To: Distribution

From: N. R. Izenberg

Subject: Master Calibration Record for CONTOUR Optical Instruments

Summary

This document contains descriptions of all calibration tests performed on the CONTOUR optical instruments (CRISP imager and spectrometer and CFI) during pre-calibration, pre-evironmental calibration, post-environmental calibration , and "Final" calibration periods from Fall 2001 through Winter 2001-2002. Each instrument has its own section. Each test is designated by a descriptive abbreviation with test details and logs shown. Some tests refer to handwritten log notes which have been digitized into PDF files and are included in the CONTOUR calibration archive.

Including compiled notes and scripts from Dave Humm, Kevin Heffernan, Steve Conard, Jeff Warren, Patrick Thompson, and others.

Most tests in the Master Clibbration Record follow this Detailed Calibration Record format:

ABCDE_FGH* – Script name and short description.

AB	C	D	E	_	F	GH
Instrument	Time	Chamber T	Detector T		Target	Test

Date of Test	Logbook Page(s)	Operator(s)*
mm/dd/yy	Instrument: Page(s)	Who took the data

Notes about the test

Runs executed: #
Run 01:
Number of images:
Filters: , Exp time:
Breakdown - rough breakdown of what images are which image numbers
History File: Yes or no
Notes from History file:
Notes from Logbook:

Special notes on location of Data/History Files:

*See appendices for details
Change Log

Section 2. CRISP

Part 1: CRISP Logbook outline

--CRISP Pre-Environmental Calibrations--
11/06/01 - START CRISP PRE-ENV CAL
NO CRISP TRIO
Center m/c point in CCD
11/07/01 – CRISP Pre-Env Cal
CIACA_PDS - Dark & Point source
CSACL_PDS – Spectrometer darks
CSACL_PFO – Spectrometer focus test.
CSACL_PCA – Spectrometer Co-alignment
CIACA_PFO - Imager Focus Test
CIACA_FPG – Imager Point Grid
---------OCF Frame Format Change-------
CSACL_FWV – Spectrometer wvln test
CIACA_FPG – Imager Point Grid
CIACA_FWV- Imager wavelength test
CSACH_PDS – Spectrometer Dark Series
CSACH_PFO – Spectrometer Focus Test
CSACL_WSE – Spectrometer Sensitivity
CSACL_WSM – Spectrometer Smooth field
CIACA_WSE - MANUAL exploration of attenuator vs. integration time
Files 311_01_0002… etc…
CIACA_WLI – Imager Linearity
11/08/01
CIACA_WFR - Flatfield, Responsivity
CIACA_WFM - Formats
12/18/01 – CRISP Post-Env (Final) Cal
CIBMA_WFR - Flatfield/responsivity.
12/20/01
CIBM1_ISL – Iris Scattered Light Diagonal
CIBM2_ISL – Iris Scattered Light Diagonal
CIBM7_ISL – Iris Scattered Light Out-of-field scattered light
CIBM3_ISL – Iris Scattered Light 1st quadrant of 16x16 CCD scan
CIBM9_ISL Iris Scattered light, 12x12 grid
CIBM9b_ISL Resumption of previous test
12/21/01
CIBMA_IPG – Iris Point Grid; 200 pixels
HAND DN LEVELS
CIBMA_HS1 – Imager Hand Samples
CIBMA_HPG – 3x3 array of Iris points – 99% reflectance std
CSBML_HS3 – 12 spectrometer hand samples
CIBMA_HS3 – 12 Imager hand samples
CSBML_WFR – Flatfield/responsivity
CSBML_WSM – Spectrometer smooth field
12/22/01
CSBML_WS2 – Smooth field 2
CIBMA_WLI – Imager Linearity
CIBMA_WRX – Imager responsivity crosscal
CIBMA_WMI – Mirror counter-rotation
CIBMA_WMI2 – Adjusted script. Saved as CIBMA_WMI_02
CSBML_WMI – spect. Mirror counter-rotation +polarizer.
CIBMA_WMP - imager polarizer
CSBMH_GSM – Gold sphere smooth field
CSBMH_GFR – Gold sphere flat/response
CIBMA_PDS – Dark series
CIBMA_PMI – Point source mirror movement
CIBMA_PSW – Point scatter wavelength dependence
12/23/01
CIBMA_PSW – used for beamsplitter ghost
CIBMA_PIF – Integrated Focus test.
12/24/01
CSBMH_FWX – Spect Wavelength scan /crosstalk
12/25/01
CIBMA_PVV – Vibration test.
CSBMH_PSV – self-vibration. Spectrometer
CIBMA_PSL – Infield (beamsplitter ghost) Scattered light.
CIBMA_PW2 – Wavelength scan
CSBMH_FW2 Wavelength test
CIBMA_PRL – Red leak test
CIBMA_PFO – Focus test
CSBMH_PFO – Spect focus test.
CSBML_PFO – spect focus test (low temp)
12/26/01
CSBMH_BWX – Big Pinhole (150 micron) lamp wvln, crosstalk
CIBCA_NDS – dark series as temp change

Part 2: CRISP Spectrometer Calibration Details by Script

CSACL_PDS Dark series

CS	A	C	L	_	P	DS
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	Low Cooler T (90 K)		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 38-39	DH, NI

Darks (opaque filter), M/C pt and fat pt source at 1-5 Hz

Runs executed: 1
Run 01:
- Number of images: 221
- Exp time: 1-5 Hz
  - Dark: 4 ea. 1-5 Hz (Spectra 1-20)
  - Dark: 4 ea. 1-5 Hz, Format 1, Region 60 (21-39)
    - Getframe error lost an image b/t 36 and 37
  - Dark: 4 ea. 1-5 Hz, Format 2, Region 100 (40-59)
  - Dark: 4 ea. 1-5 Hz, Format 3, Region 120 (60-74)
    - Getframe error lost an image b/t 59 and 60
    - Lost 5 Hz images due to getframe errors
  - Repeat for point source (75-147)
    - Lost 1st 2 1 Hz images
    - Lost a couple more inside
    - Lost last 5 Hz images
  - Repeat for "fat" point (148-221)
    - Lost last 5 Hz images
- History File: Yes
- Notes from History file:
  - Chamber ~-15 C
  - Incoherent comment about lamp.
- Notes from Logbook:
  - The "opaque" OCF filter was actually the 307 nm out of band rejection filter used by mistake. That's still pretty opaque as far as the IR is concerned.

CSACL_PFO Focus test

CS	A	C	L	_	P	FO
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	Low Cooler T (90 K)		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 38-39	DH, NI

5x5 stage steps at ctr. of Spectrometer in CCD and above and below

Runs executed: 1
Run 01:
- Number of images: 245
- Exp time: 1 Hz
  - Darks with stage motor off (Spectra 1-10)
  - Darks with stage motor on (Spectra 11-20)
  - 5x5 in center of slit (21-45)
  - 5x5 in top of slit (46-70)
  - 5x5 in bottom of slit (71-95)
  - Repeat 5x5s with defocus filter (- sense) in place (96-170)
  - Repeat 5x5s with defocus filter (+ sense) in place (171-245)
- History File: Yes
- Notes from History file:
  - Temp ~ -15 C
  - The “higher” and “lower” locations in the slit are still pretty close to the center.
- Notes from Logbook: n/a
  - The 5x5 scan in the slit enters one side of the slit, but does not cross the whole slit.
  - The “opaque” OCF filter was actually the 307 nm out of band rejection filter used by mistake. That’s still pretty opaque as far as the IR is concerned.

CSACL_FWV – Spectrometer wavelength test

CS	A	C	L	_	F	WV
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	Low Cooler T (90 K)		'Fat' M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 40	DH, NI

2 exposure times, ~3 nm bandpass

Runs executed: 2
Run 01:
Number of images: 40
Exp time: 1 & 5 Hz
4 Darks each, 1, 5 Hz (Spectra 1-8)
Spectra 1, 5 Hz every 20 nm from 790 to 2510 (9-40) Interrupted early
History File: No
Notes from Logbook:
Unknown why this test stopped or whether data is good until stop.
Run 02:
Number of images: 182
Exp time: 1 & 5 Hz
4 Darks each, 1, 5 Hz (Spectra 1-8)
Spectra 1, 5 Hz every 20 nm from 790 to 2510 (9-182)
History File: Yes
Notes from History file:
Dim on both sides. No saturated data we could see.
Notes from Logbook: n/a

CSACH_PDS – Spectrometer dark series

CS	A	C	H	_	P	DS
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	High Cooler T (103 K)		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 41	DH, NI

Darks (opaque filter), M/C pt and fat pt source at 1-5 Hz

Runs executed: 1
Run 01:
- Number of images: 60
- Exp time: 1-5 Hz
  - Dark: 4 ea. 1-5 Hz (Spectra 1-20)
  - Repeat for point source (21-40)
  - Repeat for "fat" point (41-60)
- History File: Yes
- Notes from History file:
  - Chamber ~-15 C
- Notes from Logbook: n/a

CSACH_PFO – Focus test

CS	A	C	H	_	P	FO
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	High Cooler T (103 K)		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 41	DH, NI

5x5 stage steps at ctr. of Spectrometer in CCD and above and below

Runs executed: 1
Run 01:
Number of images: 95
Exp time: 1 Hz
Darks with stage motor off (Spectra 1-10)
Darks with stage motor on (Spectra 11-20)
5x5 in center of slit (21-45)
5x5 in top of slit (46-70)
5x5 in bottom of slit (71-95)
History File: Yes
Notes from History file:
Temp ~ -15 C
The “higher” and “lower” locations in the slit are still pretty close to the center.
Notes from Logbook: n/a
The 5x5 scan in the slit enters one side of the slit, but does not cross the whole slit.

CSACL_WSE – Spectrometer sensitivity

CS	A	C	L	_	W	SE
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	Low Cooler T (90 K)		White Sphere	Sensitivity

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 41-42	DH, NI

Spectrometer Sensitivity, Linearity Flatfield, Base responsivity

Runs executed: 3
Run 01:
Number of images: 50
Exp time: 1-5
Darks, 10 ea. At 1-5 Hz (Spectra 1-50)
History File: No
Notes from Logbook:
Crash after darks due to OCF Attenuator control errors.
Run 02:
Number of images: 50
Exp time: 1-5
Darks, 10 ea. At 1-5 Hz (Spectra 1-50)
History File: No
Notes from Logbook:
Crash after darks due to OCF Attenuator control errors.
Run 03:
Number of images: 230
Exp time: 1-5
Darks, 10 ea. At 1-5 Hz (Spectra 1-50)
Attenuators at 250, 10 ea. At 1, 3, 5 Hz (51-80)
Attenuators at 200, 10 ea. At 1, 3, 5 Hz (81-110)
Attenuators at 150, 10 ea. At 1, 3, 5 Hz (111-140)
Attenuators at 100, 10 ea. At 1, 3, 5 Hz (141-170)
Attenuators at 50, 10 ea. At 1, 3, 5 Hz (171-200)
Attenuators at 0, 10 ea. At 1, 3, 5 Hz (201-230)
History File: Yes
Notes from History File:
Actual temp closer to –5 C
Notes from Logbook:
Manual control of attenuators.
Saturation at Attenuator 150 for 3 Hz.
Set at Attens = 100 for 5 Hz.
Early spectra at each level may still show attenuator moving into place.

CSACL_WSM – Spectrometer smooth field

CS	A	C	L	_	W	SM
CRISP Spectrometer	Pre- Env	Cold (-40 C) Chamber	Low Cooler T (90 K)		White Sphere	Smooth Field

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 42-43	DH, NI

Spectrometer Cal Lamp Smooth Field Spectra 1 Hz

Date of Test: 11/07/01
Operator(s): NI, DH

Runs executed: 2
Run 01:
- Number of images: 56
- Exp time: 1-5 Hz
  - 10 darks at 1-5 Hz (Spectra 1-50)
  - 1, 3, 5 Hz with lamp 1 at setting 0 (51-53)
  - 1, 3, 5 Hz with lamp 2 at setting 0 (54-56)
- History File: Yes
- Notes from History file:
  - No lamp levels. Flawed script.
- Notes from Logbook:
  - Test basically a failure, Lamp commands incorrect. Lamps never turned on.
  - All “lamp” data essentially darks.

Run 02:
- Number of images: 86
- Exp time: 1-5
  - 10 darks at 1-5 Hz (Spectra 1-50)
  - 1, 3, 5 Hz with lamp 1 at setting 0 (51-53)
  - 1, 3, 5 Hz with lamp 1 at setting 4 (54-56)
  - 1, 3, 5 Hz with lamp 1 at setting 16 (57-59)
  - 1, 3, 5 Hz with lamp 1 at setting 64 (60-62)
  - 1, 3, 5 Hz with lamp 1 at setting 128 (63-65)
  - 1, 3, 5 Hz with lamp 1 at setting 255 (66-68)
  - Repeat cycle with lamp 2 (69-86)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Lamp power may have been on. Probably not enough time for lamps to stabilize. Lamp almost certainly timed out before decent signal could be achieved. Test did not come close to either lamp’s “sweet-spot” where the detector sees the light without saturating. The attenuators both read closed (=255) for the dark spectra in these runs. The two possibilities are 1) the attenuator reading is incorrect and there is lamp light illuminating the sphere from one or both lamps, or 2) external light was high enough to cause significant background. Given the near suration level seen in some darks, Possibility 1 is the most likely.

CSBML_HS3 – 12 spectrometer hand samples

CS	B	M	L	_	H	S3
CRISP Spectrometer	Post- Env	Medium (-30 C) Chamber	Low Cooler T (90 K)		Hand Sample	Samples 3 (12 sapmles

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 23	JW, KH

Conditions hand optimized. DARKS ONLY AT START AND END Hand sample: 12 Lab standards.

Runs executed: 2
Run 01: 5 brightness standards. 3 wvln stds. and 4 mineral samples from Dick Morris at JSC
- Number of images: 210
- Exp time: 1-5 Hz
- For each sample:
  - Block light source for 3 darks at 1-5 Hz (Spectra 1-15)
  - Unblock source for sample spectra 3 ea. 1-5 Hz
    - SRS_099 (Spectra 16-30)
    - SRS_020 (31-45)
    - SRS_010 (46-60)
    - SRS_005 (61-75)
    - SRS_002 (76-90)
    - WCS_EO (91-105)
    - WCS_HO (106-120)
    - WCS_DO (121-135)
    - AREF_147 (136-150)
    - AREF_020 (151-165)
    - AREF_007 (166-180)
    - AREF_060 (181-195)
  - Block light source for 3 darks at 1-5 Hz (Spectra 196-210)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook: n/a

Run 02: 12 mineral samples from Dick Morris at JSC
- Number of images: 210
- Exp time:
  - Breakdown - Same as run # 1, but samples as follows:
    - AREF_022
    - AREF_036
    - AREF_045
    - AREF_077
    - AREF_081
    - AREF_085
    - AREF_100
    - AREF_109
    - AREF_139
    - AREF_144
    - AREF_167
    - AREF_130
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook: n/a

CSBML_WFR Flatfield/responsivity

CS	B	M	L	_	W	FR
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	Low Cooler T (90 K)		White Sphere	Flatfield, Responsivity

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 25-27	DH

Spectrometer Sensitivity, Linearity Flatfield, Base responsivity

Runs executed: 2

Run 01:

Number of images: 204
Exp time: 1, 3, and 5, Hz
Darks (Attens 255), 5 ea. At 1, 3, 5 Hz (Spectra 1-15)
Attens 254, 5 ea. At 1, 3, 5 Hz (Spectra 16-30)
Attens 253, 5 ea. At 1, 3, 5 Hz (Spectra 31-45)
Attens 252, 5 ea. At 1, 3, 5 Hz (Spectra 46-60)
Attens 251, 5 ea. At 1, 3, 5 Hz (Spectra 61-75)
Attens 250, 5 ea. At 1, 3, 5 Hz (Spectra 76-90)
Attens 249, 5 ea. At 1, 3, 5 Hz (Spectra 91-105)
Attens 248, 5 ea. At 1, 3, 5 Hz (Spectra 106-120)
Attens 247, 5 ea. At 1, 3, 5 Hz (Spectra 121-135)
Attens 246, 5 ea. At 1, 3, 5 Hz (Spectra 136-150)
Attens 245, 5 ea. At 1, 3, 5 Hz (Spectra 151-165)
Attens 0, 5 ea. At 1, 3, 5 Hz (Spectra 166-180)
Darks (Attens 255), 5 ea. At 1, 3, 5 Hz (Spectra 181-195)
Attens 220, 200, 170, 180 At 1 Hz (196-199)
Attens 190, At 1,5 Hz (200-201)
Attens 170, 100, 255 At 5 Hz (202-204)
History File: Yes
Notes from History file:
Notes from Logbook:
Sphere settings inadequate and commanding not automated.
Extensive notes regarding the Sphere and attenuators, including a number of hand calibrations looking at different attenuator settings and DN levels. (P25-27 in logbook).
Script rewritten and executed as run 02.
The jumping up and down the attenuators probably gave bad data – no rest time was allowed for the attenuators to finish moving before taking data.

Run 02:

Number of images: 540
Exp time: 1, 3, 5 Hz
Darks (Attens 255), 5 ea. At 1, 3, 5 Hz (Spectra 1-15)
Attens 240, 5 ea. At 1, 3, 5 Hz (Spectra 16-30)
Attens 230, 5 ea. At 1, 3, 5 Hz (Spectra 31-45)
Attens 220, 5 ea. At 1, 3, 5 Hz (Spectra 46-60)
Attens 210, 5 ea. At 1, 3, 5 Hz (Spectra 61-75)
Attens 200, 5 ea. At 1, 3, 5 Hz (Spectra 76-90)
Attens 190, 5 ea. At 1, 3, 5 Hz (Spectra 91-105)
Attens 180, 5 ea. At 1, 3, 5 Hz (Spectra 106-120)
Attens 170, 5 ea. At 1, 3, 5 Hz (Spectra 121-135)
Attens 150, 5 ea. At 1, 3, 5 Hz (Spectra 136-150)
Attens 130, 5 ea. At 1, 3, 5 Hz (Spectra 151-165)
Attens 0, 5 ea. At 1, 3, 5 Hz (Spectra 166-180)

Repeat above cycle with Atten 1 always at 255 and varying Atten 2 only (181-360)
Repeat above cycle with Atten 2 always at 255 and varying Atten 1 only (361-540)

History File: Yes

Notes from History file:

Brighter sphere values, automatically controlled attenuators.

Notes from Logbook:

Lower left and right corners appear darker. Edge of cooler?
Independent attenuator movements reveal spectral structures in the sphere. Some probably lamp-driven.

CSBML_WSM – Spectrometer smooth field

CS	B	M	L	_	W	SM
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	Low Cooler T (90 K)		White Sphere	Smooth Field

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 27-28	DH

Spectrometer Cal Lamp Smooth Field Spectra 1 Hz

Runs executed: 2
Run 01:
- Number of images: 16
- Exp time: 1 Hz
  - Darks (Spectra 1-5)
  - Attenuator 200 flatfield (6-7)
  - Lamp 1 level 92 (8-10)
  - Lamp 1 level 96 (11-13)
  - Lamp 1 level 100 (14-16)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Ended halfway through with error. Cal lamp 2 was commanded incorrectly. Script adjusted for Run #2.

Run 02:
- Number of images: 33
- Exp time: 1 Hz
  - Darks (Spectra 1-5)
  - Attenuator 200 flatfield (6-7)
  - Lamp 1 level 92 (8-10)
  - Lamp 1 level 96 (11-13)
  - Lamp 1 level 100 (14-16)
  - Lamp 2 level 92 (17-19)
  - Lamp 2 level 96 (20-22)
  - Lamp 2 level 100 (23-25)
  - Attenuator 170 flatfield (26-27)
  - Atten 255 Darks (28-32)
  - Spectrum 33 extra and unknown.
- History File: Yes
- Notes from History file:
  - Some spectra with central stripe.
- Notes from Logbook:
  - Cal lamps turn off automatically after 1 minute.

CSBML_WMI – Spectrometer mirror counter-rotation + polarizer

CS	B	M	L	_	W	MI
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	Low Cooler T (90 K)		White Sphere	Mirror Test

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 31-34	NI, SC

Scan Mirror Relative Reflectivity Radiometric Cal, + Polarization test
Sphere Attenuator levels =150.

Runs executed: 4
Run 01:
Number of images: 63
Exp time: 1, 3, 5 Hz
Darks, 5 ea. At 1, 3, 5 Hz (Spectra 1-15)
Mirror Side A counter-rotation 8 positions, 1, 3, 5 Hz (16-39)
Mirror Side B counter-rotation 8 positions, 1, 3, 5 Hz (40-63)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a
Run 02:
Number of images: 63
Exp time: 1, 3, 5 Hz
Breakdown - Identical to run 01
History File: Yes
Notes from History file:
POLARIZER in at Vertical relative to OCF room.
Notes from Logbook: n/a
Run 03:
Number of images: 63
Exp time: 1, 3, 5 Hz
Breakdown - Identical to run 01
History File: Yes
Notes from History file:
POLARIZER in at 45˚ relative to OCF room.
Notes from Logbook: n/a
Run 04:
Number of images: 63
Exp time: 1, 3, 5 Hz
Breakdown - Identical to run 01
History File: Yes
Notes from History file:
POLARIZER in at Horizontal relative to OCF room.
Notes from Logbook: n/a

CSBML_WS2 – Smooth Field 2 (done 2x at different times same day)

CS	B	M	L	_	W	S2
CRISP Spectrometer	Post- Env	Medium (-30 C) Chamber	Low Cooler T (90 K)		White Sphere	Smooth Field 2

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 28, 34	DH (Run 01), NI (Run 02)

Spectrometer Cal Lamp 4 settings Smooth Field Spectra 1 Hz

Runs executed: 2
Run 01:
- Number of images: 32
- Exp time: 1 Hz
  - Darks (Spectra 1-5)
  - Attenuator 200 flatfield (6-7)
  - Lamp 1 level 96 (8-10)
  - Lamp 1 level 98 (11-13)
  - Lamp 1 level 102 (14-16)
  - Lamp 2 level 96 (17-19)
  - Lamp 2 level 98 (20-22)
  - Lamp 2 level 102 (23-25)
  - Attenuator 170 flatfield (26-27)
  - Atten 255 Darks (28-32)
- History File: Yes
- Notes from History file:
  - At least one of the cal lamps seems to make a stripe on the detector. Not a flat field. (Note this may be the positioning of cal lamp 2)
- Notes from Logbook:
  - In some of the later images it looks like the cal lamps and the sphere may be on at the same time. This was not intended.

Run 02:
- Number of images: 104
- Exp time: 1 Hz
  - Darks (Spectra 1-5)
  - Attenuator 200 flatfield (6-7)
  - Lamp 1 level 94 (8-22)
  - Lamp 1 level 96 (23-37) (lamp off from timeout)
  - Lamp 1 level 98 (38-52) (lamp off)
  - Lamp 2 level 94 (53-67)
  - Lamp 2 level 96 (68-82) (lamp off from timeout)
  - Lamp 2 level 92 (83-97) (lamp off)
  - Attenuator 170 flatfield (98-99)
  - Atten 255 Darks (100-104)
- History File: Yes
- Notes from History file:
  - Only first setting for each lamp had lamp lit. Lamps timed out.
- Notes from Logbook:
  - 15 snaps took the whole minute. Script too long.
  - Setting 94 was OK, 96 and 98 will be oversaturated.

CSBMH_GSM – Gold sphere smooth field

CS	B	M	H	_	G	SM
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		Gold Sphere	Smooth Field

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 35	NI, DF

Spectrometer Cal Lamp 3 settings Smooth Field Spectra 1 Hz

Runs executed: 2
Run 01:
- Number of images: 38
- Exp time: 1 Hz
  - Darks (Spectra 1-5)
  - Attenuator 200 flatfield (6-7)
  - Lamp 1 level 93 (8-11)
  - Lamp 1 level 94 (12-15)
  - Lamp 1 level 95 (16-19)
  - Lamp 2 level 88 (20-23)
  - Lamp 2 level 90 (24-27)
  - Lamp 2 level 92 (28-31)
  - Attenuator 170 flatfield (32-33)
  - Atten 255 Darks (34-38)
- History File: Yes
- Notes from History file:
  - Lamp 1 good, perhaps more time needed for stability.
  - No signal seen in cal lamp 2.
- Notes from Logbook: n/a

Run 02:
- Number of images: 38
- Exp time: 1 Hz
  - Darks (Spectra 1-5)
  - Attenuator 200 flatfield (6-7)
  - Lamp 1 level 93 (8-13)
  - Lamp 1 level 95 (14-19)
  - Lamp 2 level 94 (20-23)
  - Lamp 2 level 96 (24-39)
  - Lamp 2 level 98 (28-31)
  - Attenuator 170 flatfield (32-33)
  - Atten 255 Darks (34-38)
- History File: Yes
- Notes from History file:
  - No signal seen in cal lamp 2.
- Notes from Logbook:
  - Only 2 lamp 1 levels and more images at those levels to give more time for the lamp to stabilize.

CS	B	M	H	_	G	FR
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		Gold Sphere	Flatfield, Responsivity

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 35	NI, SC

Spectrometer Sensitivity, Linearity Flatfield, Base responsivity. Dimmer gold sphere where spectrometer should not be so saturated.

Runs executed: 1
Run 01:
- Number of images: 300
- Exp time 1-5 Hz:
  - 5 spectra at each acquisition Rate (1-5 Hz) at 12 different attenuator settings
    - 255 (closed for darks) (Spectra 1-25)
    - 240 (26-50)
    - 230 (51-75)
    - 220 (76-100)
    - 210 (101-125)
    - 200 (126-150)
    - 190 (151-175)
    - 180 (176-200)
    - 170 (201-225)
    - 150 (226-250)
    - 130 (251-275)
    - 0 (276-300) – Open attenuator
- History File: Yes
- Notes from History file:
  - Real radiance map-able from this test.
- Notes from Logbook:
  - 1 Hz exposure at 0 attenuator showed about 700 DN at medium wavelengths.

CSBMH_FWX – Spect Wavelength scan/crosstalk
CSBMH_FWX2

CS	B	M	H	_	F	WX
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		'Fat' M/C Point Source	Wavelength scan & Crosstalk

Date of Test	Logbook Page(s)	Operator(s)
12/24/01	CRISP II: 39-40	SC

Wavelength scan and Crosstalk test, 1 & 5 Hz

Runs executed: 6
Run 01:
Number of images: 0
History File: Yes
Notes from History file:
Entrance slit set to 75 microns
Notes from Logbook:
Would not get frames. Restarted labview computer.
Run 02:
Number of images: 0
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Spectrometer power not on.
Run 03:
Number of images: 0
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Framegrabber PC locked
Run 04:
Number of images: 526
Exp time: 1 & 5Hz
Darks (5Hz) (Spectra 1-4)
Darks (1Hz) (5-8)
Wvln scan 790-1500 (2^{nd} order), every 2 nm, 1&5 Hz (9-526)
Interrupted by crash at 1234 nm (Monochromator pos 24680)
History File: Yes
Notes from History file:
Entrance slit set to 75 microns
Notes from Logbook:
Notes about setting up cutoff filter.
Memory leak crash of OCF master at line 1859. Edit script to cut out portion already done and run that as FWX2.
Run 05:
Number of images: 0
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Stage problems, labview computer crash.
Run 06:
Number of images: 1318
Exp time: 1 & 5Hz
Darks (5Hz) (Spectra 1-4)

Darks (1Hz) (5-8)
Wvln scan 1232-1500 (2^{nd} order), every 2 nm, 1&5 Hz (9-298)
1250 nm filter cut-on installed
Wvln scan 1500-2510 (1st order), every 2 nm, 1&5 Hz (299-1318)
Interrupted by crash at 1234 nm (Monochromator pos 24680)

History File: Yes
Notes from History file: n/a
Notes from Logbook:

OCF chiller alarm went off – out of coolant.
Not allot of light seen with 1250 cut-on filter – maybe none.

Data and History Files in 2 folders:
/CSBMH_FWX/ and /CSBMH_FWX_2/

CSBMH_PSV – self-vibration. Spectrometer cooler cycling

CSBMH_PSV2 (edited from script, not IDL procedure)

CS	B	M	H	_	P	SV
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		M/C Point Source	Self-Vibration

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 41, 43	NI

Cooler self-vibration. 5 Hz 3 locations in slit. The 5hz spectra are done using record command – 40 spectra right in a row to catch any vibration of point source due to cooler on/off.

Runs executed: 2

Run 01:

Number of images: 160

Exp time: 5Hz

Darks: stage Motor Off, spect cooler on (Spectra 1-10)
Darks: stage Motor on, cooler on (Spectra 11-20)
Darks: stage Motor on, cooler off (Spectra 21-30)
Darks: stage Motor Off, cooler off (Spectra 31-40)
Bottom of slit: 40 spectra cooler on (41-80)
Bottom of slit: 40 spectra cooler off (81-120)
Center of slit: 40 spectra cooler on (121-160)

History File: Yes

Notes from History file:

MONO_FWB had an erroneous setting. There is no setting 0; setting 1 is open for point source

Notes from Logbook:

Test Aborted. M/C/ light mis-focused. No spot.

Run 02:

Number of images: 260

Exp time: 5Hz

Darks: stage Motor on, spect cooler on (Spectra 1-10)
Darks: stage Motor off, cooler on (Spectra 11-20)
Bottom of slit: 40 spectra cooler on (21-60)
Bottom of slit: 40 spectra cooler off (61-100)
Center of slit: 40 spectra cooler on (101-140)
Center of slit: 40 spectra cooler off (141-180)
Top of slit: 40 spectra cooler on (181-220)
Top of slit: 40 spectra cooler off (221-260)

History File: Yes

Notes from History file:

No light seen at top or bottom of slit. Stage cords incorrect. Center OK

Notes from Logbook: n/a

CSBMH_FW2 – Wavelength Test

CS	B	M	H	_	F	W2
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		'Fat' M/C Point Source	Top/bottom Wavelength scan

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 42, 43-44	NI

2 light levels (dim and bright if needed) 2 exp times, ~2 nm steps at top/bottom/middle spec

Runs executed: 3
Run 01:
- Number of images: 528
- Exp time: 1& 5 Hz
  - 4x1Hz Darks (Spectra 1-4)
  - 4x5Hz Darks (5-8)
  - Wvln scan 1, 5 Hz at upper part of slit (9-268)
    - Every 2 nm from:
      - 800-850
      - 1200-1250
      - 1600-1650
      - 2000-2050
      - 2400-2450
  - Wvln scan 1, 5 Hz at lower part of slit (269-528)
    - Same wavelength range as previous scan.
- History File: Yes
- Notes from History file:
  - Seems to have caught no light. Misaligned M/C source?
- Notes from Logbook: n/a

Run 02:
- Number of images: 143
- Exp time: 1& 5 Hz
  - 4x1Hz Darks (Spectra 1-4)
  - 4x5Hz Darks (5-8)
  - Wvln scan 1, 5 Hz at upper part of slit (9-143)
    - Every 2 nm from:
      - 800-850
      - 1200-1250
      - 1600-1650
      - 2000-2050
      - 2400-2450
- History File: Yes
- Notes from History file:
  - Better stage coordinates for top and bottom of slit.
- Notes from Logbook:
  - Aborted after "top" of slit began wavelength scan a second time. (This is really due to switching from 2nd to 1st order, but effectively repeated the wvln scan.

Run 03:
- Number of images: 164
- Exp time: 1& 5 Hz
  - 4x1Hz Darks (Spectra 1-4)
  - 4x5Hz Darks (5-8)
  - Wvln scan 1, 5 Hz at lower part of slit (9-164)
    - Every 2 nm from:
      - 800-850

1200-1250
1600-1650
2000-2050
2400-2450

History File: Yes

Notes from History file:

Better stage coordinates for top and bottom of slit.

Notes from Logbook:

Bottom part of slit only.

CSBMH_PFO – spect focus test (high temp)

CS	B	M	H	_	P	FO
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 43	NI

5x20 stage steps at center of Spectrometer in CCD and near top and bottom of slit
2 second pause after each stage motion
"Slack" taken from stage for each row and column

Runs executed: 2
Run 01:
Number of images: 40
Exp time: 1 Hz
Dark Spectra (Spectra 1-10)
3 rows of 10 spectra, stage steps .001˚ stage (11-40)
History File: Yes
Notes from History file:
Monochromator slit set to 1200 instead of 400, but still full wvln range at zero order.
Notes from Logbook:
Scan too short – the point source enders, but does not leave the slit in each row scan. Run aborted after spectrum 40 (3 rows).
Run 02:
Number of images: 310
Exp time: 1 Hz
Dark Spectra (Spectra 1-10)
5 rows of 20 spectra, stage steps .001˚ stage, center (11-110)
5 rows of 20 spectra, stage steps .001˚ stage, bottom (111-210)
5 rows of 20 spectra, stage steps .001˚ stage, top (211-310)
History File: Yes
Notes from History file: Monochromator slit set to 1200 microns. All OK
Notes from Logbook: n/a

CSBML_PFO – spect focus test (low temp)

CS	B	M	L	_	P	FO
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	Low Cooler T (90 K)		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 43	NI

5x20 stage steps at center of Spectrometer in CCD (no top & bottom)
2 second pause after each stage motion
"Slack" taken from stage for each row and column

Runs executed: 1
Run 01:
Number of images: 110
Exp time: 1 Hz
Dark Spectra (Spectra 1-10)
5 rows of 20 spectra, stage steps .001˚ stage (11-110)

History File: Yes
Notes from History file: All OK
Notes from Logbook: n/a

CSBMH_BWX – Big Pinhole (150 micron) lamp wvln, crosstalk

CS	B	M	H	_	B	WX
CRISP Spectrometer	Post-Env	Medium (-30 C) Chamber	High Cooler T (103 K)		Big (150 micron) pinhole (M/C) setup	Wavelength scan & Crosstalk

Date of Test	Logbook Page(s)	Operator(s)
12/26/01	CRISP II: 44-47	NI, DH

Wavelength scan and Crosstalk test, 1 Hz

Runs executed: 1
Run 01:
Number of images: 912
Exp time: 1 – Script description says 1 & 5 Hz, but only 1 Hz taken
Dark spectra (Spectra 1-4)
Crosstalk (narrow bandpass filters) 1672-1688 nm (5-9)
Crosstalk (narrow bandpass filters) 1832-1848 nm (10-14)
2nd order spectra 726-1000 nm (15-152)
1st order spectra 1000-2510 nm (153-908)
Dark spectra (909-912)
History File: Yes
Notes from History file:
Bandwidth is actually ~ 2nm due to the larger exit pinhole. Also, collimation is not quite as good with bigger pinhole.
Notes from Logbook:
Adjust lamp settings manually during scan:
2nd Order signal:
Mono = 1596 (798 nm), Ch 252 saturated – Dial lamp to 30 W
Mono = 1648 (824), Ch248 sat – Lamp to 24 watts
1680 (840), Ch 247 sat – Lamp to 18 watts.
1736 (868), Ch 242 at 3195 – Lamp to 15 W
1800 (900), Ch 238 at2946 – Lamp to 12 W
1992 (996), Ch ? at 3230 – Lamp t 6 W
Switch to first order on monochromator
Program requested 1250 nm cut-on filter at this point.
Ignored until 1400nm
1000 18W
1014, Ch 221 at 3388 – Lamp to 12 W
1076, Ch 212 at 3054 – Lamp to 9 W
1132, Ch 204 at 3297 – Lamp to 6 W
1248, Ch 187 at 2892 – Lamp to 4W
1250, Ch 187 low – Lamp to 5 W
1422, Ch 161 at 3208 – Lamp to 4W
Put in 1250 nm cutoff
1458, Ch 156 at 3020 – Lamp to 3W

Part 3: CRISP Imager Calibration Details by Script

CIACA_PDS - Dark & Point source at variety of exp. times.

CI	A	C	A	_	P	DS
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 38-39	DH, NI

Dark series test with varying exposure times, plus looking at the M/C point source

Runs executed: 1
Run 01:
Number of images: 124
Filts: 6, Rebins: 0,1,2,3 (1,2x2, 4x4, 8x8 pixels per rebin)
Exp time: 0, 128, 256, 512 ms / (# pixels per rebin), x40 for fat points
Error (1)
Darks (2-56)
Points (57-108 with some errors)
Fat points (109-124)
History File: 311_CIACA_PDS_01_Hist.txt
Notes from History file:
"Fat" point does not seem more diffuse than normal point.
Integration times could be longer for all points.
"Enslit" is actually 4 mm
Chamber T= -15.7 C
Notes from Logbook:
The format of the images is different from later files. The last 512 bytes of the image are missing, **and** the 512-byte header is missing.

CIACA_PFO - Imager Focus Test

CI	A	C	A	_	P	FO
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 38-39	DH, NI

Focus test of center and corners of CCD using 5x5 grids of the M/C point source.

Runs executed: 3, but only 1 saved (rest overwritten)
Run 01:

Number of images: 203
Filts: 6, Exp time: 600 ms

Images 1-10 are dark counts.
Outside loop is point followed by near and far defocus fat points (3 loops, point 11-135, near 136-203, far third loop lost because run was aborted)
Next loop is center and corners: (0,0), (0.5, -0.5), (0.5,0.5), (-0.5, -0.5), (-0.5,0.5) degrees from center (5 loops, starting with 11-35, 36-60, 61-85, 86-110, 111-135).
Inner loops are 5x5 in steps of 0.001 degrees. Note: backlash not taken out! (5x5 loops; X loop, which is yaw in the OCF, is on the inside, so files 11-15 have Y, or pitch, -0.002, and X, or yaw, -0.002, -0.001, 0, 0.001, 0.002. Files 16-20 have Y= -0.001, etc.).

History File: No history file
Notes from History file:

No history file. Note: backlash not taken out!

Notes from Logbook:

Need to change FWB setting to FWI, change exposure time to 600 ms. I think this was fixed for the data saved.
The format of the images is different from later files. The last 512 bytes of the image are missing, **and** the 512-byte header is missing.

CIACA_FPG – Imager Point Grid

CI	A	C	A	_	F	PG
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		M/C "Fat" Point Source	Point Grid

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 39-40	DH, NI

Runs executed: 3 (all aborted). Logbook indicates one was overwritten and only 2 were taken, but we have 3 sets of files, so I think none were overwritten.

Run 01:

Number of images: 40

Filts: all filters, Exp time: 0, 900 ms

Note: Images may have wrong filter or be in-between filters; description is what we intended.

Images 1-10 are dark counts.

Order of further images unknown. No history file, and scripts may have been overwritten later. Exposure loop 0 to 900 ms was likely the innermost loop.

History File: No history file (run was aborted before the end)

Notes from History file:

No history file (run was aborted before the end)

Notes from Logbook:

Aborted because it had no pauses following the filter wheel commands.

The format of the images is different from later files. The last 512 bytes of the image are missing, **and** the 512-byte header is missing.

Note: Between the Run 01 and Run 02, the spectrometer data set CSACL_FPG was taken (see spectrometer data section)

Run 02:

Number of images: 94

Filts: all filters, Exp time: 0, 900 ms

Images 1-10 are dark counts.

Outer loop CRISP imager filter wheel loop (10 filters). Filter 1 is images 11-28, etc.

Next loop 3x3 grid, with 0.5-degree steps and intended to be centered, with Y (pitch) the outside loop. Y = –0.5 degrees and X (yaw) = -0.5, 0, 0.5 degrees in files 11-12, 13-14, and 15-16 respectively.

Inside loop is exposure; just 2 values, 0 ms and 900 ms. File 11 has 0 ms and file 12 900 ms.

Note: Filter wheel pause was only one second. Was it long enough?

History File: No history file (run was aborted before the end)

Notes from History file:

No history file (run was aborted before the end)

Notes from Logbook:

Aborted because motion stage centers were incorrect (reversed).

Run 03:

Number of images: 84

Filts: all filters, Exp time: 0, 900 ms

Images 1-10 are dark counts.

Outer loop CRISP imager filter wheel loop (10 filters). Filter 1 is images 11-28, etc.

Next loop 3x3 grid, with 0.5-degree steps and intended to be centered, with Y (pitch) the outside loop. Y = –0.5 degrees and X (yaw) = -0.5, 0, 0.5 degrees in files 11-12, 13-14, and 15-16 respectively.

Inside loop is exposure; just 2 values, 0 ms and 900 ms. File 11 has 0 ms and file 12 900 ms.

Note: Filter wheel pause was only one second. Was it long enough?

History File: No history file (run was aborted before the end)

Notes from History file:

No history file (run was aborted before the end)

Notes from Logbook:

Aborted because motion stage was incorrectly left unpowered somewhere in the loop. The logbook says that the files from this run were labeled “2”, but we have 3 runs saved, and the logbook doesn’t note any run after this, so I am assuming this is “3”.

Noticed vibration (stage/holder settling) at the corners of this data set. For final cal, we should put a pause in after moving the motion stage.

CIACA_FWV- Imager wavelength test

CI	A	C	A	_	F	WV
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		M/C "Fat" Point Source	Wavelength scan

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 41	DH, NI

Increment monochromator wavelengths across all CRISP spectral filters.

Runs executed: 1 saved (an earlier partial run was overwritten)
Run 01:

Number of images: 109

Filts: 2-10 (all but clear), Exp time: 7656 128-microsecond units

First 10 files are darks.

Outer loop is filters from 2 to 10.

Monochromator is 4^{th} order; scan from 40 nm below each filter center to 40 nm above each filter center in 8 nm steps (11 files per step). No order-sorting filter on monochromator. Filter centers: 450, 490, 530, 570, 610, 650, 690, 730, 770 nm.

So, file 11 is filter 2, 410 nm in 4^{th} order of the monochromator (implies monochromator was set to 1640 nm), file 11 is filter 2, 418 nm in 4^{th} order of the monochromator, etc.

History File: No history file (run was aborted at the end)

Notes from History file:

No history file (run was aborted at the end)

Notes from Logbook:

Aborted by bad command at the very end, but all files taken.

CIACA_WSE – Sensitivity test

CI	A	C	A	_	W	SE
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		White Sphere	Sensitivity test

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 43	DH, NI

MANUAL exploration of counts vs. integration time with Imager filters. No script, no history, but notes in Logbook.

Runs executed:
Run 01:

Number of images: 18
Filts: 2-10, Exp time: 5-900
See table above for breakdown
History File: None (manual data-taking)
Notes from History file:
None (manual data-taking)
Notes from Logbook:

File	Wvln	Filt	Atten	Exp (ms)	Exp (units)	Avg DN
2	770	10	100	10	78	1240
3,4	770	10	0	10	78	1860
5	770	10	240	300		245
6	770	10	240	900	7031	300
7	730	9	0	10	78	1625
8	690	8	0	10	78	2675
9	650	7	0	10	78	2938
10	650	7	0	5	39	1650
11	610	6	0	5	39	1260
12	610	6	0	10	78	2260
13	570	5	0	10	78	2080
14	530	4	0	10	78	1060
15	530	4	0	20	156	1860
16	490	3	0	20	156	1480
17	450	2	0	20	156	650
18	450	2	0	100	781	2300

Files 311_01_0002… etc…

CIACA_WLI – Imager Linearity White sphere

CI	A	C	A	_	W	LI
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		White Integrating Sphere	Linearity

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 44	DH, NI

Runs executed: 1
Run 01:
Number of images: 20
Filts: 6, Exp time: 0,10,20,50,100,200,300,500,700,900 ms
Dark at each exposure time (1-10)
White sphere attens both 215 by hand (11-20)
History File: 311_CIACA_WLI_01_Hist.txt
Notes from History file:
OK. Inst temp –2.7 C.
Notes from Logbook:
None

CIACA_WFR _ Flatfield, Responsivity White sphere

CI	A	C	A	_	W	FR
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		M/C Point Source	Flatfield, Responsivity

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 44	DH, NI

Runs executed: 1
Run 01:

Number of images: 40
Filts: 1-10, Exp time: "0" ms (defaults to a single 0.128 ms unit) for each, and 1,100,30,30,10,10,7,10,15,10 ms respectively for filters 1-10

Attenuators = 255 "background/dark" at all exposure times (1-20)

Filt 1 "0" ms – Image 1
Filt 1 1 ms -Image 2
Filt 2 "0" ms – Image 3
Filt 2 100 ms -Image 4
…

Attenuators = 0 "full open" at all filters/exposure times.

Filt 1 "0" ms – Image 21
Filt 1 1 ms -Image 22
Filt 2 "0" ms – Image 23
Filt 2 100 ms -Image 24
…

The "0 ms" exposure might be used to remove background and smear simultaneously from the longer exposure images.

History File: 312_CIACA_WFR_01_Hist.txt
Notes from History file:

OK. Inst. Temp. –2.5 C.

Notes from Logbook:

n/a

CIACA_WFM - Formats White sphere

CI	A	C	A	_	W	FM
CRISP Imager	Pre- Env	Cold (-40 C) Chamber	Ambient Detector		M/C Point Source	Formats

Date of Test	Logbook Page(s)	Operator(s)
11/07/01	CRISP I: 44	DH, NI

Runs executed: 1
Run 01:
Number of images: 32
Filt: 6
Attenuators = 0, Format 0, Exposure 501 units (Images 1-4)
Format 1, Exposure 125 units (5-8)
Format 2 Exposure 32 units (9-12)
Format 3 Exposure 8 units (13-16)
Repeated for images 17-32
History File: 312_CIACA_WFM_01_Hist.txt
Notes from History file:
Attenuator not controlled – wrong command used. Lots of saturated data.
Monochromator filter wheel controlled instead of attenuator open/close.
Notes from Logbook:
n/a

CIBMA_WFR - Sphere Flatfield/responsivity.

CI	B	M	A	_	W	FR
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Flatfield, Responsivity

Date of Test	Logbook Page(s)	Operator(s)
12/19/01	CRISP II: 12-13	DH, NI

Runs executed: 1
Run 01:

Number of images: 44
Filts: 1, Exp time: varies

Filt 1, Backgrounds (exposures, 8, 391, 157, 118, 63, 55, 40, 47, 79, 71 units)
Attens = 255) (Images 1-10)
More varying exposure times (11-22)
Attenuators Open, step though each filter at a specific (short) exposure time, then through the filters again at a longer exposure time (22-42)
Two last image at attens = 240 (43-44)

History File: Yes – Note the History file is 1.1 Meg because of an error in recording that rewrote and added the history file each time a new image was saved.

Notes from History file:

Scan mirror in off mode

Notes from Logbook:

Last few images were manually commanded to correct for scripting errors.
Scan mirror encoder position before turn off = 335213. After = 335312

CIBM1_ISL – Iris Scattered Light Diagonal

CI	B	M	1	_	I	SL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Iris point source	Scattered Light test (Diagonal)

Date of Test	Logbook Page(s)	Operator(s)
12/20/01	CRISP II: 13	DH, JW

50 diagonal steps across CCD, each filter, to characterize the "pupil ghost" as a function of radial distance from the center of focus.

Runs executed: 2
Run 01: ND3 in
- Number of images: 630
- Filts: all, Exp time: Variable
  - 10 Darks (Images 1-10)
  - Short exposures with each filter (11-20)
  - Long exposure darks (21-120)
  - 51 positions, 10 filters at each position (121-630)
- History File:
- Notes from History file: Yes
  - Added short loop at start to calibrate ND3 with short exposure times
- Notes from Logbook:
  - Burned a hole in the cardboard blocking filter.

Run 02: Similar to 1, but ND3 out
- Number of images: 630
- Filts: All, Exp time: variable
  - Same as Run 1
- History File:
- Notes from History file: n/a
- Notes from Logbook:
  - Script edited to take out some extraneous commands and save time.

CIBM2_ISL – Iris Scattered Light Diagonal 2 ND3 Out.

CI	B	M	2	_	I	SL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Iris point source	Scattered Light test (Diagonal 2)

Date of Test	Logbook Page(s)	Operator(s)
12/20/01	CRISP II: 14	DH, NI

Orthogonal diagonal to CIBM1

Runs executed: 1. This test was not run with ND3 taken out.
Run 01:

Number of images: 540
Filts: All, Exp time: Variable

Darks (short and long exposures) Images 1-30)
51 diagonal spots (31-540)

History File: Yes
Notes from History file:

History file says this is the first quadrant test. That's incorrect.

Notes from Logbook:

ND3 in for this test.

CIBM7_ISL – Iris Scattered Light Out-of-field scattered light

CI	B	M	7	_	I	SL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Iris point source	Scattered Light test (Out of Field)

Date of Test	Logbook Page(s)	Operator(s)
12/20/01	CRISP II: 14	NI

Out of field cross for scattered light out to one FOV from each edge of the CCD.

Runs executed:

Run 01:

Number of images: 250
Filts: All, Exp time: 1 sec
10 Darks (Images 1-10)
1 image per filter at 6 positions horiz. out of field on one side of CCD (11-70)
6 positions on other horiz. side (21-130)
6 positions vertical one side (131-190)
6 positions vertical, other side (191-250)
History File: yes
Notes from History file: n/a
Notes from Logbook:
Weird Out-of-Field stuff (odd reflections from Collimator walls)

CIBM3_ISL – Iris Scattered Light. 1st quadrant of 16x16 CCD scan

CI	B	M	3	_	I	SL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Iris point source	Scattered Light test (8x8 Quadrant)

Date of Test	Logbook Page(s)	Operator(s)
12/20/01	CRISP II: 14-15	NI

8x8 quadrant of intended 16x16 grid of CCD. Not completed.

Runs executed: 1
Run 01:
Number of images: 153
Filts: All, Exp time: 1 sec
10 darks (Images 1-10)
1 image per filter in each of 14 positions in grid (11-150)
Aborted filter cycle in next position (151-153)
History File: Yes
Notes from History file:
N/a
Notes from Logbook:
Interrupted by several crashes. One after image 136 (DPU reboot), and again after 153 when we aborted test. This test was ended in favor of a single 12x12 grid of the whole CCD.
No notes say whether the ND3 was in or not, but it should be obvious from the images.

CIBM9_ISL Iris Scattered light, 12x12 grid across CCD, ND3 in and out
CIBM9b_ISL Resumption of previous test at location of last abort.

CI	B	M	9	_	I	SL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Iris point source	Scattered Light test (12x12 Grid)

Date of Test	Logbook Page(s)	Operator(s)
12/20-21/01	CRISP II: 15-17	NI, SC (?)

12x12 grid across whole CCD. Installed extra filter wheel to put ND3 in and take it out automatically for each position.

Runs executed: 1 – broken into two scripts
Run 01: (a)
- Number of images: 709
- Filts: All, Exp time: 1 sec
  - 10 darks (Images 1-10)
  - At each grid position, each filter once with ND3 in and once out.
    - 34 grid positions of 144 (11-700)
    - Part way through the next position (701-709)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - 1553 crash after image 493.
  - Images 493-592 use Mirror side B instead of A
  - Memory leak freeze after image 709. Ended test. Edit and re-run from where we left off with CIMB9b_ISL

Run 01: (b) uses CIMB9b_ISL script
- Number of images: 2210
- Filts: All, Exp time: 1 sec
  - 10 darks (Images 1-10)
  - At each grid position, each filter once with ND3 in and once out.
    - 110 grid positions of 144 (11-2210)
- History File: Yes
- Notes from History file:
  - 3-hr break between 9 and 9b to fix spectrometer
- Notes from Logbook: n/a

Location of Data and History Files (March 2002):
- /CRISP_OCF/CIBM9_ISL/ and /CIBM9b_ISL/

CIBMA_IPG – Iris Point Grid 200 pixel iris.

CI	B	M	A	_	I	PG
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Iris point source	Point Grid

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 17	DH (?)

3x3 point grid of large Iris spot (~ 200 pixels across)

Runs executed: 2
Run 01:
- Number of images: 190
- Filts: All, Exp time: 1 sec
  - 10 Darks, filt 6 (Images 1-10)
  - Cycle 10 filters, ND3 in and out in each of 9 positions in grid. (11-190)
- History File: Yes
- Notes from History file:
  - Grid too large.
  - Pupil ghost very evident.
- Notes from Logbook:
  - Grid was too large. Test completed, but rewritten with smaller grid.

Run 02:
- Number of images: 190
- Filts, Exp time: Same as run 1.
  - Same as run 1 but grid locations all within CCD.
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook: n/a

HAND DN LEVELS

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II:	DH (?)

Hand DN levels with Spectralon Plate at chosen lamp level:

Filter	Exposure (ms)	Approx. DN
1	10	2540
2	980	800
3	725	2500
4	360	2500
5	135	2550
6	105	2550
7	65	2570
8	55	2500
9	90	2570
10	165	2510

Spectrometer levels:
1 Hz ~ 3200 DN+
5 ~700's
4 ~900's
3 ~1100's
2 ~1700's

CIBMA_HS1 – Imager Hand Samples

CI	B	M	A	_	H	S1
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Hand Samples	Samples 1

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 21-22	KH, JW

Runs executed: 1
Run 01:
Number of images: 500
Filts: All, Exp time: varied by filter.
Sample 1: 3 dark/background images each filter (Images 1-30)
2 Sample images each filter (31-50)
Repeat for 9 more filters before ending test. (51-500)
Samples:
1 – Spectralon plate (Images 1-50)
2 – 99% Reflectance std (51-100)
3 – SRS 20% (101-150)
4 – SRS 10% (151-200)
5 – SRS 5% (201-250)
6 – SRS 2% (251-300)
7 – WCS-EO-020 Wvln std (301-350)
8 – WCS-HO-020 Wvln std (351-400)
9 – WCS –DO-020 Wvln std. (401-450)
10 – Resolution target on top of Spectralon sheet. (451-500)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Aborted after sample 10.
Focus varies across field.

CIBMA_HPG – 3x3 array of Iris points – 99% reflectance std.

CI	B	M	A	_	H	PG
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Hand Samples	Point Grid

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 22	KH, JW

3x3 grid of 99% reflectance sample. Optimized exposure times for each filter.

Runs executed: 1
Run 01:
Number of images: 140
Filts: All, Exp time: fixed per filter
50 Darks /blocked light source (1-50)
1 image, each filter, fixed exp time, in each of 9 grid points (51-140)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
99% reflectance sample
Looks like darks were not taken at the same exposure times as the images.

CIBMA_HS3 – 12 Imager hand samples

CI	B	M	A	_	H	S1
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		Hand Samples	Samples 3

Date of Test	Logbook Page(s)	Operator(s)
12/21/01	CRISP II: 24	KH, JW

12 hand samples on lab jack setup with fiber optic illumination.

Runs executed:
Run 01:
Number of images: 300
Filts: All, Exp time: fixed per filter
3 darks for each exposure time (Images 1-30)
1 – AREF_147 2 images/filter at fixed exp time. (31-50)
2 – AREF_020 (51-70)
3 – AREF_007 (71-90)
4 – AREF_060 (91-110)
5 – AREF_022 (111-130)
6 – AREF_036 (131-150)
7 – AREF_045 (151-170)
8 – AREF_077 (171-190)
9 – AREF_081 (191-210)
10 – AREF_085 (211-230)
11 – AREF_100 (231-250)
12 – AREF_109 (251-270)
3 darks for each exposure time (Images 271-300)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CIBMA_WLI – Imager Linearity

CI	B	M	A	_	W	LI
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		White Integrating Sphere	Linearity

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 29	DH

Looking into white sphere, take backgrounds and then sphere images going to saturation.

Runs executed: 1
Run 01:
Number of images: 20
Filts: 6, Exp time: varying
10 background (attenuators = 255) images at increasing exposure times. (Images 1-10)
10 images with same exposure times at attenuators =140 (11-20)
History File: Yes
Notes from History file:
Saturation before last exposure, as planned
Notes from Logbook: n/a

CIBMA_WRX – Imager responsivity crosscal

CI	B	M	A	_	W	RX
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		White Integrating Sphere	Responsivity crosscal

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 29	DH

Cross-calibration of IR filters for comparison with Spectrometer in similar wavelength ranges.

Runs executed: 2
Run 01:
Number of images: 144
Filter: 10, All Exp time: about 500 ms and 1 sec
2 darks/backgrounds (attens = 255) at each exposure time (Images 1-4)
Attens = 240, same exposure times (5-8)
Repeat cycle for attens = 230-170 going by 10's (9-36)
Repeat for attens = 150, 130, and 0 (37-48)
Repeat entire cycle with Attenuator 1 staying closed the whole time (49-96)
Repeat entire cycle with Attenuator 2 staying closed the whole time (97-144)
History File: Yes
Notes from History file:
Exposure times seemed too long. Too many saturated images.
Notes from Logbook:
Seemed over exposed
Hot pixel noted at 503-570
Run 02:
Number of images: 144
Filts, Exp time:
Identical to Run 1 but shorter exposure times
History File:
Notes from History file:

Notes from Logbook:
Modified run looks OK
No hot pixel evident

Location of Data and History Files (March 2002):
http://sdc.astro.cornell.edu/Data/calibration/fits/CRISP_OCF/CIBMA_WRX/

CIBMA_WMI – Mirror counter-rotation
CIBMA_WMI2 – Adjusted script. Saved as CIBMA_WMI_02

CI	B	M	A	_	W	MI
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		White Integrating Sphere	Mirror counter-rotation

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 31-32	NI, SC

Counter-rotation of crisp mirror and stage looking into the integrating sphere to see mirror angle dependence.

Runs executed: 2
Run 01:
Number of images: 125
Filts: all, Exp time: fixed per filter
4 darks/filter (attens = 255) (Images 1-40)
Attens = 170, mirror side A
1 image/filter at counter-rotation stage = 8 deg (41-51 – error at 42 required extra snap)
Stage = -4.5, mirror = 176 (52-61)
Stage = -.5, mirror = 180 (62-71)
Stage = 3.5, mirror = 184 (72-81)
Stage = 7.5, mirror = 188 (82-91)
Stage = 11.5, mirror = 192 (92-101)
Stage = 15.5, mirror = 196 (102-111)
Stage = 19.5, mirror = 200 (112-121)
Mirror side B
Stage = -8.5 (122-125) Test died here.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Stage error during first run because the stage was commanded to move too far. Fixed with manual command. Image # 24 taken with mirror at angle 188 deg. Basically dark. Test crashed after image 125.
Some big gradients in images may indicate poor stage/mirror alignment.
Run #1 –8 deg stage and 172 deg mirror position id .5 degrees off proper counter-rotation. Scripts and spectrometer adjusted to make 8 deg&172.5 deg respectively.
Run 02:
Number of images: 90
Filts, Exp time: Same as above test
10 darks (attens = 255, 1 for each exp time) (Images 1-10)
Attens = 170, mirror side B
Stage –8, mirror 172.5, 1 image/filter (11-20)
Repeat at 7 more counter-rotation positions (21-90)
History File: Yes
Notes from History file:
Uses script CIBMA_WMI2 – B mirror side only. Darks only 1 each.
Notes from Logbook: n/a

CIBMA_WMP - imager polarizer test
CIBMA_WM2 - imager polarizer test 2

CI	B	M	A	_	W	MP, M2
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		White Integrating Sphere	Mirror counter-rotation

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 33-34	NI, SC

Mirror counter-rotation with polarizer in vertical, horizontal and 45 degree angle.

Runs executed: 3
Run 01: Polarizer vertical in room sense
Number of images: 130
Filts: All, Exp time: fixed for each filter
Three darks for each exposure time (Images 1-30)
One exposure per filter at each of 10 counter-rotation positions (31-130)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a
Run 02: Polarizer 45 degrees to vert.
Number of images: 102
Filts, Exp time: Same as Run 1
Identical to Run 01 except Polarizer and crash after image 102.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Test interrupted by crash. Resumed at start of last counter-rotation angle in next test.
Run 02b: Polarizer 45 degrees to vert.
Using Script CIBMA_WM2
Number of images: 40
Filts, Exp time: Same as Run 1
10 darks (Images 1-10)
Completion of run (as if 101-130) (11-40)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a
Run 03: Polarizer horizontal in room sense.
Number of images: 130
Filts, Exp time: Same as Run 1
Identical to Run #1 except polarizer
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CIBMA_PDS – Dark series

CI	B	M	A	_	P	DS
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 35	DH, NI

Runs executed: 1

Run 01:

Number of images: 144

Filt: 6, Exp time: 0, 128, 256, 512 ms

4 darks at each of 4 exposure times at 4 formats. (Images 1-64)
Repeat cycle with open point source (65-128)
4 images at each exposure time with fat point. Exposure time = 40* previous exposure times (max ~ 1 sec)

History File: Yes

Notes from History file:

Last three exposure times were funny. Probably because they were commanded to be greater than 1-sec, but executed as ~1 sec.

Notes from Logbook: n/a

CIBMA_PMI – Point source mirror movement

CI	B	M	A	_	P	MI
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Mirror movement

Date of Test	Logbook Page(s)	Operator(s)
12/22/01	CRISP II: 36	NI

Goniometric mirror calibration check

Runs executed: 1
Run 01:
Number of images: 26
Filts: 6, Exp time: 980 ms
10 Darks (Images 1-10)
Mirror and Stage counter-rotated:
-8, -4, 0, 4, 8, 12, 16, 20 deg (11-18)
Counter-rotation repeated with Mirror “B” side. (19-26)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CIBMA_PSW – point scatter wavelength dependence. Used for beamsplitter ghost

CI	B	M	A	_	P	SW
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Stray light (pupil ghost) wvln dep.

Date of Test	Logbook Page(s)	Operator(s)
12/22-23/01	CRISP II: 36-37	NI

Wavelength dependence of pupil and field ghosts Clear Filter, max signal and 10 files at each wavelength

Runs executed: 3
Run 01:
Number of images: 0
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Test failed. Instrument shutdown due to overcurrent. No data taken.
Run 02:
Number of images: 280
Filts: 1, Exp time: 980 ms
10 Darks (Images 1-10)
10 images ea. With 10 nm bandpass filters: 390, 441.6, 514.5, 530, 620 (11-60)
Monochromator scan (~16 nm bandwidth):
10 images ea. every 40 nm from 1240 to 1800 (61-210)
10 images ea. every 100 nm from 1800 to 2400 nm (211-280)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Data contains no light. Mirror was improperly homed.
Run 03:
Number of images: 280
Breakdown identical to run 02
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Data with properly homed mirror looks fine.

CIBMA_PIF – Integrated Focus test.

CI	B	M	A	_	P	IF
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Integrated Focus

Date of Test	Logbook Page(s)	Operator(s)
12/23/01	CRISP II: 37-38	NI, KH

5x5 stage steps at ctr. & corners in CCD All filters

Runs executed: 2
Run 01:
Number of images: 466
Filts: all, Exp time: 10 ms (filt 1). Exposure time varied for each filter, but darks not obtained for all exp times.
10 Darks 10 ms only (Images 1-10)
Center 5x5 for all filters (11-260)
Corner 1 5x5 for filters 1-9 (261-460)
Partial 5x5 of filter 9 (561-466)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Memory leak crash of OCF master. Reboot and edit script to continue.
Run 02:
Number of images: 810
Filts: All, Exp time: fixed per filter
10 Darks 10 ms only (Images 1-10)
Corner 1 filters 9-10 (11-60)
Corner 2 filters 1-10 (61-310)
Corner 3 filters 1-10 (311-560)
Corner 4 filters 1-10 (561-810)
History File: Yes
Notes from History file:
Starts where Run 01 left off: Filter 9 in to lower left corner (in the labview image window)
Notes from Logbook:
Script re-starts Filter 9 in the same corner as it left off. Script chopped and saved as CIBMA_PIF2_script.

CIBMA_PVV – Vibration test.

CI	B	M	A	_	P	VV
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Vacuum pump Vibration test

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 41 & 43	NI

Darks and 610 nm filter obs. of target. Short integration time, many reps. Chiller *not* turned off and on because of low coolant levels.

Runs executed: 2
Run 01:
Number of images: 40
Filts: 6, Exp time: 10 ms
Darks, 10 (Images 1-10)
30 consecutive images of point source.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
The run executed fine, but the M/C source was not focused properly and there was no light to see.
Run 02:
Number of images: 40
Run execution identical to Run 01.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
M/C light source correctly focused now.

CIBMA_PSL – Infield (beamsplitter ghost) Scattered light.

CI	B	M	A	_	P	SL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Scattered Light

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 41 & 42	NI

5x5 stage steps at ctr. & one corner in CCD clear filter, unsaturated, saturated, and supersaturated

Runs executed: 2
Run 01:
Number of images: 180
Filts: 1, Exp time: 50,200, 980 ms
Darks, 10 for each exp. time (Images 1-30)
Center 5x5, each exposure time at each position (31-105)
Corner 5x5, each exposure time at each position (106-180)
History File: Yes
Notes from History file:
Never saw a spot.
Monochromator slit width at 1200
Notes from Logbook:
The run executed fine, but the M/C source was not focused properly and there was no light to see.
Run 02:
Number of images: 180
Run execution identical to Run 01.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
M/C light source correctly focused now.

CIBMA_PW2 – Wavelength scan

CI	B	M	A	_	P	W2
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Wavelength Scan 2

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 41-42	NI

Wavelength scan across spectral filters - ~ 4 nm bandwidth monochromator settings.
Script error recorded 90 darks instead of 10 at start of script.

Runs executed: 2
Run 01:
- Number of images: 175
- Filts: 2-10, Exp time: 980 ms
  - Darks (Images 1-100)
  - Filt 2, 1640 nm-1960 nm scan in 16 nm steps (4^{th} Order) (101-111)
  - Filt 3, 1800 nm-2120 nm scan in 16 nm steps (4^{th} Order) (112-122)
  - Interrupted to find home on mirror and snap singe image (123)
  - Finish Filt 3 (124-133)
  - Filt 4, 1960 nm-2280 nm scan in 16 nm steps (4^{th} Order) (134-154)
  - Filt 5, 2120 nm-2440 nm scan in 16 nm steps (4^{th} Order) (155-175)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Interrupted and aborted because no spot of light seen. The light source was not being correctly focused into the M/C setup.
  - All images in this run are effectively Darks.
  - Spot actually is there for later filters, but very weak.

Run 02:
- Number of images: 289
- Filts: 2-10, Exp time: 980 ms
  - Darks (Images 1-100)
  - Filt 2, 1640 nm-1960 nm scan in 16 nm steps (4^{th} Order) (91-111)
  - Filt 3, 1800 nm-2120 nm scan in 16 nm steps (4^{th} Order) (112-132)
  - Filt 4, 1960 nm-2280 nm scan in 16 nm steps (4^{th} Order) (133-153)
  - Filt 5, 2120 nm-2440 nm scan in 16 nm steps (4^{th} Order) (154-174)
  - Filt 6, 2280 nm-2600 nm scan in 16 nm steps (4^{th} Order) (175-195)
  - Filt 7, 2440 nm-2760 nm scan in 16 nm steps (4^{th} Order) (196-216)
  - Filt 8, 2600 nm-2920 nm scan in 16 nm steps (4^{th} Order) (217-237)
  - Filt 9, 2680 nm-3160 nm scan in 16 nm steps (4^{th} Order) (238-268)
  - Filt 10, 2920 nm-3240 nm scan in 16 nm steps (4^{th} Order) (269-289)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Test performed after fiddling with MC setup to get bright spot in decent focus.

CIBMA_PRL – Red leak test

CI	B	M	A	_	P	RL
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Red Leak

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 42	NI

Red leak test of spectral filters. ~ 4 nm Bandwidth from monochromator

Runs executed: 1
Run 01:
Number of images: 622
Filts: 2-10, Exp time: 980 ms
10 Darks (Images 1-10)
For each filter:
1 ND3 Image
Image Every 25 nm, 1600-2400
Filt 2: (11-44)
Filt 3: (45-78)
Filt 4: (79-112)
Filt 5: (113-146)
Filt 6: (147-180)
Filt 7: (181-214)
Filt 8: (215-248)
Filt 9: (249-282)
Filt 10: (283-316)
Repeat all 9 spectral filters with 780 nm cutoff filter in place (IR Bandpass) (317-622)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CIBMA_PFO – Focus test

CI	B	M	A	_	P	FO
CRISP Imager	Post-Env	Medium (-30 C) Chamber	Ambient Detector		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
12/25/01	CRISP II: 42	NI

Filter 6 only 5x5 in center and 4 corners. Stage backlash removed at start of each row and column.

Runs executed: 1
Run 01:
Number of images: 135
Filter: 6, Exp time: 600 ms
10 x 600 ms Darks (Images 1-10)
Center 5x5 (11-35)
4x Corner 5x5's (36-135)
History File: Yes
Notes from History file:
Mono Entrance slit width set to 1200 instead of 400, but should still be full wavelength range at zero order.
Notes from Logbook: n/a

CIBCA_NDS – dark series as temp changes.

CI	B	C	A	_	N	DS
CRISP Imager	Post-Env	Cold (-40 C) Chamber	Ambient Detector		No light source (and TPU off)	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
12/26/01	CRISP II: 47-49	DH

10, 500, and 980 ms exposures of darks with TPU off

Runs executed: 9
ALL RUNS:
Number of images: 30 ea.
10 x 10 ms Dark (Images 1-10)
10 x 500 ms Dark (11-20)
10 x 980 ms Dark (21-30)
History File: Yes (all 9)
Notes from History file: n/a
Notes from Logbook:
Chamber brought cold for this last test as we warm up.
Run 01: Chiller set –55 deg. – No sign of "herringbone" electrical noise.
Run 02: Chiller set to –40 deg.
Run 03: Chiller set to –30 deg.
Run 04: Chiller set to –25 deg.
Run 05: Chiller set to –20 deg.
Run 06: Chiller set to –15 deg.
Run 07: Chiller set to –10 deg.
Run 08: Chiller set to –5 deg.
Run 09: Chiller set to –0 deg.

Section 3. CFI

Part 1: CFI Logbook outline

----CFI Pre-Env Calibrations – No DPU – All cals "by hand"---
10/30/01 - CFI Pre-Env Calibrations
CF0AA_PDS 31 images "by hand
CF1AA_PDS 24 images "by hand"
CF0AA_PFO – focus test "by hand"
CF0AC_PDS – Dark series "by hand"
CF0AC_PFO – Focus test "by hand"
CF1AC_PFO – Completion of focus
CF0AC_FPG – Point grid 96 images
CF0AC_WLI – Linearity/attenuator test
10/31/01 - CFI Pre-Env Calibrations
CF0CC_WFR – Flatfield reflectivity
CF1CC_WFR – continuing flatfield
CF0CC_PDS – Dark series 48 images
CF0CC_PFO – cold focus test
CF0CC_FPG – Cold Point grid
CF0CC_FWV – wavelength bandpasses
CF0CC_DSP –Filter spin test 35 images
CF1CC_PFO Quick focus test 26
CF0CC_WGR Flat field gradient test.

-Post ENVIRONMENTAL CALIBRATIONS-

11/17/01 – CFI Post-Env Cals
Find center
CFBCC_PDS – Dark series
CFBCC_PIF – Integrated focus test
CFBCC_PCF - corner focus test
CFBCC_FWV – wavelength scan
CFBCC_FW3 - wvln scan of filter 3
CFBCC_FCL – Clear filter cutoff test
CFBCC_PMS – Mirror scattered light.
CFBCC_FMI – Mirror and Formats
CFBCC_WFL – Sphere flatfield
CFBCC_WRA – sphere radiance
11/18/01 – CFI Post-Env Cals
CFBDD_WWU - Warm-up flatfield
11/19/01 – CFI Post-Env Cals
CFBWC_PDS – Dark Series
CFBWC_FMI – Fat point Mirror test
CFBWC_WMI – Sphere mirror test
CFBWC_WFL – Flat field
CFBWC_WRA – Radiance
CFBWC_WFM – Formats
CFBWC_WPO – Polarization test
CFBWC_FFM – Formats
CFBWC_PIF Integrated focus
CFBWC_FRL – Red leak test
CFBWC_FCL – fat point clear filter
CFBWC_FWV - wavelength scan
CFBWC_FW7 – filter 7 wvln scan
11/20/01 – CFI Post-Env Cals
CFBMC_PDS – dark series
CFBMC_PIF – Integrated focus test
CFBMC_FWV – wavelength scan
CFBMC_FCL – clear filter test
CFBMC_FRL – Red leak test
CFBMC_WFL - flatfield
CFBMC_WRA - radiance
CFBMC_WFM – formats
11/21/01 – CFI Post-Env Cals
CFBCD_PDS – Dark test. Cooling
CFBCC_PDS – Dark test
CFBCC_PIF Integrated focus test
CFBCC_PND - ND filter check
CFBCC_FCL – Clear filter test
CFBCC_FRL Red Leak
CFBCC_FWV – wavelength SCAN
CFBCC_WFL – Flatfield
CFBCC_WRA – radiance
CFBCC_WF2 – modified WFL
CFBCC_LPB – HeNe Laser.
11/26/01 – CFI Post-Env Cals
CFBWC_LMS – scattered light with cube mirrors & bright lamp.
CFBWC_HS1 – Hand samples
CFBWC_HS2 – Hand samples
CFBWC_LSC – "Lamp" or Iris scattered light test.
Cube face center tweaks

--CFI Final Cal (slightly different format)--

02/21/02-CFI Final Cal
Center and exposure checking of M/C
CFCCC_PIF - Integrated Focus Test
CFCCC_PSF - 1-second Focus Test (Point spread function)
CFCCC_PDS – Dark series and formats
CFCCC_FWV – Wavelength Scan
02/22/02
CFCCC_FRL - Red Leak test
Change out M/C setup for Iris setup
Centering, center of focus, and exposure checking of White Sphere
CFCCC_WFL - Flatfield
CFCCC_WFM - Formats -Flatfield
CFCCC_WRA - Radiometry
CFCCC_WST - Stability
Centering, Iris size, exp. checking of iris VIS-IR setup
CFCCC_IDL - Iris Diagonal Long wvln filters
02/23/02

CFCCC_IGL - Iris 8x8
CFCCC_IIS - Iris Infield scatter test
CFCCC_ISO - Iris out of field scatter
Centering, Iris size, exp. checking of iris UV setup
CFCCC_IDS - Iris Diagonal Short wvln filters
CFCCC_IGS - Short wvln grid

02/24/02

Exp. checking of UV flatfield setup.
CFCCC_WUV - UV flatfield
Ex. Check of VIS-IR hand sample setup.
CFCCC_HPG - Halon plate Point Grid
CFCCC_HV1 -Hand samples 1
CFCCC_HVG – VIS-IR Iris point grid
CFCCC_HUG – UV Iris point grid

02/25/02

Ex. Check of UV hand sample setup.
CFCCC_HU1 –UV Hand
Verify Heater Control
CFCCC_WHF - Heated Flatfield test
CFCCC_FR8 - Filter 8 Radiometry
CFCCC_WWU - Flatfield Warm-up
Also CFCCC_WUV_2 (folder misnamed)

Part 2: CFI Calibration Details by Script

CF0AA_PDS 32 images "by hand" - Stage motor power on
CF1AA_PDS 24 images "by hand" - Stage motor power off

CF	0, 1	A	A	_	P	DS
CFI	Pre-Env By Hand	Ambient Chamber	Ambient Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
10/30/01	CFI I: 26	SC, NI

At vacuum, Filter 4 (620 nm). 4 images at different exposure times.

Number of images: 32; CF0AA_PDS_##
Breakdown & Logbook Notes:
Stage motor on
Exp. 1/0 (2.048 ms units/addtl. Seconds) Images 0-3
Exp. 44/0 (2.048 ms units/addtl. Seconds) Images 4-7
Exp.74/0 (2.048 ms units/addtl. Seconds) Images 8-11
Exp. 245/0 (2.048 ms units/addtl. Seconds) Images 12-15
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 16-19
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 20-23 <- Bad
Exp. 1/5 (2.048 ms units/addtl. Seconds) Images 24-27
Exp. 1/5 (2.048 ms units/addtl. Seconds) Images 28-31
Number of images: 24; CF1AA_PDS_##
Breakdown & Logbook Notes:
Stage motor off
Exp. 1/0 (2.048 ms units/addtl. Seconds) Images 0-3
Exp. 44/0 (2.048 ms units/addtl. Seconds) Images 4-7
Exp.74/0 (2.048 ms units/addtl. Seconds) Images 8-11
Exp. 245/0 (2.048 ms units/addtl. Seconds) Images 12-15
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 16-19
Exp. 1/5 (2.048 ms units/addtl. Seconds) Images 20-23

CF0AA_PFO - focus test "by hand" - 202 images

CF	0	A	A	_	P	FO
CFI	Pre-Env By Hand	Ambient Chamber	Ambient Detector		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
10/30/01	CFI I: 26-28	SC, NI

5x5 stage scans of point source. Filter 4. 366-unit exposure time.

Number of images: 202; CF0AA_PFO_##
Breakdown & Logbook Notes:
10 Darks (Images 0-9)
Image 10 is bad
Point source Center 5x5 in "video cords" (11-35)
Defocus (position 2) lens 5x5 in center (36-60)
Defocus (position 3) glass window 5x5 in center (61-85)
10 Darks (86-95)
3 Throw aways: (96-98)
Upper Left corner 5x5 (99-123)
Upper right 5x5 (124-148)
Throw aways, (149-151)
Lower right 5x5 (152-176)
Lower left (177-201) - Image 200 may be bad position.

CF0AC_PDS - Dark series "by hand" Cold loop - 48 images

CF	0	A	C	_	P	DS
CFI	Pre-Env By Hand	Ambient Chamber	CCD Cooler on		Point source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
10/30/01	CFI I: 29	SC, NI

Similar to 1st dark series, but with CCD nitrogen loop cooler on.

Number of images: 48; CF0AC_PDS_##
Breakdown & Logbook Notes:
Stage motor off Darks
Exp. 1/0 (2.048 ms units/addtl. Seconds) Images 0-3
Exp. 44/0 (2.048 ms units/addtl. Seconds) Images 4-7
Exp.74/0 (2.048 ms units/addtl. Seconds) Images 8-11
Exp. 245/0 (2.048 ms units/addtl. Seconds) Images 12-15
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 16-19
Exp. 1/5 (2.048 ms units/addtl. Seconds) Images 20-23
Point source open
Exp. 1/0 (2.048 ms units/addtl. Seconds) Images 24-27
Exp. 44/0 (2.048 ms units/addtl. Seconds) Images 28-31
Exp.74/0 (2.048 ms units/addtl. Seconds) Images 32-35
Exp. 245/0 (2.048 ms units/addtl. Seconds) Images 36-39
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 40-43
Exp. 1/5 (2.048 ms units/addtl. Seconds) Images 44-47

CF0AC_PFO - Focus test "by hand" 102 images before crash
CF1AC_PFO - Completion of focus test

CF	0, 1	A	C	_	P	FO
CFI	Pre-Env By Hand	Ambient Chamber	CCD Cooler on		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
10/30/01	CFI I: 29-30	SC, NI

Similar to the ambient detector Focus test. Interrupted by crash and completed as CF1AC_PFO
Filter 4, exposure time 366 units.

Number of images: 106; CF0AC_PFO_##
Breakdown & Logbook Notes:
10 Darks (Images 0-9)
Center 5x5 (10-34)
UL 5x5 (35-59)
UR 5x5 (60-84)
LR 5x5 (85-106) Crash on last leg of 5x5
Number of images: 106; CF1AC_PFO_##
Breakdown & Logbook Notes:
10 Darks (Images 0-9)
LL 5x5 (10-34)

CF0AC_FPG - Point grid 42 images
CF1AC_FPG - Continuation of point grid 96 images

CF	0, 1	A	C	_	F	PG
CFI	Pre-Env By Hand	Ambient Chamber	CCD Cooler on		'Fat' M/C Point source	Point Grid

Date of Test	Logbook Page(s)	Operator(s)
10/30/01	CFI I: 30-33	NI, SC

5 filter positions, 1-4 & 7. 4 exposure times (2, 90, 150, 500 ms) 5 locations in CFI frame - center and 4 corners.

Number of images: 42; CF0AC_FPG_##
Breakdown & Logbook Notes:
- 10 Darks (Images 0-9)
- Center of CCD:
  - Filter 1: (11-15)
  - Filter 2 (16-20)
  - Filter 3 (21-25)
  - Filter 4 (26-30)
  - Filter 7 (31-36)
- Corner 1
  - Filter 1 (37-41)
- Test ended by Crash

Number of images: 96; CF1AC_FPG_##
Breakdown & Logbook Notes:
- Corner 1:
  - Filter 2: 2, 90, 150, 500, 958 ms (Images 0-4)
  - Filter 3 (5-9)
  - Filter 4 (10-14)
  - Filter 7 (15-20) (19 may be bad image)
- Corner 2: Filters 1-4 & 7 (21-45)
- Corner 3: Filters 1-4 & 7 (46-70)
- Corner 4: Filters 1-4 & 7 (71-95)

CF0AC_WLI - Linearity/attenuator test 550 images

CF	0	A	C	_	W	LI
CFI	Pre-Env By Hand	Ambient Chamber	CCD Cooler on		White Sphere	Linearity

Date of Test	Logbook Page(s)	Operator(s)
10/30/01	CFI I: 34-35	NI, SC

90 ms exposures, different filters, going from closed attenuator to open by steps.

Number of images: 550; CFOAC_WLI_##
Breakdown & Logbook Notes:
- Filter 2:
  - 10 Darks (Attens = 255) (Images 0-9)
  - 10 ea. Stepping attenuators 1 by 1 from 254-243 (10-129)
  - 10 @ Attens = 238 (130-139)
  - 10 ea. Stepping attens by 10 228-148 (140-239) -
    - Strange wavy pattern in flatfield visible by Attens = 218
    - Saturated by Attens = 148
    - Bright patch of pixels on CCD - piece of dust?
- Filter 1 (clear)
  - 10 Darks (240-249)
  - 10ea. 1 by 1 attenuator steps 254-235 (250-449)
    - Saturation at attens = 235
- Attenuators set at 250, vary exposure times (Filter 1)
  - 10 @ 44 Units (450-459)
  - 10 @ 88 units (460-469)
  - 10 ea. At 100, 110, 120, 125, 130, 135 units (470-529)
  - 10 ea. At 80, then 70 units (530-549)

CF0CC_WFR - Flatfield reflectivity "by hand" 290 images before crash
CF1CC_WFR - Flatfield reflectivity "by hand" 240 images to complete test

CF	0,1	C	C	_	W	FR
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		White Sphere	Flatfield, Radiometry

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 36-38	NI, SC

All available filters (1-4 & 7), different attenuator levels and exposure times to get flat fields

Number of images: 240; CF0CC_WFR_##
Breakdown & Logbook Notes:
- Stage motor on:
  - 10 Darks at 40 units exp. time (Attens = 255) (Images 0-9)
  - 10 ea. Darks at 80 units, 160 (10-29)
- Stage motor off
  - 10 ea. Darks at 160 units, 320, 468 (30-59)
- Filter 1, Attens = 240:
  - 10 ea. At Exp. time 40, 45 (60-79)
  - 10 ea. Exp times increase by 10 units 50-180 (80-219)
- Filter 2, Attens = 240
  - 10 ea. Exp. time 40, 90, 180, 360, 1+1sec, 1+3sec, 1+6sec (220-289)
- Test stopped by crash.

Number of images: 240; CF1CC_WFR_##
Breakdown & Logbook Notes:
- Filter 3, Attens = 240
  - 10 ea. Exp. time 40, 80, 180, 360, 1+1sec, 1+3sec, 1+6sec (Images 0-69)
- Filter 3, Attens = 220
  - 10 ea. Exp. time 1+6sec, 1+3sec, 1+1sec, 360, 180, 90, 40 (70-139)
- Filter 4, Attens = 220
  - 10 ea. Exp. time 40, 90, 180, 360, 468, (140-189)
- Filter 7, Attens = 220
  - 10 ea. Exp. time 40, 90, 180, 360, 270, (190-239)
- NOTE: Darks do not always match exposure times of flatfield well. We were still finding our feet during these tests and weren't getting everything right.

CF0CC_PDS - Dark series 48 images

CF	0	C	C	_	P	DS
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 38	NI, SC

Now-standard dark series. Filter 4

Number of images: 48; CF0CC_PDS_##
Breakdown & Logbook Notes:
Stage motor off Darks
Exp. 1/0 (2.048 ms units/addtl. Seconds) Images 0-3
Exp. 44/0 (2.048 ms units/addtl. Seconds) Images 4-7
Exp.74/0 (2.048 ms units/addtl. Seconds) Images 8-11
Exp. 245/0 (2.048 ms units/addtl. Seconds) Images 12-15
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 16-19
Exp. 1/1 (2.048 ms units/addtl. Seconds) Images 20-23
Point source open
Exp. 1/0 (2.048 ms units/addtl. Seconds) Images 24-27
Exp. 44/0 (2.048 ms units/addtl. Seconds) Images 28-31
Exp.74/0 (2.048 ms units/addtl. Seconds) Images 32-35
Exp. 245/0 (2.048 ms units/addtl. Seconds) Images 36-39
Exp. 468/0 (2.048 ms units/addtl. Seconds) Images 40-43
Exp. 1/1 (2.048 ms units/addtl. Seconds) Images 44-47

CF0CC_PFO - cold focus test 135 images

CF	0	C	C	_	P	FO
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		M/C Point Source	Focus Test

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 39	NI, SC

Similar to earlier Focus tests, but with cold chamber. - Filter 4, 366 unit exposure.

Number of images: 135; CF0CC_PFO_##
Breakdown & Logbook Notes:
10 Darks (Images 0-9)
Center 5x5 (10-34)
UR 5x5 (35-59)
UL 5x5 (60-84)
LL 5x5 (85-109)
LR 5x5 (110-134)

CF0CC_FPG - Cold Point grid 185 images

CF	0	C	C	_	F	PG
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		'Fat' M/C Point Source	Point Grid

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 40-41	NI, SC

Similar to ambient point grid:
5 filter positions, 1-4 & 7. 4 exposure times (2, 90, 150, 500 ms) 5 locations in CFI frame - center and 4 corners.

Number of images: 185; CF0CC_FPG_##
Breakdown & Logbook Notes:
- 10 Darks (90 ms)(Images 0-9)
- Darks 1, 44, 74, 244, 468 units (10-14)
- Repeat Dark series 9 more times (15-59)
- Center of CCD:
  - Filter 1: 1, 44, 74, 244, 468 units: (60-64)
  - Filter 2 series (65-69)
  - Filter 3, 4, 7 series (70-84)
- UR Corner: Filters 1-4 & 7, exp time series for each: (85-109)
- UL Corner: Filters 1-4 & 7, exp time series for each: (110-134)
- LL Corner: Filters 1-4 & 7, exp time series for each: (135-159)
- LR Corner: Filters 1-4 & 7, exp time series for each: (160-184)

CF0CC_FWV - wavelength bandpasses 192 images

CF	0	C	C	_	F	WV
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		'Fat' M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 42-46	NI, SC

Scan up and down the spectral filters, with cutoff filters out, then in. This is pretty complex, and superceded by Post-environmental tests, so refer to the logbook for most of the details.

Number of images: 192; CF0CC_FWV_##
Breakdown & Logbook Notes:
- Filter 2, Exposure time 1 unit+3 seconds, Grating order 2
  - 10 Darks (Images 0-9)
  - Wvln scan "up" (10-34)
  - Clear filter image (35)
  - Wvln scan "down w. cutoff filter (36-60)
- Filter 3, Exposure time 1 unit+3 seconds, Grating order 2
  - Test exposure (61)
  - Wvln scan "up" (62-81)
  - Clear filter image (82)
  - Wvln scan "down w. cutoff filter (83-102)
- Filter 4, Exposure time 1 unit+3 seconds, Grating order 2
  - Test exposures (103-107)
  - Wvln scan "up" (108-124)
  - Clear filter (125)
  - Wvln scan "down w. cutoff filter (126-142)
- Filter 4, Exposure time 1 unit+4 seconds, Grating order 2
  - Test exposures (143-145)
  - Wvln scan "up" (146-168
  - Clear filter (169)
  - Wvln scan "down w. cutoff filter (170-191)

CF0CC_DSP -Filter spin test 35 images

CF	0	C	C	_	D	SP
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		Dark	Filter Spin test

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 47	SC, NI

Sets of 5 images (all dark), 50 unit exposure times, taken while filter wheel is moving.

Number of images: 35; CF0CC_DSP_##
Breakdown & Logbook Notes:
No filter movement (Images 0-4, 5-9)
Filter wheel moving from 1-6 (10-14)
Filter wheel moving from 6-1 (15-19)
Filter wheel moving from 1-6 (20-24)
No filter movement (Images 25-29, 30-34)

CF1CC_PFO Quick focus test 26 images

CF	1	C	C	_	P	FO
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		M/C Point Source	Fast Focus Test

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 47	SC, NI

Shortened focus test. Single 4x4 and some darks with faster (50 unit) exposure time, Filter 4.

Number of images: 26
Breakdown & Logbook Notes:
4x4 in center of CCD (Images 0-15)
10 Darks (16-25)

CF0CC_WGR Flat field gradient test. 70 images

CF	0	C	C	_	W	GR
CFI	Pre-Env By Hand	Cold Chamber (-30 C)	Cooled Detector		White Sphere	Gradient test

Date of Test	Logbook Page(s)	Operator(s)
10/31/01	CFI I: 47	SC, NI

CFI facing sphere, then moving the stage off center to get gradients across CCD. Clear filter, attenuators =245. 44 unit (90 ms) exposure time.

Number of images: 70; CF0CC_WGR_##
Breakdown & Logbook Notes:
5 images w. Stage centered on Sphere (122?) (Images 0-4)
5@ Stage 121.75? (5-9)
5@ 121.5? (10-14)
5 ea. Stepping by 0.5? from 121? to 116? (15-69)

CFBCC_PDS - Dark series

CF	B	C	C	_	P	DS
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 53-54	NI, SC

Darks and 620 nm Filter observations of point source 5 exp. times + 5-sec ND3 exposure

Runs executed: 2
Run 01:
Number of images: 92*
Filter: 4 , Exp times (1, 44, 74, 245, 468 units and 1 sec+1unit):
Record 4 images of point source at each of 6 exposure times at each setting:
Dark (opaque filter) (Images ~1-24*)
ND1 (~25-48)
Open (~49-72)
Open with defocusing glass in filter wheel. (~73-96)
*Perfect script would have had 96 images. Use these numbers as a guide only and refer to the history file for details.
History File: Yes
Notes from History file:
- Chamber still cooling down during run.
-1st of the 5 second exposures always kicked back error, so probably only 3 such exposures were taken. No apparent interruption of number sequencing of images.
- This PDS was taken at Cube mirror #1 - somewhat off center from #0. Will redo test (iteration 02) with cube mirror 0.
Notes from Logbook:
Framegrabber throwing off many snap errors (probably timeouts)
If a record error is in the history file and the Record is not re-entered (by hand), then the data recorded is probably stale.

Run 02:
Number of images: 95
Filters: , Exp time, Breakdown: Identical to Run 01
History File: Yes
Notes from History file:
-Execution OK except for the 5-secomd record image problem
-NOTE to Analysts: LOOK for errors in the history file.
-If a record or getframe image has an error, and then does _not_ have an OK afterward, it failed. A failed record might result in stale data being retrieved. --A failed getframe results in loss of an image, though the numbers should still increment normally, ignoring the failed image.
-Also, the center pixel of the CCD looks to have moved from the original setup position, possibly as a function of cube mirror rotation. Center pixel is now ~504,492.
Notes from Logbook:
-Functionally identical to Run 01 expect for cube mirror face 0.

CFBCC_PIF - Integrated focus test

CF	B	C	C	_	P	IF
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'M/C Point Source	Integrated Focus

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 54-55	NI, SC

5x5 .001 deg stage grid scans in 5 locations (center and 4 corners) all (5) filters, 3 exp times
75 ms exp Filt 1 gives 550-1200 DN (fn of location, CCD temp)

Runs executed: 1
Run 01:
Number of images: 415
Filters: All, Exp time 3 units, 10, 74, 367, 1sec+245, :
Darks with stage motor off (images 1-20)
Darks with stage motor on (21-40)
5x5 stage scan grid with each filter at 3 exp times (41+)
History File: Yes, up to abort.
Notes from History file:
Watch for errors in long exposures (1.5 sec)
Notes from Logbook:
-Filter 1 150 ms exposure is well saturated
-test as coded would take 6 hrs. abort after center 5x5 in all filters and rewrite script to do corners only with one exposure time instead of 3. See illus. in logbook for sketch of PIF vs. PCS focus tests.

CFBCC_PCF - corner focus test - single exposure time per filter.

CF	B	C	C	_	P	CF
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		M/C Point Source	Corner Focus

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 55	NI, SC

5x5 .001 deg stage grid scans in 5 locations (center and 4 corners) all (5) filters, 3 exp times
75 ms exp Filt 1 gives 550-1200 DN (fn of location, CCD temp)

Runs executed: 1
Run 01:

Number of images: 524
Filters: All, Exp times: Fixed for each filter:

Darks at 2 exposure times stage motor off (images 1-8)
Darks at 2 exposure times stage motor on (images 9-16)
5x5 stage scan grid with each filter at 4 corners of CCD (17+)

History File: Yes, up to abort.
Notes from History file:

Had to send supplementary commands to move stage AX2, else OK

Notes from Logbook:

- Darks only taken for 20 and 200 ms. Use images from other corners as darks.
- Timeout errors (?) required manual commanding of the stage to move from corner to corner, but not within the 5x5's

CFBCC_FWV - wavelength scan

CF	B	C	C	_	P	WV
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 56	NI, SC

Optimized exposure time, 1 nm wavelength scans across all (5) filters
920, 840 filters use Grating order 2, 620, 514 use order 3. Monochromator steps are in angstroms (= 10*nm). Wavelength scans start well below filter "bottom" and increment up past filter "top" in wvln space.

Runs executed: 1
Run 01:

Number of images: 216
Filters: spectral (2, 3, 4, & 7), Exp time fixed for each filter:
For each filter, 4 darks before wavelength scan:

F2: 4 darks +steps across filter (images 1-54)
F3: 4+steps (55-108)
F4: 4+steps (109-162)
F7: 4+steps (163-216)

History File: Yes
Notes from History file:

- The Filter 3 data saturate in the middle. Going to do another run (FW3) with shorter exposure time.
- Other shenanigans with framegrabber were handled with supplementary input commands.

Notes from Logbook:

-Single exposure time per filter.
-Fat point looks like a fuzzy point or comma
-Snap errors in long exposure times alleviated by increasing imaging interval time on GSE

CFBCC_FW3 - rerun wvln scan of filter 3 to avoid saturation

CF	B	C	C	_	F	W3
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Wavelength Scan of filter 3 only

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 57	NI, SC

Optimized exposure time, 1 nm wavelength scans across all (5) filters
920, 840 filters use Grating order 2Monochromator steps are in angstroms (= 10*nm). Wavelength scans start well below filter "bottom" and increment up past filter "top" in wvln space.

Runs executed: 2
Run 01:
Number of images: 29 (4 darks then partway through scan)
Filter: 3, Exp time: 2 sec +1 unit
History File: Yes
Notes from Logbook:
Aborted partway through (838 nm) b/c exposure time was too high
Run 02:
Number of images: 54
Filter: 3, Exp time: 1 sec+1 unit
Images: 4 darks, then 50-step wavelength scan:
History File: Yes
Notes from History file:
- Peak at ~837 nm, ~2600 DN
Notes from Logbook:
- some DN vs. wvln notes

CFBCC_FCL - Clear filter cutoff test

CF	B	C	C	_	F	CL
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Clear filter Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 58	NI, SC

150 ms exposures around 800, 900, 1000 nm and around 1100, ~16 nm bandwidth

Runs executed: 3
Run 01:
Number of images: 16 (4 darks then partway through wvln scan)
Filter: 1 (clear), Exp time: 10 ms
History File: Yes
Notes from Logbook:
Aborted b/c 10 ms exp. was too small. Script rewritten
Run 02:
Number of images: 20 (4 darks then partway through wvln scan)
Filter: 1 (clear), Exp time: 150 units
History File: No
Notes from Logbook:
Aborted at 1085 nm b/c 150-unit exp. was too big - saturated data - wanted 150 ms exposure. Script rewritten
Run 03:
Number of images: 56
Filter: 1 (clear), Exp time: 150 ms
Dark images (Images 1-4)
Wvln scan 4 images per location (800, 900, 1000 nm, then every 5 nm from 1080 to 1120) (5-56)
History File: Yes
Notes from History File:
- Several wavelength programming errors, typos mostly
- And it looks like 2nd order light was significant contributor. Probably needs repeating with cutoff filter.
- 1075 nm taken instead of 1085 nm
Notes from Logbook:
Aborted b/c 10 ms exp. was too small. Script rewritten

CFBCC_PMS - mirror scattered light.

CF	B	C	C	_	P	MS
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Mirror scattered light

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 59	NI, SC

Coarse step stage scans across FOV & up/down Clear filter, Saturate light level All Cube mirror positions

Runs executed: 2
Run 01:
Number of images: 20
Filters: Clear, Exp time: several
History File: No
Notes from Logbook:
- Aborted during dark acquisition due to slowness of test.
- Script changes - darks only before and after data taking; one exposure time 5 sec + 1 unit.

Run 02:
Number of images: 103
Filters: Clear, Exp time: 5sec + 1 unit
Darks (Images 1-4)
At each of 4 mirror positions
12 step scans across CCD
12 step scan up-down CCD
(5-100)
Darks (101-103)
History File: Yes
Notes from History:
Last 2 images come from failed dark exposures. They are probably stale versions of the last images taken.
Notes from Logbook:
- Aborted during dark acquisition due to slowness of test.
- Script changes - darks only before and after data taking; one exposure time 5 sec + 1 unit.

CFBCC_FMI - Mirror and Format exerciser.

CF	B	C	C	_	F	MI
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	(Cube) Mirror test and Formats

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 60	NI, SC

10, 20, 50 ms, 4 cube mirrors, clear filt +darks, windowing, rebinning, compression

Runs executed: 1
Run 01:
- Number of images: 84
- Filters: 1 (clear), Exp time: 10, 40 ms
  - 4 Darks ea. 10, 40 ms (Images 1-8)
  - At 10 ms exposure time:
    - 2 pt. Source images of each mirror cube face: 3, 2, 1, 0 (9-16)
    - 2 pt. Source images at each of 5 formats (mirror face 1) (17-26)
    - 2 pt. Source images at each of 8 compression tables (27-42)
  - Repeat sequence at 40 ms exposure time (43-84)
- History File: Yes
- Notes from History file:
  - A number of getframe errors.
  - "Test is hosed"
  - Format commands (rebinning) turned back nothing but errors, both from GSE and framegrabber. Neither knew how to handle some of the formats.
  - Cube mirror face 2 is substantially differently centered from the others.
  - Compression algorithms looked "totally funky"
- Notes from Logbook:
  - Formats were misbehaving. GSE/framegrabber may not have been prepared to handle them. Formats 4 and 5 are almost certainly bogus data.

CFBCC_WFL - Sphere flatfield

CF	B	C	C	_	W	FL
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		White Sphere	Flatfield

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 61	NI, SC

All filters flat field. Exposure times tuned to get ~ 2500 DN in each filter. Filters 1 and 2 use attenuator setting 240. 3, 4, 7 use 220.

Runs executed: 1
Run 01:
Number of images: 150
Filters: all (1, 2, 3, 4, 7) Exp time: tuned for each filter: 230, 958, 958, 730 ,475, respectively
10 Darks (attenuator closed) at each of the 5 exposure times (958 repeated unnecessarily (Images 1-50)
10 images for each filter at a defined attenuator setting (51-100)
10 Darks (attenuator closed) at each of the 5 exposure times (958 repeated unnecessarily (Images 101-150)
History File: Yes
Notes from History file:
Evidence of pupil ghost and long wavelength interference patterns obvious.
Notes from Logbook:
Sphere < 1 foot from OCF chamber window with aluminum foil collar to keep out stray light. This is probably not the optimum setting - sphere too close to window.

CFBCC_WRA - sphere radiance

CF	B	C	C	_	W	RA
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		White Sphere	Radiometry

Date of Test	Logbook Page(s)	Operator(s)
11/17/01	CFI I: 61	NI, SC

Spectral filters 2 and 3 2-90 ms exp. darks, Atten open, and 220.

Runs executed: 1
Run 01:
Number of images: 156
Filters: 2, 3, Exp time: Many
Dark (attenuator 255) images at varying exposure times:
1, 2,3, 4, 5, 6, 7,8 , 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 28, 32, 36, 40, 44 units (*2.048 for ms) (Images 1-26)
Repeat exposure time series with each of 2 spectral filters at attenuators = 0 (27-78)
Repeat exposure time series with each of 2 spectral filters at attenuators = 220 (79-130)
Repeat Darks as before (131-156)
History File: Yes
Notes from History file:
Filter 2 above smear and below saturation for 18-24 ms exposures with Open attenuator.
Filter 3 for 18-24 ms.
Notes from Logbook:
Smear dominates for fastest exposure times.

CFBDD_WWU - Warm-up flatfield test

CF	B	D	D	_	W	WU
CFI	Post- Env	Changing Chamber T	Changing Detector T		White Sphere	Warm Up Flatfield

Date of Test	Logbook Page(s)	Operator(s)
11/18/01	CFI I: 63-64, 66	DH, PT?

IR filter flat fields during warm-up

Runs executed: 15
ALL RUNS:
Number of images: 60*
Filters: 2, 3, Exp time: 958 ms
20 Darks (attenuators = 255) (Images 1-20)
10 exposures, Filter 2, Attenuators = 240 (21-30)
10 exposures, Filter 3, Attenuators = 220 (31-40)
20 Darks (41-60)
Run 01:
History File: No - History file overwritten by Run 13, which was for some reason appended to Run 1.
Notes from Logbook:
Coldest temp. Chiller set to -42 C
Run 02:
History File: Yes
Notes from History file:
3 o'clock liner = -41 C
CCD = -66 C
Instrument = -34 C
Notes from Logbook:
Repeat of Cold baseline.
Run 03:
History File: Yes
Notes from History file:
3 o'clock liner = -19 C
CCD = -66 C
Instrument = -32 C
Notes from Logbook:
Chiller set to -20 C before this run.
Run 04:
History File: Yes
Notes from History file:
3 o'clock liner = -19 C
CCD = -65 C
Instrument = -30 C
Notes from Logbook: n/a
Run 05:
History File: Yes
Notes from History file:
3 o'clock liner = -18.9 C
CCD = -64 C
Instrument = -29 C
Notes from Logbook: n/a
Run 06:
History File: Yes

Notes from History file:
3 o'clock liner = -12.3 C
CCD = -62.7 C
Instrument = -27 C
Notes from Logbook:
Chiller temp set-point to +10 C before test
Script edited for this and subsequent runs to have darks taken through filter 3 instead of filter 1 because some light is getting though filter 1.

Run 07:
History File: Yes
Notes from History file:
3 o'clock liner = +3.4 C
CCD = -60.6 C
Instrument = -24 C
Notes from Logbook:
Chiller temp set-point to +40 C before test
Fringes may have moves a skosh at this setting

Run 08:
History File: Yes
Notes from History file:
3 o'clock liner = +12 C
CCD = -58.5 C
Instrument = -22 C
Notes from Logbook: n/a

Run 09:
History File: Yes
Notes from History file:
3 o'clock liner = +22.8 C
CCD = -54.6 C
Instrument = -17 C
Notes from Logbook: n/a

Run 10:
History File: Yes
Notes from History file:
3 o'clock liner = +32 C
CCD = -50 C
Instrument = -11 C
Notes from Logbook: n/a

Run 11:
History File: Yes
Notes from History file:
3 o'clock liner = +38 C
CCD = -44 C
Instrument = -6 C
Notes from Logbook: n/a

Run 12:
History File: Yes
Notes from History file:
3 o'clock liner = +40 C
CCD = -35 C
Instrument = +4 C
Notes from Logbook: n/a

Run 13:
History File: Yes
Notes from History file:
CCD = -20 C

Instr = +13 C
Liner3 = +33 C

Notes from Logbook:

Switched liquid nitrogen tanks before this test. 2nd nitrogen tank not functional. Test will be finished with more rapidly warming CFI cold plate (and therefore CCD)
Run 13 was for an unknown reason appended to run 1 as images 61-120. Run 1 images not bothered, but run 1 history file was overwritten with Run 13's.

Run 14:

History File: Yes

Notes from History file:

3 o'clock liner = +40 C
CCD = -11 C
Instrument = +26 C
No LN2 remaining,

Notes from Logbook:

After calibration of White Sphere optical sensor.

Run 15:

History File: Yes

Notes from History file:

3 o'clock liner = +40 C
CCD = 31 C
Instrument = +31 C

Notes from Logbook: n/a

CF	B	W	C	_	P	DS
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 67, 71	SC, NI

Darks and 620 nm Filter obs. of pt source 5 exp times + 5-sec ND3 exposure

Runs executed: 3
Run 01:
Number of images: 68
Filters: , Exp time:
Filters: 4, Exp time: 2, 90, 150, 500, 958, and 5.002 sec
4 (opaque filter) darks for each of 6 exposure times. (Images 1-24)
4 point source images for each of 6 exposure times. (25-48)
4 point Source through ND3 at all exposure times (49-72) Interrupted after 68.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
CCD temp at ~-4
Script turned stage motor off before it finished turning the CFI to face the M/C setup.
Run killed after image 68
Run 02:
Number of images: 96
Filters: 4, Exp time: 2, 90, 150, 500, 958, and 5.002 sec
4 (opaque filter) darks for each of 6 exposure times. (Images 1-24)
4 point source images for each of 6 exposure times. (25-48)
4 point Source through ND3 at all exposure times (49-72)
4 "fat" point source images for each of 6 exposure times. (73-96)
History File: Yes
Notes from History file:
Stage hand-commanded to face M/C position. Room lights Off.
ND3 seems to block all light. Replace with ND1.
Notes from Logbook: n/a
Run 03:
Number of images: 96
Filters: 4, Exp time: 2, 90, 150, 500, 958, and 5.002 sec
4 (opaque filter) darks for each of 6 exposure times. (Images 1-24)
4 point Source through ND1 at all exposure times (25-48)
4 point source images for each of 6 exposure times. (49-72)
4 "fat" point source images for each of 6 exposure times. (73-96)
History File: Yes
Notes from History file:
Some getframe errors, re-entered at command line with no problem. Errors with 5-sec exposures.
Notes from Logbook:
Run taken at end of day after other 11/19 tests.
Liquid N2 loop turned off after image 68.

CFBWC_FMI - Fat point Mirror test

CF	B	W	C	_	F	MI
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		'Fat' M/C Point Source	(Cube) Mirror test

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 67	SC, NI

10, 20, 50, ms, 4 cube mirrors, clear filt +darks - no formats

Runs executed: 1
Run 01:
Number of images: 72
Filters: 1, Exp time: 10, 20, 50 ms
Darks, 4 ea. At 10, 40 ms (Images 1-12)
10 ms: 4 images at each cube face (13-28)
repeat w. 20 ms exposures (29-44)
repeat w. 50 ms exposures (45-60)
Darks, 4 ea. At 10, 40 ms (Images 61-72)
History File: Yes
Notes from History file:
CCD temp ~-14 C
V. low to no signal at shortest exposure time.

Notes from Logbook: n/a

CFBWC_WMI - Sphere mirror test

CF	B	W	C	_	W	MI
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		White Sphere	(Cube) Mirror test

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 68	SC, NI

475 ms, 4 cube mirrors, 514 nm filt +darks

Runs executed: 1
Run 01:
Number of images: 24
Filters: 7, Exp time: 475 ms
4 Darks (Attenuators = 255) (Images 1-4)
4 ea. Attenuator 220 Images, Cube mirrors 0-3 (5-20)
4 Darks (21-24)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Manually commanded stage to turn to face sphere.

CFBWC_WFL - Flat field

CF	B	W	C	_	W	FL
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		White Sphere	Flatfield

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 68	SC, NI

All filters flat field

Runs executed: 1
Run 01:
Number of images: 130
Filters: 1, 2, 3, 4, 7, Exp time: 230, 958, 958, 730, 475 respectively for each filter.
Attenuators at 240 for Filters 1, 2. 220 for 3, 4, & 7
10 Darks ea. Different Exposure time (Images 1-40)
10 images per filter at its optimized exposure time (41-90)
10 Darks ea. Different Exposure time (Images 91-130)
History File: Yes
Notes from History file:
Max signals in some filters were over 3000 DN, but we think still in the linear range of CCD
Notes from Logbook:
CCD temp -18 C

CFBWC_WRA - Radiance

CF	B	W	C	_	W	RA
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		White Sphere	Radiometry

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 68	SC, NI

Long wvln spectral filters 2-90 ms exp. darks, Atten open, and 220.

Runs executed: 1
Run 01:
Number of images: 156
Filters: 2, 3, Exp time: Many
Dark (attenuator 255) images at varying exposure times:
1, 2,3, 4, 5, 6, 7,8 , 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 28, 32, 36, 40, 44 units (*2.048 for ms) (Images 1-26)
Repeat exposure time series with each of 2 spectral filters at attenuators = 0 (27-78)
Repeat exposure time series with each of 2 spectral filters at attenuators = 220 (79-130)
Repeat Darks as before (131-156)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFBWC_WFM - Formats

CF	B	W	C	_	W	FM
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		White Sphere	Formats

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 68	SC, NI

10, 20, 50 ms, 4 cube mirrors, 514 nm filt +darks, windowing, rebinning

Runs executed: 1
Run 01:
Number of images: 73
Filters: 7, Exp time: 464, 115, 30 ms
4x Darks at each exposure time (Images 1-12)
Exp time 464: 4x Attenuator 220 exposures at each Format (13-29)
Repeat at 115 ms exposures (30-45)
Repeat at 30 ms exposures (46-61)
4x Darks at each exposure time (Images 62-73)
History File: Yes
Notes from History file:
Getframe errors abounded with Format 3. Only 1 Format 3 image seems to have been successful at 464 nm exposure, none at 115, none at 30.
Some rebin exposures were saturated. Some striping and "quilting" appearance on rebin images.
May not have taken appropriate darks.
Notes from Logbook:
Format 3 doesn't work in GSE software. No Binned darks taken.

CFBWC_WPO - Polarization test

CF	B	W	C	_	W	PO
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		White Sphere	Polarization

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 69	SC, NI

all filters polarization 0, 45, 90

Runs executed: 1
Run 01:
Number of images: 100
Filters: 1,2, 3, 4, 7, Exp time: 230, 958, 958, 730, 475 ms respectively
4 Darks, each exposure time (Images 1-20)
Polarizer Vertical:
4 images at each filter at optimized attenuator setting and exposure (21-40)
Repeat for polarizer 45 degrees (41-60)
Repeat for Polarizer Horizontal (61-80)
4 Darks, each exposure time (Images 81-100)
History File: Yes
Notes from History file:
0 degrees is vertical relative to OCF room.
Room lights turned on after during final darks - after image 88.
Notes from Logbook:
Polarizer hand installed between sphere exit port and window.

CFBWC_FFM - Formats

CF	B	W	C	_	F	FM
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Formats

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 69	SC, NI

10, 20, 50 ms, clear filt +darks, windowing, rebinning

Runs executed: 2
Run 01:
- Number of images: 20
- Filters: 1, Exp time: 10, 20, 50 ms
  - Darks 4 ea. At 10, 20, 50 ms (Imaged 1-12)
  - Format 1, 10 ms (13-16)
  - Format 2, 10 ms (17-20)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Used stale script. Test aborted.

Run 02:
- Number of images: 144
- Filters: 1, Exp time: 10, 20, 50 ms
  - Darks, 4 ea. At 10 ms at all 6 formats (Images 1-24)
  - Repeat Darks at 20 ms (25-48)
  - Repeat darks at 50 ms (49-72)
  - Repeat entire cycle looking at Fat point source. (73-144)
- History File: Yes
- Notes from History file:
  - Interesting gradients may be result of open chamber window.
- Notes from Logbook:
  - Taken with Room lights on.

CFBWC_PIF Integrated focus

CF	B	W	C	_	P	IF
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		M/C Point Source	Integrated Focus

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 69	SC, NI

5x5 .001 deg grids in ctr. and 4 corners all (5) filters, 1 (optimized) exp time

Runs executed: 1
Run 01:
- Number of images: 285
- Filters: 1, 2, 3, 4, 7, Exp time: 20, 200, 750, 450, 958 ms respectively.
  - 4 Darks each exp. time with stage motor off (Images 1-20)
  - 4 Darks each exp. time with stage motor on (Images 21-40)
  - 5x5 of point source in canter, all filters (41-165)
  - 5x5 of point source in corners, clear only (166-265)
  - 4 Darks each exp. time with stage motor on (Images 266-285)
- History File: Yes
- Notes from History file:
  - No corner 5x5s with spectral filters - clear only.
  - Steve liked this test.
- Notes from Logbook: n/a

CFBWC_FRL - Red leak test

CF	B	W	C	_	F	RL
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Red Leak

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 70	SC, NI

5 sec exp, across all spectral filters

Runs executed: 2
Run 01:
Number of images: 0
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Aborted due to long exposure problems.
Run 01:
Number of images: 272
Filters: 2,3, 4, 7, Exp time: 5.002 sec
For filter 2:
1 Dark image (Image 1)
1 image (16 nm wide) every 25 nm from 1600-2400 nm (2-34)
Repeat for filter 3 (35-68)
Repeat for filter 4 (69-102)
Repeat for filter 7 (103-136)
Repeat all 4 filter cycles with 780 nm cutoff filter in place manually. (137-272)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Run after long-exposure software fix.

CFBWC_FCL - fat point clear filter

CF	B	W	C	_	F	CL
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Clear Filter wvln scan

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 70	SC, NI

150 ms exposure times 800,900,1000, and around 1100
NOTE: 920, 840 use Grating order 2, 620, 514 use order 3

Runs executed: 1
Run 01:
Number of images: 104
Filters: 1, Exp time: 150 ms
Darks (Images 1-4)
4 images at 800, 900, 1000 nm (16 nm bandpass) (5-16)
4 images every 5 nm from 1080-1120 (17-52)
Repeat all with IR cutoff filter in place (53-104)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Low Pass filter OK.
Watch for stale images.

CFBWC_FWV - wavelength scan

CF	B	W	C	_	F	WV
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 70	SC, NI

Optimized exposure time, 1 nm wavelength scans across all (5) filters
NOTE: 920, 840 use Grating order 2, 620, 514 use order 3

Runs executed: 1
Run 01:
Number of images: 156
Filters: 2, 3, 4, Exp time: 506, 958, 1188, 6512 ms
At filter 2, 506 ms:
4 darks (Images 1-4)
step from 25 nm below banc center (920 nm) to 25 nm above (5-55)
Repeat for filter 3 (band center 840) (56-110)
Repeat for filter 4 (band center 629 (110-156 (until crash))
History File: No
Notes from Logbook:
Crash at end of filter 4. OCF Master Memory leak likely culprit.
Crash occurred when filter 4 was at 639 nm, close enough to call it done. Filter 7 done with independent test.

CFBWC_FW7 - complete wavelength scan with filter 7 only

CF	B	W	C	_	F	W7
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Wavelength Scan filter 7 only

Date of Test	Logbook Page(s)	Operator(s)
11/19/01	CFI I: 71	SC, NI

Optimized exposure time, 1 nm wavelength scans across filter
NOTE: 514 nm filter uses order 3 in monochromator

Runs executed: 1
Run 01:

Number of images: 54
Filters: 7, Exp time: 6512 ms
4 darks (Images 1-4)
step from 25 nm below banc center (513 nm) to 25 nm above (5-54)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFBMC_PDS - dark series

CF	B	M	C	_	P	DS
CFI	Post- Env	Medium (0 C) Chamber	Cold Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 71-72	DH

Darks and 620 nm Filter obs. of pt source 5 exp times + 5-sec ND3 exposure

Runs executed: 1
Run 01:
Number of images: 95
Filters: 4, Exp time: 2, 90, 150, 500, 958, and 5.002 sec
4 (opaque filter) darks for each of 6 exposure times. (Images 1-23)
4 point Source through ND1 at all exposure times (24-47)
4 point source images for each of 6 exposure times. (48-71)
4 "fat" point source images for each of 6 exposure times. (72-95)
History File: Yes
Notes from History file:
Lost 1 5-wsecond exposure between Image 20 and 21 - 5-second exposure.
Getframe_image 2 turned back a few errors.
Notes from Logbook:
Room lights on for 1st 4 exposures.
Had to recover from about 10 getframe errors during run.

CFBMC_PIF - Integrated focus test

CF	B	M	C	_	P	IF
CFI	Post- Env	Medium (0 C) Chamber	Cold Detector		M/C Point Source	Integrated Focus

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 72	DH

5x5 .001 deg grids in ctr and 4 corners all (5) filters, 1 (optimized) exp time

Runs executed: 1
Run 01:
Number of images: 285
Filters: 1, 2,3, 4, 7, Exp time: 20, 200, 750, 450, 958 ms, respectively for each filter.
4 Darks, each exposure time, stage motor off (Images 1-20)
4 Darks, each exposure time, stage motor on (21-40)
5x5 scan, clear filter, center and 4 corners. (41-165)
5x5, spectral filters, center only (166-265)
4 Darks, each exposure time, stage motor on (266-285)
History File: Yes
Notes from History file:
Recovered from errors to write images 0248 and 0275
Notes from Logbook:
Stage motion seems to have slack that is not taken up in the basic 5x5 scan. 1st couple positions of movement in a row of 5 have little or no motion relative to last position in previous row. At worst we're getting only 2 or 3 actual changes in position.

CFBMC_FWV - wavelength scan

CF	B	M	C	_	F	WV
CFI	Post- Env	Medium (0 C) Chamber	Cold Detector		'Fat' M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 73	DH

Optimized exposure time, 1 nm wavelength scans across all (4) spectral filters

Runs executed: 1
Run 01:
Number of images: 216
Filters: spectral (2, 3, 4, & 7), Exp time fixed for each filter: 506, 958, 1188, 6512 ms, respectively
For each filter, 4 darks before wavelength scan:
F2: 4 darks +steps across filter (2nd order) (images 1-54)
F3: 4+steps (2nd order) (55-108)
F4: 4+steps (3rd order) (109-162)
F7: 4+steps (3rd order) (163-216)
History File: Yes
Notes from History file:
Only one "snap" error.
Notes from Logbook:
When running in 2nd or third order, wavelength resolution is proportionally smaller than 1 nm calculated.

CFBMC_FCL - clear filter test

CF	B	M	C	_	F	CL
CFI	Post- Env	Medium (0 C) Chamber	Cold Detector		'Fat' M/C Point Source	Clear Filter wvln scan

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 73	DH

150 ms exposures around 800, 900, 1000 nm and around 1100, ~16 nm bandwidth, "open" and then with IR-only filter in place.

Runs executed: 1
Run 01:
Number of images: 104
Filter: 1 (clear), Exp time: 150 ms
Dark images (Images 1-4)
Wvln scan 4 images per location (800, 900, 1000 nm, then every 5 nm from 1080 to 1120) (5-56)
Repeat darks and wvln scan with IR bandpass cutoff filter in place (57-104)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFBMC_FRL - Red leak test

CF	B	M	C	_	F	RL
CFI	Post- Env	Medium (0C) Chamber	Cold Detector		'Fat' M/C Point Source	Red Leak

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 73	DH

5 sec exp, across all (4) spectral filters

NOTE: 920, 840 use Grating order 2, 620, 514 use order 3

Date of Test: 11/20/01
Operator(s): DH

Runs executed: 2
Run 01:
- Number of images: 31
- Filters: , Exp time:
- Breakdown - rough breakdown of what images are which image numbers
- History File: No
- Notes from Logbook:
  - Interrupted by memory leak crash. Run 02 starts from the beginning.

Run 02:
- Number of images: 272
- Filters: 2, 3, 4, 7 , Exp time: 5002 ms
  - For each filter:
    - Snap 1 dark
    - Step from 1600 nm to 2400 nm every 25 nm (16 nm bandpass)
  - Filt 2 (2^{nd} order) (Images 1-34)
  - Filt 3 (2^{nd} order) (35-68)
  - Filt 4 (3rd order) (69-102)
  - Filt 7 (3rd order) (103-136)
  - Repeat all filters with 780 nm cutoff filter in place (137-272)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook: n/a

CFBMC_WFL - flatfield
Run 01: File write problem
Run 02: Frame grabber images
Run 03: Still problem -
Run 04: Record replaced with snap in script.

CURRENTLY MISSING - "Warm Chamber" run of this test saved a second time by mistake. Checking if data was backed up on CD-ROM.

CF	B	M	C	_	W	FL
CFI	Post- Env	Medium (0C) Chamber	Cold Detector		White Sphere	All filters Flatfield

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 74	DH

Runs executed: #
Run 01:
Number of images:
Filters: , Exp time:
Breakdown - rough breakdown of what images are which image numbers
History File: Yes or no
Notes from History file:
Notes from Logbook:

CFBMC_WRA - radiance

CF	B	M	C	_	W	RA
CFI	Post- Env	Medium (0C) Chamber	Cold Detector		White Sphere	Radiance

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 74	DH

CURRENTLY MISSING - "Warm Chamber" run of this test saved a second time by mistake. Checking if data was backed up on CD-ROM.

Runs executed: #
Run 01:
Number of images:
Filters: , Exp time:
Breakdown - rough breakdown of what images are which image numbers
History File: Yes or no
Notes from History file:
Notes from Logbook:

CFBMC_WFM - formats

CF	B	M	C	_	W	FM
CFI	Post- Env	Medium (0C) Chamber	Cold Detector		White Sphere	Formats

Date of Test	Logbook Page(s)	Operator(s)
11/20/01	CFI I: 74-75	DH

CURRENTLY MISSING - "Warm Chamber" run of this test saved a second time by mistake. Checking if data was backed up on CD-ROM.

Runs executed: #
Run 01:
Number of images:
Filters: , Exp time:
Breakdown - rough breakdown of what images are which image numbers
History File: Yes or no
Notes from History file:
Notes from Logbook:

CFBCD_PDS - Dark test. Cooler still cooling CCD down

CF	B	C	D	_	P	DS
CFI	Post- Env	Cold (-30 C) Chamber	Detector T Cooling		'M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 76	NI, SC

Darks and 620 nm Filter obs. of pt source 5 exp times + 5-sec ND1 exposure

Runs executed: 1
Run 01:
Number of images: 96
Filters: 4, Exp time: 2, 90, 150, 500, 958, and 5.002 sec
4 (opaque filter) darks for each of 6 exposure times. (Images 1-24)
4 point Source through ND1 at all exposure times (25-48)
4 point source images for each of 6 exposure times. (49-72)
4 "fat" point source images for each of 6 exposure times. (73-96)
History File: Yes
Notes from History file:
Mirror move error is ignorable
Notes from Logbook:
CCD temp at -27 C still cooling slowly.
Room lights on for 1st 8 frames.

CFBCC_PDS - Dark test

CF	B	C	C	_	P	DS
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 76	NI, SC

Darks and 620 nm Filter obs. of pt source 5 exp times + 5-sec ND1 exposure

Runs executed: 1
Run 01:
Number of images: 96
Filters: 4, Exp time: 2, 90, 150, 500, 958, and 5.002 sec
4 (opaque filter) darks for each of 6 exposure times. (Images 1-24)
4 point Source through ND1 at all exposure times (25-48)
4 point source images for each of 6 exposure times. (49-72)
4 "fat" point source images for each of 6 exposure times. (73-96)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
CCD temp started at -52, ended at -55 C

CFBCC_PIF Integrated focus test

CF	B	C	C	_	P	IF
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'M/C Point Source	Integrated Focus

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 76	NI, SC

5x5 .001 deg grids in ctr. and 4 corners all (5) filters, 1 (optimized) exp time

Runs executed: 1
Run 01:
Number of images: 285
Filters: 1, 2,3, 4, 7, Exp time: 20, 200, 750, 450, 958 ms, respectively for each filter.
4 Darks, each exposure time, stage motor off (Images 1-20)
4 Darks, each exposure time, stage motor on (21-40)
5x5 scan, clear filter, center and 4 corners. (41-165)
5x5, spectral filters, center only (166-265)
4 Darks, each exposure time, stage motor on (266-285)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
This and subsequent PIF tests have stage motion changed. X & Y axis start is moved several millidegrees "lower" before going to start position to take out any backlash. Much better observed movement in 5x5 grid scan.
CCD temp starts at -55, ends at -59 C

CFBCC_PND - ND filter check

CF	B	C	C	_	P	ND
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'M/C Point Source	Neutral Density

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 76	NI, SC

Darks and Clear Filter obs of point source, 5-sec open and ND1, ND3 exposures

Runs executed: 1
Run 01:
Number of images: 9
Filters: 1, Exp time: 5002 ms
3 images each:
Darks (Images 1-3)
ND1 point source (4-6)
ND3 point source (7-9)
History File: Yes
Notes from History file:
Test shows ~300 DN with ND3 filter in 5 sec exposure in filter 1
Notes from Logbook: n/a

CFBCC_FCL - Clear filter test

CF	B	C	C	_	F	CL
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Clear Filter

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 76	NI, SC

150 ms exposures around 800, 900, 1000 nm and around 1100, ~16 nm bandwidth, "open" and then with IR-only filter in place.

Runs executed: 1
Run 01:
Number of images: 36
Filters: 1, Exp time: 150 ms
Dark images (Images 1-4)
Wvln scan 1 per location (800, 900, 1000 nm, then every 5 nm from 1080 to 1120) (5-16)
Dark images (Images 17-20)
Repeat Wvln scan with IR bandpass filter in place (21-32)
Dark images (Images 33-36)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFBCC_FRL Red Leak

CF	B	C	C	_	F	RL
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Red Leak

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 77	NI, SC

5 sec exp, across all (5) filters
920, 840 use Grating order 2, 620, 514 use order 3

Runs executed: 2
Run 01:
- Number of images: 94
- Filters: 2, 3, 4, 7 , Exp time: 5002 ms
  - For each filter:
    - Snap 1 dark
    - Step from 1600 nm to 2400 nm every 25 nm (16 nm bandpass)
  - Filt 2 (2^{nd} order) (Images 1-34)
  - Filt 3 (2^{nd} order) (35-68)
  - Filt 4 (3rd order) (69-102) (Interrupted after Image 94
  - Filt 7 (3rd order) (103-136)
  - Repeat all filters with 780 nm cutoff filter in place (137-272)
- History File: No
- Notes from Logbook:
  - OCF Master Memory Leak crash

Run 02:
- Number of images: 179
- Filters: , Exp time:
  - Snap 1 dark (Image 1)
  - Finish Filt 4 from Run 1 (2-9)
  - Filt 7, same format as Run 1 filters (3rd order) (10-43)
  - Repeat all filters with 780 nm cutoff filter in place (44-179)
- History File: Yes
- Notes from History file:
  - 2375 nm, filter 7 exposure lost due to frame error (2^{nd} to last).
- Notes from Logbook:
  - Script edited to makeup script. Starts with dark snap, then continues interrupted Run 1 at filter 4, 2225 nm.

CFBCC_FWV - wavelength SCAN

CF	B	C	C	_	F	WV
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		'Fat' M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 77	NI, SC

optimized exposure time, 1 nm wavelength scans across all (4) spectral filters
920, 840 use Grating order 2, 620, 514 use order 3
Filters 2 and 3 had shorter scans. Filters 4 and 5 were longer.

Runs executed: 170
Run 01:

Number of images:
Filters: spectral (2, 3, 4, & 7), Exp time fixed for each filter: 506, 958, 1188, 6512 ms, respectively
For each filter, 4 darks before wavelength scan:
F2: 4 darks +steps across filter (2^{nd} order) (images 1-35)
F3: 4+steps (2^{nd} order) (36-70)
F4: 4+steps (3rd order) (71-125)
F7: 4+steps (3rd order) (126-170)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFBCC_WFL - Flatfield

CF	B	C	C	_	W	FL
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		White Sphere	Flatfield

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 77	NI, SC

All filters flat field

Runs executed: 2
Run 01:
Number of images: 130
Filters:1, 2, 3, 4, 7 , Exp time: 230, 958, 958, 730, 475 ms, respectively
Attenuators at 240 for Filters 1, 2. 220 for 3, 4, & 7
10 Darks ea. Different Exposure time (Images 1-40)
10 images per filter at its optimized exposure time (41-90)
10 Darks ea. Different Exposure time (Images 91-130)
History File: Yes
Notes from History file:
Clear filt =9.9dn/ms from sphere at Atten 240
Notes from Logbook:
Sphere was right up against OCF optical window. Not optimum location
Run 02:
Number of images: 0
History File: No
Notes from Logbook:
Sphere against back wall, but not centered. Data not useful, not preserved.

CFBCC_WRA - radiance

CF	B	C	C	_	W	RA
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		White Sphere	Radiometry

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 77	NI, SC

Long wvln spectral filters 2-90 ms exp. darks, Atten open, and 220.

Runs executed: 2 - but run number was not incremented. Run 01 was actually images 1-156. Run 02 saved as images 157-312. Run 1's History file was lost, but parallels Run 02.

Run 01:

Number of images: 156

Filters: 2, 3, Exp time: Many

Dark (attenuator 255) images at varying exposure times:

1, 2,3, 4, 5, 6, 7,8 , 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 28, 32, 36, 40, 44 units (*2.048 for ms) (Images 1-26)

Repeat exposure time series with each of 2 spectral filters at attenuators = 0 (27-78)

Repeat exposure time series with each of 2 spectral filters at attenuators = 220 (79-130)

Repeat Darks as before (131-156)

History File: No

Notes from History file:

Notes from Logbook:

Run done with Sphere up against OCF optical window

Run 02:

Number of images: 156

Filters: 2, 3, Exp time: Many

Dark (attenuator 255) images at varying exposure times:

1, 2,3, 4, 5, 6, 7,8 , 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 28, 32, 36, 40, 44 units (*2.048 for ms) (Images 156+1-26)

Repeat exposure time series with each of 2 spectral filters at attenuators = 0 (156+ 27-78)

Repeat exposure time series with each of 2 spectral filters at attenuators = 220 (156+ 79-130)

Repeat Darks as before (156+ 131-156)

History File: Yes

Notes from History file:

Stage pitch was manually adjusted to 2.8 degrees to center FOV in sphere.

Notes from Logbook:

Run done with Sphere against back wall of facility - ~ 6 feet from OCF window.

CFBCC_WF2 - modified WFL sphere at back wall

CF	B	C	C	_	W	F2
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		White Sphere	Flat Field (all filters

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 78	NI, SC

Flat field with Sphere moved against back wall of OCF. Reworked WFL test

Runs executed: 1
Run 01:
Number of images: 130
Filters:1, 2, 3, 4, 7 , Exp time: 230, 958, 958, 730, 475 ms, respectively
Attenuators at 240 for Filters 1, 2. 220 for 3, 4, & 7
8 Darks ea. Different Exposure time (Images 1-36)
8 images per filter at its optimized exposure time (37-72)
8 Darks ea. Different Exposure time (Images 73-104)
History File: Yes
Notes from History file:
Filt 2 is pretty weak at 1 sec exposure.
Notes from Logbook:
Pitch = 2.8 deg (manual)

CFBCC_LPB - Hand shots with HeNe Laser.

CF	B	C	C	_	L	PB
CFI	Post- Env	Cold (-30 C) Chamber	Cold Detector		HeNe laser (4mW +ND2)	Pencil Beam

Date of Test	Logbook Page(s)	Operator(s)
11/21/01	CFI I: 78	NI, SC

Manual laser pointed into OCF window to try to illuminate different parts of the aperture. Commands entered by hand in labview software.

Runs executed: 1
Run 01:
Number of images: 9
Filters: 1, Exp time: various
Check individual text files.
History File: No
Notes from Logbook: n/a

CFBWC_LMS - scattered light with cube mirrors & bright lamp.

CF	B	W	C	_	L	MS
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		Lamp Source (Collimator only)	Cube Mirror Scattered light

Date of Test	Logbook Page(s)	Operator(s)
11/26/01	CFI I: 79-80	PT, NI, SC

Coarse step stage scans across FOV & up/down
Clear filter, Saturated light level , All Cube mirror positions

Runs executed: 1

Light source was lamp illuminating small (4") integrating sphere. Sphere aperture stopped down by manual iris. Spot size ~10-11 pixel diameter max brightness with ~ 25 pixel diameter annulus

Run 01:

Number of images: 108
Filters: 1, Exp time: 24 units (50 ms)
Blocked light source darks (images 1-4)
ND 0.5 exposures (5-8)
For each cube mirror facing (4 total):
12 positions in X stage direction
12 positions in Y stage direction
(9-104)
Blocked light source darks (images 105-018)
History File: Yes
Notes from History file:
-No monochromator. Sample & Source set up at collimator entrance.
-ND5 is placed in front of aperture at first. it will be removed after darks are finished.
-Back of the envelope cals say that brightest stuff we see away from spot is 10^-7 of the max signal. Pretty small even if it is real scattered light, though it's probably some kind of multiple reflection from the setup.
Notes from Logbook:
-Logbook says ND5 used. That was a misread of the filter. It was ND 0.5
-Possible reflections from inside the monochromator seen when looking way off the center.
-Note says test would be redone with ND2, but no further word on whether that was done or not is given.

CFBWC_HS1 - Hand Samples 1

CF	B	W	C	_	H	S1
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		Hand Sample (Collimator only)	Samples 1 (12 hand samples)

Date of Test	Logbook Page(s)	Operator(s)
11/26/01	CFI I: 81	PT, NI, SC

Conditions hand optimized Hand sample: 11 lab standards+1 extra
8 Reflectance standards, 3 spectral standards, resolution target.

Runs executed: 2*

Run number not incremented. Files overwritten

Logbook documents the interruption and editing of the script in first run to insert exposure time change between each filter and separate background images

Run 01:

Number of images: 240
Filters: all (5 - each with set exposure time)
For each sample (4 total):
Blocked light source 2 images*5 filters
Open light source (illuminated sample) 2 images*5 filters
History File: Yes
Notes from History file:
No monochromator. Sample & Source set up at collimator entrance.
Priority analysis of last sample.
Notes from Logbook:
Hand-derived exposure times using SRS_99 samples inserted into script
F2: 958 ms ~1000 DN (double derivation for exp. time)
F3: 958 ms ~1000 DN (double derivation for exp. time)
F4: 958 ms ~1000 DN (double derivation for exp. time)
F7: 2 sec ~800 DN (double derivation for exp. time)
F1: 40 ms ~2200 DN
Samples used:
1: SRS_99 (Images 1-20 - 1st 10 dark)
2: SRS_80 (21-40)
3: SRS_80 (41-60)
4: SRS_40 (61-80)
5: SRS_20 (81-100)
6: SRS_10 (101-120)
7: SRS_05 (121-140)
8: SRS_02 (141-160)
9: WCS_DO (161-180)
10: WCS_HO (181-200)
11: WCS_EO (201-220)
12: WCS_JO (221-240)

CFBWC_HS2 - Hand samples

CF	B	W	C	_	H	S2
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		Hand Sample (Collimator only)	Samples 2 (4 hand samples)

Date of Test	Logbook Page(s)	Operator(s)
11/26/01	CFI I: 81	PT, NI, SC

Conditions hand optimized Hand sample: 4 Mineral samples

Runs executed: 1

Run 01:

Number of images: 80
Filters: all (5 - each with set exposure time)
For each sample (4 total):
Blocked light source 2 images*5 filters
Open light source (illuminated sample) 2 images*5 filters
History File: Yes
Notes from History file:
No monochromator. Sample & Source set up at collimator entrance.
Notes from Logbook:
Samples used:
1: AREF_060 (Images 1-20 - 1st 10 dark)
2: AREF_020 (21-40)
3: AREF_007 (41-60)
4: AREF_147 (61-80)

CFBWC_LSC - "Lamp" or Iris scattered light test.

CF	B	W	C	_	L	SC
CFI	Post- Env	Warm (30 C) Chamber	Cold Detector		Lamp Source (Collimator only)	Scattered Light

Date of Test	Logbook Page(s)	Operator(s)
11/26/01	CFI I: 82	PT, NI, SC

Search for in- and out-of- field ghosts using very bright spot.
Coarse step stage scans across FOV & up/down Clear filter, Saturate light level

Runs executed: 1

Run 01:

Number of images: 36
Filter 1, 98 exposure units (200 ms)
Darks: 1-4
ND3: 5-8
Open: 9-32 - Crosshair
12 positions in X stage direction
12 positions in Y stage direction
*Stage motor off after each movement
Darks: 33-36
History File: Yes
Notes from History file:
Set exposure to 200 ms (98 units) by hand. Script commanded 24 units.
The gunk near the spot is a hand-made baffle and is not the object of the test
Notes from Logbook:
History file incorrectly says ND2 used. ND3 actually used.

CFI REALWORLD Scenes

Date of Test	Logbook Page(s)	Operator(s)
11/27/01	CFI I: 86-87	SC+?

Taken with CFI in “environment box” with no scripting, looking out at treeline during cloudy night. No history file.

RawData_#.xxx (# = 0-10; xxx – “raw” or “fit”)
Scene: Radio Tower, Guy wires, trees, light pole, shipping container
Images:

0: Filter 2, 44 units (exp. time)
1: F2, 66 units
2: F2, 88 units
3: Bogus?
4: F3, 44 units
5: F3, 66 units
6: F4, 44 units
7: F4, 66 units
8: F4, 88 units
9: F7, 44 units
10: F7, 66 units

RawDataI_#.xxx (# = 0-10; xxx – “raw” or “fit”)
Scene: Far treeline
Images:

0: Filter 7, 44 units (exp. time)
1: F7, 66 units
2: F4, 44 units
3: F4, 66 units
4: F3, 44 units
5: F3, 66 units
6: F2, 44 units
7: F2, 66 units
Funky point defect noted in scene.

CENTER and EXPOSURE CHECKING OF M/C SETUP

Date of Measurement	Logbook Page(s)	Operator(s)
02/21/02	CFI-I: 98-99	NI, DH, KH

"By Hand" Centering of stage to be centered on Monochromator/collimator focused spot. Does not have to be exact. (VAC, COLD)

STAGE COORDS FOR M/C Setup:

AX1: -58.04

AX2: 3.778

"By Hand" DN/Exposure Zero Order monochromator- M/C setup, These values will be input to the Point Source and Fat point cals with the monochromator at zero order (white light). Values of point source should be near 3000 DN with no ND. Exposure times should be < 1 sec if possible. May need to twiddle stage somewhat to get brightest point. Watch adjust Integrated focus test to make sure exposure times are not too high or low.

Filter	Exposure time	Approx max DN	Note
1	19 ms	2600	ND1
2	21 ms	2690	Open
3	22 ms	3085	Open
4	26 ms	3110	Open
5	65 ms	2995	Open
6	36 ms	3030	Open
7	28 ms	2832	Open
8	830 ms	3075	Open
9	260 ms	3040	Open
10	260 ms	2975	Open

NOTES: There's about 1 pixel of jitter in the up-down (AX2) direction. It is quite clear and does not decrease or change with stage motor on/off state.
Filter 9 gave ~3600 maximums during PIF at 280 ms exposure. Reduce it to 260 ms.

MS values go into the 5th column of the CFI_Exposure_Times_ms.txt table.
1000 ms values go into the 5th column of the CFI_Exposure_Times_sec.txt table

Needed for the following tests:

CFCCC_PDS - Dark and Format series
CFCCC_PIF - Integrated Focus Test
CFCCC_PSF - 1- second focus test

"By Hand" DN/Exposure for first order in monochromator- M/C setup, These values will be input to the Point Source and Fat point cals, which are in first order of the monochromator (single-wavelength light). Values of point source should be near 2300 DN with no ND. Exposure times should be < 1 sec if possible. May need to twiddle stage somewhat to get brightest point. Watch FWV to make sure point does not get too bright at the central wavelength. Data was taken with OCF Suprasil window (filter 2 on the exit slit filter wheel) in to slightly defocus the point. The data in the table below was taken in the CFCCC_FWV directory, with filenames from 2_0547 to 2_0576.

The Framegrabber had a great deal of trouble with the 60 sec images. We rebooted the program and the OCF master and changed the filter 8 exposures to 30 sec. The combination solved the error problems and gave adequate signal in filter 8 to do bandpass characterization.

To avoid rewriting all the scripts, these values were put into the 5th column of each of two new tables called CFI_Exposure_Times_ms_1.txt and CFI_Exposure_Times_sec_1.txt.

Filter	Exposure time	Approx max DN	Note
2	2 s + 409.6 ms	2180	Open
3	1 s + 614.4 ms	2461	Open
4	614.4 ms	2399	Open
5	1 s + 614.4 ms	2166	Open
6	921.6 ms	2408	Open
7	1 s + 204.8 ms	1913	Open
8	60 s + 204.8 ms 30s +2.048 ms	905 600	Open
9	20 s + 204.8 ms	1826	Open
10	3 s + 204.8 ms	1843	Open

Needed for the following tests:

CFCCC_FWV - Wavelength Scan
CFCCC_FRL - Red Leak test

CFCCC_PIF - Integrated Focus Test

CF	C	C	C	_	P	IF
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		M/C Point Source	Integrated Focus

Date of Test	Logbook Page(s)	Operator(s)
02/21/02	CFI I: 99	NI, PT

SPECIAL INSTRUCTIONS.
Point source tests need optimized exposure times for each filter as well. M/C point source centered in CCD

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes	12:14-Abort 12:25-12:48 Abort 12:51-14:10 = 1.333 Hr	02/21/02 15:00

BASELINE SCRIPT
All filters
Darks for all exp times
5 locations in CCD (Center and 4 corners. Center only for spectral filters)
10 filters
5x5 grid of points

Runs executed: 3
Run 01:
- Number of images: 40
- Filters: All
  - 2 Darks for each of 10 exp times, Stage Motor off (Images 1-20)
  - 2 Darks for each of 10 exp times, Stage Motor on (21-40)
  - Aborted at this point because of script formatting error.
- History File: yes
- Notes from History file: n/a
- Notes from Logbook:: n/a

Run 02:
- Number of images: 129
- Filters: All
  - FIXED Exposure format error
  - 2 Darks for each of 10 exp times, Stage Motor off (Images 1-20)
  - 2 Darks for each of 10 exp times, Stage Motor on (21-40)
  - Center position
    - Clear filt 5x5 (41-65)
    - 5x5's of other 9 filters (66-290)
  - Aborted after Image 129 because the ND1 was not being taken out for the spectral filters
  - Edit and rerun.

History File: Yes
- Notes from History file: n/a

Notes from Logbook: n/a
Run 03:
- Number of images: 430

Filters: All
FIXED ND1 problem.
2 Darks for each of 10 exp times, Stage Motor off (Images 1-20)
2 Darks for each of 10 exp times, Stage Motor on (21-40)
Center position
Clear filt 5x5 (41-65)
5x5's of other 9 filters (66-290)
4 corners, each one 5x5 clear filter (291-390)
2 Darks for each of 10 exp times, Stage Motor off (Images 391-410)
2 Darks for each of 10 exp times, Stage Motor on (411-430)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFCCC_PSF - 1-second Focus Test (Point spread function)

CF	C	C	C	_	P	SF
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		M/C Point Source	Spread Function

Date of Test	Logbook Page(s)	Operator(s)
02/21/02	CFI I: 99	NI, PT

SPECIAL INSTRUCTIONS.
Long exposures in center only. This test is optional

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes	14:10-14:57= ~0.75 hrs	02/21/02 15:00

BASELINE SCRIPT
All filters all 1-sec exposures
Darks
1 location in CCD (Center)
10 filters
5x5 grid of points

Runs executed: 1
Run 01:
- Number of images: 258
- Filters: All
  - 2 Darks, Stage Motor off (Images 1-2)
  - 2 Darks, Stage Motor on (3-4)
  - Center position
    - 5x5's of 10 filters (5-254)
  - 2 Darks, Stage Motor off (Images 255-256)
  - 2 Darks, Stage Motor on (257-258)

- History File: Yes
- Notes from History file: n/a
- Notes from Logbook: n/a

CFCCC_PDS - Dark series and formats

CF	C	C	C	_	P	DS
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		M/C Point Source	Dark Series

Date of Test	Logbook Page(s)	Operator(s)
02/21/02	CFI I: 99	NI, PT

SPECIAL INSTRUCTIONS.
Point source tests need optimized exposure times for each filter as well. M/C point source centered in CCD

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes	15:15-16:00 = 0.75 Hrs	02/21

BASELINE SCRIPT
Clear filter
For each of 4 M/C filter states (Opaque, ND1, Open, 1.5 pixel defocus.
5 exposure times, 3 formats (normal, 2x2 binning, 4x4 binning.

Runs executed: 3
Run 01:
Number of images: 120
Filters: 1
Darks: 5 exp. times (2, 10, 40, 160, 640 ms) * 3 Formats * 10 images (Images 1-150)
Step 208, stuck after image 120. Exp time 313 0, Normal Image: Abort
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a
Run 02:
Number of images: 30
Filters: 1
REWORK SCRIPT for longer exposures of darks
Darks: 5 exp. times (19, 500, 1002, 5002, 10002 ms) * 3 Formats * 10 (Images 1-150)
Ground to a halt after image 30. I think it's a problem with long exp records.
Re-EDIT TO SNAPS and RERUN
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a
Run 03:
Number of images: 195
Filters: 1
REWORK SCRIPT for longer exposures of darks
Darks: 5 exp. times (19, 500, 1002, 5002, 10002 ms) * 3 Formats * 10 (Images 1-150)
ND1 point source single snaps at each exp time, each format: (151-165)
Open point source snaps (166-180)
ND3 point source snaps (181-195)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFCCC_FWV - Wavelength Scan

CF	C	C	C	_	F	WV
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		"Fat" M/C Point Source	Wavelength Scan

Date of Test	Logbook Page(s)	Operator(s)
02/21/02-02/22/02	CFI I: 99-101	NI, PT, DH, KH, JW

SPECIAL INSTRUCTIONS.
Long exposures in center only. This test is optional

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1.5 Hr	Yes	16:00-Abort 16:04- Unimaginably long Finished 3:22	Yes

BASELINE SCRIPT
Spectral filters only, fixed exp time for each.
4 Darks
Spectral scan across the filter region. Form 25 nm below center to 25 above.
UV filters (8-10) have extra scan across OOB rejection filters in the M/C setup

Runs executed:
Run 01:
Number of images: 0
Bad Run - script problems
Notes from History file: n/a
Notes from Logbook: n/a
Run 02:
Number of images: 546
Filters: Spectral
Filt 2: 4 Darks, then 1 nm step scan across filter (Images 1-54)
Filts 3-7 (55-324)
Filt 8: 4 darks, 1 nm step scan across filter + repeat across filter w. OOB in place (325-398)
Filts 9 and 10 same as 8 (399-546)
History File: Yes
Notes from History file: n/a
Notes from Logbook:
3936 counts at 527 nm - saturated. Prediction was ~3000 DN at this point.
UV filters showed low/no signal.
Exposure times set for 0 order monochromator, not 1st order

Run 03:
Number of images: 324 GOOD DATA
Filters: 2-7
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Script rewritten as in Logbook

Filt 2: 4 Darks, then 1 nm step scan across filter (Images 1-54)
Filts 3-7 (55-324)
Aborted during Filter 8 Record 4 command, which choked on a 60 second record.
1st Order Monochromator exposure times

Run 04:

Number of images: 0
Filters: 8, 9, 10
History File: No
Notes from Logbook:

This run just hacked out all filters before filter 8 and replaced the record 4 with 4 snaps.
Hacked script is CFCCC_WFV2_script.
Got Snap errors (99) for the 60 sec exposures - maybe Frame grabber can't handle such long exposures

Run 05:

Number of images: 0
Filters: 8, 9, 10
History File: No
Notes from Logbook:

This run replaced filter 8 exposure times with 30 sec+2.048ms
Failed either b/c of OCF master tiredness or framegrabber foibles Restart master and FG program

Run 06:

Number of images: 13
Filters: 8, 9, 10
History File: Yes
Notes from History file: n/a
Notes from Logbook:

Same as run 5
Progressed about 1/2 way through Filter 8
Failed when Jeff wanted to see the data and crashed the program. That'll teach him.

Run 07:

Number of images: 172 GOOD DATA
Filters: 8, 9, 10

Same as run 5. The only problem here is that the command to move the open filter into position after the darks for filter 10 was, for some reason, skipped - even though it was in the script. Filter 10 data is all dark.

History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

Run 08:

Number of images: 74 GOOD DATA
Filters: 10

CFCCC_WFV2 script hacked to CFCCC_WFV3_script. This contains *only* filter 10 data acquisition. Problem was in script where "CF" was used in place of "OCF"
Only problem here is that the bandpass filter did not go in, so we have 2 scans of the filter itself. Despite this gross incompetence in script coding, we are *not* going to do another run.

History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFCCC_FRL - Red Leak test

CF	C	C	C	_	F	RL
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		"Fat" M/C Point Source	Red Leak

Date of Test	Logbook Page(s)	Operator(s)
02/22/02	CFI I:101	NI, JW

SPECIAL INSTRUCTIONS.
Long exposures in center only. This test is optional

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1.5 Hr	Yes	3:40-5:10 = 1.5 hours	Yes

BASELINE SCRIPT
Spectral filters only, fixed exp time for each (1 sec for all except filt 8, which is 5 sec).
4 Darks before and after scan
images at each of 20 wvln locations for each spectral filter
Repeat darks

Runs executed: 1
Run 01:

Number of images: 394
Filters: Spectral

Script had mistake (filter FW13 was moved to position 1 after darks instead of open position 3. This was corrected during the run with no problems before it impacted any images.
4 darks * 2 exposure times (Images 1-8)
2 image * 20 wvln positions for each of 9 filters (9-368)
Error - looks like with instrument at filter move 9 after image 202.
Power down and restart CFI. Resume script - seems OK.

History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CENTERING, CENTER OF FOCUS AND EXPOSURE CHECKING OF WHITE SPHERE

Date of Measurement	Logbook Page(s)	Operator(s)
02/22/02	CFI I 101	NI, JW

"By Hand" Centering of stage to be looking dead into the sphere (no gradients in corners). (VAC, COLD)

STAGE COORDS FOR SPHERE:

AX1: 121.91

AX2: 3.678

"By Hand" DN/Exposure/Attenuator level Check - FLATFIELD, (VAC, ROOM TEMP)
These values will be input to the White sphere cals. All exposure times should be < 1 sec. Desired DN levels are ~3000. Use attenuator values of 230, 220, 200, or 140

Filter	Attenuators	Exposure time	Approx max DN
1	230	35 ms	2800
2	220	958 ms	2700
3	220	958 ms	2700
4	220	800 ms	2835
5	220	900 ms	2725
6	220	900 ms	2750
7	220	550 ms	2810
8	140	958 ms	2810
9	140	600 ms	2915
10	200	958 ms	2685

MS values go into the 2nd column of the CFI_Exposure_Times_ms.txt table.
1000 ms values go into the 2nd column of the CFI_Exposure_Times_sec.txt table
Note that the photometer on the sphere does not seem to be working as before.

Needed for the following tests

CFCCC_WFL
CFCCC_WRA
CFCCC_WST
CFCDD_WHF
CFCDD_WWU

"By Hand Determination of FILTER 4 exposure/Attenuator setting needed to get 375 DN (dark included) for Format test

ATTENUATOR: 220
EXPOSURE TIME: 115 ms ESTIMATE

These values go into the CFCCC_WFM.pro script.

"By Hand" Determination of center-of-focus of optics used for centering the Iris-diagonal for Pupil ghost characterization. (VAC, Any Temp, preferably COLD)

CENTER OF FOCUS PIXEL (in labview window cords)

X (column): 520

Y (row): 508

Needed for CFCCC_ISD

CFCCC_WFL - Flatfield

CF	C	C	C	_	W	FL
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		White Sphere	Flatfield

Date of Test	Logbook Page(s)	Operator(s)
02/22/02	CFI I: 102	DH, SC

SPECIAL INSTRUCTIONS.
Run at cold temp. Sphere 1 meter from window.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
30 min	Yes	~1 Hr	Yes

BASELINE SCRIPT:
For All Filters:
10 Background/Darks (Both Attens = 255)
10 Exposures at fixed attenuator settings and exposure times for filter

Runs executed: 1 in two parts
Run 01:
Number of images: 200
Filters: All
Filt1, 10 background, 10 flat (Images 1-20)
Filt 2 (21-40)
Filt 3 (41-60)
Filt 4 (61-80)
Filt 5 (81-100)

History File: Probably not
Notes from History file: n/a
Notes from Logbook: n/a
History file erased when run 1 was continued with the second half.
Run 01 continued:
Number of images: 100
Filters: All
Script edited to CFCCC_WFL1 replacing RECORD 10 with 10 SNAP commands.
Filt 6 (101-120)
Filt 7 (121-140)
Filt 8 (141-160)
Filt 9 (161-180)
Filt 10 (181-200)
History File: Yes
Notes from History file:
Continuing the test probably erased the first part of the history file.
Notes from Logbook:
Notes in logbook about readout hotspot pixel and its "tail".

CFCCC_WFM - Formats -Flatfield

CF	C	C	C	_	W	FM
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		White Sphere	Formats-Flatfield

Date of Test	Logbook Page(s)	Operator(s)
02/22/02	CFI I: 103	DH, SC

SPECIAL INSTRUCTIONS.
Run at cold temp. Sphere 1 meter from window.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
15 min	Yes	?	Yes

BASELINE SCRIPT:
Filter 4 only (620 nm), darks and flatfields at set atten/exposure time set so that the open setting is ~375 DN

Normal images
2x2 binning
4x4 binning

Runs executed:
Run 01:
Number of images: 60+3
Filter: 4
No Binning 10 background, 10 flat (Images 1-20)
2x2 binning (21-40)
4x4 binning (41-60)
extra images (61-63) taken after script completion
History File: Yes
Notes from History file:
Last image saturated.
Notes from Logbook:
Integration times not properly set in this script
Rework exposure times and rerun
Run 02:
Number of images: 60
Filter: 4
Rewritten to fix integrating times.
No Binning 10 background, 10 flat (Images 1-20)
2x2 binning (21-40)
4x4 binning (41-60)
History File:
Notes from History file:
Odd-even column problem noted in 4x4 binned images.
Notes from Logbook:
Extra images taken manually and placed in CFCCC_Manual folder (run 2)

CF	C	C	C	_	W	RA
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		White Sphere	Radiometry

Date of Test	Logbook Page(s)	Operator(s)
02/22/02	CFI I: 104	DH, SC, NI

SPECIAL INSTRUCTIONS.
Run at cold temp. Sphere 1 meter from window.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
2.5 Hr	Yes	12:10 - 16:24 ~4:15 hrs	Yes

BASELINE SCRIPT:
For 3 Lamp settings (Halogen+Xenon, Xenon only, Halogen only - attenuator controlled:
8 Attenuator settings (both or one depending on if both or 1 lamp is used) including 255 which provides
background darks
10 filters
4 exposure times/filter

Runs executed:
Run 01:
Number of images: 1920
Filters: All
Both lamps open
Atten settings 255, 240, 220, 200, 150,100, 50, 25, 0
Filts 1-10
5, 10, 20, 40 ms exposures
=8*10*4*2 (Images 1-640)
Xenon only (641-1280)
Halogen only (1281-1920)
History File:
Notes from History file:

Notes from Logbook:
Several thoughts about the 309 filter (and other UV filters in the logbook.

CFCCC_WST - Stability

CF	C	C	C	_	W	ST
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		White Sphere	Stability

Date of Test	Logbook Page(s)	Operator(s)
02/22/02	CFI I:	SC, NI

SPECIAL INSTRUCTIONS.
Run at cold temp. Sphere 1 meter from window.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes	1 Hr	No

BASELINE SCRIPT:
10 darks, 500 clear flatfield images, 10 darks

Runs executed: 3
Run 01: No data
Run 02: No data kept
Run 03:
Number of images: 520
Filters: Clear
10 Darks (Images 1-10)
500 flatfields (11-510)
10 Darks (511-520)
History File:
Notes from History file:

Notes from Logbook:

CENTERING, IRIS SIZE, EXPOSURE CHECKING OF IRIS SETUP

Date of Measurement	Logbook Page(s)	Operator(s)
02/22-23/02	n/a	NI, JW, JH, DH

"By Hand" Centering of stage to be centered on collimator/Iris spot. Does not have to be exact. IRIS spot set to 25-30 pixel diameter in CCD (VAC, COLD)

STAGE COORDS FOR IRIS:

Basically the same as for M/C

"By Hand" DN/Exposure- Iris setup, ND3
These values will be input to the Iris cals Undersaturated values should be near 3000 DN when ND3 is in. All exposure times should be < 1 sec
IF THE SMEAR FROM THE MOST SENSITIVE FILTER DOES NOT SATURATE AT ND3 at ~ 1 second exposure THEN ALL IRIS TESTS WILL USE 1 SEC EXPOSURES FOR ALL FILTERS (and the table below will not need filling in. IT WOULD BE BETTER to use the 1-second-for-all as it will save substantial run time not having to switch exposure times

EXCERCISE CAUTION when determining exposure times of the Iris. Unprotected light from the 200 W lamp at near max wattage may be dangerous to the CCD.

Here (from Howard) is the list of thing that should be balanced when choosing the exposures for the 12x12 grid test:

1) Ensure there is high SNR for the ghost in the ND0 image
2) Ensure there is high SNR for the unsaturated spot for the ND3 image
3) Ensure that the frame transfer smear is not saturated in the ND0 image
4) Ensure that the saturated spot is not "too large" in the ND0 image
5) Don't melt the CCD ;-)

At ND3 Lamp Max - "Long" filters

Filter	Exposure time	Approx max DN	Ghost at open setting
1	50 ms	1860	
2	3002.048 ms	1530	~170 DN
3	3002.048 ms	1530	~50-60 DN
4	3002.048 ms	1935	
6	3002.048 ms	1085	90-100 DN
7	3002.048 ms		100 DN

For tests: CFCCC_IDL
CFCCC_IGL

CFCCC_IDL - Iris Diagonal - Long wavelength filters

CF	C	C	C	_	I	DL
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Iris/small Int sphere +200 W lamp	Scattered Light Diagonal

Date of Test	Logbook Page(s)	Operator(s)
02/22-23/02	106	NI, JW

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
12 Hrs	Yes	11:50 - 5:52 !6 hrs	Yes

BASELINE SCRIPT:

5 Opaque Filter Darks at 50 ms exposure time
5 Darks at 3002 ms through each of the filters
60 diagonal locations across CCD centered on center of focus. Iris spot is ~25 or pixels across
At each location:
3 exposure settings: ND3 in "long" ; Open; ND1
1 image per filter

Runs executed: 2

Run 01:

Number of images: 10 - bad start

Run 02:

Number of images: 1158
Execution pretty much like baseline.
Filters: All
History File: Yes
Notes from History file: n/a
Notes from Logbook: n./a

CFCCC_IGL - Iris 8x8 grid, longer wvln filters

CF	C	C	C	_	I	GL
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Iris/small Int sphere +200 W lamp	Scattered Light 8x8 Grid

Date of Test	Logbook Page(s)	Operator(s)
02/23/02	CFI I: 106	DH, KH, NI

SPECIAL INSTRUCTIONS.
Setup the same as the Iris Diagonal

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
20 Hrs	Yes	6:09 -	Yes

BASELINE SCRIPT
8x8 grid of 25 pixel diam points across CCD
At start and end :
5 darks for each filter/exposure time
At each point
3 exposure settings: ND3 in "long" (1-ssc or fixed per filt); Open; ND1 ("short")
1 image per filter

Runs executed: 2
Run 01:
Number of images: 1143
Filters: 2-7
5 Darks in each filter 2-7 (Images 1-30)
At each position, 3 exposures x 6 filters. 61 positions in grid (31-1128)
Part of 62nd spot, 1129-1143.
Executed fine, but script was truncated near very end. So didn't quite finish. Hacked script to CFCCC_IGLfin_script, then ran that as Run 02

History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

Run 02: "CFCCC_IGLfin"
Number of images: 114
Filters: 2-7
Darks (Images 1-30)
Last 3 spots (31-85)
Darks (85-114)
Simply the last few points on the grid. Started at the start of the last location before the interrupt, and added darks onto the beginning of this makeup test.
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

CFCCC_IIS - Iris Infield scatter test

CF	C	C	C	_	I	IS
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Iris/small Int sphere +200 W lamp	Infield Scatter

Date of Test	Logbook Page(s)	Operator(s)
02/23/02	CFI I: 106	NI, JW

SPECIAL INSTRUCTIONS.
Setup the same as the Iris Diagonal

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hrs	Yes		Yes

BASELINE SCRIPT

Offset position from center of CCD,
Run through all filters.
Iris set at 12 pixel diameter
For each filter: 2 darks, 2 ND1, 2 ND3, 2 Open

NOTE stuff recorded in this test seems like it was out of sync with the image display by an image. It is possible that the images may be lagged by 1 from what the setup parameters indicate. This would be a framegrabber buffer issue.

Runs executed: 5

Run 01: Bad script (16 images)
History Note: Will put in filters for UV *8, 9, 10) between light source and integrating sphere (using spare CFI filters). Source is "fiber optic" lamp but without fiber.
Intent is to do so PSRR, but with a spot with some size since that's the smallest we can make here.
actual spot size is ~ 12 pixels

Run 02: Almost good script - script hacked directly 4 images (CFCCC_IIS2_script)

Run 03: Good script (CFCCC_IIS2_script)
Number of images: 56
Filter 2 - 2 darks, 2 ND1, 2 ND 3, 2 Open (Images 1-8)
Filters 3-7 (9-56)
Crash before filter 8 images)
Filters: 10
History File: Yes
Notes from History file:
Filter 10 set to 10 sec exposure time.
Notes from Logbook:
Filter 5 saturates at ND3 at 20 sec exposure.

Run 04: Hacked script (CFCCC_IIS3_script) to do Filts 8-10 (filt 8 exposure time was too long in previous run. Re-do Filt 5 b/c it had too much light.
Number of images: 32
Filters: 8, 9, 10, 5
Filter 8, same series, (Images 1-8)
Filter 9, 10, then 5 (9-32)
History File: Yes
Notes from History file:
Shorter exposure times
CFI crashed during test, but operated well after restart.

Notes from Logbook: n/a

Run 05: Hacked script (CFCCC_IIS4_script) to do Filt 10 one more time at 10 sec exposure

Number of images: 8

Filter 10- 2 darks, 2 ND1, 2 ND 3, 2 Open (Images 1-8)

Filters: 10

History File: Yes

Notes from History file:

Filter 10 set to 10 sec exposure time.

Notes from Logbook:

CFI lost power three times between 4 and 5 pm. Restarts made instrument work OK.

CFCCC_ISO - Iris out of field scatter

CF	C	C	C	_	I	SO
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Iris/small Int sphere +200 W lamp	Scattered Light OOF cross

Date of Test	Logbook Page(s)	Operator(s)
02/23/02	CFI I: 106	NI, KH, JW

SPECIAL INSTRUCTIONS.
Setup the same as the Iris Grid

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hrs	Yes	<1hr	Yes

BASELINE SCRIPT
5 Darks at start, between and at end
Horizontal, then Vertical cross taking open 1-sec exposure images out to 1 CCD dist from edge of CFI
CCD
5 "-X", 5 "+X, 5 "-Y", 5 "+Y"
At each point
1 image per filter

Runs executed: 1
Run 01:
Number of images: 300
Filters: All
5 Darks each filter (Images 1-50)
5 Positions OOF horiz., 1 snap each filter (51-100)
5 more positions, other side of CCD (101-150)
5 vertical positions "above" CCD (151-200)
5 Vertical positions "below" CCD (201-250)
5 Darks each filter (251-300)
History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

EXPOSURE CHECKING OF UV IRIS SETUP

Date of Measurement	Logbook Page(s)	Operator(s)
02/23/02		JW, NI

Stage still at sphere positioning

"By Hand" DN/Exposure- UV setup

~56 pixel spot

EXCERCISE CAUTION - Wear eye protection if source is bright UV

AT ND3 with arc lamp setup

Filter	Exposure time in ms	Approx max DN	Approx Ghost in DN at open
5	5002.048		180
8	10002.048		60-70
9	5002.048		90
10	5002.048	529	60-70

For Tests: CFCCC_IDS
CFCCC_IGS

CFCCC_IDS - Iris Diagonal - short wavelength filters

CF	C	C	C	_	I	DS
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Iris/small Int sphere +200 W lamp	Scattered Light Diagonal

Date of Test	Logbook Page(s)	Operator(s)
02/23-24/02	107	NI, JW, SC

SPECIAL INSTRUCTIONS.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
5 Hrs	Yes	4:50 hrs	Yes

BASELINE SCRIPT:

Darks for 10 sec and 5 sec exposures through respective filters

ND3, ND1, Open images for other spectral filters, 50 ms exposure time
60 diagonal locations across CCD centered on center of focus. Iris spot is ~56 pixels across
At each location:
3 ND settings: ND3 in "long" ; Open; ND1
1 image per filter 5, 8, 9, 10. all exp 5002.048 ms except filter 8, which is 10002.048 ms
Repeat darks at end +short exposure darks for earlier long-wvln filter check.

Runs executed:

Run 01:

Number of images: 799
Filters: All (but mostly 5, 8, 9, 10)
History File: Yes
Notes from History file:
Spot is ~55 pixels diameter
Darks at start and end of test include exposures through longer wavelength filters
Notes from Logbook:
Radiator started warming up soon after this test.

CFCCC_IGS - Iris 8x8 grid, short wvln filters

CF	C	C	C	_	I	GS
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Iris/small Int sphere +200 W lamp	Scattered Light 8x8 Grid

Date of Test	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 107	SC

SPECIAL INSTRUCTIONS.
Setup the same as the Iris Diagonal Short wvln

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
5 Hrs	Yes		yes

BASELINE SCRIPT
8x8 grid of 25 pixel diam points across CCD
At start and end :
darks for each filter/exposure time
At each point
3 exposure settings: ND3 in "long" ; Open; ND1 ("short")
1 image per filter 5, 8, 9, 10 (5 sec exp. except for filter 8 which is 10 sec.)

Runs executed:
Run 01:
Number of images: 800
Filters: 5, 8, 9, 10
4 darks, filters 5, 8, 9, 10 (Images 1-16)
1st of 64 spots in grid (17-28)
The other 63 spots (29-784)
Last Darks (785-800)
History File: yes
Notes from History file: n/a
Notes from Logbook: n/a

EXPOSURE CHECKING OF UV FLATFIELD SETUP

Date of Measurement	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 107-109	DH,PT

Stage still at sphere positioning

"By Hand" DN/Exposure- UV setup

UV lamp set up facing back wall or other UV friendly target

EXCERCISE CAUTION - Wear eye protection if source is bright UV

AT ND3 with arc lamp setup

Filter	Exposure time in s	Approx max DN	Note
8	20	400-800	Range not from setup
9	20	430	
10	20	2900	5 seconds used

Used for CFCCC_WUV

CFCCC_WUV - UV flatfields

CF	C	C	C	_	W	UV
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		White Sphere	UV flatfields

Date of Test	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 108-109	DH

SPECIAL INSTRUCTIONS.
Run at cold temp. Sphere 1 meter from window.
Setup UV lamp facing the back (white plastic) wall. Hoping a single bounce will give us enough light.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes		Yes

BASELINE SCRIPT:
10 images in 309 filter, 10 images in 345, 10 images in 387
Then turn off lamp and take 10 darks for each of those exposure times.

Runs executed: 2
Run 01:
Number of images: 31
Filters: 8, 9, 10
10 flatfields Filt 8 (Images 1-10)
Filt 9 (11-20)
Filt 10 (21-30)
Darks at each of 3 exposure times (31 then Abort)
History File: Yes
Notes from History file:
Radiator temp is -47.9
Integrating Sphere setup: Mercury Pen ray lamp set up inside lip of integrating sphere
Notes from Logbook:
Script hacked (not IDL because license server was down) to accommodate more correct exposure times.
Filt. 10 overexposed. Lamp variations? Repeat with 5s exposures for filt 10.
Run 02:
Number of images: 90
Filters: 8, 9, 10
10 flatfields Filt 8 (Images 1-10)
Filt 9 (11-20)
Filt 10 (21-30)
Lexan window in place: 10 exp filter (31-60)
UV lamp off. Repeat 10 exp/filter (61-90)
History File:
Notes from History file:
Lamp off data also had Lexan window OFF.
Notes from Logbook:
1st of the 10 filt 10 images look overexposed. 1st of the 19 s exposures also looked overexposed. Ignore the 1st of each 10 images.

EXPOSURE CHECKING OF HAND SAMPLE SETUP

Date of Measurement	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 109	DH,PT

"By Hand" DN/Exposure- Iris setup, Halon plate/Hand samples
These values will be input to the Hand Sample cals. Values should be near 3000 DN with no ND. All exposure times should be < 1 sec if possible. Exposure times will be used for point grid and hand sample tests. Exposure time test was done with Spectralon sample.

Filter	Exposure time	Approx max DN
1	40 ms, ND1 used	2592
2	800 ms	2863
3	600 ms	2732
4	300 ms	3027
5	1400 ms	2878
6	450 ms	2706
7	350 ms	2834
8*	150 ms	2700
9*	90 ms	2725
10*	45 ms	2975

*UV arc lamp source

Needed for the following tests:

CFCCC_HPG -Hand sample (Halon plate) Point Grid
CFCCC_HV1 -Hand samples 1

"By Hand" Centering of stage to be centered on collimator spot. Does not have to be exact. (VAC, COLD)
STAGE COORDS FOR open collimator:
AX1: -58.06
AX2: 3.48

FOR: CFCCC_HPG final run

1) Will rewrite HPG using Filter 1 only for each of the OCF filters (clear, ND1, ND3, and closed). Will use a high integration time to get a bight signal. This is a ghost test.
2) Will run CFBCC_HS1 and HS2 and any other hand sample tests with the Halon as our first sample. The Halon will give us a reference for all of the other filters and hand samples. Will do only for filters 1 through 7 with the fiber optic source.
3) Will replace the fiber optic with the xenon lamp and repeat all measurements for filters 8 through 10.

Addl. Notes: Look at CFCCC_Manual_2 for filter 10 experimentation.
Filter 8 Spectralon image had some structure - possibly because of flatfield OOB light we've seen in the sphere data.

CFBCC_HPG -Hand sample (Halon plate) Point Grid

CF	C	C	C	_	H	PG
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Hand Sample	Point Grid

Date of Test	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 110	DH, PT

SPECIAL INSTRUCTIONS.
Open (or removed Iris. Only the Collimator aperture limits image size. Hand sample setup has Halon plate on lab jack and fold mirror. Illuminated by fiber optic from lamp. Collimator aperture should be on the order of 100 pixels.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes	~15 min	Yes

BASELINE SCRIPT
- 5 darks at each of 10 exposure times
- 3x3 grid of locations. At each:
  - 1 image for each filter at its fixed exposure time
- 5 darks at each of 10 exposure times

Runs executed: 3

Run 01:
- Number of images: 29
- Filters: 1
  - Interrupted at Image 29. Data screwy
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Cadence set to 1 when it should be 10 s. - Data not trustworthy.

Run 02:
- Number of images: 39
- Filters: 1
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Too bright even at ND3
  - Use 2s integration
  - 10 s integ time, but snaps are 5s apart.

Run 03:
- Number of images: 36
- Filters: 1
  - Position 1 of 9: 2 sec exposure closed, ND1, ND3, Open (Images 1-4)
  - 8 more positions in grid (5-36)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Not all images displayed, but all images recorded.

CFCCC_HV1 -Hand samples 1 Visible

CF	C	C	C	_	H	V1
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Hand Sample	Samples 1 VIS.(12 samples)

Date of Test	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 111-112	DH, NI, KH

SPECIAL INSTRUCTIONS.
Open (or removed Iris. Only the Collimator aperture limits image size. Uses exposure times for each filter used for the previous test (Halon plate) Illuminated by fiber optic from lamp. Collimator aperture should be on the order of 100 pixels.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
2.5 Hrs	Yes		Yes

BASELINE SCRIPT
12 Samples placed manually
For each sample: 7 VIS-IR filter; 2 Darks, then 2 images

Runs executed: 5
Run 01:
Number of images: 56
Filters: 1-7
Sample 1. 7 filters, 2 darks+2 images (Images 1-28)
Sample 2 (28-56)
SAMPLES:
1: Spectraflect (Halon) flat
2: 99% brightness standard (AREF-SRS-set)
Aborted after 2nd sample
History File: Yes
Notes from History file: n/a
Notes from Logbook:
ND1 filter not in place , so those images are over exposed. Stop and do these samples in later runs.
Run 02:
Number of images: 224
Filters: All
Sample 1. 7 filters, 2 darks+2 images (Images 1-28)
Samples 2-4 (29-112)
Samples 5-8 (113-224)
Abort for focus
SAMPLES:
1: 20% Brightness sample
2: 5% Brightness
3 2% Brightness
4: Wavelength Sample DO
5: Wavelength Sample EO
6: Wavelength Sample HO (small brown spot visible to eye)
Raised sample stage 1/8" to account for sample thickness diffs.
7: Athena Ref Sample AREF 223

8: AREFF 600 Up side
Script stopped to focus Images. Focus work stored in CFCCC_Manual_3

History File: Yes
Notes from History file: n/a
Notes from Logbook: n./a

Run 03:

Number of images: 336
Filters: All
Sample 1. 7 filters, 2 darks+2 images (Images 1-28)
Samples 2-4 (29-112)
Samples 5-12 (113-336)
SAMPLES:
1: AREF 223 Up
2: AREF 223 Down
3: AREF 147 Up
4: AREF 147 Down
5: AREF 020 Up
6: AREF 020 Down
7: AREF 146 Up
8: AREF 146 Down
9: AREF 007 Up
10: AREF 007 Down
11: AREF 060 Up
12: AREF 060 Down

History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

Run 04:

Number of images:
Filters: All
Sample 1. 7 filters, 2 darks+2 images (Images 1-28)
Sample (29-56)
SAMPLES:
1: AREF 196 Up
2: AREF 196 Down
Reboot CFI

History File: Yes
Notes from History file: n/a
Notes from Logbook: Crash required various computer restarts

Run 05:

Number of images:
Filters: All
Sample 1. 7 filters, 2 darks+2 images (Images 1-28)
Samples 2-4 (29-112)
SAMPLES:
1: AREF 222 Up
2: AREF 222 Down
3: 99% reflectance Disk standard
4: Halon Plate
Abort because finished samples

History File: Yes
Notes from History file: n/a
Notes from Logbook: n/a

Location of Data/History File(s) (April 2002):
/CFCCC_HV1/ and /CFCCC_Manual_3/

CFBCC_HVG -Hand sample (Halon plate) Point Grid - visible filter grid

CF	C	C	C	_	H	VG
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Hand Sample	Visible Point Grid

Date of Test	Logbook Page(s)	Operator(s)
02/24/02	CFI I: 113	NI,KH

SPECIAL INSTRUCTIONS.
Open (or removed Iris. Only the Collimator aperture limits image size. Hand sample setup has Halon plate on lab jack and fold mirror. Illuminated by fiber optic from lamp. Collimator aperture should be on the order of 100 pixels.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	Yes		Yes

BASELINE SCRIPT
- 5 darks at each of 10 exposure times
- 3x3 grid of locations. At each:
  - 1 image for each filter at its fixed exposure time
- 5 darks at each of 10 exposure times

Runs executed: 2
Run 01:
- Number of images: 10
- Filters: 1-7
  - 4 darks at each of 7 exp times (Images 1-10 -Aborted)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Failed because exposure times were not set correctly for Halon.

Run 02:
- Number of images: 119
- Filters: 1-7
  - 4 darks at each of 7 exp times (Images 1-28)
  - 9 locations*7 filters*1filter (29-911)
  - 4 darks at each of 7 exp times (Images 92-119)
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook:
  - Darks are actually dim background images.

CFBCC_HUG -Hand sample (Halon plate) Point Grid - UV filters

CF	C	C	C	_	H	UG
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Hand Sample	UV Point Grid

Date of Test	Logbook Page(s)	Operator(s)
02/24/02	Na (!)	?

SPECIAL INSTRUCTIONS.
Open (or removed Iris. Only the Collimator aperture limits image size. Hand sample setup has Halon plate on lab jack and fold mirror. Illuminated by UV arc lamp. Collimator aperture should be on the order of 100 pixels.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
1 Hr	yes		Yes

BASELINE SCRIPT

5 darks at each of 10 exposure times
3x3 grid of locations. At each:
1 image for each filter at its fixed exposure time
5 darks at each of 10 exposure times

Runs executed: 1
Run 01:
Number of images: 54
Filters: 8, 9, 10
Dark and open exposures for filters 8, 9, and 10 in one position of 3x3 grid (Images 1-6)
8 more grid positions (7-54)
History File: Yes
Notes from History file: n/a
Notes from Logbook: This test does not seem to be logged in the log book at all.

CFBCC_HU1 -Hand samples UV filters

CF	C	C	C	_	H	U1
CFI	"Final" Cal	Cold (-30 C) Chamber	Cold Detector		Hand Sample	Samples 2 UV (12 samples)

Date of Test	Logbook Page(s)	Operator(s)
02/25/02	CFI I: 113	NI, KH

SPECIAL INSTRUCTIONS.
Open (or removed Iris. Only the Collimator aperture limits image size. Uses exposure times for each filter used for the previous test (Halon plate) Illuminated UV arc lamp. Collimator aperture should be on the order of 100 pixels.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
0.75 Hrs	Yes		Yes

BASELINE SCRIPT
- 7 Samples placed manually
- For each sample:
  - For each of 3 UV filters:
    - 2 Darks
    - 2 images

Runs executed: 1
Run 01:
- Number of images: 84
- Filters: 8, 9, 10
  - Sample 1. 3 filters, 2 darks+2 images (Images 1-12)
  - Samples 2-4 (13-48)
  - Samples 5-7 (49-84)
  - SAMPLES:
    - 1: Brightness standard sample S99
    - 2: Brightness S20
    - 3: Brightness S5
    - 4: Brightness S2
    - 5: Wavelength Standard Sample DO
    - 6: Wavelength Standard Sample EO
    - 7: Wavelength Standard Sample HO
    - Stop after 7
- History File: Yes
- Notes from History file: n/a
- Notes from Logbook: n/a

CFCCC_WHF - Heated Flatfield test

CF	C	D	D	_	W	HF
CFI	"Final" Cal	Changing Chamber T	Changing Detector T		White Sphere	Heated Flatfield

Date of Test	Logbook Page(s)	Operator(s)
02/25/02	CFI I: 114-117 & 121	JW, NI

SPECIAL INSTRUCTIONS.
Run multiple times as CCD is maintained with the CFI heater near -40 degrees C. Functionally identical to WCD and WWU. Temp should be controlled to -40 +/- 3 over at least 3 runs. Script coded as continuously running loop. (approximately 3 minutes per iteration).

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
15 min	Yes		Yes

BASELINE SCRIPT:
For Filters 1, 2, 3, 4, 5:
10 Background/Darks (Both Attens = 255)
10 Exposures at fixed attenuator settings and exposure times for filter
Loop through about 100 times or until stopped.

Runs executed: 4
Run 01: 1 cycle to test duration. Data not kept
Run 02: St up for 100 cycles at 3 minutes/cycle.
Run stopped b/c it wasn't dark enough. Data not kept.
Run 03: Heater control not responding. Backup plan described in log book.
Rate of heating controlled differently. Possibly too fast for reliable flatfielding.
Run 04:
Number of images: 186
Filters: 1, 2,3, 4, 5
Filt1-5 Background (Images 1-5)
Filt 1 Attens 230 exposure+ filts 2-5 attens = 220 exposures (6-10)
Repeat cycle 17.6 times
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Run 04 was done *after* FR8, when heater control was better established.
1st 2 cycles have no heater control.
Heater on, software control at 60 C. Other heater control notes in logbook.

CFCCC_FR8 - Filter 8 Radiometry

CF	C	C	C	_	F	R8
CFI	"Final" Cal	Cold Chamber T	Cold Detector T		"Fat" M/C point source	Filter 8 (309 nm) Radiometry

Date of Test	Logbook Page(s)	Operator(s)
02/25/02	CFI I: 18-120	DH

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
15 min	Yes		DH

BASELINE SCRIPT:

Runs executed: 1
Run 01:
Number of images: 110
Filters: 8

Images 101-110 manually commanded at corner of CCD.
History File: Yes
Notes from History file:
CsTe photocathode EMR 541F-08-17-03900 S/N 57062 operated at -3500 V
Beamscan center: +500, +3000 (in beamscanner coordinates)
PMT rates:
40 s dark: 0.93 c/s
100 s signal: 3.24 c/s
40 s dark: 1.05 c/s
Notes from Logbook:
Detailed notes in logbook surrounding this test.

CFCCC_WWU - Flatfield Warm-up test
And CFCCC_WUV_2 misnamed.

CF	C	D	D	_	W	WU
CFI	"Final" Cal	Changing Chamber T	Changing Detector T		White Sphere	Warm-up Flatfield

Date of Test	Logbook Page(s)	Operator(s)
02/25-26/02	CFI I: 121-125	DH, PT, SC, JW

SPECIAL INSTRUCTIONS.
Run multiple times as CCD warms up. What matters most is the change in CCD temperature in operational range. Try to do one run every time the CCD temp has changed by a half degree until it gets above -30 deg C (or instrument is at RT or slightly above)
Script looped as in WHF.

Run Checklist

Projected time per Run	Axes/Exp/Attens SET in SCRIPT	Actual Run Time (avg or best)	DATA UPLOADED
15 min	Yes		Yes

At every CCD degree of cooling, run this test.
BASELINE SCRIPT:
For Filters 1, 2, 3, 4, 5:
Runs executed: 2
Run 01:
Number of images: 1270
Filters: 1, 2,3, 4, 5
10 Background/Darks (Both Attens = 255) (Images 1-10)
10 Exposures at fixed attenuator settings and exposure times for filter 1) (11-20)
Repeat for filters 2-5 (21-100)
Repeat whole set 11.7 times during warm-up.
History File: Yes
Notes from History file:
Pressure gauges off
Notes from Logbook:
Data saturated as CCD got warmer. After some time, this test was aborted and rewritten with half-length exposure times
Run 02: Saved as Run # 1 in folder WUV_2, but image files themselves have proper nomenclature.
Number of images: 1124
Filters: 1, 2,3, 4, 5
10 Background/Darks (Both Attens = 255) (Images 1-10)
10 Exposures at fixed attenuator settings and exposure times for filter 1) (11-20)
Repeat for filters 2-5 (21-100)
Repeat whole set 10.2 times during warm-up.
History File: Yes
Notes from History file: n/a
Notes from Logbook:
Script same as run 1, but half-length exposure times.

Section 4. Appendices

APPENDIX A: CONTOUR test file name conventions.

These filenames apply to Pre and Post Environmental Cal observations for CFI and CRISP

doy_12345_678_xx_nnnn.cde

doy: Julian day of year
1&2: Detector
CF = CFI
CI = Crisp Imager
CS = Crisp spectrometer
3:Pre/Post Environmental
0,1: "By Hand" tests – CFI Pre-Env cals
A: Pre-Env Scripts
B: Post-Env Scripts
C: "Final Cal" Scripts for CFI
4: Temperature* of OCF Chamber / Instrument Optics
A = Ambient (Room temp)
C = Cold (CRISP = -40 C; CFI = -30 C)
M = Moderate/Medium (CRISP = -30 C; CFI = 0 C)
W = Warm (CRISP = -10 C; CFI = 30 C)
D = Delta or changing (usually warming)
*Nominal. Actual temps vary by several degrees, usually warmer than listed
5: Temp of Detector or Special*
A = Ambient OCF temperature**
C = Cold - CFI Nitrogen cooler loop
H= High (100 K) setting of IR-cooler for spectrometer
L= Low (93 K) setting of IR-cooler for spectrometer
D = Delta/Changing
W = Warming: CFI heater on
*1, 2, 3, 7, 9, 9b – Used for Infield scatter test designator for CRISP Imager.
**CRISP-Imager detector temp will always be A
6:Target
B = Big (150 micron) pinhole
D = Dark
E = Environment Box
F = M/C "Fat" (defocused) point source
G = Gold Int. Sphere
H = Hand Sample
I = Iris. Collimator setup looking at a bright, adjustable size point
L = Lamp: similar setup as Iris. Or Laser

N = Null / Dark
P = Monochromator/Collimator Point source
W = White (Spectraflect) Int. Sphere

7&8: Test

CA = Co-alignment
CF = Corner Focus test
CL = Clear filter wavelength test
D6 = 3x3 array of points reflectance std.
DL = Diagonal scan (CFI) long wvln filts
DS = Dark Series
= Diagonal scan (CFI) UV filters
F2 = Mod. Flat field (sphere at back wall)
FL = Flat field
FM = Format test
FO = Focus
FR = Flat/Radiometry
GL = 8x8 Grid (CFI) Long wvlns
GR = Flat field gradient
GS = 8x8 Grid for (CFI) UV wvlns
HF = Heater-controlled flatfield
IF = Integrated Focus test
IS = Infield Scatter test
LI = Linearity
M2 Imager mirror/polarizer v2
MI = Mirror Test/Format test
MI2 = makeup MI
MP Imager mirror/polarizer
MS = Mirror scattered light
ND = ND Filter check
PB = Laser test
PO = Polarization
PG = Point Grid (3x3)
R8 = Radiometry CFI UV filter 8
RA = Radiometry
RL = Red leak wavelength test
RX =Radiance crosscal
S1 = Hand Sample
S2 = Hand Sample (or smooth field 2)
S3 = Hand Sample
S4 = Hand Sample
S5 = Hand Sample
S6 = Hand Sample
SC = Scattered light
SE = Sensitivity (Sphere)
SF = Point Spread Function
SL = Scattered Light
SM = Smooth Field
SO = Out of Field Scatter
SP = Filter Spin test
ST = Stability
SV = Self Vibration test
SW = Scatter wavelength dependence
U1 = UV Hand samples (CFI)
UG = UV Point grid (CFI)
UV = UV Wavelength scan
= UV flatfield
V1 = VIS-IR Hand samples (CFI)
VG = VIS-IR Point grid (CFI)
VV = Vibration
W2 = Wavelength scan
W3 = filter 3 wavelength test
W7 = filter 7 wavelength test
WV = Wavelength
WU = warm-up (flatfield) test
WX = Wavelength scan and crosstalk
WX2 = Wvln scan & xtalk complete

xx: Run iteration
nnnn: Measurement in Series = 0001-9999
cde: analysis/processing level
.RAW
.FIT

Calibration Operators: A list of initials of people who actually took the cal data in the OCF
NI = Noam Izenberg
DF = Dennis Fort
DH = Dave Humm
SC = Steve Conard
KH = Kevin Heffernan
JW = Jeff Warren
PT = Patrick Thompson

Appendix B – Calibration of OCF Optical Window

The integrating spheres were located outside the vacuum chamber. A 1" thick, 8" diameter fused silica λ/10 optical flat (Custom Scientific) formed the window into the vacuum system where the instruments were located. Optronics Laboratories measured the transmission of the window. Transmission values for the optical quality fused silica flat are given in Figure B1 and B1. The FWHM spectral resolution for these measurements was 8nm FWHM from 300nm to 1100nm, 16nm from 1100nm to 2200nm, 32nm from 2200nm to 2500nm.

B1 gives the values for a 1" diameter circular patch 1" above the center of the window, and a 1" diameter circular patch 1" below the window. These values showed negligible difference for all wavelengths of interest, indicating a spectrally uniform window.

To obtain an electronic version of the transmission tables, contact Dr. Dave Humm at david.humm@jhuapl.edu.

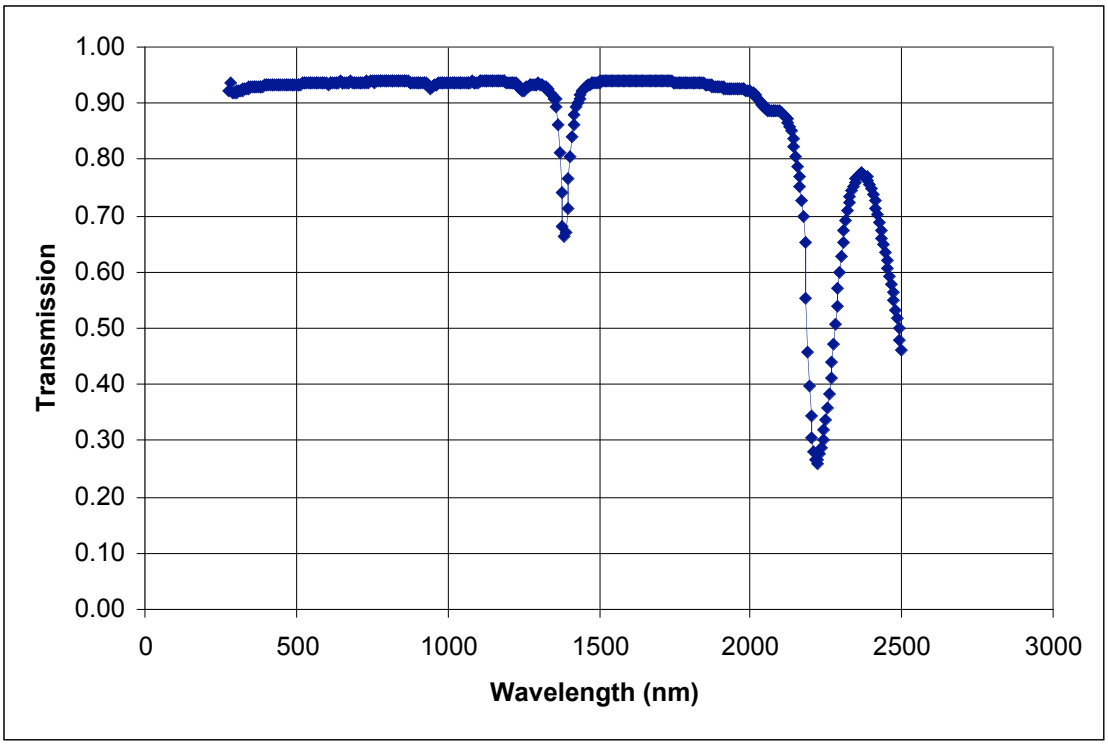


Figure B1. Transmission of fused silica optical quality vacuum chamber window.

Table B1. Transmission of fused silica window, 1” above and below the center.

λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)
280	0.923	0.901	**480**	0.933	0.934	**680**	0.938	0.938	**880**	0.937	0.938
285	0.937	0.906	**485**	0.934	0.934	**685**	0.936	0.936	**885**	0.936	0.936
290	0.919	0.921	**490**	0.934	0.934	**690**	0.936	0.936	**890**	0.936	0.936
295	0.920	0.926	**495**	0.934	0.934	**695**	0.936	0.936	**895**	0.937	0.937
300	0.917	0.921	**500**	0.934	0.934	**700**	0.936	0.936	**900**	0.937	0.937
305	0.922	0.922	**505**	0.934	0.934	**705**	0.936	0.936	**905**	0.938	0.938
310	0.921	0.921	**510**	0.934	0.934	**710**	0.936	0.937	**910**	0.937	0.937
315	0.923	0.925	**515**	0.934	0.934	**715**	0.937	0.937	**915**	0.936	0.936
320	0.924	0.925	**520**	0.934	0.935	**720**	0.937	0.937	**920**	0.936	0.937
325	0.923	0.925	**525**	0.934	0.935	**725**	0.937	0.937	**925**	0.936	0.936
330	0.926	0.927	**530**	0.935	0.935	**730**	0.939	0.938	**930**	0.936	0.936
335	0.927	0.927	**535**	0.935	0.935	**735**	0.937	0.937	**935**	0.934	0.934
340	0.929	0.932	**540**	0.935	0.935	**740**	0.938	0.937	**940**	0.929	0.930
345	0.926	0.927	**545**	0.935	0.935	**745**	0.939	0.938	**945**	0.927	0.928
350	0.928	0.929	**550**	0.935	0.935	**750**	0.938	0.937	**950**	0.929	0.930
355	0.929	0.930	**555**	0.935	0.935	**755**	0.938	0.937	**955**	0.931	0.933
360	0.929	0.930	**560**	0.935	0.935	**760**	0.939	0.937	**960**	0.933	0.933
365	0.929	0.930	**565**	0.935	0.935	**765**	0.939	0.938	**965**	0.934	0.934
370	0.929	0.930	**570**	0.935	0.935	**770**	0.938	0.938	**970**	0.936	0.936
375	0.929	0.930	**575**	0.935	0.935	**775**	0.939	0.938	**975**	0.935	0.936
380	0.929	0.930	**580**	0.936	0.935	**780**	0.940	0.939	**980**	0.935	0.937
385	0.930	0.931	**585**	0.936	0.936	**785**	0.939	0.938	**985**	0.937	0.937
390	0.931	0.932	**590**	0.936	0.936	**790**	0.940	0.940	**990**	0.937	0.938
395	0.932	0.933	**595**	0.936	0.936	**795**	0.939	0.938	**995**	0.937	0.938
400	0.932	0.933	**600**	0.936	0.936	**800**	0.939	0.938	**1000**	0.937	0.938
405	0.932	0.931	**605**	0.934	0.935	**805**	0.940	0.938	**1005**	0.937	0.937
410	0.932	0.932	**610**	0.935	0.935	**810**	0.938	0.937	**1010**	0.936	0.937
415	0.932	0.932	**615**	0.936	0.936	**815**	0.941	0.940	**1015**	0.936	0.937
420	0.932	0.932	**620**	0.936	0.936	**820**	0.941	0.940	**1020**	0.937	0.938
425	0.932	0.932	**625**	0.936	0.936	**825**	0.940	0.939	**1025**	0.937	0.937
430	0.932	0.932	**630**	0.936	0.936	**830**	0.940	0.939	**1030**	0.938	0.939
435	0.932	0.932	**635**	0.936	0.936	**835**	0.940	0.939	**1035**	0.938	0.939
440	0.932	0.933	**640**	0.936	0.936	**840**	0.938	0.938	**1040**	0.937	0.938
445	0.932	0.933	**645**	0.940	0.940	**845**	0.938	0.937	**1045**	0.938	0.938
450	0.932	0.933	**650**	0.937	0.937	**850**	0.941	0.941	**1050**	0.936	0.938
455	0.934	0.934	**655**	0.936	0.937	**855**	0.939	0.939	**1055**	0.937	0.939
460	0.933	0.933	**660**	0.937	0.936	**860**	0.938	0.938	**1060**	0.937	0.937
465	0.933	0.933	**665**	0.936	0.936	**865**	0.939	0.939	**1065**	0.938	0.939
470	0.933	0.934	**670**	0.937	0.937	**870**	0.939	0.939	**1070**	0.937	0.937
475	0.933	0.934	**675**	0.937	0.937	**875**	0.937	0.937	**1075**	0.938	0.939

λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)
1080	0.938	0.940	**1280**	0.934	0.935	**1480**	0.936	0.938	**1680**	0.939	0.941
1085	0.938	0.939	**1285**	0.934	0.936	**1485**	0.936	0.938	**1685**	0.939	0.940
1090	0.938	0.939	**1290**	0.934	0.936	**1490**	0.937	0.938	**1690**	0.939	0.940
1095	0.938	0.940	**1295**	0.934	0.936	**1495**	0.937	0.939	**1695**	0.939	0.940
1100	0.938	0.940	**1300**	0.934	0.936	**1500**	0.938	0.939	**1700**	0.939	0.940
1105	0.938	0.940	**1305**	0.934	0.936	**1505**	0.938	0.940	**1705**	0.938	0.939
1110	0.938	0.940	**1310**	0.933	0.935	**1510**	0.939	0.940	**1710**	0.938	0.939
1115	0.938	0.940	**1315**	0.932	0.934	**1515**	0.939	0.940	**1715**	0.938	0.939
1120	0.939	0.940	**1320**	0.931	0.933	**1520**	0.939	0.940	**1720**	0.938	0.939
1125	0.939	0.940	**1325**	0.929	0.930	**1525**	0.939	0.940	**1725**	0.938	0.939
1130	0.938	0.940	**1330**	0.926	0.927	**1530**	0.940	0.940	**1730**	0.938	0.939
1135	0.938	0.940	**1335**	0.922	0.923	**1535**	0.940	0.941	**1735**	0.938	0.939
1140	0.938	0.940	**1340**	0.918	0.919	**1540**	0.940	0.941	**1740**	0.938	0.940
1145	0.938	0.940	**1345**	0.914	0.915	**1545**	0.940	0.941	**1745**	0.938	0.939
1150	0.939	0.940	**1350**	0.909	0.910	**1550**	0.940	0.941	**1750**	0.938	0.939
1155	0.939	0.940	**1355**	0.906	0.906	**1555**	0.940	0.941	**1755**	0.938	0.939
1160	0.938	0.940	**1360**	0.894	0.894	**1560**	0.940	0.941	**1760**	0.938	0.939
1165	0.938	0.940	**1365**	0.860	0.860	**1565**	0.940	0.941	**1765**	0.937	0.939
1170	0.938	0.940	**1370**	0.812	0.812	**1570**	0.940	0.941	**1770**	0.937	0.939
1175	0.938	0.940	**1375**	0.742	0.741	**1575**	0.940	0.941	**1775**	0.937	0.938
1180	0.938	0.940	**1380**	0.681	0.680	**1580**	0.939	0.941	**1780**	0.937	0.938
1185	0.938	0.940	**1385**	0.662	0.661	**1585**	0.939	0.941	**1785**	0.936	0.937
1190	0.938	0.940	**1390**	0.671	0.670	**1590**	0.939	0.941	**1790**	0.936	0.937
1195	0.938	0.939	**1395**	0.712	0.711	**1595**	0.939	0.941	**1795**	0.936	0.937
1200	0.938	0.939	**1400**	0.764	0.764	**1600**	0.940	0.941	**1800**	0.936	0.937
1205	0.938	0.939	**1405**	0.805	0.805	**1605**	0.940	0.941	**1805**	0.936	0.937
1210	0.937	0.939	**1410**	0.839	0.839	**1610**	0.940	0.941	**1810**	0.936	0.937
1215	0.937	0.939	**1415**	0.862	0.862	**1615**	0.940	0.941	**1815**	0.936	0.937
1220	0.936	0.938	**1420**	0.879	0.880	**1620**	0.940	0.941	**1820**	0.936	0.936
1225	0.935	0.936	**1425**	0.892	0.893	**1625**	0.940	0.941	**1825**	0.936	0.936
1230	0.933	0.934	**1430**	0.902	0.903	**1630**	0.940	0.941	**1830**	0.936	0.936
1235	0.929	0.929	**1435**	0.909	0.911	**1635**	0.940	0.941	**1835**	0.936	0.935
1240	0.925	0.926	**1440**	0.915	0.916	**1640**	0.939	0.941	**1840**	0.935	0.935
1245	0.923	0.924	**1445**	0.921	0.921	**1645**	0.939	0.941	**1845**	0.935	0.934
1250	0.923	0.924	**1450**	0.925	0.925	**1650**	0.939	0.941	**1850**	0.934	0.933
1255	0.925	0.926	**1455**	0.928	0.929	**1655**	0.940	0.940	**1855**	0.933	0.932
1260	0.928	0.929	**1460**	0.930	0.931	**1660**	0.940	0.940	**1860**	0.932	0.932
1265	0.930	0.932	**1465**	0.932	0.933	**1665**	0.939	0.940	**1865**	0.932	0.931
1270	0.932	0.934	**1470**	0.934	0.935	**1670**	0.939	0.940	**1870**	0.932	0.931
1275	0.933	0.935	**1475**	0.935	0.937	**1675**	0.939	0.940	**1875**	0.931	0.930

λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)	λ (nm)	T (top)	T (bot)
1880	0.929	0.929	**2080**	0.888	0.889	**2280**	0.505	0.504	**2480**	0.533	0.531
1885	0.928	0.929	**2085**	0.888	0.889	**2285**	0.539	0.537	**2485**	0.517	0.515
1890	0.928	0.928	**2090**	0.887	0.888	**2290**	0.570	0.568	**2490**	0.500	0.497
1895	0.928	0.928	**2095**	0.886	0.887	**2295**	0.599	0.598	**2495**	0.479	0.477
1900	0.928	0.928	**2100**	0.884	0.885	**2300**	0.626	0.625	**2500**	0.461	0.461
1905	0.928	0.927	**2105**	0.882	0.883	**2305**	0.651	0.650			
1910	0.927	0.927	**2110**	0.879	0.880	**2310**	0.673	0.672			
1915	0.927	0.927	**2115**	0.876	0.876	**2315**	0.692	0.691			
1920	0.927	0.928	**2120**	0.872	0.872	**2320**	0.709	0.707			
1925	0.927	0.927	**2125**	0.867	0.867	**2325**	0.723	0.722			
1930	0.927	0.927	**2130**	0.859	0.860	**2330**	0.734	0.733			
1935	0.926	0.927	**2135**	0.850	0.851	**2335**	0.744	0.743			
1940	0.926	0.927	**2140**	0.838	0.839	**2340**	0.752	0.751			
1945	0.925	0.927	**2145**	0.823	0.824	**2345**	0.759	0.758			
1950	0.924	0.927	**2150**	0.806	0.806	**2350**	0.765	0.764			
1955	0.924	0.927	**2155**	0.788	0.789	**2355**	0.770	0.770			
1960	0.925	0.927	**2160**	0.769	0.770	**2360**	0.772	0.772			
1965	0.924	0.926	**2165**	0.750	0.751	**2365**	0.774	0.773			
1970	0.924	0.926	**2170**	0.727	0.727	**2370**	0.775	0.774			
1975	0.924	0.926	**2175**	0.699	0.699	**2375**	0.774	0.772			
1980	0.924	0.925	**2180**	0.652	0.652	**2380**	0.771	0.770			
1985	0.924	0.925	**2185**	0.555	0.554	**2385**	0.768	0.767			
1990	0.923	0.924	**2190**	0.459	0.458	**2390**	0.763	0.761			
1995	0.922	0.923	**2195**	0.396	0.396	**2395**	0.756	0.754			
2000	0.921	0.922	**2200**	0.345	0.344	**2400**	0.747	0.746			
2005	0.920	0.921	**2205**	0.305	0.305	**2405**	0.737	0.735			
2010	0.918	0.919	**2210**	0.279	0.277	**2410**	0.726	0.724			
2015	0.915	0.916	**2215**	0.264	0.263	**2415**	0.714	0.712			
2020	0.912	0.913	**2220**	0.260	0.259	**2420**	0.702	0.700			
2025	0.909	0.910	**2225**	0.264	0.263	**2425**	0.690	0.687			
2030	0.905	0.906	**2230**	0.275	0.274	**2430**	0.675	0.673			
2035	0.901	0.903	**2235**	0.288	0.286	**2435**	0.661	0.659			
2040	0.897	0.899	**2240**	0.302	0.300	**2440**	0.648	0.646			
2045	0.894	0.896	**2245**	0.319	0.317	**2445**	0.634	0.632			
2050	0.891	0.893	**2250**	0.338	0.336	**2450**	0.620	0.618			
2055	0.889	0.890	**2255**	0.359	0.358	**2455**	0.608	0.606			
2060	0.888	0.889	**2260**	0.384	0.382	**2460**	0.594	0.592			
2065	0.887	0.888	**2265**	0.411	0.410	**2465**	0.579	0.577			
2070	0.887	0.888	**2270**	0.441	0.439	**2470**	0.564	0.563			
2075	0.888	0.888	**2275**	0.472	0.471	**2475**	0.549	0.548			

Appendix C – Integrating Sphere Calibrations

The integrating spheres were calibrated at LabSphere, Inc. 10/2/2001. Table C1 gives the spectral radiance of the LabSphere CSTM-USS-2000-SF 20" integrating sphere with both Xenon and halogen lamps operating, and both attenuators fully open. This sphere had the LabSphere Spectraflect coating for better performance in the visible.

Table C2 gives the spectral radiance of the LabSphere CSTM-USS-2000-IG 20" integrating sphere with the attenuator fully open. This sphere had the LabSphere InfraGold coating for better performance in the infrared.

As of this writing (1/29/02), a more accurate, complete, and reliable calibration of both spheres is planned for March of 2002.

Table C1. Spectral radiance of unattenuated white sphere with Xenon and halogen lamps.

Wavelength (μm)	**Spectral Radiance ($mW/cm^2/sr/\mu m$)**
0.310	0.00114
0.320	0.0167
0.330	0.0791
0.340	0.189
0.350	0.442
0.400	17.3
0.450	28.8
0.500	30.8
0.555	32.3
0.600	33.9
0.655	29.5
0.700	16.4
0.800	12.3
0.900	11.6
1.050	10.6
1.150	11.0
1.200	10.4
1.300	8.60
1.540	4.56
1.600	3.87
1.700	3.38
2.000	0.916
2.100	0.868
2.300	0.438

Table C2. Spectral radiance of unattenuated gold sphere with halogen lamp.

Wavelength (μm)	Spectral Radiance (mW/cm^2/sr/μm)
0.400	0.0255
0.450	0.0450
0.500	0.120
0.555	0.734
0.600	1.67
0.655	3.06
0.700	4.18
0.800	5.96
0.900	6.72
1.050	6.86
1.150	6.42
1.200	6.00
1.300	5.60
1.540	4.13
1.600	3.81
1.700	3.30
2.000	2.10
2.100	1.70
2.300	1.22
2.400	1.04

Further notes on the Integrating spheres: Commanding and attenuators.

Attenuators (From Dave Humm)

Many thanks to Doug for setting up the laptop computer to control the integrating sphere. I have been running tests on the attenuators, controlling them by hand and writing down the reading of the integrating sphere built-in photodiode for feedback.

I have reproduced the slow changing behavior found by Howard in the CFCDD_WHF CFI warm-up test. It is a problem with the attenuators themselves, not the scripts or Doug's software or the instrument. It occurs in both attenuators, and I expect it will show up to some extent in almost all of the datasets in which we use the attenuators.

Lessons for CONTOUR data analysts: For radiometric responsivity, data with an attenuator setting of 0 is reliable, and data with an attenuator setting of 255 is reliable for background subtraction. These two settings are repeatable to much better than 1%. All other attenuator settings are not repeatable, and so are not reliable for radiometric calibration, only for flat fielding. Noam and I were aware that there was a cloud over the attenuator calibration when we

took the final data for both CRISP and CFI, although I hoped that we could calibrate the attenuators, so we took radiometric data with an attenuator setting of 0 as much as possible. I believe we have data with every instrument filter (except possibly the clear one) with an attenuator of zero, so it should be possible to get a radiometric calibration from that. If the only data you can use has an attenuator not equal to zero or 255, get back to me. I may be able to help you, depending on the other data that was taken at nearly the same time. There appear to be patterns in the attenuator errors, which we may be able to back out (but not with complete confidence) in individual cases. The dramatic and infrequent errors Bruce has shown me should not be a problem as long as any automated data analysis process plots them and allows the user to identify them and throw them out.

Lessons for future measurements (Sphere calibration, CFI cal check at Goddard, MDIS, etc.): Use the 0 setting for radiometric calibration if it's not too bright. If you must use the attenuators, command them to zero first each time the attenuator setting changes. This makes them *much* more repeatable. Make sure you are collecting the photodiode data. I expect to get results on the linearity of the built-in photodiode from the sphere calibration, so theoretically the photodiode will allow us to get radiometric results from the sphere with the attenuator on. Turn off the filtered Xenon arc lamp unless you really need it; all the spectral lines make it a bad calibration source.

I believe I know some additional details about the nature of the errors in the attenuator, but I am at the limit of what I can test writing down data by hand. I have one more day to work on the sphere (with a number of distractions, unfortunately), and I intend to write some scripts to exercise the attenuators more and test my theories. Up until now, I have not seen any of the large, infrequent errors seen by Bruce, but I may be able to see them also because the scripts will collect so much more data. Bruce has also found more unusual results to show me. If I am successful in making the scripts work, I will follow up with another email on details of the attenuator errors, although I don't expect them to be as important as the above.

Commanding (From Doug Oursler:

Since calibration it has become clear that there are two problems with the calibration sphere. The first problem is mechanical and has to do with the reproducibility of attenuation settings. In fact, as Dave Humm has shown, the device is only moderately reproducible when commanded to a setting of 0 before each desired setting. (See Dave for details.)

The second problem is in my Labview programming. All commands are getting to the sphere controller correctly from both manual entry and macro/network commanding (OCFmaster)... The problem is in getting OCF_GLOBAL_VALUES which assembles all of the settings to be put into the history file. There are cases where if a small change in attenuator settings is asked for followed immediately by a request for global values that the values will be "stale".. predating the attenuator change.

This programming problem has been fixed and tested (4/10/02) with the calibration sphere.

Recalibration of the White integrating sphere: April-May 2001.

From Dave Humm 04/26/02

1. The tungsten halogen bulb is bad by inspection, almost certainly due to too many hours of use at full current. We will calibrate the Xe arc lamp. I will get a new bulb from Labsphere, and calibrate with it if we can fit it into the vendor contract.

We measured large changes in the photodiode readout when using the tungsten halogen lamp. Readings varied between 1000 and 1800 during the day when running the sphere at the vendor, versus 2060 at APL in the last couple of weeks and 914 in the November and December data with the original bulb. These readings were taken with the attenuator wide open, and the photodiode output when using the Xe lamp was very stable, so it was not an attenuator or detector issue. We removed the quartz halogen bulb to inspect it, and the filament was in terrible shape. With the unaided eye, one big gap with a melted glob connecting it was visible, and many similar small features were visible with a magnifying glass.
It surprises me the bulb was making light at all, and it is clearly on the verge of burning out. I brought it back, and I have it in my office, if you want a look.

Optronic Labs has data on bulbs of similar type, but does not use them in radiometric applications, because they have seen problems with stability after many hours of use. When they do use these bulbs, they drive them at less than the rated 6 amps to extend lifetime. The Labsphere controller drives the bulbs at 6 amps. Given their experience, and ours with one bulb that burned out and another that almost burned out, it is almost certainly a lifetime issue. This is supported by our photodiode data from the calibrations in November and December, which show good repeatability with the attenuator wide open. Also, it means the photodiode measurements in the last two weeks are not reliable indicators of the brightness of the second bulb in February, for the final CFI measurements. At this time, we do not have an indication of how much different it was from the first bulb. The easiest way to find out would be to use the Xe arc lamp as a standard and compare CFI measurements with the old bulb and the new bulb. If the measurements with the Xe lamp are unchanged, then CFI was unchanged, and any changes in the CFI signal would reflect changes in the new bulb versus the old bulb.

The Labsphere tungsten halogen lamp power supply has a timer for the "on" time of the bulb. There is only one timer, and we were using the power supply for both the white and gold integrating spheres, so we do
not have separate times for the two bulbs. But, as of today, the total time for both bulbs is 169:26:49. Optronic Labs recommends recalibration after 50 hours of use, and they always replace the bulb. Labsphere also recommends recalibration after 50 hours of use, but even after our first bulb burned out, they gave us no indication that was a hard deadline.

Conclusion for CONTOUR: Focus most of our attention on calibrating the Xe arc lamp. The best we can do with the tungsten lamp is calibrating a new bulb. I will obtain a new bulb from

Labsphere. That will give the closest possible match, since it will be from the same manufacturer and have the same selection and preparation. Even so it could be different both in brightness and color temperature, so the calibration of the sphere with it will be a low priority.

Conclusion for future projects: My top recommendation would be to replace the tungsten halogen lamp power supply and assembly with one from a trusted vendor. Even if we don't need the very highest calibration accuracy, we should calibrate first and stick closely to the recommended time limit. The bulb will stabilize in 15 minutes, so we should be careful to turn it off when we aren't using it. The Xe lamp
is not useful unless we need UV (in which case we need to change it for an unfiltered Xe lamp). Perhaps we should put another tungsten halogen lamp at that port as a backup in case one of the bulbs burns out.

2. Plan for calibrating Xe lamp at IR wavelengths. We saw enough variation with attenuator position that we should attempt to calibrate at some different attenuator positions. With the attenuator open, I am proposing two scans from 1000-2200 nm with 1 nm steps and 3.2 nm resolution, and two with 2 nm steps and 8 nm resolution. I also have scans at lower resolution for attenuator positions 170, 220, and 255. We scan 2100-2500 nm at lower resolution, but the CRISP spectrometer images don't show any emission lines there. 300-1100 nm is a different set-up, so we will plan for that when the IR measurements are finished.
Optronic Labs is reviewing my suggestions. I attach my email to them.

When you get down to your noise limit, it becomes very hard to increase the spectral resolution by taking more data. At the telecon, I said the data needed went like the inverse cube of the resolution, but actually it's the inverse 5th power. To double the resolution, you decrease both slit widths by a factor of 2, so you decrease your signal-to-noise by a factor of 4. You need 16x the data to get back the factor of 4 in signal-to-noise, and then another factor of 2 in number of data points because of increased sampling for the increased resolution, for a total factor of 32. So, when you hit the noise limit, you hit a wall very quickly in terms of data collection time. The high-resolution scan has a minimum signal-to-noise of only 35 in the 1100-1800 nm range, which is not very good but probably worth accepting to get the high resolution. The vendor is looking at my numbers to see if they are comfortable with that low a signal-to-noise, and to see if they can do anything more to boost the signal.

From 1000-2200 nm, I added low resolution scans to get better signal-to-noise. Above 2200 nm, they have to change the grating, and we are stuck with lower resolution, but it doesn't matter much because the CRISP spectrometer images don't show any lines there.

The lab at Optronic Labs will not replicate the OCF in humidity. In any case, the water adsorbed in the sphere coating cannot be controlled. Therefore, I think it is important to have a spectrum smoother than the Xe spectrum as an aid in taking out the water bands by analysis. The plan has a scan with the tungsten halogen lamp for this purpose. If the vendor takes the data before the new LabSphere lamp is available, they will use the best of the 3 WIKO lamps I brought down.

The details on the scans I suggest are in the attachment, my email to Optronics Labs. Feedback is desired. I'm trading accuracy to get resolution, because I figure we aren't that accurate anyway. However, I don't have a good sense of how the science requirements flow down to the calibration requirements.

Appendix D - Calibration of Optical sensor of Spectrafelct (White) Sphere, 11/18/01

Cal # 1 setting on LabSphere controller.

Attenuator Setting	Sensor Output reading
255,255	2.002E-10
254, 254	2.04E-10
250,250	2.85E-10
240,240	1.57E-9
220,220	2.71E-8
200,200	8.35E-8
100,100	1.11E-6
0,0	2.50E-6

Appendix E:

General Calibration Information

CRISP Imager "Exposure Units" are 0.128 ms each.
CRISP Spectrometer exposures are 1-5 Hz (minus x ms readout time)
CFI "Exposure Units" are 2.048 ms each but can have up to 128 whole seconds added.

CFI Temperature conversion:
degrees C = 0.25*(telemetry value, 10 bits) - 117.0
It is the same for all of the CFI thermal monitoring points except the single one that is output in the CCD image

Table E1: Defocus effects on CFI and CRISP from the M/C output "lenses" (OCF_MONO_FWB)

Collimator	Filter Wheel	CFI	CRISP
1	Open		
2	Long FL BK-7	-1.5*	-5.8
3	Schott Glass Window	0.6	2.5
4	Short FL BK-7	-4.1	-16

*Numbers denote pixels of defocus +/- indicate near or far.

Table E2: M/C Filter Wheel positions

OCF_FW12_FW	OCF_FW13_FW
1 307.1 *	530 *
2 340 *	620 *
3 390 *	840 *
4 441.6 *	920 *
5 514.5 *	ND1
6 open	open
0 ND3	opaque **

*Out of Band rejection filter 10 nm bandwidth
** used for M/C darks.

Table E3: CFI Filter Wheel Band centers and Bandwidths

#	center	bandwidth	
1	clear	500-850 nm	
2	920	13	
3	840	9	
4	620	4	
5	445	10	Not in 2001 cals
6	526	5	Not in 2001 cals
7	513	12	
8	309	6	Not in 2001 cals
9	345	8	Not in 2001 cals

10 387 6 Not in 2001 cals

Table E4: CRISP FILTER WHEEL

#	center	bandwidth
1	"Clear"	
2	450,	40
3	490,	40
4	530,	40
5	570,	40
6	610,	40
7	650,	40
8	690,	40
9	730,	40
10	770,	40

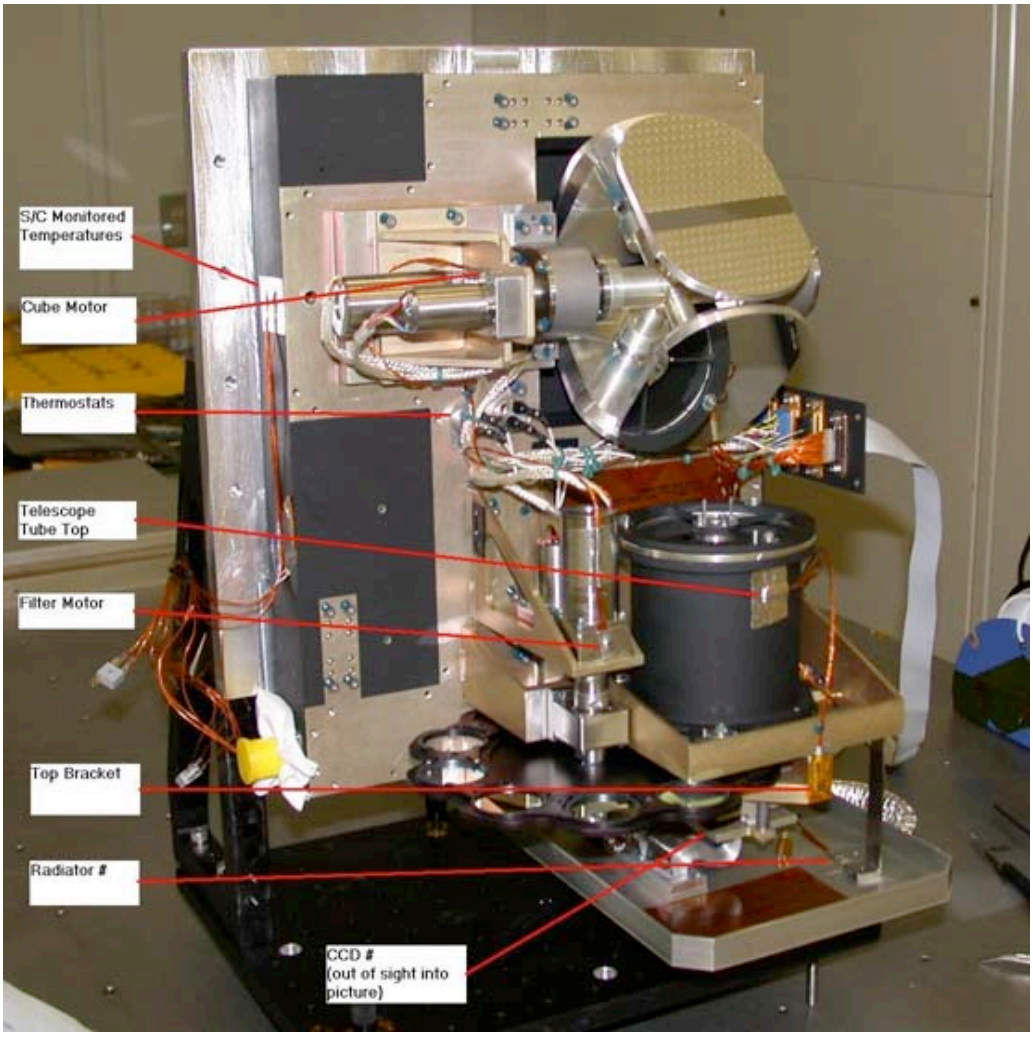
Table E5: CRISP Temperature conversions

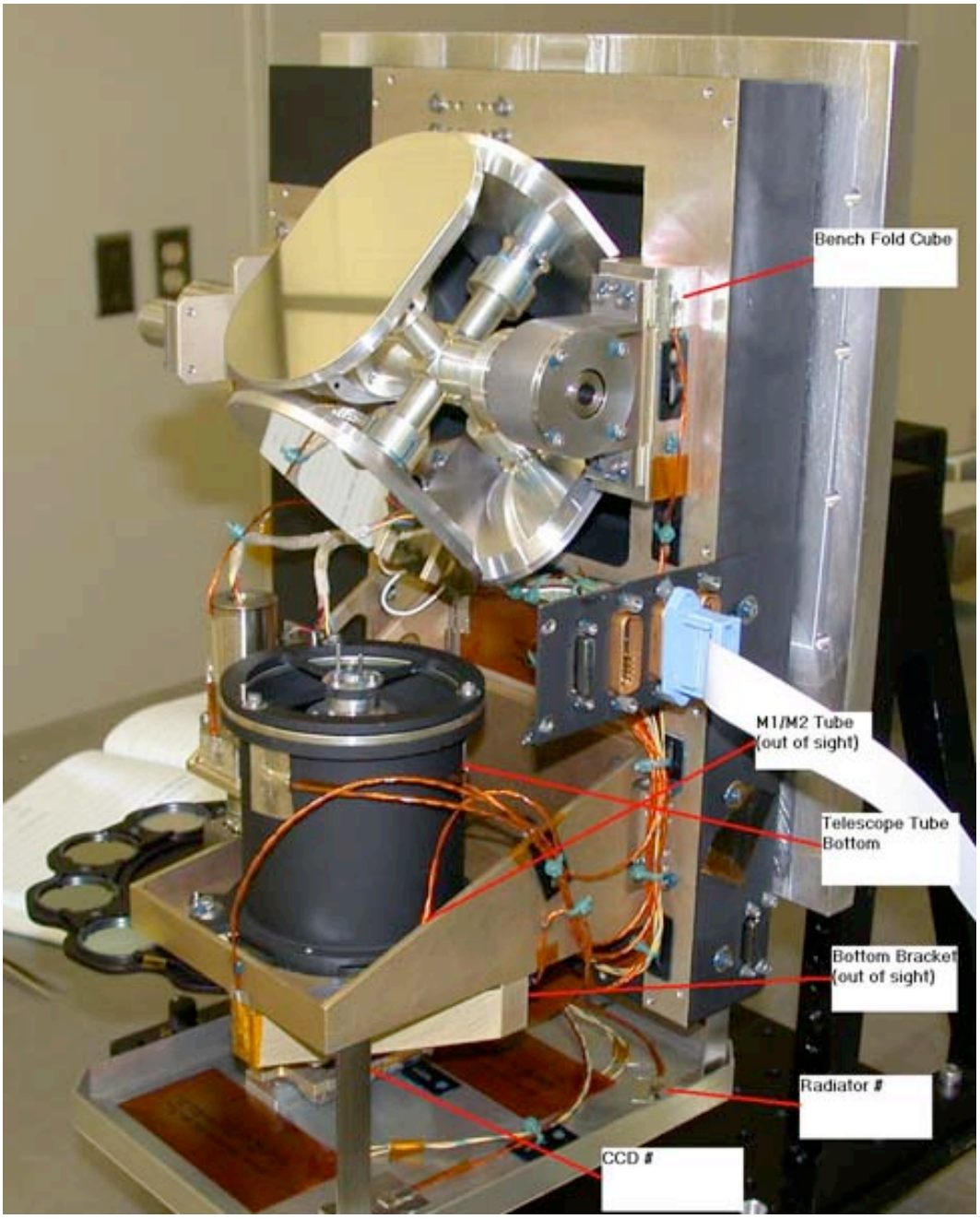
Temp	DN (hex)	DN (decimal
20	389	905
0	33a	826
-18	2f2	754
-36	2b1	689

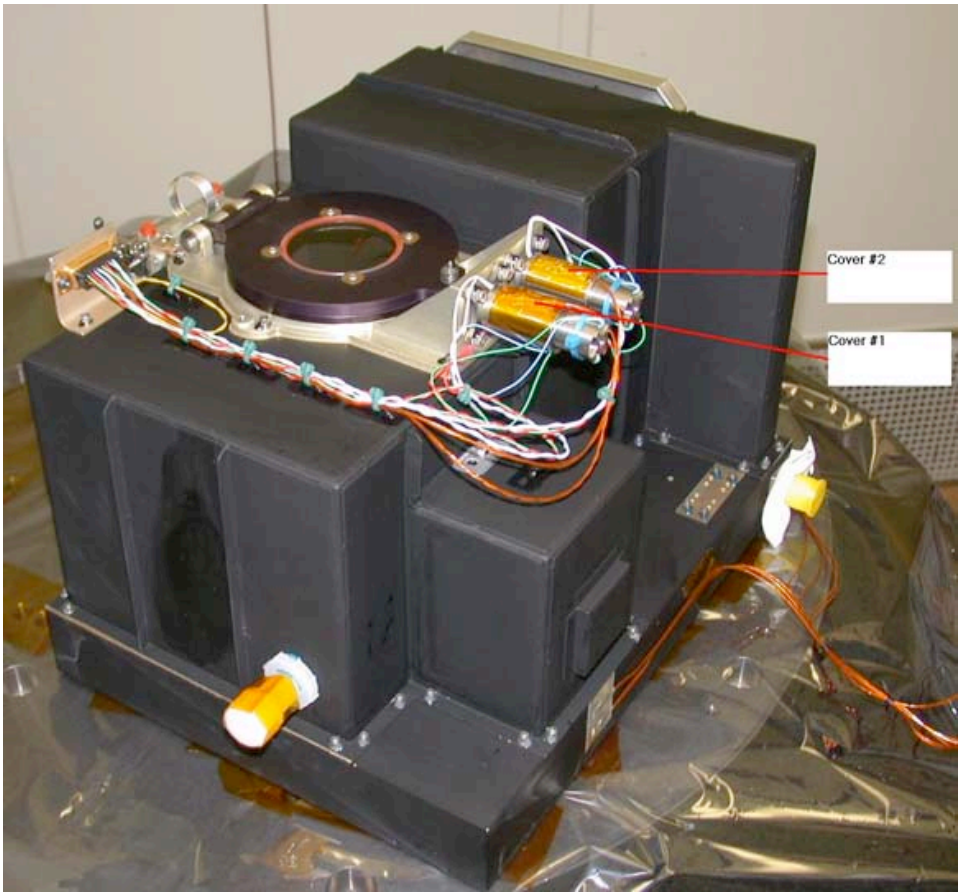
Table E6: CFI Temperature conversions

Tenp	DN (hex)	DN (decimal
20	209	521
-17	1c1	449
-26	1b0	432
-36	194	404
20	20a	522
0	1db	475
-17	1c1	449
-26	1b0	432
-30	1a4	420
-35	185	389
-36	194	404
-40	17f	383
-45	17f	383
-46	182	386
-55	177	375

Locations of CFI Thermistors.


S/C Monitored Temperatures
Cube Motor
Thermostats
Telescope Tube Top
Filter Motor
Top Bracket
Radiator #
CCD #
(out of sight into picture)


Bench Fold Cube
M1/M2 Tube
(out of sight)
Telescope Tube
Bottom
Bottom Bracket
(out of sight)
Radiator #
CCD #


Cover #2
Cover #1

Appendix F – OCF Setups

There were 3 primary setups in the OCF:

- Monochromator/Collimator Setup
- Collimator + Sample (or Source) setup
- Integrating Sphere Setup

M/C setup:
A lamp (50 Watt) was pointed into the Monochromator, then into the collimator, then into the Chamber.
Darks in this setup were taken using an internal filter wheel with an opaque filter

Collimator + Sample or other:
Collimator alone, aperture looking either into small (4" diameter) integrating sphere illuminated by a source (200 W lamp), or at a fold mirror pointed down to a lab jack holding hand samples or standards.
Darks were taken several ways: Blocking the light source with an object (cardboard/etc.), blocking the collimator aperture, or installing a filter wheel with an opaque filter.

Integrating sphere setup.
Sphere placed facing an optical window in the opposite side of the chamber from the Collimator setup. (capped by an opaque cover when spheres not in use).
Sphere distance varies over different calibration runs. It was too close early on (right up against the Window flange to ~1 foot away) with foil or other "mufflers" installed to keep out leaked light from the room. Later calibrations had the spheres against the back wall of the OCF room apertures ~ 6 feet from the window.
Darks from the Integrating spheres were taken by closing the sphere lamp attenuators all the way.

Appendix G – Script and History File OCF Command Lexicon

OCF_STAGE_AX1=A X
X = absolute stage AX1 position: floating point number. Units in degrees.

OCF_STAGE_AX2=A Y
Y = absolute stage AX2 position: floating point number. Units in degrees.

OCF_STAGE_MOTOR = X
X = stage motor on of off: 0 = off, 1 = on

OCF_FW13_FW = 0
OCF_FWX_FW = 0
Commands M/C filter wheel. See Table E2

OCF_FW12_FW = 0
OCF_FWI_FW = 0
Commands M/C filter wheel. See Table E2

OCF_FWB_FW = 0
Commands M/C filter wheel. See Table E1

OCF_Mono_WV 0
Monochromator setting. In Angstroms (10*nm)
As the grating was a 2 micron grating, sometimes wavelengths less than 1500 nm tended to use 2^{nd} order light (i.e. monochromator set to 16000 for 800 nm). Wavelengths less than ~ used 3^{rd} order, less than 500-600 used 4^{th} order.

OCF_SPHERE_ATTEN = X Y
OCF_HAND_SPHERE_ATTEN X Y
X = attenuator number (1 = Halogen lamp, 2= Xenon (white sphere only)
Y = attenuator value: 0 - 255. 0 - brightest; 255 = dimmest
if value is 255, this is also implied as a dark

OCF_VERIFY_….
OCF_HAND_….
Commands that are done “by hand” in OCF. Script pauses until the operator OK’s that the task is OK or has been completed.

OCF_HAND SAMPLE X
X = hand sample number: 1 - 12 possible. Sample ID’s noted in logs.

OCF_VERIFY_BLOCK_LIGHT_SOURCE

These are indications that dark frames are coming next (Collimator only setup)

OCF_Hand_Mono_Grating 2: IR
OCF_Hand_Mono_Exslit_L 10
OCF_Hand_Mono_Exslit_W 10
OCF_Hand_Mono_Enslit_L 10
Monochromator settings that never changed during calibrations
OCF_Hand_Mono_Enslit_W 400
Controlled by a micrometer. 400 or larger indicated broadband light.

OCF_Hand_Mono_Bandwidth
"Full" when OCF_Hand_Mono_Enslit_W was 400. Otherwise, bandwidth was 0.0133* the slit value (so a setting of 75 was ~ 1 nm bandwidth).

OCF_Hand_ND_Filt
OCF_Hand_OOB_Filt_ctr
OCF_Hand_OOB_Filt_fwhm
Hand-emplaced neutral density of Out of band rejection filters.

OCF_Hand_Verify_TQCM <10 Hz/hr
OCF_Verify_Chamber T=Warm, Pmax=2e-6
Verification of OCF chamber conditions. We never go the TQCM working properly.

APPENDIX H: "OCF_QUIET_VALUES text file definitions

OCF_GLOBAL_VALUES QUIET	Echo of status query command
12/19/01 10:51:47 PM	Time this image was taken
INPUT FILTER WHEEL 1 (GPIB12) IS NOT CONNECTED	Status of M/C Filter wheel FW12 (or FWI)
POSITION IS 0	Position of M/C Filter wheel FW12, if connected.
INPUT FILTER WHEEL 2 (GPIB13) IS NOT CONNECTED	Status of M/C Filter wheel FW13 (or FWX)
POSITION IS 0	Position of M/C Filter wheel FW13, if connected.
ARC MONOCHROMATOR IS NOT CONNECTED	Monochromator Status
WAVELENGTH {ANG} 0	Monochromator Wavelength . 0 = Zero order
SIDE FILTER WHEEL POSITION 0	Monochromator side FW, not used (reads 0 or 1)
FRONT FILTER WHEEL POSITION 0	Monochromator FW with defocusing filters (FWB)
DIVERTER MIRROR IS SET TO FRONT	Monochromator setup (always this way)
SAMPLE STAGE (NEWPORT) IS CONNECTED	Instrument Stage
MOTOR POWER IS OFF	Instrument Stage Power
POSITIONS	AXIS 1: Azimuth AXIS 2: Elevation AXIS 3, 4: Translation (not used)
THERMOCOUPLE READER (SR630) IS CONNECTED	Thermocouple reader status

THERMOCOUPLE CHANNELS

CH #	READING	UNITS	DESCRIPTION
1	-26.00	CENT---TYPE T	TRACKING MIRROR ASSY BASE
2	-26.30	CENT---TYPE T	UPPER HOUSEING ASSY
3	-24.90	CENT---TYPE T	LOWER HOUSEING ASSY
4	-21.30	CENT---TYPE T	SCAN MOTOR
5	-15.20	CENT---TYPE T	TABLE
6	-34.80	CENT---TYPE T	LINER 3 O'CLOCK
7	-35.60	CENT---TYPE T	LINER 6 O'CLOCK
8	-16.00	CENT---TYPE T	PITCH STAGE
9	OOR*	CENT---TYPE T	X
10	OOR	CENT---TYPE T	X
11	25.00	CENT---TYPE T	CHAMBER WALL OUTSIDE
12	-31.10	CENT---TYPE T	COOLANT TO CHILLER (RETURN)
13	-33.60	CENT---TYPE T	COOLANT FROM CHILLER (SUPPLY)
14	2.585435E-7	TORR	TARGET CHAMBER VACUUM

15	4.890491E-7	TORR	COLLIMATOR VACUUM
16	OOR	TORR	MONOCHROMATOR VACUUM

*OOR = Out-Of-Range

CALIBRATION SPHERE IS CONNECTED	Calibration sphere status
ATTENUATOR 1 IS SET TO 255	Attenuator 1 setting (Halogen lamp)
ATTENUATOR 2 IS SET TO 255	Attenuator 2 setting (Xenon lamp)
ATTENUATOR 3 IS SET TO 0	Not used
ATTENUATOR 4 IS SET TO 0	Not used
CALIBRATION NUMBER IS 2	Setup for Reference detector, if used
CALIBRATED REFERENCE DETECTOR READING 3.590000E-1	Sphere reference detector reading.

Section 5. Final Integrating Sphere calibrations

Below are slightly modified notes from David Humm regarding the final calibration of the Labsphere Spectraflect Intagrating sphere by Optronics labs in the Summer of 2002.

The final spreadsheeds are appended with the pdf documentation in Microsoft Excel format:
OptronicsCalReportXenon.xls – Xenon lanp attenuation values
OptronicsCalReportTungsten.xls – Tungsten lamp attenuation values
OptronicsCalReportRadiance.xls – Radiance calibrations
The written report from Optronics is also scanned and included in the archive as a separate .pdf file.

These are the final spreadsheets from Optronic Labs. When CONTOUR blew up and we started to wind down the project, they were going to do a little more work on the wavelength-dependent uncertainties, but other than that it is complete.

The spreadsheets are designed so that one may obtain the spectral radiance of the sphere for either lamp for a given photodiode monitor value, or for a given humidity. We don't have good data on the humidity in the OCF; we had a low-accuracy monitor and did not log its reading consistently. It was low, though. Perhaps 30-35%. The intent was to adjust the humidity to reflect the size of the water absorption features in the spectrum.
The spreadsheets are designed to input photodiode monitor value, not attenuator position, because the photodiode value is a more reliable indicator of radiance than the attenuator position. The spreadsheets do include plots of monitor reading as a function of attenuator position. However, you may recall that the attenuators were not repeatable under the conditions we calibrated CRISP. In the Optronic Labs calibration of the attenuators, they were commanded to position 0 before every command to a position. We had determined that the attenuators were repeatable under those conditions.

Richard Young (the optical scientist at Optronic Labs) did not include much written guidance, but it is relatively easy to use the spreadsheets.

Comments on the individual workbooks:

1. Final Xe attenuations spreadsheet. The "Spectral Values" worksheet contains the spectral radiance of the sphere using just the Xe lamp for different attenuator positions. You can enter the photodiode monitor value, and the radiance changes. Note that the red and blue lines on the "Spectral Values Plot" worksheet have different y-axis values on either side of the plot. The y-axis ranges scale with the radiance. In this spreadsheet, you can clearly see the wavelength dependence changes with attenuator setting. There is also a worksheet "Monitor" that gives the photodiode reading as a function of attenuator setting.
2. Final Tungsten attenuations spreadsheet. Same thing for the tungsten lamp.

3. Final Radiance values spreadsheet. The "Radiance humidity calc" sheet contains the spectral radiance of the sphere for each lamp separately and both together at an attenuator setting of 0, for various levels of humidity. It is currently set to 35%, which should be roughly the sort of humidity we saw in the OCF during the CRISP calibration. There is no workbook which gives the sphere output as a function of both photodiode monitor and humidity, but I think we could make it up pretty easily by combining some elements from the above two workbooks with this one.

Noam R. Izenberg

Distribution:

B. L. Gotwols
D. C. Humm
R.W. McEntire
S. L. Murchi
J. W. Warren
SRP Files
Archives