I&T,Calibration &Qual flow

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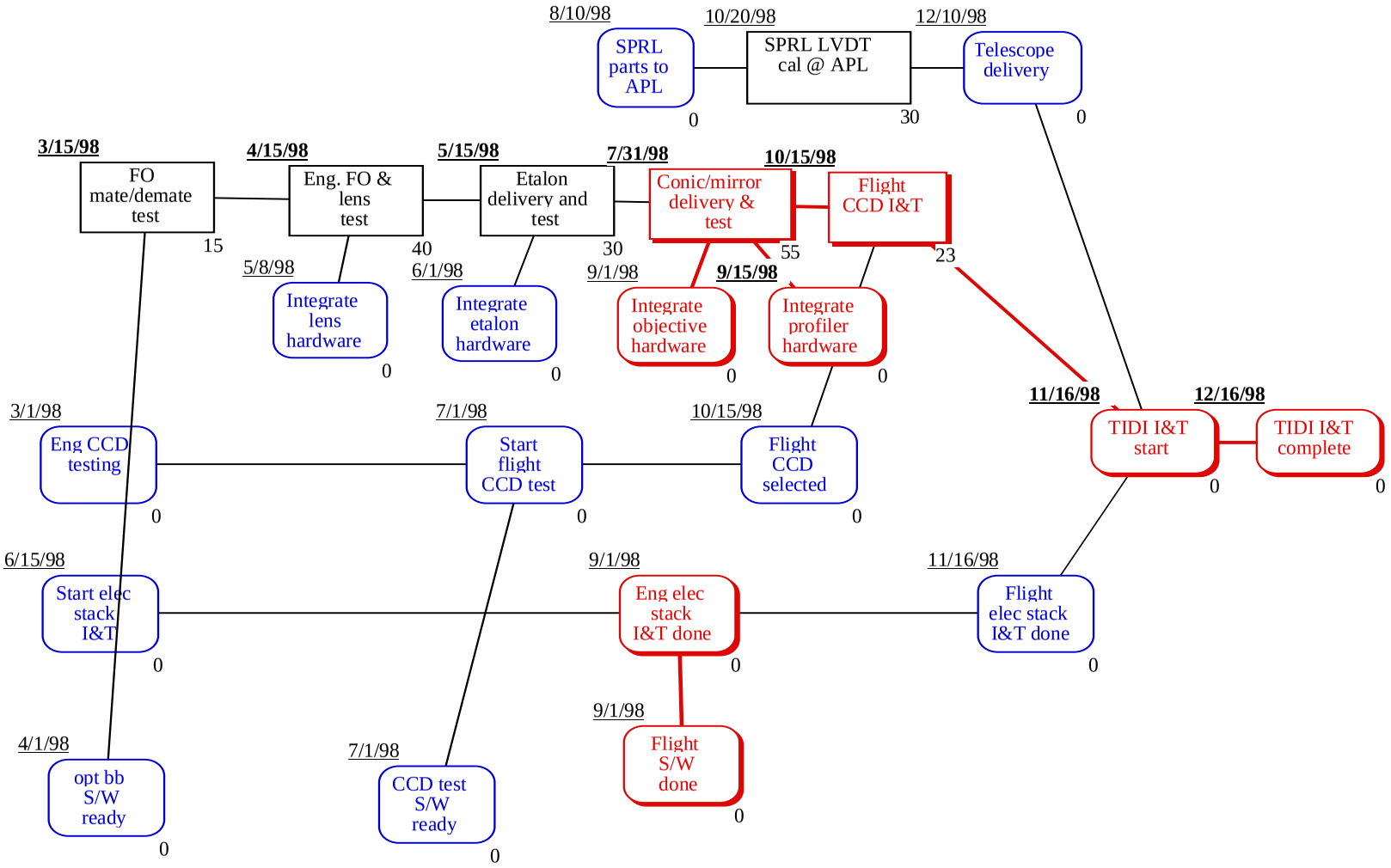
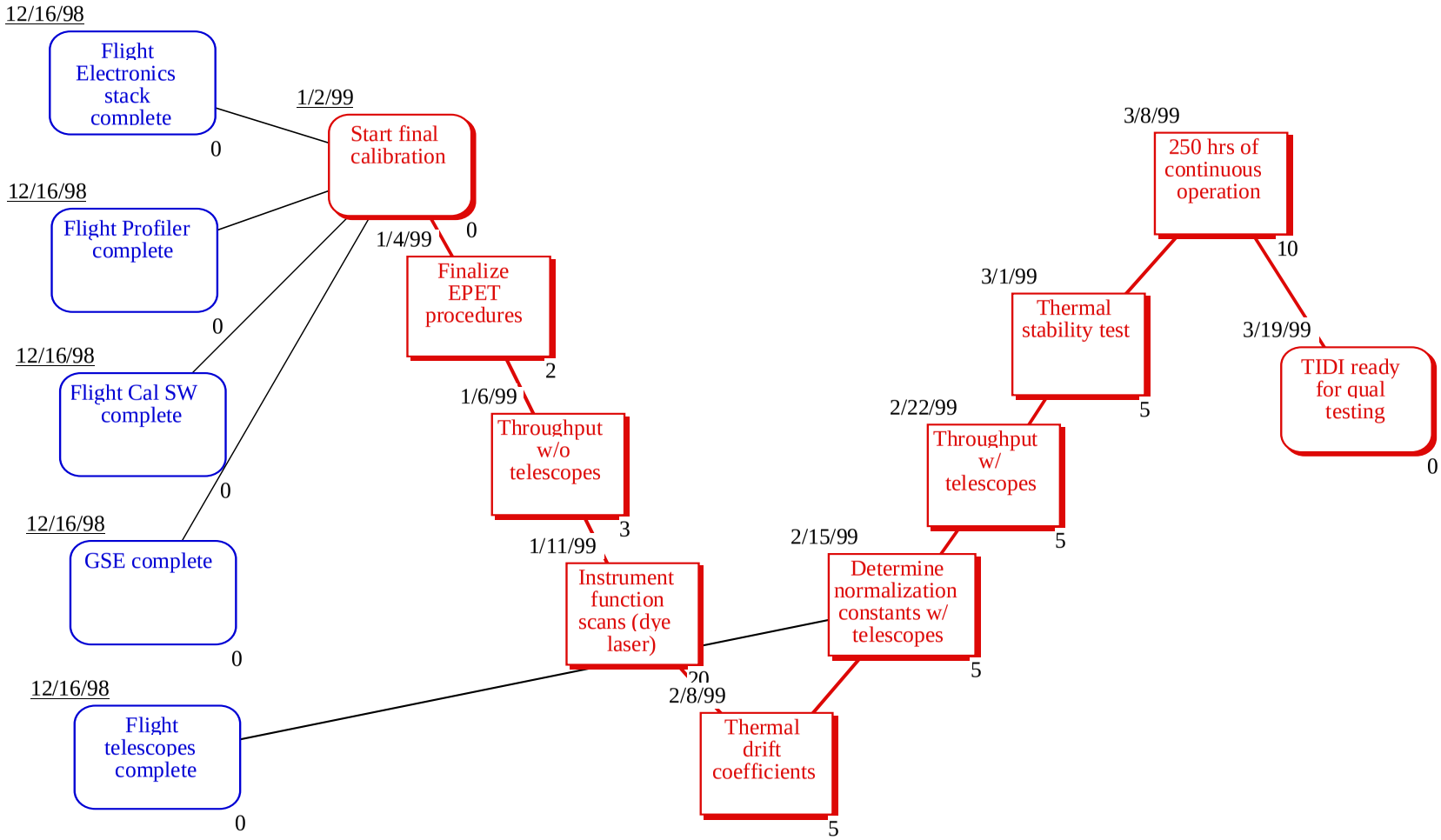
TIDI I&T

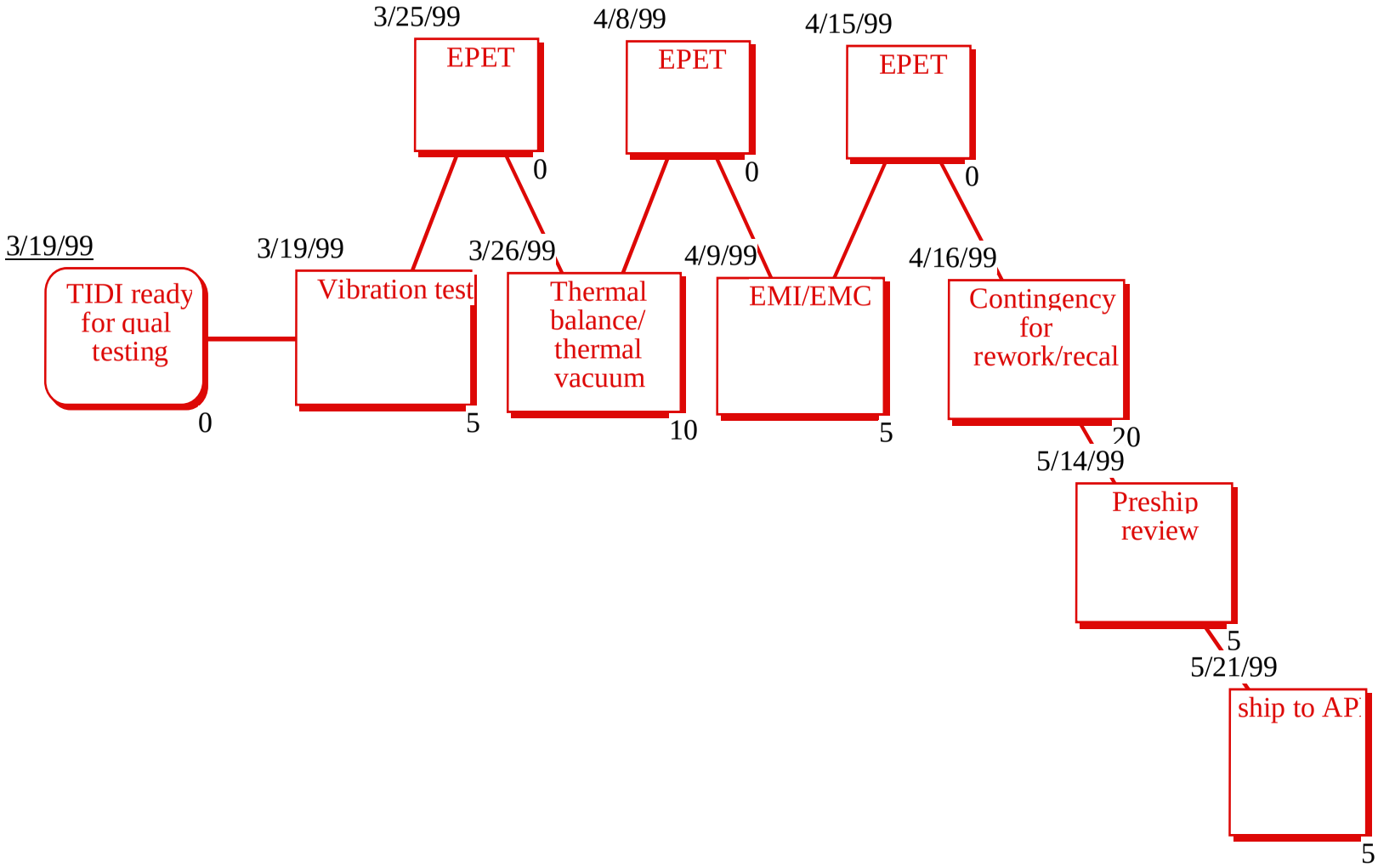

8/10/98
SPRL parts to APL
0
10/20/98
SPRL LVDT cal @ APL
30
12/10/98
Telescope delivery
0
3/15/98
FO mate/demate test
15
4/15/98
Eng. FO & lens test
40
5/15/98
Etalon delivery and test
30
7/31/98
Conic/mirror delivery & test
55
10/15/98
Flight CCD I&T
23
5/8/98
Integrate lens hardware
0
6/1/98
Integrate etalon hardware
0
9/1/98
Integrate objective hardware
0
9/15/98
Integrate profiler hardware
0
11/16/98
TIDI I&T start
0
12/16/98
TIDI I&T complete
0
3/1/98
Eng CCD testing
0
7/1/98
Start flight CCD test
0
10/15/98
Flight CCD selected
0
6/15/98
Start elec stack I&T
0
9/1/98
Eng elec stack I&T done
0
11/16/98
Flight elec stack I&T done
0
9/1/98
Flight S/W done
0
4/1/98
opt bb S/W ready
0
7/1/98
CCD test S/W ready
0

TIDI Calibration



All functions will include EPET's

TIDI Qualification



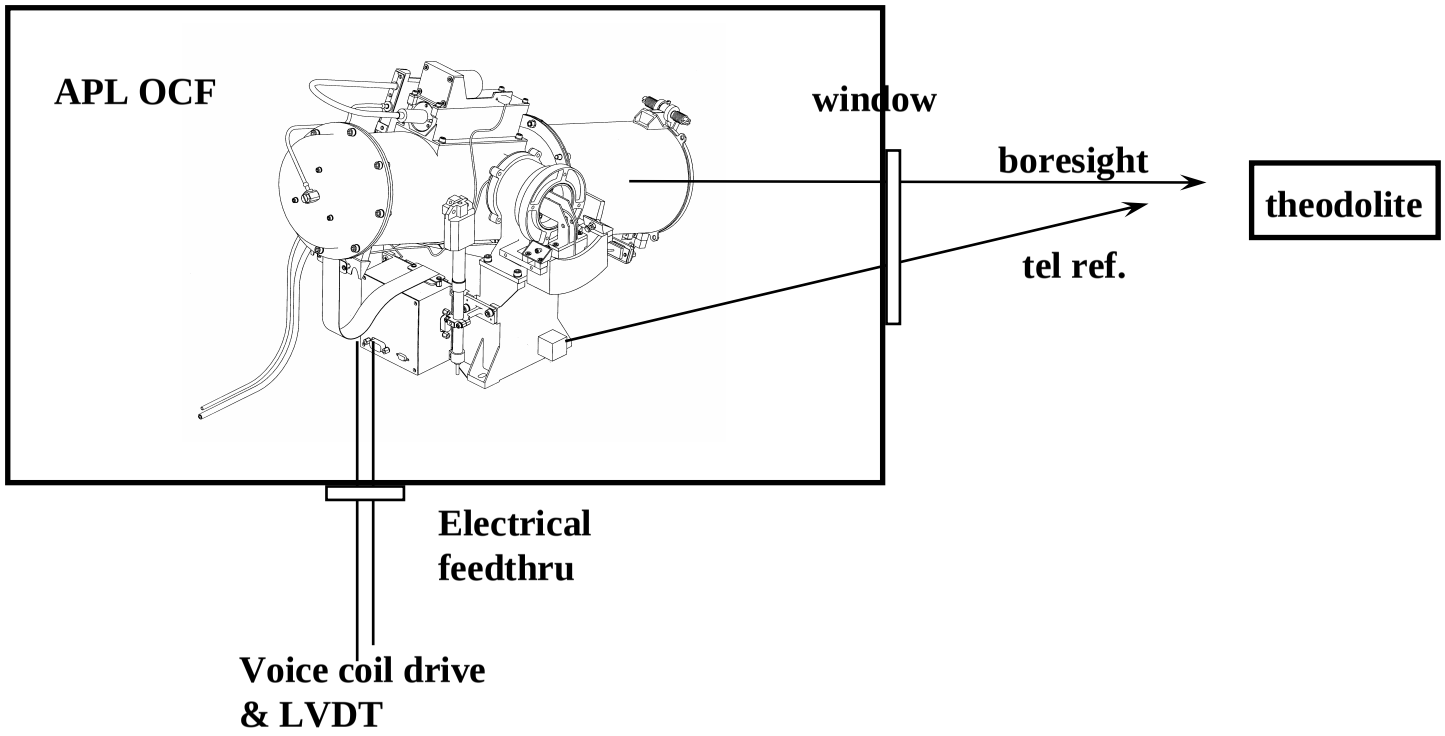
SPACE PHYSICS RESEARCH LABORATORY

TIDI

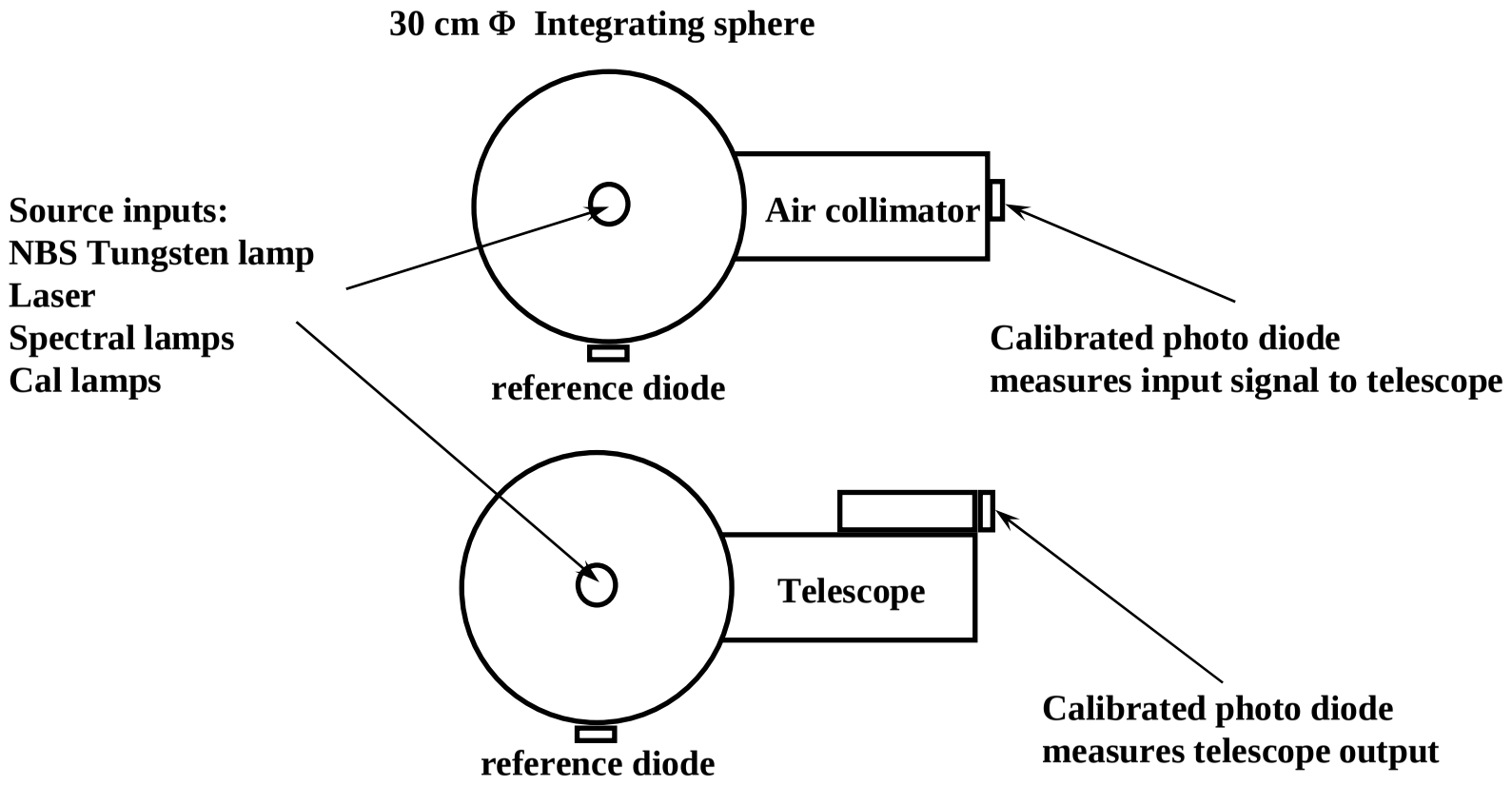
Telescope I&T

- **Voice coil and LVDT and preamp to be fully tested at SPRL and integrated at APL**
- **Calibration of the LVDT at APL in conjunction with the boresight measurements**
  - **SPRL to arrive at APL with GSE to read LVDT while telescope is undergoing temperature test and boresight is monitored**
- **Telescopes will be fully exe/orcized at SPRL during TIDI I&T**
  - **primarily testing the flight s/w**
- **Telescopes will be calibrated for throughput at SPRL**

Telescope LVDT calibration



Telescope throughput



Tests will be performed on each telescope
with/without fiber optic

Telescope / FO integration

Tests at SPRL

- **Telescopes will be mated to profiler with fiber optics**
- **Integrating sphere will be mounted to telescope with full aperture window in place.**
  - **Measure total system throughput vs λ**
  - **Measure CCDchannel normalization vs λ**
  - **Repeat for fiber optic mate / demate (cycle 10X)**

- **Repeat with deployable cover (small window) in place**
  - **This will provide the reference values to be carried to the spacecraft (signal/channel/ in each of the five fields)**

Telescope / FO integration

At Spacecraft I&T w/ TIDI fully integrated

Repeat SPRL transfer test case

– Total # fibers/channel = 13

Field	channel width (fiber)	Channel height (fiber)	throughput loss/channel (1 broken fiber) %
Tele 1	0.16	80	1.2
Tele 2	0.18	70	1.4
Tele 3	0.22	59	1.7
Tele 4	0.28	46	2.2
Cal	0.44	27	3.7

Action

0- 10 % / channel : no action on ground, normalize on orbit

>10% / channel : Consider swapping fiber cable and rerunning throughput tests

Profiler I&T

- **Integration will begin in May**
  - optical bb test bed will be converted to flight bb test bed by September as optics arrive
- **Input optics testing**
  - verify filter collimator efl, spot size, beam size, throughput
  - verify etalon collimator efl, spot size, beam size, throughput
- **EM fiber optic**
  - verify configuration
  - image onto CCD
  - measure throughput
  - measure field-to-field crosstalk
- **Etalon testing**
  - Finesse, FSR (pressure scanning)

Profiler I&T

- **Objective optics**
  - measure efl, spot size, throughput
- **End-to-end throughput**
  - from fiber optic input to CCD
- **End-to-end imaging**
  - Characterize flight fiber optic fields at the CCD
  - Measure flight fiber optic field crosstalk
- **Characterize circular field transformation into rectangular array (CLIO)**
- **Repeat end-to-end tests**
  - With CLIO
  - With telescopes

Optics test bed

TIDI optical breadboard