

Feb 2013

TK6 JL

Date 01 Feb UT, Test in lab

h20,0001 1506.206 ~~1506.206~~ .45

Very Strong

1506.66

1.5

1509.78

1508.15

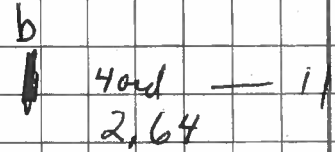
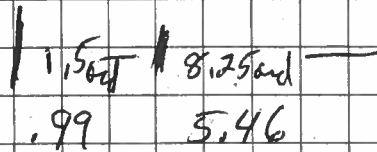
1.23

1510.53

1509.38

1509.46

11 -



← Red 2.5

h20,0002 med mode looking for a good H2O pattern

56.918

33.480

1

1523.64

1.48

VS 1522.16

1.09

S 21.07

2.38

18.69

0.37

18.32

0.7

17.60

0.4

17.20

15.86

Room .0003  
:0004

1248 cm<sup>-1</sup>

"

by eye

CVF in d mode

brood filter

brood filter than CVF

Feb 2nd 2013, TKG, JL, GO

Junk 1002  
.1003 > just what name implies, I was testing something  
setting up at 820 in

atau.1004

med mode

Focus = -0.40

temp = 273.8

Go to Jupiter

jup.1005

moved West after scan 2

use calib to focus at 1248 cm<sup>-1</sup>  
go to Atau to focus

Focus = -0.42

jup.1006

offset -26E 18N

after scan 1 move 1.5" N

end after 3 -

Aurora!

jup.1007

offset -26E 11N

moved ~~2.5"~~ "W after scan 1  
bounce!

jup.1008

offset -26E 6.5N

jup.1009

offset -26E 2N

.1010

-26E -2N

after scan 2 moved 1" E

.1011

-26E

-~~2.5"~~ 6.5N

bounce

.1012

-26E

-11N

set next scan up  
a bit early...?

lowered E rate back to nominal

end frames odd?

at end focus was at -0.43 due to T  
~~shift~~

drifted way South  
Change wavelength 820 cm<sup>-1</sup>  
moved focus to 0.02  
blindly

Jup. 1013 med 819 cm<sup>-1</sup> focus = -0.42  
after scan 1 offset 2" N  
shift in middle of last scan

Switch to 1248 cm<sup>-1</sup> hi-med

Jup. 1014 hi med focus = -0.44  
restarted @ look  
Jup. 1015 -2.6 E 6.5 N  
after scan 2 moved -2 E

Jup. 1016 after -2.6 E 2 N

put mirror in to check N/S  
had to move 3 N

Jup. 1017 adjusted to give a bit more N rate  
-2.6 E -2 N  
move 2" W after scan 2  
more west rate  
end of scan 3 add shift in background

Jup. 1018 -2.6 E -6.5 N  
Junk ~~2nd~~ 1st scan huge jump  
in middle ended early

Jup. 1019 -2.6 E -6.5 N  
more west added during scan 1  
after scan 1 moved 3" W  
Scan 3 some water variation

Jup. 1020 -2.6 E -1.1 N

going to 2 tan & wave 818.5  
focused -0.47

Jup. 1021 ended after 3 scans

Switch to 1248 hi-med

Jup 1022

-26E 6.5N  
move west after scan 1  
moved 2" W after scan 2

Jup 1023

-26E 2N  
shutter at end of scan 2

.1024

-26E 2N  
moved W 2" after scan 3

.1025

-26E -18N Looking for Aurora South  
moved N 2" after scan 1

Going to Ceres to set up for Sara's source

Wn = 773 hi-med

Cer. 1026

setup with slit 10+1  
focus = -0.6 Temp Air 3.7C

~~Chi Uma Majoris BS 4518 - wasn't ~~observed~~~~  
~~Ma Uma BS 4069~~

~~Ma Uma 1027~~

Found Chi Uma

marked boresight off Chi Uma  
needed to move 4" north

Ngc 4194

ngc 4194.1027

rod 3" just to find it  
6 scans 1 sec slit, 16 reads

Dave looking for off-axis guide star  
ended early  
guiding now

ngc 4194.1028

nodding 10" north (nominal)

Ngc 4194.1029

west 1.4" from nominal

.1030

East 1.4" " "

.1031

East 2.8" " "

N6C4194.1032

2.8 W of nominal  
+ hints in see it

.1033

2.8 W 2N of ~~nominal~~

.1034

4.2 W 2N of " "  
didn't see it

.1035

scan

center 2.8 W 2N

offset = 5.5 0

nrpts = 16

nrnod = 16

step = 0.7 0

.1036

repeat scans

nrnod = 16

.1037

" "

nrnod = 32

.1038

" "

#1 Shifting gears set up for Saturn

2 B00 and set up at 8518.5 cm<sup>-1</sup> med mode

ab00.1039

nod also

focus = -0.5

ab00.1040

f scan test

Go to Saturn

Sat.1041

.1042

moved 2.5 W after scan 3

Go to ab00 to set up at

587 hi-med focus = 0.7

Sat.1043

H<sub>2</sub> S(1) 3" N of center

died - scanning E/W  
- shut down on notes window & it died

Sat. 1044

4" N offset  
f scan  
of lock died

.1045

4" S offset  
move 2" W after scan 1  
moved 2" W after scan 2  
moved 1" W " scan 3

.1046

same 4" S scans  
move 1" W after scan 1  
got more west rate

.1047

4" N offset  
moved 2" S after scan 1

Sat. 1048

try ph. 3 at  $904 \text{ cm}^{-1}$   
went to focus at  $2 \tau$   $904 \text{ cm}^{-1}$   
focus = -0.4

west rate = -0.0005  
moved 1" E after scan 1

frame ~~61~~ 61 got there sat  $\approx 10$  sec then  
picked back up

.1049

.1050

.1051

.1052

.1053

.1054

.1055

good first scan

moved 2" W after scan 1  
moved 2" W after 1 scan

nrod = 8

moved 1" W after scan 1  
increased W rate to 0.001 during scan  
moved 3 W after file

.1056

.1057



Felt 3rd 2013 UT  
TKG, LF, JL, GO, B:11

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Setup at  $820 \text{ cm}^{-1}$  for C2H6

atac, 2000 C<sub>2</sub>H<sub>6</sub> models

Jul. 2001 moved 2" S after scan 1

040 West  
PT med rate

Changed to  $1248 \text{ cm}^{-1}$  Hi-med

Jul. 2002 ended early not centered on blaze

Jul. 2003 peaked up blaze  
after scan 3 moved 1" W

Jul. 2004 offset -26 E 6.5 N  
~~moved~~ moved 2" W after scan 3

Jul. 2005 offset -26 E 2 N  
moved 1" E after scan 1

.2006 -26 E -2 N

.2007 -26 E -6.5 N

.2008 -26 E -11 N

moved E 2" after scan 2  
Scan 3 was getting slightly  
occulted by dome

.2009 offset -26 E -16  
after scan 1 2 South  
Scan 2 2 South

Change to  $820 \text{ cm}^{-1}$

Jul. 2010



Back to CHy 1248

- Jul. 2011 -26E 11N
- Jul. 2012 offset -26E 6.5N
- Jul. 2013 -26E 11N we were south for above to files moved 2" E after scan 1
- Jul. 2014 -26E 2N after scan 3 moved 1" west
- Jul. 2015 -26E -2N move 2 W after scan 1 bounce
- Jul. 2016 -26E -6.5N
- Jul. 2017 -26E -11N

I think I'm off about 5" S with crosshair in hi Res since el adjust things in med mode moved 2" N after scan 1

Change to 818.3 med mode

- Jul. 2018 ~~-26E~~ C2H6 scan Tele jump in scan 4

Change to 1248 cm<sup>-1</sup>

- Jul 2019 offset -26E 16N (due to pointing issue?) ended after 2 scans ~~going to shift whole by~~
- Jul. 2020 offset -26E 12N
- .2021 -26E 6.5N
- .2022 -26E 2N
- .2023 -26E -2N

Jul. 2024 ended after 2  
 missing lower shutter  
 going to North pole Aurora drifting N/S

Jul. 2025 offset = 2 CE 18N  
 moved 2" N after scan 3  
 Change to Co(H<sub>2</sub>) med mode 8/8.5

Jul. 2026 came on foot ended after  
 one scan  
 make sure we get a  
 clean flat  
 drift

Jul. 2027 use bounce to reduce  
 ended after 2 scans

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### Sara's Galaxies

Ceres setup at 773.9 with orders  
 shifted to see red  
 focus = -0.63

Cer. 2028

Cer. 2029 another file just waiting for  
 well

Chi Ursa Majoris for pointing

~~Cygnus 2030~~  
 to NGC 4194

ngc 4194. 2030 16 mod scans

going to ~~run~~ run Uma to check Focus

looked good

back to Ngc 4194

ngc 4194.2031

Scan 9 has some sort of electronic noise  
ended after 9 scans

ngc 4194.2032

~~John is going to disable motors to see  
if it reduces the noise didn't happen~~

.2033

after scan 1 disabled motors  
Noise got better  
after scan 7 turned motors on  
noise came back

.2034 disabled motors after flat

Went to zenith  
add extension cord to type motor camp &  
motors drivers to same power supply

.2035

.2036

noise problem due to collimator motor  
so ~~the~~ unplugged it & we are good to go  
scan 14 noticed some grating shift

.2037

.2038 @ look died

Going to debug + lower for Saturn

258.7

76

aboo. 2039  
.2040  
.2041

taken just for flat  
" " " "  
aboo good data

Saturn

NH<sub>3</sub> at 900 cm<sup>-1</sup> low res

Sat. 2042

skip = 14, 15

guiding  
off axis

.2043

after 2043 moved 3" South to  
center rod on sl. 2

.2044

nmod 16

.2045

nmod 32

.2046

.2047

.2048

.2049

skip 30 & 31 ended early - shutter  
got in way

.2050

.2051

changing to 960 cm<sup>-1</sup> low res

Sat. 2052

16 nmod

.2053

32

.2054

32

.2055

32

.2056

32

.2057

32

.2058

32

.2059

.2060

Feb 4th 2013

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TG, JL, GO, LF, CD, Bill

570 ~~570~~ -0.41

587 -0.47

Setup at 540 cm<sup>-1</sup>

746.5 -0.29

820 -0.301

at au. 3000 - is actually a test frame  
32 stars at a blackbody

980 -0.31

955 -0.31

mirror. 3001 - is actually a blackbody  
3002 - is actually shiny

1150 -0.301

1247 -0.31

use 2 Tau to focus focus = -0.612

Going to Jupiter

Jup. 3003 540 cm<sup>-1</sup>

Jup. 3004 587 cm<sup>-1</sup> bounce!  
odd beginning on scan 4 moved 1" west after scan 3  
Go back to 2 Tau to focus + setup at 746.5

Jup. 3005 focus = -0.48 wave 745 cm<sup>-1</sup>  
we are low in slit  
moved 3" S after scan 1  
moved 2" S after scan 2  
moved 1" N 1" W

Got to 2 Tau to get 1150 cm<sup>-1</sup>  
focus = -0.35

Jup. 3006 1150 cm<sup>-1</sup> clock died  
ended after 2

Jup. 3007 after scan 3 moved 54"  
a little late but did it  
put in mirror - re-point then offset  
4" South

Jup. 3008 focus = -0.42 960 cm<sup>-1</sup>

Jup. 3009 offset - 3" N before scan 1  
end after 2



Jup. 3010 end after 1  
guiding now

Jup. 3011 end after 1 to check pointing

.3012 ~~changed to 901 cm<sup>-1</sup>~~

901 cm<sup>-1</sup> Jup. 3013 nod mode 901 cm<sup>-1</sup> Jup - mistake

.3014 5 scan  
end after 3

Changed to 1248

.3015 ended after 1 wrong wave 1304 cm<sup>-1</sup> prob.

.3016 ended after 2

Changed to 820

.3017 818.5 cm<sup>-1</sup>  
3 scans - ended after 3

focus = -0.73 Changing to SO<sub>2</sub> on I<sub>0</sub>  
marked bore sight in far beam

Cal. 3018 first 4 nod pairs were poor  
 Cal. 3019 8 nod  
didn't like 7 shifted by 20 pixels

Cal. 3020

go to I<sub>0</sub>

I<sub>0</sub>. 3021 skip = 1-7

.3022  
 .3023  
garbage I lost guiding crap  
I was the right by jump

.3024 skip = 13

.3025

.3026

.3027

guiding

guiding

io. 3028

io. 3029

io. 3030

go to Callisto

Cal. 3031

back to I<sub>o</sub>

LO. 3032 skip = 1 2

io. 3033

io. 3034

, 3035

, 3036

, 3037

8 nod

Callisto

Cal. 3038

set up at 773.9

~~AGC~~

Cal. 3039

Focus = -0.64

go check pointing at chi Ursae Major (4518)

NGC 4194 orders moved to look more blue

offset guiding

NGC 4194. 3040

, 3041 ended after 7 scans

moved Telescope 1" N 2E

, 3042 - should be more centered

, 3043

, 3044

, 3045



going to Epilon Orion 4630

K2.5 <sup>vis</sup> 3mag

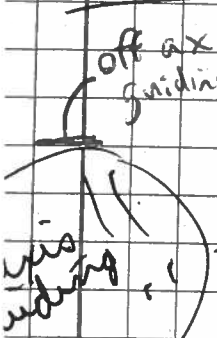
Star 4 - position to offset from  
can't see star 4

pointed to what we think is B (nowledge in visible)

antB. 3046	15.1E	3.9N
	really obvious in this file	
.3047	1 slit width east	16.5E 3.9N
	not obvious	
.3048	1 slit width West	13.7E 3.9N
	not obvious	
.3049	back to nominal pos 15.1E 3.9N	
B1 from B .3050	" ✓	

MB 5.4E  
-2.8N

.3051  
.3052  
.3053  
.3054



off axis!!  
guiding go to Saturn time  
to Boo to focus & setup at 820cm<sup>-1</sup>  
Focus = - ~~0.73~~ 0.73

Sat. 3055 offset = 0,0  
ended optical

.3056 offset 2E, 2N

C2Hz focus ~ -7.4

Sat. 3057 → garbage wrong scan

.3058 ended after 2 - bad at Miller

Went to 1248 cm<sup>-1</sup> scan

- Sat. 3059
- .3060
- .3061
- .3062
- .3063
- .3064

→ Beacon near central meridian 13:50 UT.  
 Air mass: 1.45.  
 after move 3" west to center Saturn

Changed to 818.5

Sat. 3065

Change to 744.5 C<sub>2</sub>H<sub>2</sub> R(5,6)

- Ad. 3066
- .3067
- .3068

done interfered scan 2

on to C<sub>2</sub>H<sub>4</sub>

- Sat. 3069
- 3070
- 3071
- 3072
- 3073

Beacon  
 "  
 15:03 UT, a/m = 1.2  
 15:17 1.2  
 15:31 1.2  
 Done 15:46 UT.



.4010 -26 9N  
first scan looked a little odd edges off top not very sloped (seeing?)  
CFHT ~~off~~ ~~aperta~~ seeing varying between 0.4 + 1.4

.4011 -26 5N  
not off axis Guiding anymore

Ethane med mode

exp. 4012 need to move ~~with~~ South  
moved 5 south 2 East after scan 1  
2 south 2 East after scan 2  
2 East after scan 3

off axis Guiding

Callisto focus = -7.0

Cal. 4013 - test for Z 530 cm<sup>-1</sup>

Cal. 4014 good!  
coverage for entire word is .37 take three off say x then the line needs to be at  
 $\sqrt{\text{pixel}} = 256 \times 1/3$

start at 7:15 UT

IO. 4015 ended file junk didn't set background back to cal to set it

UT 7:27 back to IO

IO. 4016  
4017  
4018

Garbage 11  
4019 ended early Guider lost the star  
4020 ended early rotator to  
telescopes mightily jump  
4021 skip = 1-11

CO. 4022 - really good  
.4023  
.4024  
.4025  
.4026

Callisto

Cal. 4027 not on it  
way off nothing  
Cal. 4028 skip = 17

another half file to get good into

cal. 4029 8m red

back to I o

CO. 4030 skip = 12  
guiding

.4031  
.4032  
.4033  
.4034  
.4035  
.4036 skip = 6 watermark

Callisto

cal. 4037 skip = 13

Going to Ceres NeIT 773.9

ser. 4038 focus = -0.71

pointing BS 4518 Chi Uma

ngc 4194

Centered on blaze

ngc 4194, 4039  
4040

moved 1.5N 1W before next file  
4041

going to Epsilon Corvus 4630 for pointing check

Then on to Ant D - changed wave number to center on array

off axis  
guiding

offset from B by 11.4E 13.7N to get to D

ant D. 4042 ended early - need longer slit

ant D. 4043 new longer slit  
maybe

at -10.6 -0.4

$\tau_{\text{ant}} = 0.04$

ant D. 4044 moved 1"E at -9.6 -0.4  
not obvious

ant D. 4045 moved 1"W and 1"N at -11.5" 0.5  
we basically moved to optical position

ant D. 4045 moved 2"W + 1"N from nom  
-12.5 0.5

ant D. 4046

I think I see the positive beam  
~~we~~ moved 1.5" South for next file

ant D. 4047 2"W + 0.5 S from nom  
Very weak negative beam near dot sl

ant D. 4048 3"W 0.5 S from Nom  
looks good here

ant D. 4049 3.9"W 0.5 S

S can  
did a mid to center on Source  
quick look did  
Ant D. 4050 32 scans  
Ant D. 4051

Going to Saturn

focused on B00 - 0.57

Point  
Guiding

820 ~~hi~~ med

Sat. 4052

f scan poor seeing  
hi med

Sat. 4053  
Wrong  
frame time

to adjust for C2H4  
moved South after 5 scan)

Charged to C2H4

- Sat. 4054
- . 4055
- . 4056 med-8
- . 4057
- . 4058
- . 4059
- . 4060
- . 4061
- . 4062
- . 4063
- . 4064
- . 4065

13:25 UT,	a/m = 1.54
13:40	a/m = 1.46
13:55	a/m = 1.40
14:10	1.35
14:25	1.30
14:40	1.26
14:55	1.25
15:11	1.2
15:25	1.2

Source

C2H4  
Sat. 4066



Feb 6, 2013

TG, LF, CO, Bill

.217 .205 offset for io orders

need line on pupil 145 from left

Cal. 5000 test to check wavelength

Cal. 5001

boresight set  
in middle

io. 5002

io. 5003

io. 5004

bounce

off axis guiding

io. 5005

io. 5006

io. 5007

io. 5008

io. 5009

Cal. 5010

io. 5011

ended after 6  
bounce  
to set up guiding

off axis guiding

io. 5012

.5013

.5014

.5015

.5016

.5017

.5018

.5019

guiding

Cal. 5020

Jupiter

539.5

Jup. 5021

focus = -0.63

garbage - guiding  
died.

539.5

Jup. 5022

off-axis Guiding

moved 1" S after Scan 1

moved 1" S after Scan 2

moved 0.5 N after Scan 3

Jup. 5023 586.5  $\text{cm}^{-1}$ Jup. 5024 745  $\text{cm}^{-1}$ 

ended early

745  $\text{cm}^{-1}$ 

focus -0.48 (from previous work)

had the regular jump

Jup. 5025

last guiding

guiding issues

no guiding

Jup. 5026

moved 25 IE after Scan 1

should have moved West

moved 1.5 2W after Scan 2

moved 0.5 N after Scan 3

Jup. 5027

1248  $\text{cm}^{-1}$  (narrow slit)  
med mode

Jup. 5028

1" long-slit

to 10 crossing limit

moved 1" N after Scan 3

0.1E

Jup. 5029

960 low res

moved N 2" E 1" after Scan 1

moved E 2" N 2" after Scan 3

Jup. 5030

901  $\text{cm}^{-1}$  low res

moved N 2" after Scan 1

Jup. 5031

1161 low res

moved 2 north after Scan 3

Jup. 5032

818.5

moved 3" N after Scan 1

moved 4" N " " 2

ended after 3 good frames

Jup. 5033

539.5 cm<sup>-1</sup>

ended after 2

.5034

586.5 cm<sup>-1</sup>

getting tough - high air mass

.5035

960

ended after 3

.5036

901

Galaxy time!

cer. 5037

774.6

skip = 1 2

try to point to

Scrt B54382

3.56 mag 69

pretty easy

Ant BBI. 5038

offset -3E -1.4N  
scanning B4 B1

map 1

.5039

map 1

.5040

offset -2E -2.4N

map 2

.5041

map 2

.5042

map 2

.5043

.5044

.5045

.5046

.5047

Aboo to setup at 818.6 C<sub>2</sub>H<sub>6</sub> for Saturn

focus = -0.48

aboo. 5048

Go to Saturn

called ~~Sat~~ aboo 5049

scan at 818 cm<sup>-1</sup>

~~but~~ but was Saturn

Sat. 5050

- high med mode to pos slit on Sat

off axis scanning

~~Sat 5055~~

Sat. 5051	CH <sub>2</sub> O	1156 cm <sup>-1</sup>
. 5052	3:37	<del>OT a/m 1.456</del>
5053	12:37	a/m 1.456
5054	3:52	1.395
5055	14:06	1.344
. 5056	14:22	1.296
. 5057	14:37	1.263
. 5058	14:51	1.206

change to 539.5 cm<sup>-1</sup>

Sat. 5059 f scan started to ~~be~~ extended cal  
 . 5060 s scan  
 818.5

Sat. 5061 ethane f scan

Sat. 5062 ~~C<sub>2</sub>H<sub>2</sub>~~  
 C<sub>2</sub>H<sub>2</sub>

. 5063+64 garbage

Feb 7th 2013, TRG, CD, LE Eric -0.56

alpha Tau to focus & setup in prep for Jupiter at 539.5 cm<sup>-1</sup> focus = -0.52

atan. 6000

Jup really (sat) 6001 539.5 seeing looks poor moved 2 S after scan 1

jup. 6002 586.5 bounce = 0.1 2nd scan started way too close moved 5" W after scan 2 moved 1" N after scan 3

jup. 6003 ~~586~~ 744.5 focus set to -0.5

jup. 6004

jup. 6005 960 moon at begin of scan beautiful

Temp changing a lot

jup. 6006 901 initial focus = -0.38 2nd scan = -0.28 better a bit of dome in scan 3

jup. 6007 try 901 again initial focus = -0.15 scan 2 = best focus = -0.26

jup. 6008

jup. 6009 819.5 cm<sup>-1</sup> seeing is poor

jup. 6010 start over with 539.5

Jup. 6011 586.5

.6012 744.5

a bit of Southern Aurora

.6013 1248 ~~1248~~ wrong filter

.6014 1248 moved wrong way after scan 2

.6015 ~~960~~ 960  $\text{cm}^{-1}$   
 cloud in scan 3  
 dome closing in scan 4  
 100% humidity

Dome closed

960  $\text{cm}^{-1}$  low res

take scans while dome closed

black .6016  
 shiny .6017

960  $\text{cm}^{-1}$  ~~low res~~ med mode

black .6018

shiny .6019

960  $\text{cm}^{-1}$  hi-med

black .6020  
 shiny .6021

1248  $\text{cm}^{-1}$  high med - broad filter

black .6022  
 shiny .6023

1248  $\text{cm}^{-1}$  high med - C-O

Block. 6024  
Shiny. 6025



Feb 9, 2013 UT T6, CD, Enc 94

Went to LTA to focus  
boresight  
818 cm<sup>-1</sup>

focus = -0.4

Jupiter  
Jup. 7000

818.6 cm<sup>-1</sup> med scan

Jup. 7001

Focus N

after scan 1 moved 2 S 1 E

moved 2" north after scan 2

moved 5" after scan 3

Jup. 7002

-26 E ~~11~~ 11 N

moved 3" W after scan 1

boresight is terrible

moved 2 W after scan 3

scan 4 is bad ~~scan 4 is bad~~ at

something in way

Jup. 7003

-26 6.5 N

ended after 3

nitrogen pump line broken

Jup. 7004

we are guiding as of scan 2

.7005

-26 -2 N

garbage -

guiding died

Ugh - telescope at issues

.7006

-26 -2 N

guiding by middle

scan 1

stopped early at end of scan 2

back east (probably skip

that scanner truncate it)

I moved on step 70

of 75 step scan

.7007

-26 -6.5 N

medium mode C<sub>2</sub>H<sub>6</sub>

Jup. 7008

garbage wrong in wrap

Scan

.7009

818.6

pretty picture scan 3 & 4

off axis guiding

Back to CHy

- Jup. 7010 -26 11N
- .7011 -26 6.5N
- .7012 -26 2N  
in scan 4 had the jump lost 5 can garbage
- .7013 -26 -2N  
ended after this scan (3) want to enter guide star better
- .7014 -26 -6.5N
- .7015 -26 -11N  
in last scan possible ~~to~~ Repil shift in dewar

Med mode 818.6

Jup. 7016

CHy

- Jup. 7017 -26 E 16N
- Jup. 7018 -26 E 6.5N
- Jup. 7019 -26 E 2N  
big background change at end of scan
- Jup. 7020 -26 E -2N
- Jup. 7021 -26 E -6.5N
- Jup. 7022 -26 E -11N
- .7023 -26 E 4N

C2H6

818.6

end of 2

Jup. 7024 scan 1 & 2 focus = -0.46  $\downarrow$

Changed focus to -0.54

Jup. 7025 med 818.6 last scan moved  
focus to -0.64

Galaxy time

Ceres focus = -0.68  
776.8

Cer. 7026

Go to BS 4382 & let to check printing  
adjusted bore sight

Went to visible position B  
offset by 7.1 E 13 N

Scan offset from there -7.2E 0N  
21 steps

off-axis guiding

antcd. 7027

antcd. 7028 turned gain from 25 → 50  
antcd. 7029 " "

Map 2:	Offset	-9" E	3" N
	step	0.7 E	0 N
	# scan pts	26	
	# scans	16	

antcd. 7030

Map 3:	Offset	-9" E	-1" N
	step	0.7" E	0" N
	# scan points	26	
	# scans	16	

antcd. 7031

Map 4:	Offset	-9" E	0" N
	step	0.7 E	0" N
	# scan pts	26	
	# scans	16	

antcd. 7032

antcd. 7033

antcd. 7034  
8 NNOD

On to Saturn

200 for focus + setup focus = -0.61

Sat. 7035 med mode 818.6

744.5

Sat. 7036 med mode ended after 5 scans - just to mechanical

Sat. 7037 back to 818.6 hrs up to peak up on beacon maybe N pole won't time ended after 1

CH4

Sat. 7038 move 2N after 2nd scan move 2N after scan 3

Sat. 7039 - found the beacon for half an hour so

Sat. 7040

Sat. 7041 mod = 8

Sat. 7042 move ~~1~~<sup>2</sup> N

Sat. 7043 2 more North

Sat. 7044 2 more North after scan 2 moved 2 S

7045  
7046

Imaging

Sat. 7047 539.5 cm<sup>-1</sup> focus = -0.83 bad flat moved SW 55 after scan 1 ended after 2

Sat. 7048 reduce first 2nd scan focus = -0.73

Sat. 7049

586.5 cm<sup>-1</sup>

getting cluttered by  
atmosphere  
ended after 3

Sat. 7050

820 cm<sup>-1</sup>

scan 1 focus = -0.5  
2 " = 0.57

seeing is poor

go to d box to check focus but c. really  
think it is just seeing

CFHT shows seeing jumping  
up to 1.5-2"

focus should be good tweaked it to -0.6

Sat. 7051

really good first scan  
seeing still poor  
ended after 3

Sat. 7052

low res 960

back to 818.4

Sat. 7053

54  
57  
55  
9

Feb 10, 2013 UT  
TG, CD, Dave

SO<sub>2</sub> on Io & Callisto

Callisto

Cal-8001

focus = -0.80

Io 530g

- io. 8002
- . 8003
- . 8004
- . 8005
- . 8006
- . 8007
- . 8008
- . 8009

Water is highly variable

Cal. 8010

Io 530h

- io. 8011
- io. 8012
- io. 8013
- io. 8014
- io. 8015
- io. 8016
- io. 8017
- 8018
- 8019
- 8020

b.g source pair 8

Callisto

Cal-8021

~~skip~~ skip = 12

- io. 8022
- . 8023
- . 8024

skip = 17

skip = 13 14 telescope jump

# Jupiter

100

Jup. 8025 539.5 cm<sup>-1</sup>  
moved 2" W after scan 1  
bounce on  
moved 2 west after scan 3

Jup. 8026 ended early after scan 1  
struggling to set up with  
off axis

Jup. 8027 try again

Jup. 8028 C<sub>2</sub>H<sub>2</sub> 744.5  
maybe a bit of Southern Aurora  
moved 0.5" N after scan 2

Jup. 8029 C<sub>2</sub>H<sub>6</sub> 818.6 cm<sup>-1</sup>

Jup. 8030 CH<sub>4</sub> 1248 cm<sup>-1</sup>

Jup. 8031 960 cm<sup>-1</sup> NH<sub>3</sub>

Jup. 8032 901 cm<sup>-1</sup> NH<sub>3</sub>

Jup. 8033 1161 cm<sup>-1</sup> Clouds  
Wow!!

start over 3 scans each

Jup. 8034 539.5 possibly catching  
shutter in last  
frame just a bit  
I think okay

Jup. 8035 586.5  
ended after 2

Jup. 8036 744.5

Jup. 8037 818.5

off axis  
guiding now

det



Jup. 8038

1248 CH<sub>4</sub>

Jup. 8039

960

NH<sub>3</sub>

Jup. 8040

901 cm<sup>-1</sup> PH<sub>3</sub>

Jup. 8041

1661 cm<sup>-1</sup>

102

Feb 11, 2013

(formally, this is still 10 UT

in data directories, we call today 11 UT

9:23 AM local time

T.G., CND

Engineering

1161lowres

black. 9000 scan  
shiny. 9001

med mode near 1161

black. 9002 bias = -3.6  
shiny. 9003 "

black. 9004 bias = -4.0  
shiny. 9005

hi-med mode 1161

black. 9006 gain = 50 bias = -4  
normal setup

Some question  
is we -  
shiny 9007

change bias to -3.6

black. 9008  
shiny. 9009

529.8 cm<sup>-1</sup>

normal set up hi-med  
hi-med

black. 9010  
shiny. 9011

bias = -3.6  
black. 9012  
shiny. 9013

529.8  $\text{cm}^{-1}$  medium mode  
bias -3.6

black - 9014  
shiny - 9015

medium mode with -4.0 bias

shiny/black. 9016 (actually black)  
black - 9017  
shiny - 9018

749.5  $\text{cm}^{-1}$  medium mode bias = -3.6

black - 9019  
shiny - 9020

bias = -4 med mode

black - 9021  
shiny - 9022

hi-med bias = -4

black - 9023  
shiny - 9024

bias = -3.6

black - 9025  
shiny - 9026

observing time

set up at 818.6 med mode  $\text{C}_2\text{H}_6$   
focus = -0.61

Jupiter 818.6

CH<sub>4</sub> hi-med mode

Jup. 9028 offset -26 19 shoot for N pole  
 ended after 2 nailed it

Jup. 9029 offset -26 11

.9030 -26 6.5

.9031 -26 2

bounce is bad through  
zenith

off axis  
guiding

Jup. 9032 length ?? -26 -2  
 may be wrong

not guiding

screwed up the guiding set up again

Jup. 9033 -26 -2

.9034 -26 -6.5

big Had variation

Yuck

big drift

.9035 -26 -11

.9036 N pole Aurora CH<sub>4</sub>

.9037 C<sub>2</sub>H<sub>4</sub> 950 cm<sup>-1</sup>  
glock died  
ended after 2

.9038

.9039 C<sub>2</sub>H<sub>2</sub> Q branch

.9040 CH<sub>3</sub>O

.9041 818.6

.9042 C<sub>3</sub>H<sub>8</sub> 748

.9043

Callisto

Cal. 9044 Test wave setting

for score

focus = -0.93

Cal. 9045

off axis guiding

Go to Io

Co. 9046

. 9047

. 9048

. 9049

. 9050

. 9051

. 9052

. 9053

cal. 9054

skip pair 9

io. 9055

. 9056

. 9057

. 9058

. 9059

. 9060

poor seeing & variable  
Tan

cal. 9061

some N drift, skip 1 4

io. 9062

skip 1 5

io. 9063

io. 9064

cal. 9065

skip 1

Feb 12, 2013 UT 10 6  
CNO, TG, Dave, Bill

acquired  $\alpha$  Tau

atau.1500

dialled line at 530.409 to 0.251 from 1st  
3<sup>rd</sup> order, bonesited, peaked up

cal.1501

io.1502

io.1503

io.1504

io.1505

io.1506

io.1507

io.1508

io.1509

cal.1510

cal.1511

Callisto - divisor spectrum

io.1512

io.1513

io.1514

io.1515

io.1516

io.1517

io.1518

io.1519

cal.1520

cal.1521

io.1522

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~~4~~ Jupiter Time.



Jup. 1523	539.5 cm <sup>-1</sup> wrong slit length ended after 1	good data first small slit
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Jup. 1524	539.5 correct slit moved 3" N " " N	1 E after scan 1
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Jup. 1525	586.5 cm <sup>-1</sup>	
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Jup. 1526	744.5	South Aurora
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Jup. 1527	818.6 cm <sup>-1</sup>	
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Jup. 1528	1248 cm <sup>-1</sup>	
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Jup. 1529	960 cm <sup>-1</sup>	could see South Aurora M C <sub>2</sub> H <sub>2</sub>
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Jup. 1530	901 cm <sup>-1</sup>	
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.1531	1161 cm <sup>-1</sup>	
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.1532	539.5	
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.1533	586.5	
-------	-------	--

.1534	744.5	
-------	-------	--

.1535	818.6	
-------	-------	--

.1536	1248.	
-------	-------	--

.1537	960	
-------	-----	--

.1538	901	
-------	-----	--

.1539	1161	
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.1540	1161 bad source pair 2	
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