted K mirror by  $+1^\circ$  from nominal to bring  
illuminated region into central 128.

checked wavelength setting carefully. believe  $760.7 \text{ cm}^{-1}$  in  
center of spectrum.

Focus on Arcturus.  $z = -4.4$

aboo. 6000 checked boresight at end.

Temp = 4.9 Go to NGC 4151. use offset guider (Coord: 244, -173)

6:25 UT n4151. 6001 Looks like some continuum in same place  
as star. pos: 61-72 neg: 31-42 <sup>IDL starts</sup>  
positive just below bad spot on filter(?) at 0

6002

Had Nept.  
rates

Tried moving filter and couldn't see change in bad spot.

n4151. 6003

move  $0.5''$  W to see if there is more signal.

. 6004 not an improvement

move  $0.5''$  E from start.

. 6005 nothing.

Back to 0.0 - starting position.

n4151. 6006  
6007  
6008

Change to  $816 \text{ cm}^{-1}$  for  $\text{H}_2$ . Shift ekelon so detector  
sees redder frequencies (features move on screen to blue).  
Go to hi-med mode. Change to optistar1 & 1s int. time.

T=4.2 Go to  $\nu$  Lib for focus  $z = -4.4$

7:47 W siglib. 6009 high on slit. Move S  $0.5''$  in pair 8  
end at pair 9

change gain to 50. change nod to  $3.5^\circ \text{N}$ . Move S  $0.5''$   
before starting.

siglib. 6010 still high move S. good <sup>NS</sup> at pair 8  
peaking. pair 10 is good. Mostly good 10-16.  
slight bounce

Go to WL16. couldn't find guide star or source.  
Try imaging mode. Found source  $\sim 4.5''$  N to put it

wl16. 6011 not very bright. Will try hand guiding  
for 1 or 2 files.  
peaking at start  
not much there  
move S  $0.5''$  during pair 2

. 6012

Go to  $\alpha$  Sco  $z = -4.4$  boresight looked good

usco. 6013

Go to Do Ar 21. Guide star at -216, -238

8:53 UT doar21. 6014 no continuum.

6015

6016

6017

6018

6019

9:12 UT

slight bounce  
throughout  
↓

23 June 2003 (cont'd)

Do Ar 21 no continuum 814 cm<sup>-1</sup>

9:39 UT doar21.6020 .6021 came back 1.9" E off on TV. Had Nept rates in guider.

Go to Antares

asco.6022 boresight 0.4" W off. focus is good nsum=4

Go to G5530 guide star 244, 27

g5530.6023 Went ~1.3" W from starting point NS is good. ±35 on sidebar (gain=50) good at pair 12 good

.6024 25 26

Go to Nemesis (Ast 128)

nem.6027 ±70 on sidebar (gain=50) nsum=6 peaking early move south ~0.5" in pair 5 slight bounce

6028 nsum=8. off at start. skip=1,2

6029 slight NS guiding in pair 12 0.5" S during pair 3 0.4" S 13 } trying to keep it in same place

10:40 UT

change to 1232 cm<sup>-1</sup> 1.4" slit ~8.5" Peaked CVF.

Go to γ Aql for focus, flux, boresight. z = -4.4

gag1.6030 good at pair 3. last one very good

Go to Neptune. offset guiding

nep.6031

Looks like signal is coming going down. Stopped after 12 came back on perfectly

11:52 UT

nep.6032

Change to 730.5 cm<sup>-1</sup>. move echelon to see bluer on detector. Gain=25

epagr.6033 garbage. operator error z = -4.5

epagr.6034 peaking. good at pair 4 nod = 5" N more guiding later.

Go back to Neptune. Echelle is a little off. A branch starts ~middle so losing high J, but TE says fine.

nep.6035 Getting α-11? in 2<sup>nd</sup> to last order

Change echelon to get down to Q (Z). 729.561 is ~150 in 4<sup>th</sup> order

nep.6036

.6037 last pair has fringe pattern

Move to Triton -13.7" E 5.1" N at 13 UT Can see it on TV

tri.6038

nsum=8 shiny had bright streak at one edge of slit bang on.

.6039

6040

41

42

43

44

45

46

47

48

49

50

Bang on.

23 June 2003 (cont'd)

tri. 6051  
6052Goto Neptune and  $822 \text{ cm}^{-1} \text{ C}_2\text{H}_2$ .  
Echelon still tipped. Gain still 50nep. 6053 peaking through pair 7. skip = 1-6  
emission extended along slit - comes close  
to pos/neg overlap.  
losing some light at end

Mirror showed Neptune off boresight

.6054 Lots of guiding. don't sum.  
bringing mirror in maybe a little off NS.6055 started with Neptune on crosshair.  
signal strong + symmetric.  
off near end.Goto  $\beta$  Peg. Good on boresight to  $0.5'' \text{ E } 0.5'' \text{ N}$ 

bpeg. 6056 stop after 8

Go to Mira

ocet. 6057 peaking. good at pair 6. usable throughout.

Go to TX Psc

txpsc. 6058 guiding. spikes in 14  
6059 good at pair 8. bounce on pair 13, 15

Try going to Pallas

pal. 6060 peaking  
6061 weak until pair 6  
6062 some guiding

24 June 2003: JL, SH, MR, PS

start at  $409.5 \text{ cm}^{-1}$  for  $[\text{Ne V}]$  redshifted 995 km/s  
moved K-mirror so spectrum is fully on detector ( $\sim 0.5''$ )  
0.16 s integration time. Temp =  $6.0^\circ \text{ C}$   $z = -5.0$ 

Go to RX Boo set focus

rxboo. 7000  
.7001Goto NGC 4151. Change integration time to 0.11  
Can't see the galaxy yet. Go to Vesta.vesta. 7002 Tried to put it in same place.  
7003

Goto NGC 4151.

n4151. 7004 see some cont: 2 full range on sidebar  
7005 moved  $1'' \text{ W}$  for this one. no apparent signal  
7006  $1'' \text{ E}$  from start. glitch in pair 13  
~~7007~~ visual check had us  $\sim 1.5 \text{ NS}$   $\sim 3 \text{ EW}$  off  
repeak visually  
7007 got 2 full range  $0.5 \text{ W } 0.35$   
7008 turn off guider. pos beam may not be settled.  
 $0.3 \text{ W } 0.75$  at end  
change nodwait to 1.5  
7009 pos + neg look more symmetric.  $0.3'' \text{ W}$  at end  
10 glitch pair 12.  $0.6'' \text{ E}$  at endChange to  $815.1 \text{ cm}^{-1}$ . Echelon seeing to the blue blue  
(features shifted to red). Moved Echelon diagonal so  
orders are longer.Go to  $\alpha$  Boo  $z = -4.3$  Temp = 277.3 wrong ratesaboo. 7011 peaking. good  $\sim 4$ .Go to  $\alpha$  Sco orders are clipped again.

asco. 7012

24 June 2003 (cont'd)

Go to Do Ar 21. offset guiding in A mode  
-244, -184 for guide star  
doar. 7013 platescale on guider was wrong.

bounce  
0.7" W but could be seeing  
7014 try offset guiding again T = 276.6  
0.1" off

7015  
7016 came in 0.5" W

Go to  $\alpha$  Sco for focus + boresight

asco. 7017 a little low on slit. dropping in signal at end

change to z = -4.6

asco. 7018 peaking. glitch 4

Back to Do Ar 21

doar. 7019 offset guiding. bang ~~off~~ on ~4.25 mas per

Temp = 3.0

20  
21 accum looking better

22 bang on.

23

24

25

26 0.5" W.

Go to HD 163 296 offset guiding T = 2.6

hd163. 7027 peaking. good + settled at pair 12.  
best  $\pm 10$

bounce  
7028

29 nsum = 6 water line varying

30

31

32

33

34

Go to Nemesis

nem. 7035  $\pm 35$  on sidebar spikes on pair 3 bounce  
7036 peaking. good on pair 5

7037 good

7038 a little high on slit T = 2.4

39 guide 0.5" S during pair 2

40

41 high on slit. guide S during 13 z ~ 1.25 mm

42 move S during pair 2

Go to NML Cygni for focus z = -4.6 for T = 2.5°C

nmlcyg. 7043 guide S during 3 wrong object name  
peaking. good on 7

Go to MWC 349 position was off a bit. go to brighter  
in binary  
mwc<sup>349</sup>. 7044 offset guiding. move NS at start very bright  
7045

Recenter echelon orders to detector with echelon  
diagonal. Move echelon paraboloid to see redder than before.  
(features move to blue). Water lines still off to side of  
order.

mwc349. 7046

47

48

49

Move to 5106 IRS 4. Had to go to imaging <sup>moving K-mirror</sup> to find repeatable  
it. Screen coordinates 20:27:27.3 37:22:49. <sub>is dicey. not very repeatable</sub>

5106i4. 7050 may be high in slit bounce

7051 move south before start

52 peaking ~ 7-12. best is ~ 12 full range

53

54

55

24 June 2003 (cont'd)

s106:4. 7056  
7057  
7058  
~~7059~~

Go back to MWC 349 since K mirror moved for S106.

mwc. <sup>349</sup>70~~56~~<sup>59</sup>  
60  
61  
62

Try LkHx 225. Good guide star

LkHx 225. 7063  
7064 pair 14 peaked up  
65

Go to Pallas for divisor. Not as bright as MWC 349

pal. 7066 z = -4.7 on pair 5 Temp = 2°C  
guiding.  
67 glitch: pair 13  
68 guiding  
69

70  
71  
72 Guiding problems  
73 Guiding problems  
74  
75

76 skip = 1-3  
77 pair 4 is bad; off source

Go to  $\beta$  Peg

bpeg. 7078

25 June 2003: MR, TG, QZ

set up in med mode at 760.7 (ArV + 995 km/s)  
Moved K mirror 1° beyond normal to get spectrum in  
central 128 for sub 128 at 13  $\mu$ m. 2" slit.

Go to  $\delta$  Vir for focus, bare sight & flux. z = -4.3  
software error, numbers updating by 2 dvir. 8000

Go to NGC 4151. Offset star ~ 247 -186

N 4151. 8002 nothing obvious. visually checked <0.5" off  
8004 try 8 nads here at OE ON  
8006 tried moving 1"E see something  
8007 " " 2"E ON increase nod wait. nada.  
8008 go back to 1"E. nsum=16. something there.  
8009 echelle shifted during pair 2.  
atmospheric lines moved by ~13 pixels in  
echelle dispersion.  $\rightarrow$  not lines so much as difference  
did it again on pair 13. between lines.  
not sure if permanent or a bounce + recover.  
Think it is just a bounce. Atmospheric lines are broad  
Got something

~~800~~  
8010  
8011  
8012  
8013

had to move an ~~additional~~ 3.5 east to get back to galaxy on crosshair.

to check pointing and get atmo calibrator  
Vesta  
align on it Ves. 8014 8nmol  
changed focus z = -4.5

back to  
NGC 4151

N 4151. 8015  
~~8016~~ better signal - not guiding with guider  
8016 it's not obvious now?  
no need to move after putting mirror in



Changed Wno → 587.03

Vesta

z = -4.9

~~8017~~

H<sub>2</sub> S(1) hi-med  
2" slit  
tipped echelon Parab. - more blue

Vea. 8017 guided south at start through pair 7  
8018 guiding + peaking through pair 4

Go to Sigma Libra for flux

siglib. 8019 bounce. peaking through pair 7  
dropping at end

Go to α Sco for boresight + focus

asco. 8020 good at pair 6 but mostly good throughout

Go to GSS 30 guide star at ~244, 27

gss30. 8021 bounce. may be a little off of it.

.8022 sky climbing slightly from pair 15

23 ~20-24 full range on sidebar

24 nsum = 8

25

26 sky variations ~pair 14

27 " " ~pair 1-4: skip 1-4, 9-16

still bouncing

28 nsum = 4

29

30 nsum = 6 peaking

circus clouds to the south.

Go to R Aql for more northern boresight + focus.  
z = -4.9 T = 275.8

raql. 8031 ±50

32 guiding

Go to AS 353A. Brighter of binary. Guide star @ -244, 77

a353. 8033

nothing obvious. bang on at end.  
a little paranoia regarding Southern companion  
falling on slit. Will get 2 nodding on +  
2 nodding off slit

~~a353. 8034~~  
a353. 8034

Change to nodding off slit.

a353. 8035 1<sup>st</sup> deriv bounce pair 6 sky fluctuations 20" N nod

Go back to 5" N nod.

a353. 8036

37 sky is good

38

39

40

41

spot on visually

Go to NML Cygni z = -4.9 T = 2.0

nmlcyg. 8042 peaking. very strong object name wrong

Go to MWC 349

m349. 8043

Guiding. ±35 on sidebar during peakup  
lost star during flat.  
came back way off

.8044

Guiding. lost a nod during flat? came back 7.9" S

relatively good here ↓

.8045

no offset guiding.  
some sky variations

8046

nsum = 6

8047

sky variations. accum still looks ok

.8048

off the obj a little bit

.8049

.8050

.8051

8052

sky is up in first few images

Gemini says  
I'm seeing

m349.8053 full off the obj in first 6 image  
 higher sky between #21 and #32  
 8054 sky variation  
 8055 some sky variation at the beginning  
 8056  
 8057 nsum 6→8  
 8058 sky rises at the end  
 8059 sky variations  
 8060 fall off the obj before #12

Tried finding 5106 IRS4, but couldn't. Go back to MWC 349

m349.8061 Nsum=6  
 8062  
 8063 nsum 6→8, lost obj for a while at the beginning.  
 8064 sky is higher between #4 & 17  
 8065  
 8066  
 8067 some sky variation  
 8068

Go to NGC 7538 IRS1. Had to move ~2.5W and 3.2N to find it

n7538il.8069 some guiding along slit. 80 on sidebar  
 8070  
 8071  
 8072  
 8073 nsum. 6→8  
 8074 sky jumps up <sup>From</sup> ~~between~~ #10  
 8075 sky variation  
 8076  
 8077  
 8078 Some sky variation

n7538il.8079  
 8080 sky is up at the end  
 Go to Pallas

pallas. 8081

Full range  
 90 on sidebar during peak. May be a little out of focus Temp = 1.4°C  
 sky variations  
 peaking

.8082

z = -4.1 (oops) to start with. Play during integration. change to -5.1. peak up. good at pair 10  
 Not a big change

8083

84  
 85

Go to β Peg

~90 on sidebar

bpeg. 8086

looks good

26 June 2003 MR, TG, QZ

Mg I + H<sub>2</sub>S(2)  
Seeing is pretty poor

Settings up on Arcturus will focus & bore sight  
moved echelon over to the ~~the~~ <sup>rad</sup> side so detectors  
see red.

nsumch  
(clouds)

about 9000 - sky variations z = -4.1 Temp = 5.1°C  
peaking

Vesta  
Ves. 9001  
Ves. 9002

Eta Boo guide star @ 244, 202  
eloo. 9003 guiding Pom sync on  
peaking at start  
clouds  
not certain got any really good ones.  
Peak more

.9004 pair 6 is good  
lots of cloud pair 8-12+  
seeing (!) affecting signal.

6:12 UT

.9005  
.9006 big sky  
.9007 nrod = 32  
.9008 more clouds  
.9009  
.9010

6:27 UT

focus = -4.4 Temp = 4.3°C

daph. 9011 some NS guiding.  
9012

Move to α Sco. z = -4.4 Temp = 4.2°C

asco. 9013

Move to Elias 29

el 29. 9014 nrod = 32 still cloudy  
guiding by hand.  
9015 sky getting bad at pair 7  
lost it pair 15  
9016 got it back pair 21  
pretty good one  
might be low on slit  
9017 pretty good. big sky at end.  
9018 clouds are back  
accum still looks good  
9019 sky got worse ~ pair 25  
mostly good.  
9020 sky bad at start  
peaking near start. on it well ~ 10  
seeing probably isn't great  
Got off it ~ pair 30  
peaked up ~ pair 27

line profile  
looked split for  
9020

8:12 UT  
9:20 UT

9021  
9022  
9023  
9024  
25  
26  
27  
28  
29

sky calmed down  
guided a bit at beginning  
peaked up ~ 5

Back to α Sco z = -4.6 Temp = 3.2°C set boresight

Go to 51 Oph (by way of zenith) guiding  
sky is still up+down

51 oph. 9030 move S during pair 3. 20 on side bar (full range)  
sky got bad ~ pair 25.  
9031 more bad sky.  
9032  
9033

510624 Telescope Gays → RA 20:27:26.9, Dec 37:22:46.5

10:19 UT

510624. 9034 clouds started up again at pair 20

5106i4.9035  
 .9036  
 9037  
 9038  
 9039  
 9040  
 9041  
 9042  
 9043  
 9044

sky getting quite stable  
 nsum = 8 nrod = 32 1<sup>st</sup> deriv bounce  
 nrod = 16

Go to NML Cyg

nmlcyy. 9045

change to 1246.1 H<sub>2</sub> S(4). Peaked CVF. 1.4" slit  
 z = -4.4 echelon more centered at blaze.  
 gain = 50.

nmlcyy. 9046 peaking. pair 5 is good.  
 moved SN along slit in pair 6.

Try going back to ~~the~~ 5106 IRS 4.  
 Finally found it at RA 20:27:27.17  
 Dec 37:22:49.6

5106i4. 9047 offset guiding. Faint  
 9048  
 9049  
 9050  
 9051  
 52  
 53

Deneb  
 aagl. 9054 good at pair 6  
 80 is full range

mwc 349

m349. 9055  
 .9056

moved echelon looking more red  
 focus = -4.5 temp = 2.2  
 noded

scan

7E ON offset ncoadd = 2  
 36 points 35 x -0.4E ON

We're a little low in the slit.  
 Matt thinks he sees some diffuse stuff at very end  
 of scan.

~~9057~~ Moved ~~North~~ North .6" between 2+3 scans

.9057 came on a little too quickly

move ~~source~~ telescope 1.5"E + 0.5"N

.9058 NS looks good. still a little early

move telescope 1"E

.9059

9060

drifting ~~East~~ along scan. move 2"E at  
 end of 9060. Move 0.5"N, too.

.9061

Mirror came in at end of scan 4  
 still drifting EW

9062

9063

9064

Pallas

Pal. 9065 - scan set moved 1.5" North between 1+2

9066

9067

9068

9069

nodding along slit

guiding till pair 7

B Peg

bpeg. 9070

27 June 03 MR, TG, QZ

Pupil mode test - they cleaned primary today

Temp not  
connected in  
header  
Temp = 277.1

Pup. 0500 - on sky  
Pup. 0501 - on shiny  
Pup. 0502 black-saturated  
Pup. 0503 sub 12% mode - black  
.0504 " shiny  
.0505 on sky

Ar II Delta Ver. focus = -4.5 temp = 276.6  
WNO - 760.7

driv. 0506 guiding  
driv. 0507

NGC 4151

n4151.0508 8 n nod  
moved 1.5 N - object landing a little to  
South on slit

n4152.0509 moved .8 E after integration  
adjusted rates

n4153.0510 looks good

6:23 UT

n4153.0511 16 n nod

try .7 East in next file  
n4153.0512 didn't see anything

try .7 West in next file

.0513

.0514 16 n nod 8 n sum ~~at and~~ moved 0.5 W 0.1 N

.0515 half way through - arden't see anything  
never saw it here 1E ON

.0516 good one 1E ON

Vesta

vee. 0517

Ne II focus -4.5 temp = 276.0  
moved the echelon ~~to~~ blue

asc. 0518 Seeing is crappy

H<sub>2</sub> S(1) focus = -5.0 Temp = 275.8  
L Sco echelon still blue

asc. 0518 guiding  
acc. 0519 4 n nod to make snows re  
centered

Doar 21

guide star  
-244, -184  
UT 8:00  
8:04 UT  
Temp = 2.6 °C

doar 21. 0520 bang on in 2" seeing

doar 21. 0521 offset guiding looked good at end  
0522 bounce should be on.

23 Bang on.

24 glitch around pair 10

25 Bang on

26

27 Bang on

28 Bang on

8:47 UT

Went to α Sco. z = -4.9 T = 275.2 °C bare sight bang on.

asc. 0529

Go to HD 163296

offset guiding

UT = 9:24

hd 163.5030

barely see continuum. ± 7  
some sky variability

5031

5032

5033

34

35 ± 7

36

37

38

fabry-perot fringes ~6-10

27 June 2003 UT (cont'd)

HD 163296 in S(1)

hd 163.0539  
.0540  
41

Go to Nemesis (A128) for Atmosphere

nem. 0542 ± 20 came right in on beresight  
guided S about 0.4" peaked at start  
543 guided S during pair 2, 9, 13  
544 peaking during pairs 1-4. good on 5  
545

Go to  $\alpha$  Aql for flux

$\alpha$  aql. 0546 not bright enough for good flux  
stopped after 13

Go to  $\beta$  Peg for flux

$\beta$  peg. 0547 bounce. peaking until pair 7.  
± 50 more peaking ~~at end~~.  
pair 11 is good

Go to ~~R~~ RAql for flux focus, beresight z = -4.6

change wn → 808.043 Hud  
echelon still blue

$\alpha$  aql. 0548

Go to G29.96 scan offset -5E -2N  
steps 0.7E 0N  
npoints 20

$\Sigma \sim 0.0175$

a little too short. change offset to -7E -2N  
npoints to 23

g2996.0550 moved 0.6" N 0.3" E at end  
could be an additional 0.3" E  
due to scan return being  
not quite right

g2996.0551 moved 1.3E and 0.6S after the scan  
.0552 1.6E 0.9S  
Northern position adjusted rates  
.0553 0.4E 0.6S  
.0554 0.1E 0.4S  
.0555  
.0556 4 nod

g3392.

g3392.0557  
.0558 7W .3S try -5 0 for an offset  
liked the scan  
.0559 0.1E 0.3S  
.0560 didn't check  
.0561 1E .85 (these are from the end of .559)  
.0562 .7E .7S  
.0563 .9E .2S  
.0564

Beta Peg

$\beta$  peg. 0565 scan  
 $\beta$  peg. 0566

Pallas

pal. 0567 node found it pair 3 (not great)  
pal. 0568 moved .6 N pair 9

setting up for NGC 7538  
bounce bad

moved echelle to the red  
pal. 0569 good pair 9  
pal. 0570 pair 8 glitch  
pal. 0571

NGC 7538 middle position  
n7538.0572  
.0573  
.0574

South position 0.8 W 0.6 N  
 This isn't working.  
 n7538.0575  
 nm/cyg .0576  
 ncyg .0577 } both messed up trash  
 .0578

mwc 349  
 added obs { m349.0579 huge Hu Alpha  
 .0580

Scans { m349.0581 Scan  
 moved 1.5" N after scan 1  
 .0582  
 .0583  
 .0584

Beta Peg  
 Bleg. 0585 scan=4  
 moved 1.5" N for next scan  
 Bleg. 0586

change slit to 0.8" slit + scan  
 .0587  
 change slit to 1" slit - header is incorrect for feature  
 .0588  
 change slit to 2.1" slit  
 .0589

$\tau = 0.065$

Note - bore sight is in the center of the slit.

28 Jun 03 MR. TG. Q2  
 C60 1184 cm<sup>-1</sup> 1.4" slit. 3" N nod z = -3.9 T = 7°C  
 abao.1500 Arcturus gain = 50  
 vest.1501

"Filter" wiggles rough to cancel. Tried CVF, but it was bad, too

.1502 ±160 on the sidebar guiding south at pair 2  
 .1503 guiding during pair #4 - #8 changing ~~for~~ starting pair #10 focus  
 .1504 maybe higher in slit when start changing (playing w/ focus) z = -4.0 3.1 min  
 .1505 guiding through pair #7 nsum = 6  
 .1506 big water variation in pair #12 6.25 min  
 .1507 6.25 min  
 .1508 off the obj at the beginning 6.25 min  
 .1509 guiding through pair #8 6.25 min  
 .1510 6.25 min  
 .1511 playing w/ focus. Temp = 5.1 C  
 .1512 good at pair #10 z = -4.1 6.25 min  
 rcrb.1513 high in the slit 6.25 min  
 .1514 offset - guiding on 6.25 min  
 .1515 nsum = 8 6.25 min ±100 sidebar  
 .1516 8.5 min  
 .1517 8.5 min  
 .1518 8.5 min  
 .1519 8.5 min  
 .1520 4.25 min  
 .1521 4.25 min  
 .1522 4.25 min  
 .1523 8.5 min  
 back to 16 nods falling off, peak up.

AFGL 2136 move 5" W to find it z = -4.2 T = 4°C  
 9:42 UT g/2136.1524 guider off. peaking up at start: pairs 1-6. ±170 on sidebar  
 1525 peaking through pair 4  
 guiding ~13

28 June 2003 (cont'd)

g12136.1526 guider on. Guide lock died.  
 stop after 5. Guider looked ok.  
 .1527 guider on. peaking pair 10-12  
 .1528 peaking 2-4  
 seeing is pretty bad based on guide star.  
 .1529  
 1530 peaking pair 3-6  
 1531  
 1532

Go to AFGL 2591 z=-4.5 T=3.5°C

g12591.1533 nmod=8 nsum=4 to check guider.  
 Linear rise in DC counts  
 not on until last pair  
 .1534 peaking. bounce.  
 DC rise continuing. Go to zenith.

went to zenith. LN<sub>2</sub> T = .722 and dropped to T = .716 as we moved. Background changed from 5000 to 1500.

.1535 ±400  
 .1536 peaking around pair 6+7  
 .1537

guessing that fringe pattern is in KBr. spacing is around 0.6cm<sup>-1</sup>

Go to NML Cygni

nm1cyg.1538 ±6500 peaking during pairs 3-5

Go to NGC 7538 IAS 1

n7538i1.1539 probably lost an order  
 positive beam low on slit.  
 .1540  
 1541  
 .1542  
 1543  
 .1544

.1545  
1546

Engineering  
 - black - 2 sec - pin hole  
 " slit - 2 sec  
 " " 1 sec  
 black - moved filter  
 .1551 black CUF - same 7



29 June 03 MR, TG, QZ

had heagui problems at beginning!

α Boo, No II

780.424

temp = 5.7 Z = -4.1

scan test

nodded also.

± 350 on side bar aboo. 2500

trying mart's new fscan mode aboo. 2501

aboo. 2502 normal scan

α Sco

Trying scan with position header included

asco. 2503 26 x 0.4 E -5" E offset

position header isn't working fast enough. stopped after 1

asco. 2504 maybe out of focus. end on 2 Z = -4.3 T = 5.3

asco. 2505 diffuse light out to edge of scan ~1%

Go to Galactic Center for scans 0.4 E x 75

stop early gc. 2506 GC scan 0 -25E -16N some 1st deriv. sug. glitch ~125. Came back + moved tel. 0.8 E 1.2 N

slit is too short. change filter for longer slit  
WT 8:20 gc. 2507 GC scan 0 -25E -16N moved 1.6 E 1.8 N  
2508 GC scan 15 -25E -11N bang on!

2509 GC scan +10 -25E -6N end early - quick look didn't catch data files. File looks ok in terms of header & length.

2510 GC scan +10 -25E -6N obvious emission at start.

dave is playing with balance. We ended early try again. We were smelling something like burning electronics

.2511 6 nnode 0.5 S 0.4 W gc scan +10 started is with 6 nnode  
.2512 gc scan 0 will stop it after 4 scans!

.2513 back to 8 nnode 1.6 S 1 W adjusted rates gc scan +15

.2514 gc scan +20 1.7 W 0.8 S adjusted rates

bounce - orders shifted probably less than 1 pix.

change focus Z = -4.4 T = 4.6 This is a blind guess trying to keep up with the temp.

.2515 gc scan 0 4 nnode bounce 0.7 W 0.5 S

→ actually changed it here!

.2516 gc scan +25 bounce 8 nnode 1.3 W 0.8 S

.2517 gc scan +30 last two scans are shifting spectrally

.2518 0.8 E 0.4 S nnode = 4 gc scan 0

.2519 0.1 E 1.0 S nnode = 6 gc scan +5 3 E 0.4 S

α Hercules

aher. 2520 scanning west to east  
.2521 " east to west  
α her is a double star - not a good point source

Beta Peg

bpeg. 2522 scanning west to east  
bpeg. 2523 " east to west

moved a couple arcsec North between scan 1 & 2 see a shoulder to the profile!

Focus Z = -4.5 T = 3.9

Moved Cebalson parabol. red

Bpeg. 2524 1st + 2nd scans have different cloud monitor profiles. Drifting N during scans.

Go to S106 IRS4. Trying the funky scan.

S106i4.pos S106i4.2525 sky taken from 65" E 20 step frames taken after big step No obvious point source.

Go to nod mode to find it. Telescope coord: 20:27:27.02 (after "zeroing offsets") 37:22:48.1

S106i4.2526 Got it! S106i4.2527 8 scans moved 0.7 E + 1.6 N at end

S106i4b.pos Change scan to concentrate on central region? No. Keep same scan.

S106i4.2528 1 E, 6 N

Change scan to S106i4b.pos

S106i4b.2529 0.5 E 0.1 N

Move 2" North + try same scan S106i4b.2530 ~~0.5 E~~ ~~0.1 N~~ 1.1 E 0.3 N

3.5" N Same scan 1 n nod S106i4b.2531

3.5" S Same scan 1 n nod S106i4b.2532

3.5" S 4 n nod S106i4b.2533

Not sure of source position. Go to 7538 IRS1

n7538i1.2534 26 x 0.4 W 5" E offset move 1.5" N after 1st scan. no hint of [Ne II]

NGC 7538 IRS 1

move another 1" N

n7538i1.2535

.2536  
.2537  
.2538  
.2539  
.2540

see Ne II from H II region  
l<sub>max</sub> = 790.549  
h<sub>max</sub> = 10.110  
0.4 N 0 E  
0.7 N 0.2 E  
8 n nod 0.1 N 0 E  
0.9 N 0.3 E  
0.2 E 0.3 N

Pallas

Pal.2541  
.2542  
.2543

noded  
"  
"

l<sub>max</sub> = 779.913  
h<sub>max</sub> = 10.105

Go to S106 for big map. Start at nominal coordinates

S106.2544 70 points 25" W + 0" N 0.7 E step 2 scans. seems to be cutting middle of region

.2545 offset 27" W + 4" N 70 points  
.2546 8" N  
.2547 12" N  
2548 16" N not getting off  
49 25" W 20" N  
50 25" W 24" N sky variation  
51 27" W 8" S  
52 11 12" S  
53 27" W 18" S  
54 30" W 24" S 1st deriv bounce

Go to  $\beta$  Peg bpeg.2555 scan

30 June 03 MR, TG, QZ

Abou 1246.1 - H<sub>2</sub>S(4)  
Focus 3.8 Temp 6.7°C Gain = 50  
aboo. 3500 nodded observation black = 20,000  
Gain = 100

aboo. 3501 looking at black  
echelon tipped slightly to red. 1245.78 = 1246.45  
are both seen on 1 order.

aboo. 3502 in stare mode  
.3503 guiding during pair 4 + 7 (1"N)  
scan mode. 1.4" slit. 5"W 1.5N 0.4E x 2.6

aboo. 3504 nod wait may be too short for flats  
.3505 red leak? - black 1.4" short 51, 2  
.3506 " - shiny " "  
.3507 " - black - pinhole  
.3508 " - " move echelle see  
if diffuse stuff moves - 1.2°

-3509 +.2 from center pos.  
.3510 center position  
.3511 +.1 from start position

Temp = 5.5°C z = -4.0

aboo. 3512  
Go to Vesta

6:22 Ves. 3513 peaking  
3514 move 0.5" S before 3514

z = -4.2 Temp = 5.4  
2.5 sco  
asco. 3515 mark foresight

Go to Do Ar 21. offset guiding

6:57 do ar 21. 3516  
3517 drifted 0.3"E 0.1"N  
3518 moved telescope 0.4"E 0.0"N  
7:17 3519 glitch in pair 7. 0.4"E 0.0"N  
3520 @ nsum = 8 bang on.  
3521 bang on.  
3522  
8:08 3523 looks good

object name wrong.

Go to α Sco

asco. 3524 guided N. during 3.

Focus z = -4.3 Temp 4.6

el 29. 3525 = 50 on sidebar bounce at pair 11  
3526 moved 0.5" S pair 13  
8:49 27 peaking 6-8? spikes 14, 15  
do frequent set up's Move 50.5" in pair 2  
lost it, pair 6-7  
28 lost it on 1, 2  
29 lost it on 1, 2  
30 lost it on 1, 8 1<sup>st</sup> bounce: 10  
31 south on pair 2 spike: 10  
peaking: 11-13 1<sup>st</sup> bounce: 13  
32 glitch: pair 1 peaking: 2, 3, 4, 5, 6  
guiding a ton: high airmass  
1<sup>st</sup> bounce: 12, 14

Go to Vega T = 3.9°C z = -4.3

alyr. 3533 lots of guiding. pair 7 good  
3534 lost it: 7 guiding.

30 June 03 (cont'd)

Really Bad clouds (cirrus)

alys. 3535 peaking: 6, 7  
36 toward bottom of slit. Guide N.  
37 spikes in pair 12

nmlcygni Ne II z = -4.4 temp = 4.0  
moved echelon blue cloud variations  
scan  
nmlcyg. 3538  
3539  
UT, 2:00 .3540 went to longer slit

nmlcyg has wrong feature cloudy

933-91

g 33.91. 3541 wrong object name  
26pts pos ~~5E~~ ON didn't get off of it

36pt .3542 pos ~~7E~~ ON  
36pts .3543 ~~7E~~ ON

.3544 -7E, -4N 40pts  
moved 1.8E 0.6S  
.3545 ~~7E~~, -4N  
moved 1.0E

934.26

g 34.26. 3546 -6E 1N 26 steps  
ended early - I don't think we  
were on it

.3547 -6E 1N 26 steps  
moved 5" S between pair 1 & 2

.3548 -6E -1N may not be  
completely finished  
probe had a glitch  
we recovered  
No file 3549

Sounda crashed  
I'm not sure why.

6 30.53

g 30.53. ~~3549~~ 3550 we started on the source  
-10E -2N  
moved 0.3W 0.3S

.3551 -16E -2N still beginning  
on it

.3552 -23E -2N  
moved -0.6E -1.2N

.3553 -23E -6N  
4 nodes

.3554 moved .6E 0.7S  
-21E 2N 4 nodes

g 35.19

g 35.19. 3555 -10E 0N 23 pts  
bang on

.3556 -12E 0N 35 pts  
.3557 " " " pts

moved after last 2 files  
1.5E 0.8S

.3558 -11E -4N ~~started on it~~  
.3559 -11E 4N didn't check

moved after last to files  
2.2E 0.9S

.3560 -11E 8N  
1.2E 0.5S

.3561 -11E 12N  
0.6W 0.6S

.3562 -11E 16N

wsid  
 wsid .3563 -11E ON bang on  
~~.3564~~ cheating the focus  $Z = -4.5$  Temp 3.0  
 .3564 -14E ON 40 pts bang on  
 .3565 0.0E 0.8 S moved  
 .3566

K350  
 K350 .3567 -14E ON 49 pts  
 in the wrong place  
 try again  
 .3568 -14E ON  
 need to tip echelon parabola  
 \*\*\* moved to the red  
 .3569 -7E ON 25 pts  
 .3570 -7E ON 11  
 bang on

.3571 -7E -3N  
 .1W .3N

.3572 -7E -7N

.3573 -7E -7N

Ocet. 890  $\text{cm}^{-1}$  focus look good enough!

ocet. 3574

checked focus  $Z = -4.6$  temp 2.9

ocet. 3574 2 num 14 nod  
 sky is variable  
 got real good pair !!

clim tried -  
 lost track of a  
 file somewhere? .3577  
 ocet. 3575  $\bar{\nu} \approx 893.5$   
 guiding -  
 rates have been way off  
 didn't move CVF

peaked on CVF

.3578 everything is correct now

$\bar{\nu} \approx 897.5$

ocet. 3579  
 guide N15 Pair 7

ocet. 3580 scan 1.4" slit  
 .4" step

Moved N 2" between 142  
 .3581 another scan was centered.  
 .3582 a longer scan

B peg for a scan comparison

bpeg. 3583 scan 2 node  
 bpeg. 3584 4 node drifting  
 badly N/S  
 reduce only = 1/2 etc

I think all the scans were good on  
 ocet. The nodded observations had the problem that  
 we were drifting badly. I don't think I ever  
 really got on it. However the S/N is still  
 really good.

it's pretty damn cloudy outside. Lots  
 of cirrus everywhere!

31 June 03

TG, QZ

Temp 5.5

Focus = -4 772 cm<sup>-1</sup>

2 boos

aboo. 4500  
4501  
4502

scan .7" step  
.4" step  
.4" step

move 1" N between scans

current u = 0.0132 v = 0.0108

tip mirror to where they had it  
u = 0.0125 v = 0.0067

changing u from 0.0132 → 0.0125 moves star  
25" south  
v = 0.0108 → 0.0098 moves star  
≈ 33" W

try a scan with  
u = 0.0125 v = 0.0087

aboo. 4503

refocused after  
z = -4.2

try again

aboo. 4504

aboo. 4505 scan opposite dir.

clouds

try moving in X+Y  
current X -1.25  
current Y -1.50

ΔX = +.25 ≈ 5" West  
ΔY = +.25 ≈ 5" N

Pupil mode

Pup. mode

aboo. 4507 pos 1

5 stars  
.4508  
.4508  
4509  
4570

X -1.25 Y -1.5 u 0.0131 V 0.0107

pos 2 \* -0.5 " " "

pos 3 -1.25 -0.5 " "

pos 4 -1.25 -1.5 0.0125

pos 5 " " 0.0131 0.0067

8:30 UT

Change 7 1246 cm<sup>-1</sup> H2(S4)

Focus = -4.2 Temp 4.4

aboo. 4511

guiding 1-2 nod 0 3

Change gain = 100  
Vesta. 4512

Goto Vesta

nod 0 E 3.5 N

4513

16 mod

8 mod

trial miring  
CVF - didn't improve  
put it back where it was for  
12+13

4514

ended early pair 7 - didn't peak up

CVF left black in ended early

4515

this should work

guiding cloud variation  
skip pair 4

7:21 UT

4516

4517

point the end

2 Sco to pt + check focus

Temp 3.8

Focus z = -4.4

asco. 4518

4 mod

65530

Auto guiding

g 5530. 4519  
4520  
4521  
4522  
4523  
4524

Guiding a lot

Cont?

16 mod

g5530.4525 sky variation  
.4526  
.4527  
.4528

HD 163296

offset guiding

Hd 1632.4529  
4530  
4531  
4532

cont! peaked up by pair 5

bounce + probably long before this file

offset .3" S to center better on slit  
.4533

Signal looked worse  
tried peaking again - got really good pair 10. Other pairs (1-8) aren't terrible.

.4534

.4535 big bounce pair 12  
minor support on guider quit. Going to Zenith

Since we're going to zenith will call it quits on this object for tonight.

Vega

alys. 4536  
.4537

bore sight was bang on!  
first two pairs poor nudged it. 4N pair 13

nmlcyg

ncyg. 4538

~~stopped~~ stopped early after pair 4

HD 163296 - again - looks to be a good detection

Hd 1632.4539

peaked up during file go through to get a couple good pairs around 10-15

Hd 1632.4540  
UT 10:46 .4541  
.4542  
.4543  
.4544  
.4545  
.4546

glitch pair 9  
bounce by pair 4

11:30 HST  
N2 II

Zhu takes over  
focus = -4.5 temp = 2.8

nmlcyg - to focus + bore sight  
move schelle blue

ncyg. 4547

G 43.89

g 4389.4548

offset  
-7E 0N bang on  
.4549 -9E 2N 0.6W 0N  
.4550 -10E 4N 0.4E 0.3S  
.4551 -12E +8N 0.4W 0.2S  
.4552 -12E -4N 1.1W 0.6S  
ended early only 2 scans

G 45.12

g 4512.4553

offset  
-7E 0N move ahead  
0.9W 0.3S  
.4554 -11 0N 0.4W 0S  
.4555 -11 0N 0.3W 0.3S  
.4556 -11 -4N 1E .3S  
.4557 -11 -8N 1.5E 0.3S  
.4558 -11 +4N 0.9E 0.1S

G 33.50

g 3350.4559 -5E 0N

wind spike on last skew

We don't see the object

945.07  
 94507.4560 offset -5E 0N move afterwards 0.7W 0.8S  
 .4561 0.4" step -4E 0N 0.4E 0S  
 .4562 " " " bang on

950.23  
 95023.4563 .4" step -4E 0N  
 didn't see it  
 .4564 .7" step -4E 0N  
 never saw it

94242  
 94242.4565 .7" step -7E 0N  
 didn't see anything

66148

96148.4566 -10E 0N 0.4E 0.2S  
 .4567 -14E -1N 0.4W .2S  
 .4568 -21E -1N bang on  
 .4569 -28E -1N 0.5W 0.2S  
 .4570 -35E 3N 0.3E 0.2S  
 .4571 -40E -5N .9E 0  
 .4572 -45E -5N 1.2E .4S  
 .4573 -45E -9N

W3D

Moved echelon red

W3d. 4574 didn't see 0.7W 0.3N  
 .4574 -40E 0 way to far East  
 -5E 0  
 parabola shifting echelon parabola dots  
 tilt of dewan  
 moved 0.5W 0.8N  
 0E -4N can't see  
 0E -4N guide star anymore

we think we're actually seeing W3C  
 .45705  
 .45706  
 .45707  
 .45708  
 .4578  
 40E -30N  
 40E -26N  
 40E -26N

I think F is the Contin. Source

.4579 40E -22N  
 .4580 40E -18N  
 .4581 38E -18N  
 .4582 73E -10N  
 .4583 73E -10N didn't get off the source  
 .4584 73E -6N  
 .4585 68E -2N  
 .4586 68E 2N  
 68E 6N ~~1~~ 1 mrod  
 Zhu fell asleep while typing in new offset. (There's a first for everything)  
 .4587 68E 10N  
 .4588 68E 14N  
 .4589 67E 18N



Bad Seeing!  
all night

32 June 03 TG, QZ

windy outside

lboo to focus + bore sight  
focus = -4.1 Temp -6.4  
moved echelon ~~to~~ red

aboo .5500 nFrame = 4 instead of num  
.5501 mod pair - was used + l  
.5502 try again wood on phone  
scan

N3690 -7E ON 21 steps .7"E/step

Pos 1 n3690.5503 1st pos  
11 25 44.2 +58 50 18 .5504 " possibly starting on source

.5505 -12E ON 29 steps  
.5506 bounce

Probably appended to .5506  
5507 another file - I don't think the sequence # changed end early

.5507 -12E ON 29 steps  
I see something in this scan

Pos 2  
11 25 41.5 +58 50 13

.5508  
.5509

Pos 3  
11 25 41.5 +58 50 21

.5510  
.5511

I think I see stuff but it's so broad it looks like cont. it's not strong

Probably was supposed to be in med mode. Can't try that tomorrow if John wants

.5512 repositioned on Pos three using the displayed Coor.

Go to Pos 1 again

.5513  
.5514  
.5515

mod 6 (see a consistent peak at the end of scan)  
mod 8 offset -7E 0  
25 pts

8:30 AM

aboo change to S(1)  
focus 2-4.3 temp. 4.7

aboo .5516 temp was wrong in header

2500

aboo .5517  
Vesta

seeing is poor (windy)

Vea. 5517 pair 5 good  
.5518 really good ± 200 2 num 16 mod

2500

aboo .5519  
.5520

got good half way through seeing is bad so trying to peak up one more file with

changed focus 2-4.5 temp = 4.5

Gy269

gy269.5521 didn't see anything after guiding  
bill's looking for offset guide star  
gy270.5522 no guide stars  
will just sit on center position for one file. - don't see it. We'll move on.

SR-4

SR4.5523 end early -

wanted to be on 5530  
sent coordinates for ~~933~~  
HD163296

95530

95530.5524  
.5525

ended early - minor moved in the way on the source

These are really HD163296

auto guiding peaked up  
water is varying a bunch

~~gss30.5526~~ nmod=32 nsum=2  
 trying to beat the sky  
 bounce  
 sky subtract was much better  
 nsum=3 (see if this works)

9:45 HST

Change nod to 3.2" N will try to keep pos beam  
 in same position

don't use pipe to sum previous files to these

gss30.5528 nsum=4 nmod=16  
 nod=0 3.2 bounce  
 .5529 nsum=3 nmod=32  
 .5530

gss30.5531 on it perfect pair 18 and on  
 auto guiding

.5532  
 .5533  
 .5534  
 .5535  
 .5536 (best file yet!)  
 .5537  
 .5538  
 .5539  
 .5540  
 .5541

HD 163291

hd 163.5542 good pair 21  
 had signal during most of it but  
 was peaking up + moving N/S  
 auto guiding

.5543  
 .5544  
 .5545

Tweaked the focus  
 $Z = -4.6$   
 enhanced the signal a bit

Focus really  
 #1016 3296

hd 163.5546  
 .5547  
 .5548

went .3N - guider seems to keep the  
 source a little low on slit.  
 Probably having trouble due to  
 wind shake.  
 30 mph +

12:05 HST

.5549  
~~.5550~~  
 .5550  
 .5551  
 .5552

nmlcygni Ne II focusing  $Z = -4.6$  Temp 2.7  
 ncyg. 5553 scan

g 8.67

g 867.5554

garbage

wrong tilt of  
echelon

g 867.5555

-10E ON

mostly

Moved echelon to the blue

I think may have  
started on  
source

g 867.5556  
 5557

-10E ON  
 -15E ON

ON 1.3W

not obvious

g 12.208

g 12208.5558

-10E ON

g 11.94

g 1194.5559

-10E ON

0.6W ON

.5560

-12E -2N

0.3E 0.7N  
~~0.7W ON~~

.5561

-10E -6N

.1E -0.5N

.5562

-10E 4N

moving echelon  
to Red

.5563

- I think this is garbage  
~~hit Go~~ instead of Cont

g10.10  
 g1010. 5564 -12E -2N 0.1W 1.35  
 .5565 -12E -2N (consistent with zero (seeing))  
 Quick look had the weird - flats only have  
 4 files warning  
 it didn't catch the new file was being  
 written.  
 .5566 -12E+2N 0.8E 0.25

g10.62  
 g1062. 5567 -12E+2N 0.6E 0.25  
 .5568 0.7E 0.65

g12.221  
 g1221. 5569 -10E ON

Beta Peg.

bpeg. 5570 scan

Humphry's Alpha setting  
 80% cm<sup>-1</sup>

moved echelon to the blue  
focusing Z = -4.6 temp = 2.6

bpeg. 5571 scan  
 .5572

G445.45

g4545. 5573 -7E ON 0.9W ON  
 .5574 -7E ON bangon  
 .5575  
 .5576 -7E ON 26 points  
 1.2E ON (after the last 2 files)  
 .5577 -7E ON 1.6E  
 .5578

α Aql for a division

aagl. 5579 trash  
 .5580 moved a touch south on pair 9  
 .5581 glitch pair 8

Moved Echelon to the red  
 N 667538a (will do pallas bpeg later to Calibrate)

~~n7538a. 5582 -10.5E ON 0.3E 0.7N~~  
~~.5583 -14E ON 0E 0.8N~~  
~~.5584 -14E ON~~  
 see it, it's not much, but it's something

Forgot to turn save to on!

n 7538a. 5582 -14E ON 1N 0.6W  
 .5583 -14E 4N 1.1N 0.5E  
 .5584 -14E 4N 1.4N 0E  
 .5585 -14E 8N  
 .5586 -14E 8N good  
 .5587 " " 0.4E .6N

Beta Peg scan

bpeg. 5588 scan

moved 1.5" N after scan #2

Pallas

pal. 5589  
 .5590

5 um CO

4:20

Focus Z = -4.5 temp 2.0  
 α 2 aql

gagl. 5591  
 .5592

possibly pallas pair 5

~~1.6E~~

Set weight & shift = true

NGC 7538 IRS 1

n7538i1.5593

mirror support failed - went to Zenith

an it good pair 9  
skip previous pairs  
guiding  
peaked up pair 1 @ 5

- .5594
- .5595
- .5596
- .5597
- .5598

guiding early

Myra at 17C0 P(21,22)

Oct-5599 This is really cool  
The seeing is bad but I'll try a map anyway

.5600 2 sec/step 4 scans

West ~~East~~ → East

.5601 East to West

.5602

starting on source  
+ drifting making it worse each  
time - good skies at end  
of each scan

33 June 02 TG, QZ

H2S(1) 587

L Boo. focus z=4.5 Temp

also. 6500

Vesta  
Ves. 6501

Temp is wrong  
peaked up. Pair 5 is good.

- .6502 T still wrong = 278.2
- .6503 nudge south pair 14
- .6504 (I'll remember that this time of promise!)
- .6505
- .6506

L Sco focus z=-4.6 T=5.0

also. 6507

Elias 29

8:30 HST

- el 29. 6508
- .6509
- .6510
- .6511
- .6512
- .6513
- .6514
- .6515
- .6516
- .6517
- .6518
- .6519
- .6520
- .6521

37 full range  
No guide stars

ground bounce is pretty bad  
pair 2 bad - tried to peak up  
good file

T in header 277 is prob a little  
low should be 277.5

el 29. 6522  
6523 sky varied a little  
6524 big bounce

HD 163296

Auto guiding

hd 163. 6525 all guiding but cl'm  
on it now  
bounces

.6526  
.6527 increased rod weight to 1.8#  
nrod = 14 nsum = 8

This is faint  
.6528 - moved about .5" south  
before cl started this  
integration

.6529  
.6530  
.6531  
.6532  
.6533

Tuning nsum=4 nrod 32  
to see if sky cancel better.  
things cancel worse  
nrod 16 nsum 8

.6534  
.6535  
.6536  
.6537  
.6538  
.6539

bounce got real bad - poor  
file

.6541 nsum=4 nrod 16

nm/cyg to check focus z-4.0 is best Temp 3.6

ncyg .6542

tweaked the focus z-4.6

A5353A

autoguiding

no 35. 6543 - looked for it. couldn't see cent.  
.6544 just going to integrate  
at 0 0 pos.  
checked with minor in.  
we're on it

.6545  
.6546  
.6547  
.6548

checked a touch off .5W .2N  
to correct.

.6549  
.6550

pair 13 - weird ripple pattern  
(the water spot thing)

.6551  
.6552  
.6553  
.6554  
.6555

bang on!

bang on

Zhu's up to bat => SIV setting  
focus z = -4.3 Temp 3.1

Beta Peg

bpeg .6556

G33.9

y 339 .6557 nodding 20"N  
this line falls .04 off the C2  
line

.6558 16 nrod

guiding east west  
stopped guiding on pair 8  
we're just going to sit on  
the center ~~pos~~ position

g3391.6559  
 .6560  
 .6561  
 .6562  
 .6563  
 .6564

NGC 7538a

n7538a.6565      nod 0E 20N      nsum=4  
 .6566  
 .6567      change nsum 4→8  
 .6568  
 .6569  
 .6570  
 .6571      nod 20E 0N

Pallas

pal. 6572  
 6572

[Ne II]      Temp=2.7      Z=-4.6

Beta Peg

bpeg. 6573  
 .6574      } don't know what happened,  
 .6575      } didn't set scan correctly.  
             between pair 2 & 3  
             moved 2" N  
             ended early

try an out of focus scan

.6576      Z=-5.0  
 .6577      Z=-4  
 .6578      Z=-3  
 .6579      Z=-3.5

W3A

w3. 6580  
 .6581

offset  
 -10E 0N  
 -15E 4N } We're in the  
                     wrong place  
 confusion between instrument operator  
                     + telescope operator  
 getting bounce in both dimensions  
 spectral + spatial

.6582	-15E 4N	80 points
.6583	-15E 8N	90 points
.6584	-15E 12N	90 points
.6585	-15E 17N	90 points
.6586	-13E 22N	90 points
.6587	-13E 27N	90
.6588	-13E 32N	90
.6589	-13E 37N	85
.6590	-13E 42N	82
.6591	-15E 47N	82 drift west
.6592	-17E 52N	82
.6593	-20E 57N	82
.6594	-22E 62N	80

Endtest (34) Jun 03 T<sub>Gr</sub>, Q2

flat test:

Obj name in header is wrong. Probably pulled off load out-to-ready or bad obj

f test .7500	normal flat	wno = 725	T = 287 C <sub>2</sub> H <sub>2</sub>
.7501	cold load	on open	
.7502	"	"	
.7503	"	"	
f test 2 .7504	normal flat	wno = 587	H <sub>2</sub> SCl
.7505	cold load	on open	
.7506	"	"	
f test 3 .7507	normal flat	wno = 411	Ne (V)
.7508	cold load	"	check header for setup
.7509	"	"	
.7510	"	waited until finish	
f test 4 .7511	normal flat	wno = 808	Hud <del>Ne II</del>
.7512	cold load	"	
.7513	"	"	
f test 5 .7514	normal flat	wno = 900	(maybe) NH <sub>3</sub>
.7515	cold load	"	
.7516	"	"	
f test 6 .7517	normal flat	wno = 1000	Ozone
.7518	normal flat	again	
.7519	cold load	2 sec IT	
.7520	"	"	
f test 7 .7521	normal flat	wno = 1100	Ar III <del>CH<sub>4</sub></del>
f test 7 .7522	cold load	"	
.7523	"	"	
f test 8 .7524	change gain → 50	wno = 1233	CH <sub>4</sub>
.7525	normal	CVF peaked up	
.7526	cold load	"	
.7527	cold load	"	
f test 9 .7527	normal flat	wno = 2011	CO
.7528	gain → 100	5 sec IT	
	cold load	"	

if CVF didn't peak up ←

scratched mirror, stare mode

mir 1 .7529 gain = 1w IT = 10 wno = 2011 CO

mir 2 .7530 IT = 4, gain = 50, wno = 1233 CH<sub>4</sub>

mir 3 .7531	IT = 2	wno = 1100	Ar IV
mir 4 .7532		wno = 1000	Ozone
mir 5 .7533		wno = 900	NH <sub>3</sub>
mir 6 .7534		wno = 808	Hud
mir 7 .7535	IT = 1	wno = 411	Ne V
.7536	"	"	"
mir 8 .7537	IT = 1, gain = 25	wno = 587	H <sub>2</sub> SCl
.7538	IT = 2	"	"
mir 9 .7539	IT = 2, gain = 25	wno = 727	C <sub>2</sub> H <sub>2</sub>

gas cell test, pump on the gas cell to do vacuum

not right setup

vac 1 .7540	IT = 1, gain = 25, wno = 727	C <sub>2</sub> H <sub>2</sub>
.7541	.8" slit	
.7542	1" slit	
.7543	1.4" slit	
.7544	2.1" slit	
.7544	3.1" slit	
gas 1 .7545	.8" slit	
gas 1 .7546	1.0" slit	<del>not good setup</del> wno = 729
.7547	1.4" slit	
.7548	2.1" slit	
.7549	3.1" slit	

Take the gas cell out and try to do vacuum again

gas 2 .7550	.8" slit	we see lines
gas 2 .7551	240 slit	give up on C <sub>2</sub> H <sub>2</sub> , lost vac 2.7551
gas 2 .7552	240 slit	wno = 420 Ne V see water lines
.7553	"	
.7554	bad file	wno = 1600
gas 2 .7555		wno = 1600 H <sub>2</sub> O