

(Nov 34 cont'd)

sat. 4068

OE SN  
1<sup>st</sup> derivative grating drift prominent

4069

OE SN  
grating drift again

4070

OE SN  
Very little grating drift in scan 1

4071

OE SN  
Grating drift

4072

OE SN  
Grating drift

4073

OE SN  
Grating drift. Really bad in scan 3

4074

OE SN  
moved telescope 0.45  
bad grating drift

4075

OE SN more drift

4076

OE SN more drift. Use sky at end?  
moved telescope 3.7 E 2.2 S after 76

4077

OE 2S

4078

OE 2S

4079

OE 2S

came on too soon

4080

moved telescope 5.0 E 0.8 S after 79

4081

OE 2S  
moved telescope 0.4 E 0.3 S after 80

4082

grating drift not bad.  
OE 2S 2 scans  
came on early 3.3 E

Nov 35

Dec 5

MR, TB, HD, MF, JL

Paul

rotate the slit to East west - use A beam crossover for  
base sight  
use B beam crossover for  
N/S slit orientation.

Go to 587 cm<sup>2</sup> H<sub>2</sub>S(1) line  
Adjust echelon paraboloid to see blue

Go to p. pag. Focus = -1.91 (5°C) Mod 5"E

bpg. 5000 move N during pair 2  
peaking throughout

Go to NML Cygni  
Adjust focus to -1.86

Mod 45 E

nml. 5001

Go to IC 5117

Bright star ~30 E ~9 N  
faint, faint star close to right

ic. 5117. 5002

guiding throughout; maybe pos beam up high  
on slit.  
2nd deriv bounce

.5003

got continuum. looks extended along slit  
clouds

.5004

change mod to 10 N - off slit - for 5004  
Got continuum in center of slit.

.5005

Maybe can nod off.  
Stayed on it entire file with no guiding

.5006

peaked during 1<sup>st</sup> s. Came back some  
clouds.  
clouds. maybe try getting both.

Move 1.5" W to bring positive beam down on slit  
on the quicklook. Change to 4.5" E 0 N. Guess  
that nodding E/W made it look broader. Up.  
nod wait to 2.5 s and nsm to 6.

.5007

see both beams. Looks ok. 2<sup>nd</sup> deriv bounce

NEW MARS FLATS

SBIKs, Skys (S), Sky (D)

10:30 pm

T-275.2

MARS

PARAMS WITH LOW HAZ A,B  
go back to STATE  
of ILM

10:30 pm - ESTIMATE 4.2  
(PROB APPROX 1.2)

10:50 pm

ALPHA 12  
N100 = 13 mistake  
MARS.0006

ALPHA CALIBRATION ON TV to X-TON  
BACK TO MARS  
→ MISTAKE - NOVID OBSERVATION

MARS.0007

→ SCAN MESSD UP: PARAMETERS NOT DERIVED  
FROM PREVIOUS ATTEMPT

MARS.0008

SHIFTS SCAN OFFSET TO -12E -3N

MARS.0009

FLAT IS BAD (MARS WAS IN)  
MIGHT USE FLAT MADE = OLD

MARS.0010

UPPER 4.05 SCAN → 4  
-12E -3N

Should have made Skys: NEW NEW MARS FLAT

SBIKs, 9 Skys

New MARS FLAT

MARS OFFSET: 10 → 0.0 N  
0.0 → 2.0 E

MARS.0011

4 scans  
-12E -3N

Going North

MARS.0012

-12E 3N

MARS.0013

-12E 3N

MARS.0014

-12E 3N

Going South

MARS.0015

-12E -3N

MARS.0016

-12E -3N

not quite getting off all mass by 4.0  
4.0 am  
S/G E 0.34 moon

MARS.0017

-12E -3N

MARS.0018

-12E 3N

MARS.0019 ON

MARS.0019

-12E 3N

Alpha CMA

2

alpha.0020

pretty bad - rebase not wrapped  
n-sum=4 n-rod=8

alpha.0021

pretty good  
n-sum=11 n-rod=16

alpha.0022

n-sum=2 n-rod=16

W002 730.5 amC<sub>2</sub>A<sub>2</sub>Focus = -1.99

1.05 km

go to VESPA

293.7

alpha.0023

N100=16  
NSUM=4  
ITTIME=1

really VESPA

alpha.0024

alpha.0025

Checked crashat → pt. Needs  
put number on Vesp

Pre-empt for beam (red position not set)  
cancel  
go to SATURN

SAT.0026

clip VIMAE

N00 DE 45  
30 N  
N100=16  
NSUM=4  
ITTIME=1

BOVACE 1,2 pairs

M090 4 W 1.1 N

MARS: begin before exposure  
→ S. 3.0  
(Remember to use bands  
& offset)

sat.0027



sat. 0028

WNAE = 6 ITTime = 1  
NNO = 16Movers 3.0 S Right before  
explosion

sat. 0029

3 S AGAIN offset  $\left. \begin{array}{l} 1.9 W \\ 1.1 N \end{array} \right\}$ 

NNO = 4

same as above

sat. 0030

MOVED 2 N period to obs.

2 AM  
272.9 = T

sat. 0031

sat. 0032

movers 3 N

Noticeably sky variation

checked position m TV

3 N

sat. 0033

sat. 0034

pair 9 BOUNCE  
12

sat. 0035

Movers 8 N, checked position m TV.

sat. 0036

still 8 N

sat. 0037

" "

Ecliptic pair 3

Bounce pair 5

sat. 0038

8 N

movers offset N = 0.8

Bounce pair 1, 2

" " 8, 14

Bounce pair 12, 13

BOUNCE pair 12

~~sat. 0039~~

sat. 0039

~~8 N~~

sat. 0040

8 N

8 N

sat. 0041

check TV position w/ mirror

sat. 0042

3 S

offset moved 1.6 E

3 S

Bounce pair 4

Bounce pair 13

Sat. 0043

3 S

Mover 3 E  
0.8 N

Bounce pair 1,

sat. 0044

3 S

Bounce pair 3, 4

sat. 0045

2 N

Bounce pair 9, 10 offset 1.6 E  
ON

sat. 0046

- Nice observation!

No change

w offset

sat. 0047

2 N

Bounce pair 11, 13, 14

 $WNO = 819 \text{ cm}^{-1}$ 

go to VESTA

 $C_2H_6$ 

Force = 1.94

clipping on left is bad

vest. 0048

WNO = 16

NNO = 4

NED

0, 2, 3 N

some are better than  
others (pairs)

seems fluctuating

vest. 0049

MIGHT HAVE BEEN

A cloud on filter on camera

sat. 0050

go to SAT

Nod 0.45 N

0 offset

sat. 0051

more 3 S

sat. 0052

4 S

sat. 0053

4.5 S

after

sat. 0054

6.5 S

before

offset 1.0 S

272.9

T

M.A.H.

sat. 0055

2 N

hit atmosphere

No flat?

Sat. 0056  
 4N  
 Flat node = 0.0 (from PREVIOUS file)  
 after  
 A.O.W } offset  
 1.75 }

Sat. 0057  
 6N  
 after  
 offset { 1.4W  
 1.15 }

Sat. 0058  
 8N  
 after  
 offset { 1.4W  
 1.15 }

Sat. 0059  
 fSCAN = OBS MODE  
 test → GARBAGE

Sat. 0060  
 fSCAN  
 test 2

Sat. 0061  
 fSCAN = 2  
 Real one  
 0.0 previous  
 after  
 D.L.W } offset  
 1.15 }

Sat. 0062  
 3S  
 fSCAN = 4

Sat. 0063  
 5S

Sat. 0064  
 3N  
 after  
 0.15 } offset  
 0.65 }

Sat. 0065  
 6N  
 Not quite off plant

Sat. 0066  
 8N  
 after  
 3.6 } offset  
 1.25 }

Sat. 0067  
 8N

Sat. 0068  
 5S

Sat. 0069  
 5S

Sat. 0070  
 3S

Sat. 0071  
 8N

Dec. 1 2005

M, T, S, P, R, D, R

107

6:20pm

CORRECTING ECHLOW CHAMBER ALIGNMENT →  
 WOR RID OF CLIPPING

CHAMBER BOTH ADDRESS

Primary mirror is sitting on its 3 hand points.  
 The focus is giving us 5" seeing.  
 We hope this will be corrected soon.

Wave = 12.41  
 Mars. 1000 H<sub>2</sub>O + H<sub>2</sub>O<sub>2</sub>  
 20" with nod  
 forgot Mars plate  
 fanned

changing to Mars flats

Mars. 1001 it noded 4 nsum 30" North nod  
 noded 2.2W 0.8N

Mars. 1002 pair 1-12 good  
 13-16 something shifted probably  
 primary

Mars. 1003 Bill's busy  
 will check pointing soon

Mars. 1004 ended after 10 nnode  
 skip pair 10  
 going to zenith to fix things

Looks as if we got primary fixed  
 Gene to "B Pag" to Focus

Focus = -1.71

Mars. 1005 2 nsum  
 Mars plate still going  
 8 nnode

going to Mars



horizontal at 1.5 North of center of ellet

- Mars. 1006 offset -12E +3N 2 rmed
- Mars. 1007 offset -12E +5N ← nothing packed nominally  
7.5' N.H. at 1.5  
moved 0.7W 1.3N  
after
- Mars. 1008 offset -12E 5N 4 rmed  
after moved 1.0 0.3N
- Mars. 1009 offset -12E 5N moved 1.0W 0.2N
- Mars. 1010 offset -12E -1N → moved 0.6E 0N
- Mars. 1011 offset -12E -1N
- Mars. 1012 offset -12E -1N moved 0.7E 0.2N  
⊕
- Mars. 1013 offset -12E 5N
- Mars. 1014 offset -12E 5N moved 0.1E 0.3N
- Mars. ~~1015~~ 1015 offset -12E 5N
- Mars. ~~1016~~ 1016 offset -12E -1N ← after moved 0.6E 0N
- Mars. 1017 offset -12E -1N
- Mars. 1018 offset -12E -1N moved 1.6W 0.3N
- Mars. 1019 offset -12E 5N moved 0.3W 0.4N

- Mars. 1020 offset -12E 5N
- Mars. 1021 offset -12E 5N possibly drifting  
0.7E 1.7S
- Mars. 1022 offset -12E -1N after moved 1.0E 0.6S
- Mars. 1023 offset -12E -1N moved 0.4E 0.6S
- Mars. 1024 offset -12E -1N moved 1.0E 0.2S
- Mars. 1025 offset -12E 5N moved 0.3E 0.3S
- Mars. 1026 offset -12E 5N
- Mars. 1027 offset -12E 5N drifting  
smaller than should be moved 3.7E 0.1S
- Mars. 1028 offset -12E ~~5~~-1N  
imm?
- Mars. 1029 -12E -1N we stopped also early
- Mars. 1030 -12E 5N moved 1.6W 0N
- Mars. 1031 -12 -1N 1.9E  
1.1S
- Mars. 1032 -12 -1N moved 1.9E 0.7S

- mar. 1033 -12 E -1N moved 1.0 E 1 N
- mar. 1034 -12 E 59N moved 0.6 W 0.35
- mar. 1035 -12 E 5N  
a glitch of thick within 1st 70 in  
1st scan
- mar. 1036 -12 E 5N started slightly on mass  
ended after 2 check the flat  
moved 2.6 W 0N
- mar. 1037

## Alpha Cma

- focus was -1.71 moved to -1.82
- alpha, 1038 n mod = 8
- alpha, 1039 n mod = 16
- alpha, 1040 WNO = 1248 edited pair 9  
N mod = 16  
N sum = 4
- alpha, 1041  
go to SATURN
- sat. 1042 " position = 0,0  
offset { 4.7 W  
0.9 N
- sat. 1043 offset { 0 E  
0.6 N

- sat. 1044 pair 9 bronze 3" S
- sat. 1045 ~~5" S~~ or little bronze pair 6 5" S
- sat. 1046 pair 9 1.7 W  
1.6 N 4" S  
border pair 2  
0,0 offset
- sat. 1047 5" S
- sat. 1048 5" S not seeing beam or mass or  
a slight offset drift  
(possibly 1)  
1.8 E  
0.7 N
- sat. 1049 1" S
- sat. 1050 1" S  $\left. \begin{array}{l} \text{off} \\ \text{off} \end{array} \right\} \begin{array}{l} 4.9 E \\ 0.8 N \end{array} \left. \begin{array}{l} \text{off} \\ \text{off} \end{array} \right\}$
- sat. 1051 1" S 1.6 N  
0 E
- sat. 1052 0,0 offset
- sat. 1053 3N trailed offset guiding
- sat. 1054 3N
- sat. 1055 3N 2.1 W  
2.5 N
- sat. 1056 6N 0,0 offset
- sat. 1057 8N
- sat. 1058 8N offset 5 good
- sat. 1059 8N



Sat. 1061 8N width is varying a bit  
B/W/GC → focal 1.6 cm

Sat. 1061 8N }  
" 8N } affects half part  
Sat. 1062 8N }

Sat. 1064 8N

Sat. 1065 moved 6" E

Sat. 1066 "

Sat. 1067 "

Sat. 1068 7" E

Sat. 1069 7" E

Sat. 1070 7" E

Sat. 1071 7" E

→ 1.0N  
0.4N

Dec 2nd 2005 TG, AR, SH, DN, TE  
(32) Very Very Curious

Bill

Beta Peg setting up 13.51 cm<sup>-1</sup>  
H<sub>2</sub>O setting  
focus = -1.56 Temp 3.9 C

bpeg. 2001 2 sec int, zoom = 2, mod 16 4" rod  
Cloudy, indoor sound pan 8

Cloudy -

Eryson again 9:45

beta Peg 4" rod - centering the rod  
to mark the baronite - crosshair indicates 2" N of  
center of slit.

Temp = 1.7 C focus = -1.8'

HDO

using Mars & later  
Mars 2002 ~~4.8~~ 5" N pos reddish ~~4.8~~  
mod 2.3W 1.1N

Mars 2003 5" N mod 0.3W 0.5N

Mars 2004 5" N mod 0.1W 0.9N

Mars 2005 -1" N 0.1E 0.2S

Mars 2006 -1" N big cloud pan 12

Mars 2007 -1" N sky still here & recorded  
recovered from cloud pan 4

mod 0.3E 0.1S

Mars Roke 15.0470W, 0.0005N West 3 with

Mars 2008 +5N  
clouds got bad again

moved 0.6E 0.3S

Mars 2009 +5N

Mars 2010 +5N

moved 0.6E 1.3S

Mars 2011 -1N  
reg wind away  
coming back from 6  
trying to recover pain?  
had pair 9  
allow the place

Mars 2012 -1N

moved 2.3E 0.7S

Mars 2013 -1N

moved 0.6E 1S

Mars 2014 5N

Mars 2015 5N

moved 1.3W 0.3S

Starting to offset guide (Not Really - clouds again)

Mars 2016 5N

I think we're drifting  
moved 0.3E 0.7S

Mars 2017 -1N

clouds got better

Mars 2018 -1N

bad cloud  
pair 8 moved 3.2E 0.1S

Mars 2019 -1N

bad clouds  
pair 13 better moved 1.2E 0.3S

Mars 2020 5N

Mars 2021 5N

moved 0.9W 0.30S

Mars 2022 5N

had clouds  
where did Mars Go?

Mars 2023 5N

Mars came back

moved 2.3W 0.7S

Mars 2024 -1N

moved 0.9W 0.7N

Mars 2025 -1N

clouds

Mars 2026 -1N

1.4E 0.6S

Alpha (M.A)

acma. 2027

focus = -1.91 Temp 0.6°C

still Mars flats

moved 1" 5 pair 4

cloud pair 9

Normal flats

acma. 2028

cloud pair 5 -

guide missed up pair 8

back to normal pair 11 skip 8-10

acma. 2029

guiding

1310 cm<sup>-1</sup> CH<sub>4</sub>

lucky slit

acma. 2030

Red 3" source 1.5" in  
line right



Saturn <sup>guiding</sup>  
 sat. 2031 mod 45" N ~~OE ON~~  
 3 mm diam 16 mm  
 silty no rock steady

sat. 2032 OE ON Check

sat. 2033 OE ON

sat. 2034 OE ON

sat. 2035 OE - 3N

sat. 2036 with vanishes OE - 3N

sat. 2037 OE - 3N

sat. 2038 OE - 3N

sat. 2039 OE - 6N

sat. 2040 OE - 6N bounce

sat. 2041 OE - 6N

sat. 2042 OE - 6N

sat. 2043 OE ON

sat. 2044 OE ON

sat. 2045 OE ON

sat. 2046 OE ON

sat. 2047 OE ON

sat. 2048 OE ON

sat. 2049 OE ON

sat. 2050 OE ON

sat. 2051 OE 3N

sat. 2052 OE 3N

sat. 2053 OE 3N

sat. 2054 OE 3N

sat. 2055 OE 3N

sat. 2056 OE 6N

sat. 2057 OE 6N

sat. 2058 OE 6N

sat. 2059 OE 6N

sat. 2060 OE 6N

sat. 2061 OE 6N

moved 2.7w 0.25  
 after ~~sat. 2059~~ all  
 sets

DEC. 3 2005 MR, TG, SP, PAWS, TS Bill & Paul

WNO = 1351

110

focus = 1.6

6:10 pm  
T 27.2

204 296 → MARKED BOSS SIGHT

freq = 3000

Midday 4 N  
marked brought w/ positive beam

go to MAAS  
out up

scan for MAAS

①  $\begin{cases} -12.5 & \text{offset} \\ 0.5 & \text{Sho. rise} \\ Y8 & \text{SCAN POINTS} \\ 2 & * \text{SCANS} \end{cases}$

NW002

② more mass  
to capacitor

Mars. 3001 -12.5 N

offset  $\begin{cases} 2.0 E \\ 0.9 N \end{cases}$

Mars. 3002 -12.5

offset  $\begin{cases} 0.1 W \\ 0.5 N \end{cases}$

Mars. 3003

NW004

-12.5

scans seems poor  
last 2 scans starting in mass

offset  $\begin{cases} 7.4 W \\ 0.5 N \end{cases}$

Mars. 3004 -12.5

offset  $\begin{cases} 5.5 W \\ 1.1 N \end{cases}$

Mars. 3005

-12.5

FOUND A SPIN 3 → drifting a bit

offset  $\begin{cases} 1.9 W \\ 0.3 N \end{cases}$

Mars. 3006

-12.1

Dr. Perry has yellow better

offset  $\begin{cases} 1.0 E \\ 1.1 N \end{cases}$

Mars. 3007

-12.1

offset = 1.3 W  
0.9 N

Mars. 3008

-12.1

that 0.0

Mars. 3009

-12.5

Mars. 3010

-12.5

gms again not offset

Mars. 3011

-12.5

15.055 W } good note  
0.005 N }

~~the offset~~

that  $\begin{cases} 0.4 E \\ 0.3 S \end{cases}$

1.874/6  
8 up

→ (go to O eds to that form)  
No data taken  
(BLW error done)

down = -1.95

Mars. 3012

-12.1

offset 2.0 E  
0.5 N

Mars 3013

-12.1

offset  $\begin{cases} 2.0 E \\ 0.6 N \end{cases}$

Mars 3014

-12.1

No offset data  
offset  $\begin{cases} 1.1 E \\ 0.1 S \end{cases}$

Mars. 3015

-12.5

Mars. 3016

-12.5

Mars. 3017

-12.5

offset  $\begin{cases} 1.6 F \\ 0.4 S \end{cases}$

Mars 3018

-12.1

Mars 3019

-12.1

ROUND/E offset = 0.0

Mars. 3020

-12.1

Mars. 3021

-12.5

2.5 E } offset  
0.5 S }

Mars. 3022

-12.5

1.9 W } offset  
0.3 S }



Mar. 3023 -12, 5 offset  $\left\{ \begin{array}{l} 0.0 \\ 0.0 \end{array} \right\}$   
 Mar. 3024 -12, -1  
 Mar. 3025 -12, -1  $\left\{ \begin{array}{l} 0.4 W \\ 1.1 S \end{array} \right\}$  offset  
 Mar. 3026 -12, -1  
 Mar. 3027 -12, 5  $\left\{ \begin{array}{l} 1.4 E \\ 2.1 S \end{array} \right\}$  offset  
 Mar. 3028 -12, 5  
 Mar. 3029 -12, 5  $\left\{ \begin{array}{l} 2.6 E \\ 1.5 S \end{array} \right\}$   
 Mar. 3030 -12, -1  $\left\{ \begin{array}{l} 1.9 E \\ 0. N \end{array} \right\}$   
 Mar. 3031 -12, -1  $\left\{ \begin{array}{l} 1.2 E \\ 0. N \end{array} \right\}$   
 Mar. 3032 -12, -1 offset  $\left\{ \begin{array}{l} 2.0 E \\ 0. N \end{array} \right\}$   
 Mar. 3033 -12, 5 END of scan  
 Mar. 3034 offset  $\left\{ \begin{array}{l} 0.6 E \\ 0. N \end{array} \right\}$  SCAN 3  $\rightarrow$  CHANGE jump (spetally?)  
 Mar. 3034 -12, 5  $\rightarrow$  (found 2.2w ON)  
 Mar. 3035 -12, 5 END of SCAN 3  $\rightarrow$  lots of water variation  
 Mar. 3036 -12, -1  $\left\{ \begin{array}{l} 1.0 E \\ 0.0 N \end{array} \right\}$  offset  
 END of SCAN 2  $\rightarrow$  MORE WATER SIGNIFICANT VARIATION  
 $\left\{ \begin{array}{l} 2.5 E \\ 0.5 S \end{array} \right\}$

Mar. 3037 -12, -1  $\left\{ \begin{array}{l} 2.5 E \\ 0. N \end{array} \right\}$  offset  
 11:00 AM T. 2.212 Mar. 3038 -12, -1  $\left\{ \begin{array}{l} 0.3 W \\ 15.058 W \end{array} \right\}$  offset  
 Mar. 3039 -12, 5  
 ENDED AFTER 1 SCAN  
 FOCUS MUST BE CONTINUOUS  
 APPEAR TO BE DELETING SIGNIFICANTLY  
 $\left\{ \begin{array}{l} 3.5 W \\ 0. N \end{array} \right\}$  OFFSET  
 Mar. 3040 -12, 5 (Radio)  $\left\{ \begin{array}{l} 1.0 W \\ 0.6 N \end{array} \right\}$  OFFSET  
 Mar. 3041 -12, 5  
 Mar. 3042 -12, 5 dead-on  
 Mar. 3043 -12, 5  
 Mar. 3044 -12, -1 1.4 W, 0.1 N water  
 Go to X CMe focus -1.88 and 4" N  
 back to normal flats  
 acmd. 3045 normal 16 pass = 4 unit - 2 case  
 acmd. 3046 Doing in load  
 Change to 950 cm<sup>2</sup> C<sub>2</sub>H<sub>4</sub>  
 checked black for 2 second - Go for it. Gen=50  
 focus stayed same  
 acmd. 3047  
 acmd. 3048 3" mod pressure = 1000's psi

d. com. 3049

acme. 3050

Saturn

Guiding

Sat. 3051	OE ON
sat. 3052	"
sat. 3053	"
sat. 3054	"
sat. 3055	OE -9.5N
sat. 3056	OE -5.5N
sat. 3057	OE -5.5N
sat. 3058	OE "
sat. 3059	"
sat. 3060	OE +4N
sat. 3061	OE +4N
sat. 3062	OE +7N
sat. 3063	OE +7N
sat. 3064	"
sat. 3065	OE ON
sat. 3066	OE ON

? number  
is small

bounce

moved 0.94  
ON

with varying  
bounce

moved 0.0

sat. 3067	OE 2N
sat. 3068	OE 2N
sat. 3069	OE, ON
sat. 3070	"
sat. 3071	"
sat. 3072	"
sat. 3073	"
sat. 3074	"
sat. 3075	"

moved 0.94 ON



Dec 3rd -34,  
(Dec 4 UT)

MR, TE, TG

Paul

Beta Pag

586.5 cm<sup>-1</sup> H<sub>2</sub> (S1) orders shifted. 586.2059  
Focus = -1.71 Temp 6.5°C near slit

b pag. 4000 4 maximum 16 mod 1 sec end 5' mod  
peaking throughput  
pair 11 is good  
bounce pair 13+14 near edge of slit

Bonsight is set at Center of Slit!

Go to NME Cyp for atmospheric calibrator  
reding off slit. normal focus

nm1. 4001

exposedly defocus using TV mirror to make size 5'  
Focus = -1.96

nm1. 4002  
4003 didn't peak until end. Repeat

NGC 7027 focus back to -1.71

n 7027. 4004 scan 2 mod 9E ON 260gpa  
see continuation but came on too soon.  
shifted by 0.6 E after 4004

4005 Change to 11E ON + 29 step points  
Forget to lead next, 4005 is same as 4004  
off 0.9"E at end

4006 change offset to 11E 4N to get sky along slit  
1st deriv bounce  
scan 1 around point 5 seemed to take too long.  
additional +0.9"E at end.  
good N-S

do 4 scans starting with 4007  
App 17027. 4007

2.4"E 0.4"S after 4007  
4008 2.4"E 0"N after 9

2-5 min 180  
for  
for  
2:

change to 11E 2N

4009 2.1"E at end  
change to 12"E 2N Forget to zero offsets before  
4010

4010 marked start position on TV. scan 2 should ok  
end of scan 1 has higher sky scan 3  
2.2"E at end scan 4  
4 see eye

4011 ~~402~~ start scan 2 looked good  
3 moved 0.3"E to start on det

bounce in scan 3 got bad  
glitch in scan 4

looked good at end 15.0370 W rate

4012 scan 2 had a cloud  
0.7 W 0.4 S

4013 came back dead on. sky had smooth linear increase

change to 12"E 2"S

4014 scan 1 had "sky jumps in middle  
0.4"E 0.3 S

change to 12"E 4"S

4015 Looks too far East  
Moved 3"W before scan 3  
bang on

Nov 3<sup>rd</sup> cont'd

changed offset to 9"E 4"S

7027.4016 Fairly smooth sky increase along scan,  
offset 1.2"W 0"N at end

change to 10"E 4"S  
4017 point 21 took long time. missed buffer toggle?  
-34 had glitch  
1.7"W 0"N

4018 point 97 on scan 4 had HUGE guiding shift?  
2.8"W 0"N

4019

Go to Hk 12

use TV to adjust focus to -1.8"  
change to nodding on slit. 5"  
offset 3.7"E from Hk 12 per email  
offset guiding  
adjust for boresight in center by moving 25"S

h612.4020 2<sup>nd</sup> deriv bounce in big way  
guiding in both beams until pair 8

4021 pair 8 start searching for continuum  
neg beam on pair 13 @ 2.2"W from 3.7"E offset

4022 pair 2 saw both beams. 2"W at 3.7"E offset

4023 back at 3.7"E position + sit there.

Go to 940 cm<sup>-1</sup>  
Re-center paraboloid

Go to Mira for focus etc.  
nod 0.3". Adjust boresight for positive beam  
Focus -1.7". Focused TV afterwards

oct.4024 off star at start  
peaking through 1" half

N 4.5  
S 1.5

mas. 4025 -12E 4.5N

moved filter by 1° to help get rid of dark lines - got better.  
mas. 4026 -12E 4.5N  
2 scans  
moved 1.1"E 0"N  
4019  
2 scans  
moved 0.44 0.21

changed gain to 25

mas. 4027 -12E 4.5N  
glitch #12  
4 scans  
new gain

changed gain back to 50  
fixed nod wait

mas. 4028 -12E 4.5N  
moved 1.5E 0N

mas. 4029 -12E -1.5N  
moved 0.4E 0.2N

mas. 4030 -12E -1.5N  
dubious offsets

mas. 4031 -12E -1.5N  
moved 1.6E 1.0S

mas. 4032 -12 4.5N  
drifting N?  
moved 1.3E 1.0S

changed gain back to 50

mas. 4033 -12E 4.5N  
moved 0.4E 0.2S

mas. 4034 -12E 4.5N  
moved 1.3E 0.5S

mas. 4035 -12E -1.5N  
moved 0.6E 0.3S

mas. 4036 -12E -1.5N

mas. 4037 -12E -1.5N  
before 3rd scan moved 2" East 2.5E 0.3S  
down offset 1.2" and moved



(Av 34 cont'd)

mars. 4038 -1.2E 4.5N  
 mars. 4039 -1.2E 4.5N moved 0.6E 0.0S  
 mars. 4040 -1.2E 4.5N moved 3.6E 0N  
 mars. 4041 -1.2E -1.5N  
 before scan 3 moved 2" ~~W~~ wrong way  
 before scan 4 " 4" E moved 3E 0S  
 mars 4042 -1.2E -1.5N  
 mars. 4043 -1.2E -1.5N moved 0.1E 0N  
 mars. 4044 -1.2E 4.5N moved 1.0W 0N  
 mars. 4045 -1.2E 4.5N 1W 0.0S  
 mars 4046 -1.2E 4.5N 0.3E 0N  
 mars. 4047 -1.3E -1.5N  
 mars. 4048 -1.2E 4.5N moved 0.7E 0S

Vesta

mars flats still in effect Temp 2.1°C focus -1.81  
 Vea. 4049 pair 4 moved .5" South  
 pair 70 moved pretty far North

normal flats

Vea. 4050

.4051

TCS crashed during flat. Aborted.

4052

move N during pair 2  
 make OS 5 during 4  
 guiding during pair 6

Change to 746.5 7.48 cm<sup>1</sup> for C<sub>2</sub>H<sub>2</sub>  
 adjust echlen parallel to see ruler

Change focus to -1.91 T=1.2°C red OE 5N

Vea. 4053 moved 0.6"N during 2  
 .4054 little bounce in pair 11 (1<sup>st</sup> deriv)  
 .4055 guiding throughout

Go to Saturn Using funky scans saturn.compos

st. 4056 position OEOs  
 moved telescope 0.4"W after use

.4057 position OE 2S

.4058 OE 2S

moved telescope 0.1'E 0.1'S at end  
 OE OS

4060 OE 2S

moved telescope 0.4'E 0.2"N at end

4061 OE 2S

1<sup>st</sup> deriv bounce (drift during scan) seems worse

4062 OE 2S

4063 OE 2S

moved telescope 0.4W 0.1S

4064 OE 2S

4065 OE 2S

4066 OE 2S

moved telescope 1.1E 0.2N after 66

4067 OE 8N

gradual enter drifts  
 moved telescope 0.0E 0.0N after 17

(Nov 34 cont'd)  
sat. 4068

- 4069 OE & N  
1<sup>st</sup> derivative graty drift prominent  
OE SN  
grating drift again  
not much grating drift in scan 4
- 4070 OE SN  
Very little grating drift in scan 1  
bing on.
- 4071 OE SN  
Grating drift
- 4072 OE SN  
Grating drift
- 4073 OE SN  
Grating drift. Really bad in scan 3  
moved telescope 0.9°E 0.4S
- 4074 OE SN  
bad grating drift
- 4075 OE & N  
4076 OE SN more drift. Use sky at end?
- 4077 moved telescope 3.7°E 2.2S after 76  
OE 2S
- 4078 OE 2S
- 4079 OE 2S  
came on the scan
- 4080 moved telescope 5.0°E 0.8S after 79  
OE 2S
- 4081 moved telescope 0.4°E 0.3S after 80  
OE 2S
- 4082 grating drift not bad.  
OE 2S 2 scans  
came on early 3.3°E

Nov 35 ~~Dec 5~~

MR, TB, HP, MB, JL

Pank

rotate the slit to East west - use A beam crosshair for base sight  
use B beam crosshair for N/S slit orientation.

Go to 587 cm<sup>-1</sup> H<sub>2</sub>S(1) line  
Adjust echelon paraboloid to see blue

Go to p Arg. Focus = -1.91(5°C) Mod 5°E

bpy. 5000 move N during pair 2  
peaking throughout

Go to NML Cygni Mod 45°E  
Adjust focus to -1.86

nml.5001

Go to IC 5117 Bright star ~20°E ~9°N  
faint, faint star close to bright

- ic5117.5002 guiding throughout. maybe pos beam up high  
on slit.  
2<sup>nd</sup> deriv bounce  
get continuum. looks extended along slit.  
clouds
- .5003
- .5004 change nod to 10 N - off slit - for 5004  
Got continuum in center of slit.  
Maybe can nod off?  
stayed on it entire file with no guiding
- .5005 guide peaked during 1<sup>st</sup> S. Came back some  
clouds
- .5006 clouds. maybe try getting both.

move 1.5" W to bring positive beam down on slit  
on the quicklook. Change to 4.5°E 0.1N. Guess  
that nodding E/W made it look broader. up.  
nodwait to 2.5s and nsm to 6.

.5007 see both beams. looks ok. 2<sup>nd</sup> deriv bounce



IC 5117, 5008 2<sup>nd</sup> dir bounce  
humidity fence close.

openwisp

Capella Wwa 1245  $\text{cm}^{-1}$   
focus = 1.77

cap. 5009 red 3E ON  
had determined not wait due  
to bounce problems

Orion KL from on KL  $10 \text{ deg } 20'' \text{ W } 70'' \text{ N of BN}$   
~~5008~~

KL 5010 nred = 2  
KL 5011 nred = 8 after rechecking on BN

clouds scan 2-5?  
for beam take 10x sky  $10'' \text{ W } 20'' \text{ E of BN}$   
SO  $5'' \text{ S } 4'' \text{ E of BN}$   
sto 20x  $0.4'' \text{ S}$   
return to BN x4

KL scan = 84

clouds went away for last few scans  
but position drifted, so not returning to BN  
guide 2E is too center to or +  
KL 5012 guide E after scan 2  
cloud went off, beginning of 4  
CLOSED BY FOE

Venus shift (2pm-3pm) clouds keep w/ clock

Mat moved cross-dispersor diagonal  $\frac{1}{4}$  turn clockwise (looking up)  
wwo = 925  
hi-lo mode  
order = 1  
1.4" wide slit

test nwrite = 2

→ on guidebars, each write is a separate line

Tested a scan with nwrite = 2 and some closed. If Time = low  
NFFrame = 2: Telescope moved every 4 reads. No loss of  
time.

NFrame = 1: Telescope moved every 3 seconds. Lost 1 second  
due to telescope move.

Operated at 11:40 pm

focus -1.72 Temp 1.4°C Capella 1250  $\text{cm}^{-1}$  cloudy  
aur. 6000 peak CVF

lots of clouds + guiding  
good from 11-13, 15, 16  
.6001

more clouds  
pair 3 ok. 11+12  
positive beam much sharper.

Filter wiggles mimic  
broad signal with cloud

Go to x Ori for southern bearings. red OE 10W. Go off slit.  
no data saved. focus tested good.

Go to IC 418

Put 9<sup>th</sup> mag central object on bearings.  
offset 5" W.

IC 418, 6002

clouds. nodding off slit  
clouds decrease toward end

num = 2

- 10415.6003 start is ok. didn't check position on TV.  
manual telescope 0.9°E 13'S after
- .6004 sky looking "good" now pair 10  
moved telescope 0.5°E
- .6005 clouds end at start, clouds varying throughout
- .6006 seeing varying so didn't move telescope  
clouds normal, but fairly stable  
put mirror in at end, couldn't see it, sit + wait now.  
moved 0.7°E
- .6007 high clouds  
moved 0.3°E after
- .6008 rates look good  
clouds coming down
- .6009 house pair 1, 2, 3, 4, 5, 6, 7, 8, 9... got good  
moved 2.0°E 1.3°S at end
- .6010 adjusted track rate to 15.039 W  
.0012 S  
clouds varying
- .6011 high clouds
- .6012 high clouds  
moved 2.1°E 1.5°S  
change track rate to 15.0375°W
- .6013 rates were good. moved 0.3°E
- .6014 clouds coming down a bit

- (cont'd)
- .6015 clouds coming down some
- .6016 moved 6.3°E 1.7°S  
change track rate to 15.036°W
- .6017 moved 0.9°E 1.5°S  
change track rate to 15.0362 W 0.0014°S
- .6018
- .6019 clouds = bounce  
move to 1.9°E  
change track rate to 15.0359 W, .0015 S
- .6020 moved 2.8°E  
change track rate to 15.0350 W  
.0015 S
- .6021 clouds coming down, move 2.3°E at end  
change track rate to 15.0342 W
- .6022 clouds still coming down  
& fairly stable with less change  
change to 2.2°E 0.8°S
- .6023
- .6024
- Go to  $\omega = 1232.5$  VY CM/a
- VY CM/a 6025  $n_{sum} = 4$   $n_{med} = 16$  int time = 2 sec  
peaking up thru pair 4  
sky/bounce pair 8
- .6026 sky is varying - junk -
- .6027 start again after re-aligning junk  
clouds from pair 2



Venus (cont)

.6028

(garbage)

MR &amp; HR (Dave operator)

Nov 37 (Dec 1<sup>st</sup> UT, 7<sup>th</sup> UT)

137

2pm

Venus shift +

sure set up as yesterday

WNB = 925

Hi - Lomita

Orbit = 1

1.4" wide slit

frank cross - dispersion

Blue 9th Gen. H<sub>α</sub> line in order #10 actually, please♂ - Spe 11<sup>h</sup> 47 +14<sup>m</sup> 32 (or 41?) Loree @ 23, 295

bare sight check &amp; focus check

best focus ~ -1.87

test 60" nod

~~type~~ no data taken

Venus

39" across @ 0.3" steps = 56 steps

Start 90° E do flat @ 10 steps @ 90° E, 15" N

more 66° E W (at 15" S)

± 20 69 steps of 0.7" E W

then 66° E W (no, 90° E W)

± 10 more steps @ 90° W

± 10 more steps @ 90° E

Venus flat = 20 blocks ± 20 skies

@ 90° E position

(some threatening cirrus &amp; cumulus, but go for it)

try for position on edge of disk  
(if crescent, so ... hard)

11:20 UT Venus. 7000

7min. 20)

should 2" W

corrected

Venus. 7001

eyes accidentally set  
15" N for flats  
& came back to 0" N  
after flatsquicklook thought this one was  
all flats  
Forget to update object & take with new  
all flats  
add a jelly @ end of Venus flat, hd to fix

drifted 1" N / correct

Venus. 7002

⑧

Funky  
Scan

⑧

⑧

⑧

back getting & up escape  $\rightarrow 2$   
 rates look good  
 Venus 7003 ~~might have hit a cloud?~~  
 clouds came in  
 are we seeing thermal variations  
 or venus scattering variation

① Modifying venus scan  
 to make sky points  $60''$  more off each side  
 So,  $150''$  E to start &  $150''$  W to end

1:51 UT Venus 7004 — HORRIBLE CLOUDS  
 1<sup>st</sup> scan ~~is~~ sign of venus in clouds  
 2<sup>nd</sup> scan can just barely see  
 venus absorption lines (sometimes)

2:03 UT Clouds BAD! go  $60''$  W & sit & stare  
 in continuance more to monitor clouds

2:31 UT still horrible clouds (can't see sky lines)  
 2:33 UT Venus @  $15''$  scan  
 clouds still horrible,  
 go to moon & try to get rates

Could not find moon on guider b/c clouds  
 So sit & watch ~~sky~~ cloud monitor

2:05 UT Still horrible clouds  
 but take some cloud data in case  
 we can think of some clear way to make use of it

Cloud 7005  
~~micrometer~~ 7006 looking @ back of guide ~~scope~~  
 camera mirror

Go to  $587 \text{ cm}^2$  with Ekelan tipped to see blue.  
 slit is E-W. Go to cross hair A.

Go to  $\beta$  Peg even with clouds.

Focus at  $-2.22$   $-0.5^\circ\text{C}$

Bore sight at center of slit

bpeg. 7007 still had venus flats extra redward

moved south in pair 2  
 peaking

ic5117.7008 normal flats  
 offset guiding  
 ended early<sup>pair 4</sup> at center on low sight

.7009 see continuum

.7010  $n_{\text{sum}} = 6$  sky pretty stable  
 moved along slit in pair 2  
 needs to be moved more.  
 Move  $1''$  E

.7011 moved wrong way?  
 moved  $2''$  W during pair 11  
 moved east during pair 14  
 moved  $1''$  E during pair 4  
 good  
 sky variations increasing. 100s  
 did we miss a nod?  
 don't see continuum except high on slit for pos.

~~7012~~

came back on TV.

.7016 moved  $4''$  W during pair 7  
 good during 8-16

.7017

.7018

.7019



Go to H $\beta$  12

~~change~~ Change nod to O.E. <sup>15</sup>N off slit  
Reduce nod wait to burn 2 frames

More 2" E from having optical peak in center  
of slit

H $\beta$  12. 7020 offset guiding  
clear continuum water lines varying

7021.  
7022  
7023  
7024

more 1" E before 7025

7025  
7026

change  $n_{sum} = 4$

7027

background fluctuations

7028

bigger background fluctuations

7029

background climbing. Cirrus outside

Change to Jura for atmospheric calibrator

muNO. 7030

$n_{sum} = 3$

guiding

7031

more guiding  
some 2" E for bounce

Change to 5.57.5 cm<sup>2</sup>. Bring paraboloid to  
see a little red of center.

Go to  $\alpha$  Tau. Focus = -2.32 T = -2.1°C

atau. 7032

7033

some H<sub>2</sub>O variation

atau. 7034  
7035

adjust borelight

Go to CE Tau (aka 119 Tau)

offset guiding

$n_{nod} = 24$

atau. 7036

guiding + peaking at start  
cloud ~ 2.2

.7037

.7038

.7039

.7040

cloud variations ~ pair 6

Go to Zeta Aur.

offset guiding

zaur. 7041

very faint, but in accum

.7042

peaking during first half.

.7043

cloud coming in toward end

.7044

.7045

7046

pretty good

7047

7048

sky is pretty calm, decreasing

7049

-7050

.7051

slight bounce on atmospheric loc 1<sup>st</sup> deriv  
bounce is still there

.7052

Go to  $\alpha$  Ori

auri. 7053

stopped after pair 4. echelle sagged.

.7054

adjust echelle  
glitch pair 1. skip pair 9.

.7055

peaking.

clouds at end

shut due to humidity

Abandon Ship

Nov 38 (Dec 7th ST, 8<sup>th</sup> UT)

MR &amp; HK operations

~3m heavily cloudy dropping to no ~~light~~ open  
DS+536 ~~for~~ for ~~low~~ bore sight  
(of Sgs; same as last night)

$$f_{air} = -1.95 @ T = 2.8^{\circ}C$$

Loaded Venus flats  
using venuscscan (same as last night)

Set up a catalog of planet

Venus, 8000

Nscan=1

Venus miscentered E-W; was early

up red wait  $\rightarrow 2.5$  sec2" W tilt  $\rightarrow$  correct rates

$\phi$  align 2" E/W of hand-drawn crescent (to 2" E)  
to try to center better

Venus, 8001

-Not quite centered in cross-hairs

better centered E-W than this year

adjust rate

align 1.5" W of hand-drawn crescent (to 1.5" E)

Venus, 8002

rate ok

Venus, 8003

nscan=2

will take 2m more than 2

Venus, 8004

nscan=2

seeing

end to nscan=2

Venus, 8005

occasionally missing 2" buffer logic, not 1"

Shouldn't impact data at all, except for

slight efficiency hit

Venus, 8006

Venus, 8007

Venus, 8008

glitch during best normal stars

checked flying before 'venus' stars

4 out of 30

Moon

Blackbird row = 7000

focus  $\rightarrow +2.0$ 

Moon row = 4000

stage @ 400W/400N = 700

So, safety off

3-4 sec to do 400/400 not

set redwait = 5.0 sec

nsum=4

Nscan=16

3105

moon, 8009

moon, 8010

3104

.8012

3103

.8013

3102

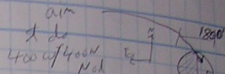
.8014

 $\rightarrow$  garbageeg redwait  $\rightarrow 7.5$  sec

~9mm

quit after pair 6 to  
close for tag

Fog &amp; snow





Nov. 39

TG, JL, MB, GH, AB

wno = 557.5

Fe II

Go to Mr Geph

mcep. 9000

nsum = 4 mod = 16 int time = 1 sec.

focus = -2.15

.9001

nsum = 6

.9002

we moved parallel to Wavelength selection will change

.9003

w120 = 407.8

.9004

.78 int time nframe = 2 nsum = 4  
bounce pair 1

.9005

.9006

nsum = 6

.9007

.9008

.9009

.9010

mod = 32

temp = 0.2°C

.9011

calibration file

nsum = 2 mod = 2

(250, 150) top right hand corner

(116, 155) above center of atmosphere line

w120 = 557.46

focus = -2.1

temp = 0.1°C

x = 231, y = 133 middle of circle

Go to AD Per

adper. 9012

temp = -0.4°C

.9013

.9014

moved .5E to ~~use of~~ <sup>use of</sup> ~~supernova~~ <sup>supernova</sup> in better  
film of ~~supernova~~ <sup>supernova</sup> back to our normal with  
10, but should by shift weight stars

.9015

glitch pair 15

.9016

.9017

.9018

9019

.9020

9021

.9022

re-sifted frames back to pre 9012 era

adper. 9024

40% wno - was calibrated at 814

adntsave

→ .9025

store mode

another calibration file

obs mode = mod

focus -2.30 Temp -0.7°C

adper. 9028.5

guide missed up due to change in focus

things good by pair 7

int time use release

Alpha Tau

atau 9026

bounce

int time 0.8 nframe = 3 mod = 6 nsum = 6

ended early - didn't see it  
pair 10

atau. 9027 on at row guidance on  
hor  
 .9028 probably little better  
 .9029  
 .9030  
 .9031  
 .9032

CE tau  $40\% \text{cm}^{-1}$

cetau. 9033 a touch of guiding  
a touch of bounce

cetau. 9034 increased n nod = 24

.9035

.9036

.9037

.9038

.9039

.9040

.9041

.9042

.9043

Alpha Ori

a ori. 9044 guiding  
glitch pair 5 n nod = 24  
getting it on pair 6  
some bounce

.9045 n nod = 8 bounce pair 7

Vesta

ves. 9046 n nod = 16

Alpha Tau

atau. 9047 n nod = 24  
bounce some guiding

.9048

.9049

Vesta

ves. 9050 n nod = 24

change wave #  
 577,4808

focus = -2.15

ves. 9051

ves. 9052

change wave #  $415 \text{ cm}^{-1}$   
 focus = -2.33 Factors at 415, 9063 FeJ

ves. 9053

orig bounce at level



## Alpha Ori

aori. 9054

\* Shifted parallax - see \*

aori. 9055 got it pair 6 n mod 16

aori. 9056 glitch during plot  
flatmode - bld n mod 24

## Epsilon Tau

Eps. Tau. 9057

, 9058

, 9059

, 9060

irresolvable water vapor  
possibly glitched on last pass

## Alpha Ori

aori. 9061

n mod ~~24~~ 16

, 9062

, 9063

## Vesta

Ves. 9064

, 9065

, 9066

, 9067

Ves. 9068

warm - wavelength calibration  
830 cm<sup>-1</sup>, 0.125 μ

Ves. 9069

back to 415 cm<sup>-1</sup>, order 2Saturn 415 cm<sup>-1</sup>

Sat. 9070

± 0" N OE

note base right from previous Vesta

bounce on light  
no. Ed 1 W ON  
n mod = 2

Sat. 9071

- 5 N OE

n mod = 4 ~~mod~~

sat. 9072

5 N OE

moved 2.6 W 0.0 N

sat. 9073

7 N OE

moved 0.7 W 0 N

sat. 9074

8.5 N OE

sat. 9075

3 N OE

glitch about moved  
#152 (width) ↓  
0.4 W 0.5 S

Nov. 40 MB, JLG, TG Bill (operator)

wno = 780.5 C<sub>2</sub>H<sub>2</sub> shot out by windwno = 587 H<sub>2</sub> J = 3-1 open at 1:00 AST  
in order = 3 586, 2059 in order 2x Tau E-W slit 3-4 mm H<sub>2</sub>Oatau .0500 mark 4" EW 2.9 slit  
0371 mark + at A centered on slit  
go to B/C, then Bbn.0501 not made seem to need W rake  
put B at center of slit to start scan  
kl.0502 kl. s1 scan sequence sky kl, bn  
2 scans

kl.0503 4 scans guide a bit W after #1 each

kl.0504 4 running smoothly watching tracking on TV

kl.0505 8 + scan signal

kl.0506 8 bounce jump in scan 1

guide E after 1 (always while on sky)

kl.0507 8 had added W rate, now take it back

kl.0508 8 jump in guiding in all scans  
when we go from sky to KL

kl.0509 8 random bounce now

kl.0510 8 a/d random small guides

kl.0511 8 tracking getting worse. time to leave

vesta.0512 high on slit for mast

vesta.0513 so-R

Shift echelle + echelon for Saturn

}

vesta.0514 Sit here while shift

4" Mod east

vesta.0515 shift as scintillates

vesta.0516

vesta.0517

looks like a wide deep

sat.0518

+3E -15N pass

2nd second scan  
moved 0.5

sat.0519

+5 -15 pass

sat.0520

11

moved 1.6W 0.9N

sat.0521

+0 -15

sat.0522

+0 -15

bounce

sat.0523

-5 -15

moved 0.4W 0.1N

sat.0524

-5 -15

sat.0525

-6 -15

moved 1.1E 0.7S

sat.0526

-6 -15

sat.0527

-5 -15

sat.0528

0 -15

moved 1.3E 0.5S

sat.0529

0 +5 -15

sky variation

sat.0530

+5 -15



Nov 41

T.G., M.B., J.L. B. 111

nml. c. 4g  
 E/W slit top, burst, bounce, 1st, focus is was as division  
 2 Hz 730  $\text{cm}^{-1}$  Q branch  
 nml. 1500  
 moved 3W to the slit housing at near  
 middle of slit focus = 1.98

bounce

~~Uranium~~ Uranium

Uran. 1501

nod 0 15<sup>N</sup>

Easter slit

norm = 0 mod = 16

checked pointing

marked 0.1 0.6 S

Uran. 1502

started guiding fair

marked 0.3 W 0 N

Uran. 1503

at hunt

Uran. 1504

mod = 24

Uran. 1505

checked 0 W 0 N

Uran. 1506

Uran. 1507

Uran. 1508

Uran. 1509

checked focus = 2.03

Uran. 1510

Uran. 1511

look good

Uran. 1512

guided pair 6

Uran. 1513

Uran. 1514

Go to Ck R (5) + HCN R (11) order 2 order 4 743.004 in order 2

align + w/ &amp; Tau (drift at first see AB Av. 2)

above 1515

before centering on & Tau  
2<sup>nd</sup> laser bounce

above 1516

guiding, searching. nothing obvious

1517

1518

sit on nominal posn now, 2<sup>nd</sup> laser bounce

1519

mod = 32 no hay nada

1520

try 0.8<sup>N</sup> N

Give up and go to #2  $\Delta = 4 - 2$  814.42  
 + N Hz at (6,0-4)

br. 1521

nod on BN

Fl. 1522

may have seen moving 4 sec/posn

kl. 1523

2 good scans seeing cbs at BN at end

kl. 1524

8 scans move 1" E after scan #1 (as we should but didn't last night)  
(skip #1)

kl. 1525

bad signal received at last scan  
move 2" E after scan 1 (skip #1 all  
did it drift during 1524? or just at end?  
move another 2" E after #2  
end after 4 scans

kl. 1526

+ scans go 0.1" E after #1 + 2  
#3 of scan good  
substantial sky noise  
will be bin to remove

kl. 1527

tracking better. still guide &amp; occasionally

kl. 1528

needed  $\Delta$  after #1

kl. 1529

kl. 1530

kl. 1531

kl. 1532

kl. 1533

kl. 1534

kl. 1535

br. 1536

br. 1537 Wind picking up

Go to slit and rotate instrument

slit now N-S

Go to Vesta focus = -2.18

Vesta. 1538

Switch to #NCO of 828cm<sup>-1</sup> 827.672Vesta. 1539 nod 6" <sup>N</sup> off slit in order of

Vesta. 1540

Go to BN

br. 1541

irc2. 1542 move 5" E 7" S of BN guide to 5.5" E  
expended command to BN

irc2. 1543

irc2. 1544

irc2. 1545

br. 1546

br. 1547

irc2. 1548

.1549

.1550

.1551

br. 1552

irc7. 1553

2.5" E 8" S, nod 5" N  
guiding at first  
west 0.5" E

irc7. 1554

irc7. 1555

irc7. 1556

band turned up at 222

br. 1557

blegnd p/c now (moved shutter)

Switch wavelengths CaH<sub>2</sub> G band 730.5cm<sup>-1</sup>  
slit is N/S, nod along slit for Divisor (BN)  
focus = -2.28

br. 1558

bad bounce

br. 1559

Going to Vesta

Vesta. 1560

Vesta. 1561 peaking pair 8-11

bars right set  
at position on this file  
rotures 0, 4 N

Saturn

Sat. 1562 focus 0, 0  
satsamps  
3 frame 4 mod  
moved 0.3W ONSat. 1563 pos 0, -5 N  
moved 0.6W 0.6S

Sat. 1564 pos 0, +4 N

Sat. 1565 pos 0, +7 N  
moved 0.3W ONSat. 1566 pos 0, +8.5 N  
water variationSat. 1567 pos 0, +8.5 N  
moved 0.7E 0.7S

Sat. 1568 pos 0, +4 N

Sat. 1569 pos 0, +4 N  
moved 0E 0.4S

Sat. 1570 pos 0, 0

Sat. 1571 pos 0, -4 N  
enable computer  
slightSat. 1572 pos 0, 8 N  
slightly off  
moved 3.6E 1.0S



12 Dec 05 (over 5 hrs) Jy TG, MB + BF

Set up on Cth. Ring atal  
Find beam + focus on  $\beta$  Peg -1.85  
2.5" nod on NS lens slit  
1309.1225 in 7  
Cth in 10-11  
4mm  $\frac{1}{2}$  O

Go to  $\alpha$  Per (Fomalhaut)

dpsa.2500 guiding alt  
dpsa.2501 vgly. too faint for a comparison

Go to NGC 7538 IFS 1 focus -1.95  
irs1.2502 during peak? - ignore  
irs1.2503 don't know if same may be OK  
irs1.2504 bounce calmed down  
was horrendous on dpsa  
looks good  
irs1.2505  
irs1.2506  
irs1.2507 cut nod to 2" N - better will continue  
irs1.2508

Go to Mars to get out of w/d

mars.2509 nod 15" N from center  
mars.2510 nod = 2 to go best for flats  
mars.2511 } some slit in beam?

Mars.2512 } assorted garbage  
mars.2513 }  
mars.2514 } going to CO 2070 cm<sup>-1</sup>

Go to  $\alpha$  Per focus -1.90 Fowler made

aper.2515 16 good pr. 9.5 Fowler time  
2516 18.5 Fowler (incl. 4.5 wait)

Go to AB Aur

abaur.2517 on +  
abaur.2518 0.34" W  
abaur.2519 another 0.3" W + 0.6" N better!  
abaur.2520 another 0.3" W a little better

Go to BN via  $\theta$ , C

bn.2521 on it after 14 pairs 50:2 1" W  
5" N  
irc2.2522 5.5" E 3" S move from BN } guiding off  
irc2.2523 on it (?) after 16 pr. } over  
seen to get off by guiding 0.3" either way  
irc2.2524 not as strong as I expected

Switch to Cth 1309.1225 in 6 (?)

irc2.2525 on it after 8 pr.  
irc2.2526  
irc2.2527 nod = 32 getting hit by bounce  
had seen no problem  
bn.2528  
bn.2529 (I may have lost count)

Go to  $\theta$  J = 6-4 (276.098)

bn.2530 on it after 2  
kl.2531 fscan like 5(w) but w/ NS slit  
scanning W across  $\theta$   
kl.2532 are there extra lines at end of scan?  
kl.2533  
kl.2534

Change Wave 1231cm<sup>-1</sup>

Bn.2535  
Bn.2536

Alpha Ori for pointing

alpha.2537 nod = OE 3 N  
inited early was set here  
on post beam

Can figure out where in file 2  
we were from the more cards.  
if headed to II here.

asteroid  
guiding Saturn

Sat. 2538 0 nod pos 0,0 nothing 30N  
moved 0.9W 0.35

Sat. 2539 pos 0, -3N nod = 16 moved 0.6W 0.15

Sat. 2540 pos 0, -4N actually see sky and set

Sat. 2541 " moved 0.4E 1.1S

Sat. 2542 nod 32 pos 0, -4

Sat. 2543 pos 0, -1 moved 0, 0

Sat. 2544 pos 0, +2N

Sat. 2545 pos 0, +2N gain = 50  
ended early (lost guide star)  
ended on pair 22

guiding off  
Titan  
with Titan  
off factor

Sat. 2546 pos 0, +5N reversed on Saturn

Sat. 2547 pos 0, +5N moved 2.0E 1.1S

Sat. 2548 pos 0, +8N  
ended early pair 16 moved 1.0E 0.1S

Now still using Titan but with titan rates

Sat. 2549 pos 0, +8N moved 0, 0

Sat. 2550 pos -2.4E, +9N

Sat. 2551 pos -2.4E, +9N moved 0.3E 0.5N

Sat. 2552 pos -2.4E, +9N

Sat. 2553 pos 6E, 0N

Sat. 2554 pos 6E, 0N moved 3E 1.8S

Sat. 2555 pos 6E, 0N moved 2.9E 0N

Sat. 2556 pos 6E 3N moved 2.9E 0.8S  
pair 20 stopped  
guiding on Titan

Sat. 2557 pos 6E 3N moved okay  
ended after 1.4 pairs

Sat. 2558 pos 6E 3N

Sat. 2559 pos 6E 3N moved 0, 0

Sat. 2560 pos 0E 0N

Sat. 2561 pos 0E 0N lost check old  
ended pair 11 wind 6.1E 0.1S  
lost smooth change

Sat. 2562 Moved 0.9W 0.5N



