Rosetta Lander Raw MAG Data Review Comments

rl-cal-romap-2-pdcs-mag-v1.0
rl-cal-romap-2-phc-mag-v1.0
rl-c-romap-2-fss-mag-v1.0
rl-c-romap-2-rbd-mag-v1.0
rl-c-romap-2-sdl-mag-v1.0

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Overview

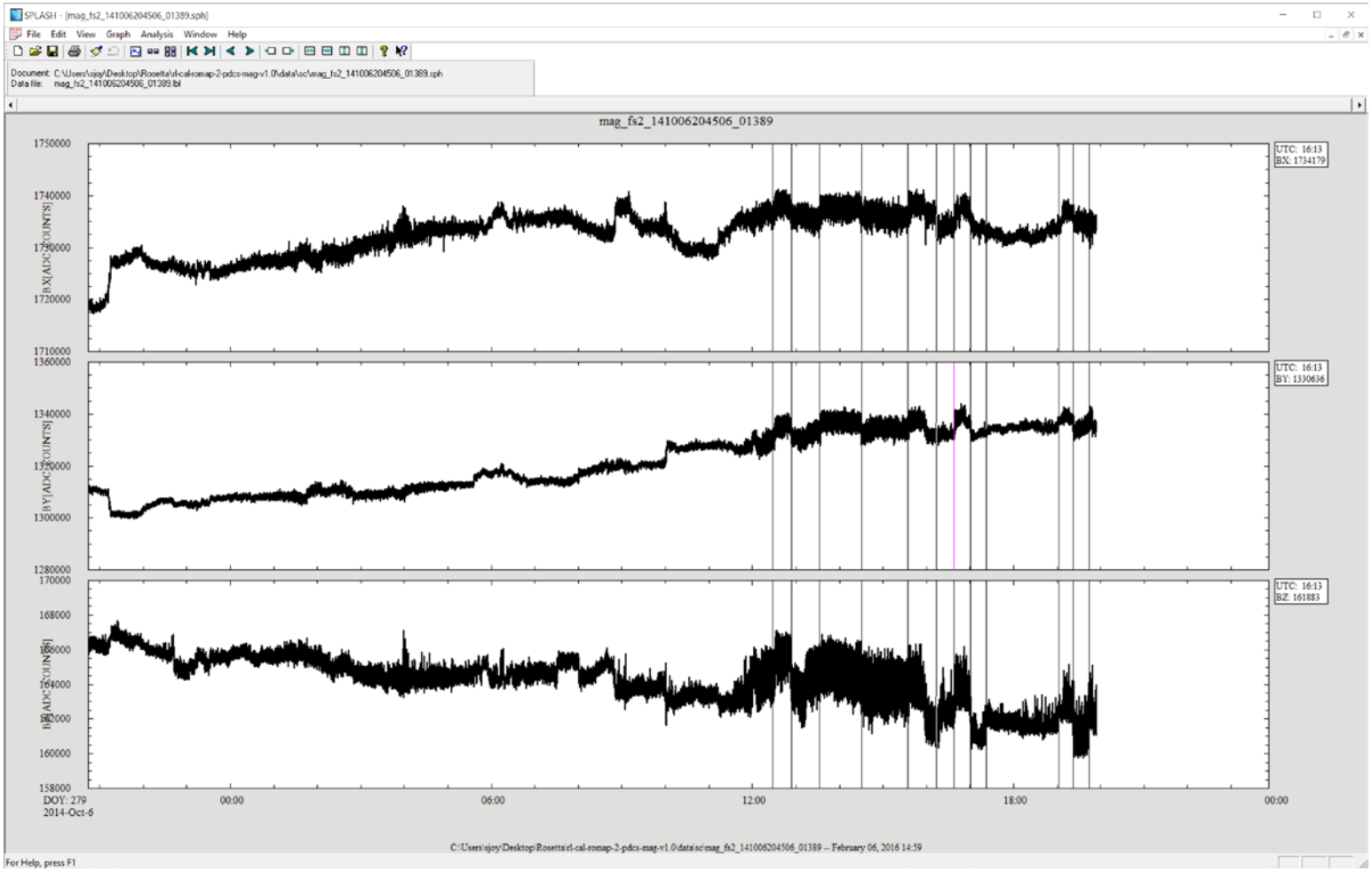
- All of the rl-XXX-romap-2-XXX-mag-v1.0 review volumes share a large number of common files:
  catalog files, documents, required files (Xxinfo.TXT), etc.
  rather than repeating comments on those files in this presentation, those comments were provided in Rosetta_Lander_common.pptx
- Furthermore, the format files for all of the raw lander mag data are identical so I will discuss them only once
- Dataset catalog files
  - All of these files are extremely sparse, with their only really useful information being the start/stop time and citation descriptions
    - RID: Provide at least minimal descriptions of the data in the descriptions including that they raw data are contaminated by multiple sources that are varying in time and frequency.
  - It might be helpful to at least direct the user to other more useful files on the volumes like the EACID and calibration description

Data sets

- ✓ rl-cal-romap-2-pdcs-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-cal-romap-2-phc-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-c-romap-2-fss-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-c-romap-2-rbd-mag-v1.0 (data and labels appear to be valid)
- ✓ rl-c-romap-2-sdl-mag-v1.0 (data and labels appear to be valid)

Each data set contains raw magnetic field sensor data (SC) and the associated housekeeping data (HSK). Sample plots of each data set follow.

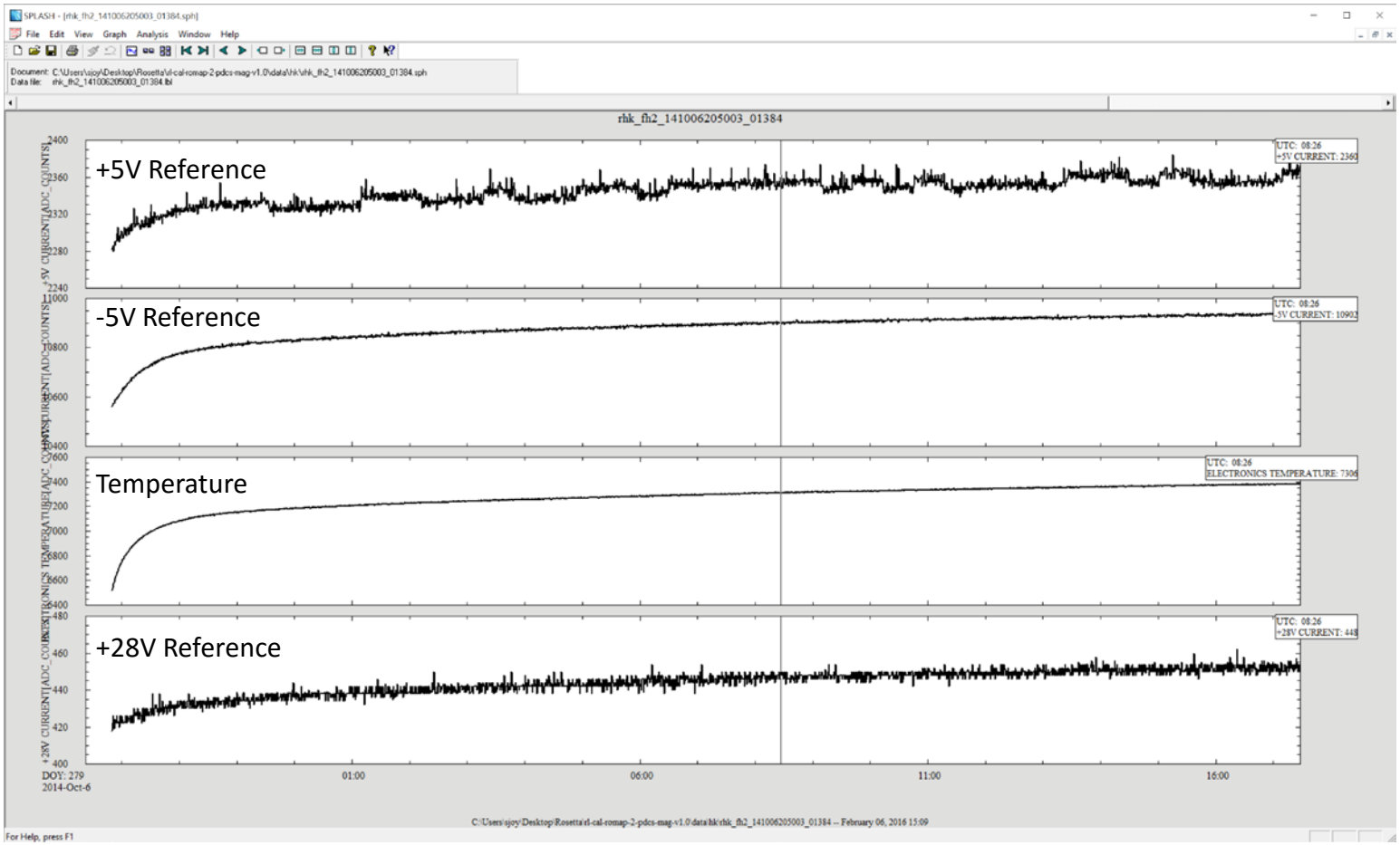
SC Data: RL-CAL-ROMAP-2-PDCS-MAG-V1.0



Plot generated from data file by reading label mag_fs2_141006204506_01389.lbl and format file romap_mag_rawsc.fmt (labels valid)

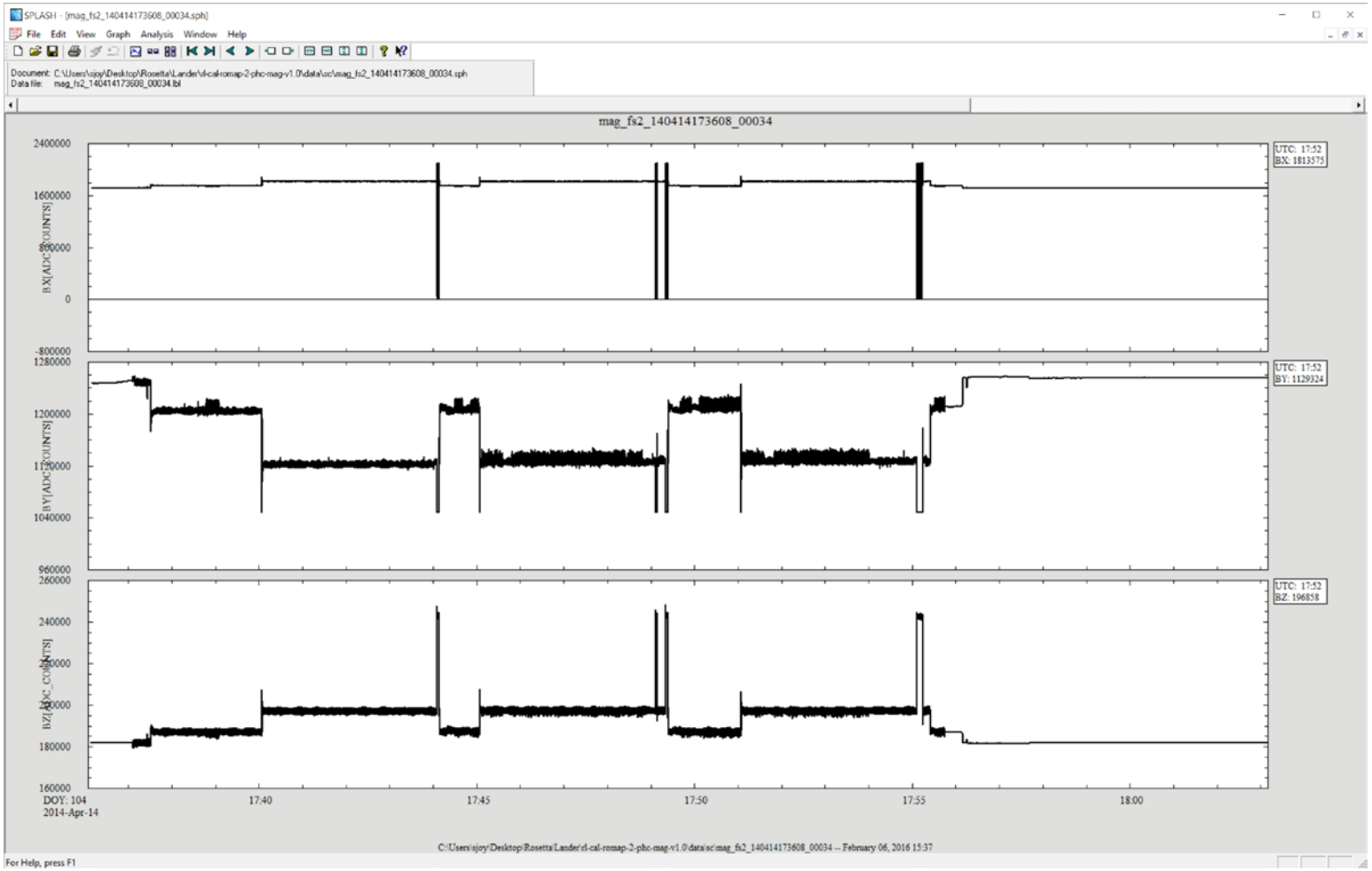
Data appear nominal with clear evidence of contaminating s/c fields

HK Data: RL-CAL-ROMAP-2-PDCS-MAG-V1.0



Plot generated from data file by reading label rhk_fh2_141006205003_01384.lbl and format file romap_rawhk.fmt (labels valid)

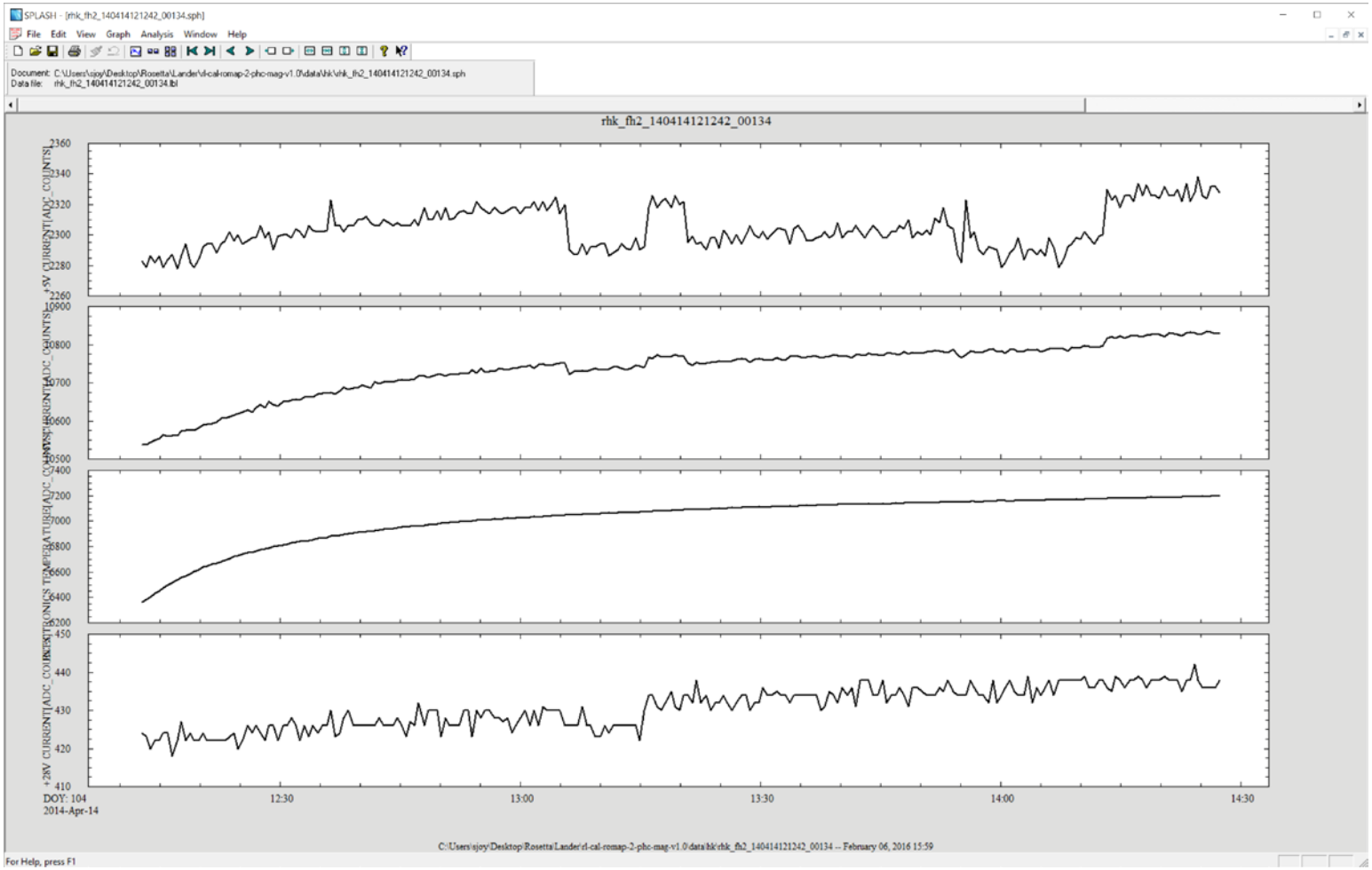
SC Data: rl-cal-romap-2-phc-mag-v1.0



Plot generated from data file by reading label mag_fs2_140414173608_00034.lbl and format file romap_mag_rawsc.fmt (labels valid)

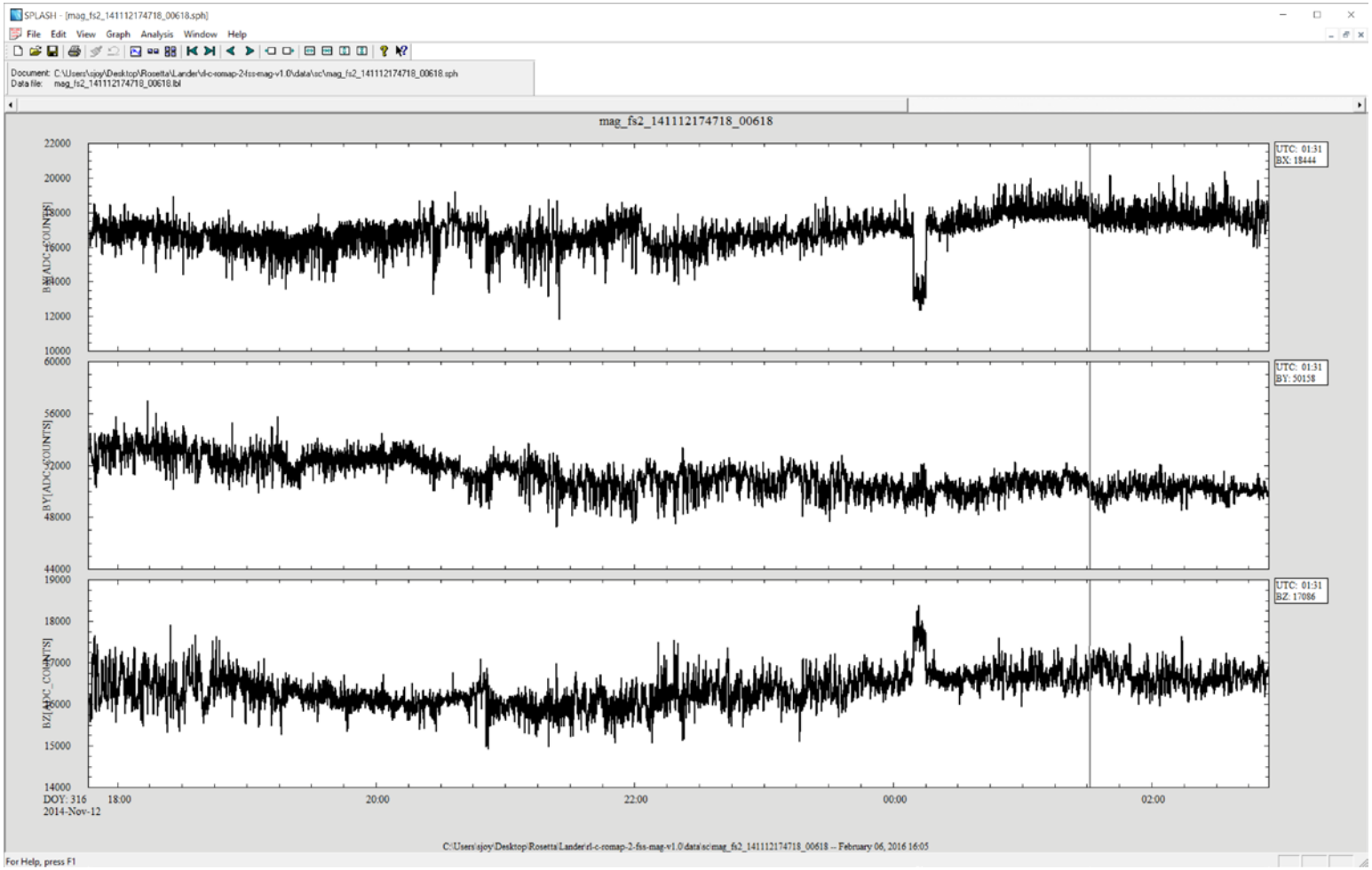
Data appear to have been acquired during a calibration test

HK Data: rl-cal-romap-2-phc-mag-v1.0



Plot generated from data file by reading label rhk_fh2_140414121242_00134.lbl and format file romap_rawhk.fmt (labels valid)

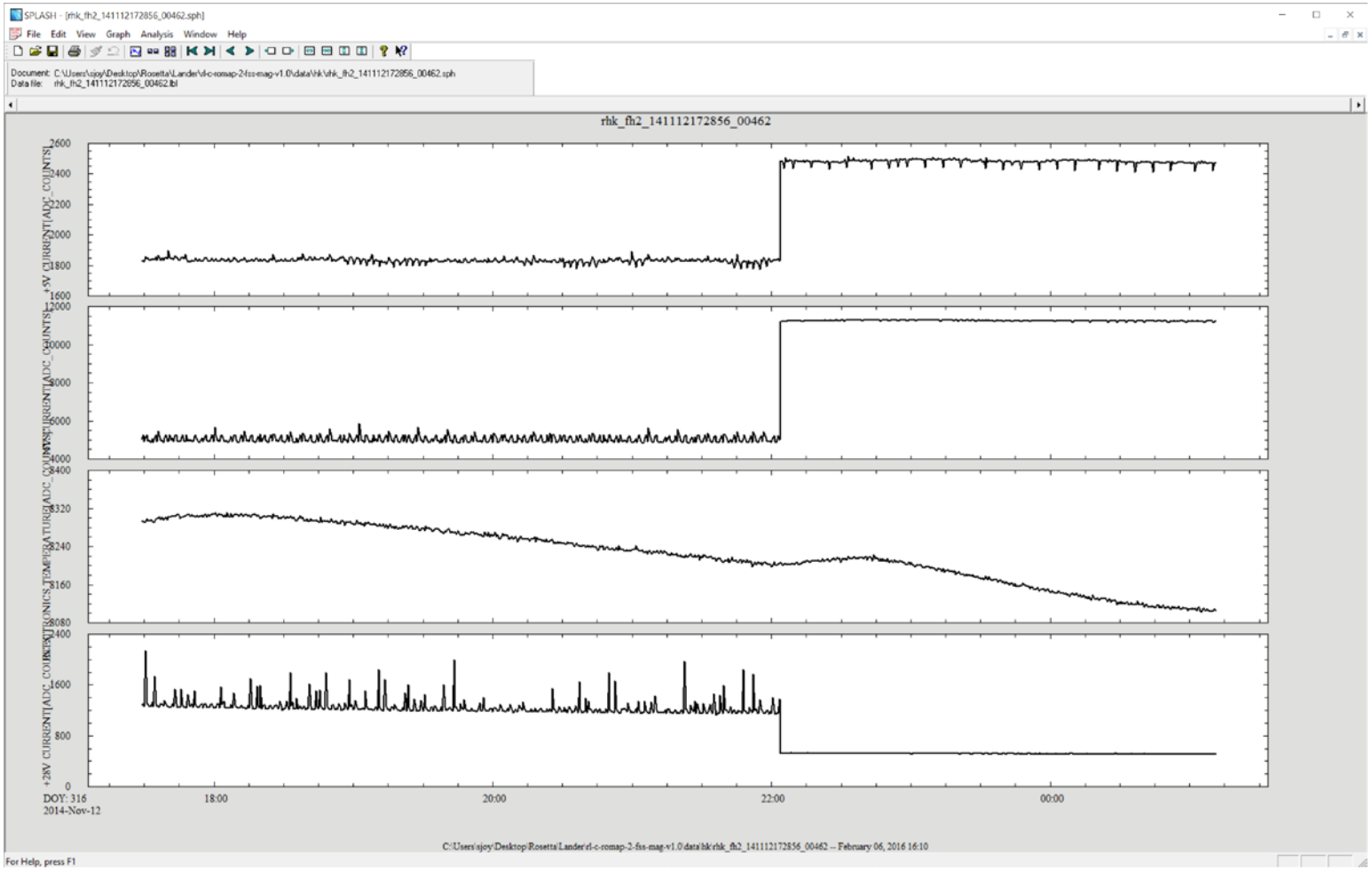
SC Data: rl-c-romap-2-fss-mag-v1.0



Plot generated from data file by reading label mag_fs2_141112174718_00618.lbl and format file romap_mag_rawsc.fmt (labels valid)

Data appear nominal

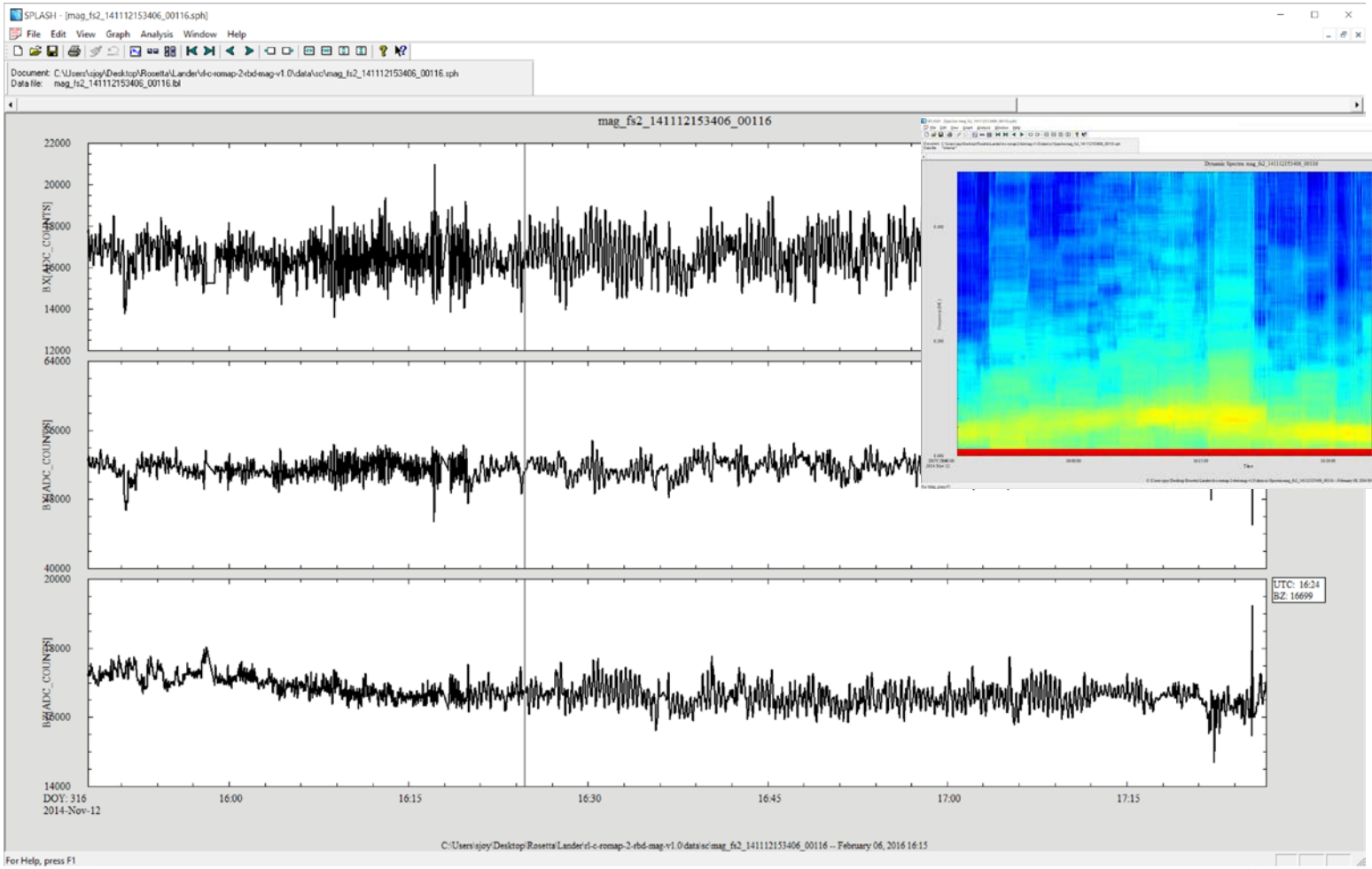
HK Data: rl-c-romap-2-fss-mag-v1.0



Plot generated from data file by reading label rhk_fh2_141112172856_00462.lbl and format file romap_rawhk.fmt (labels valid)

Abrupt shift in reference voltages is a bit alarming!

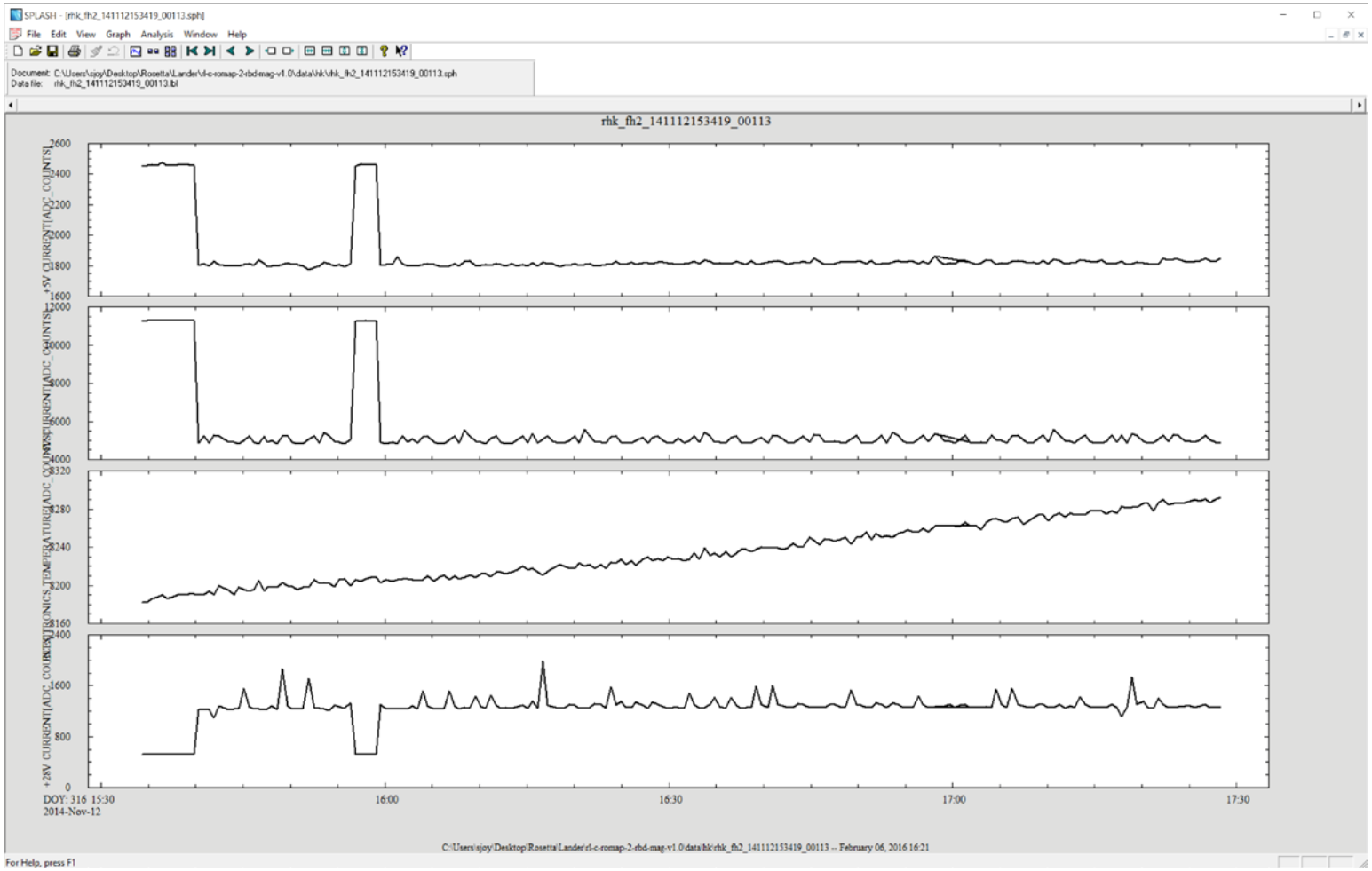
SC Data: rl-c-romap-2-rbd-mag-v1.0



Plot generated from data file by reading label mag_fs2_141112153406_00116.lbl and format file romap_mag_rawsc.fmt (labels valid)

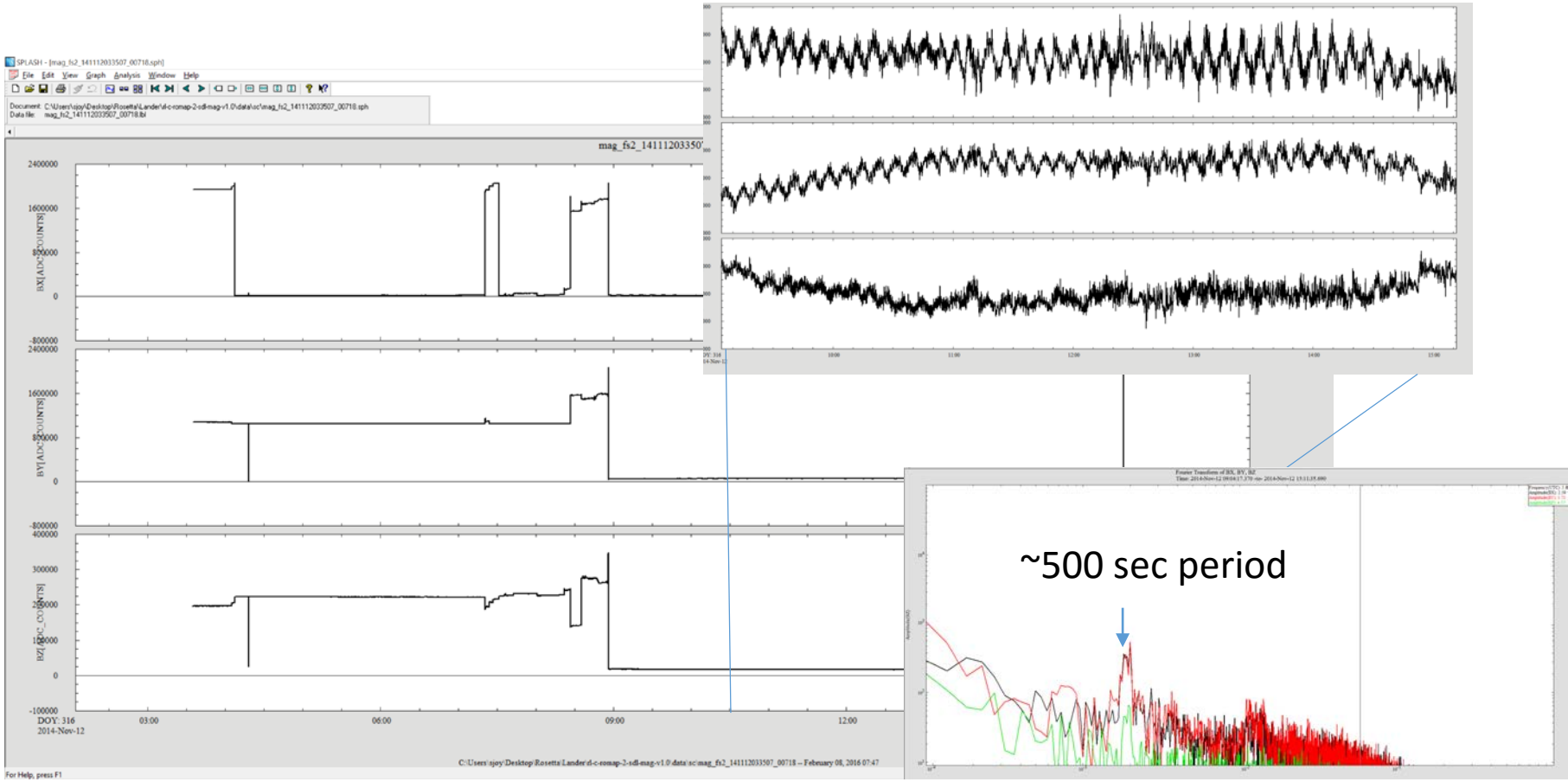
Data appear nominal, change in apparent frequency of the background flucuations

HK Data: rl-c-romap-2-rbd-mag-v1.0



Plot generated from data file by reading label rhk_fh2_141112172856_00462.lbl and format file romap_rawhk.fmt (labels valid)

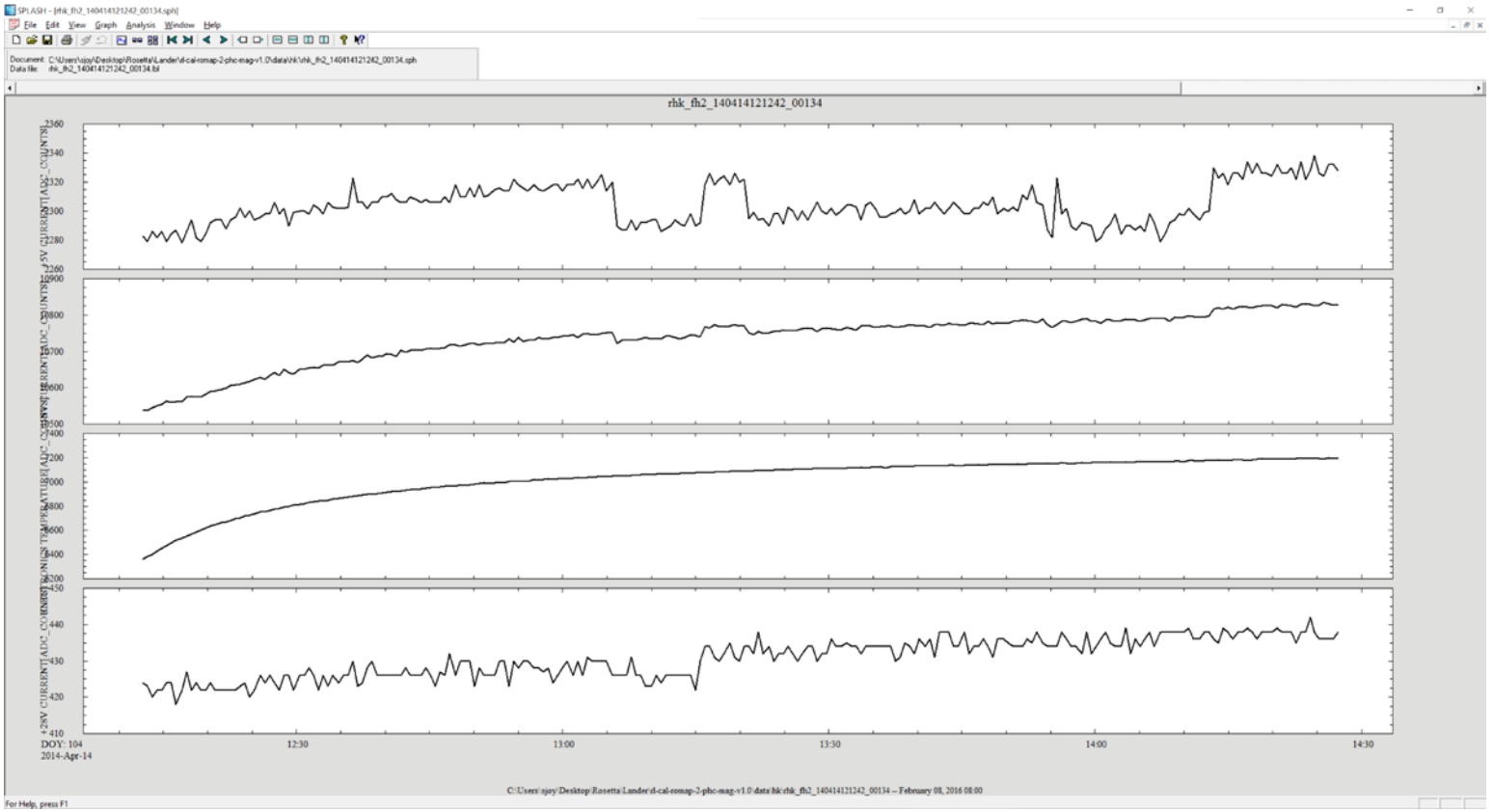
SC Data: rl-c-romap-2-sdl-mag-v1.0



Plot generated from data file by reading label mag_fs2_141112033507_00718.lbl and format file romap_mag_rawsc.fmt (labels valid)

Data show large unexplained variations over the full time interval superimpose on the small scale nearly sinusoidal variations in the X-Y components.

HK Data: rl-c-romap-2-sdl-mag-v1.0



Plot generated from data file by reading label rhk_fh2_140414121242_00134.lbl and format file romap_rawhk.fmt (labels valid)

Raw Data Archive Summary

- All of the files in each data set are properly described by their labels allowing the user to read and interpret the bytes in the data files
- The documentation is very sparse.
  - There is no detailed timeline explaining activities on the spacecraft that might help the user understand the sharp jumps in the field or in the reference voltages
  - There is no explanation of how the changes in the reference voltages (both nearly instantaneous and slow drifts) might impact the calibration
- The data are not terribly “usable” in their current state but it would be difficult for another team to develop an independent calibration of the magnetometer without additional documentation.
- RIDs
  1. Add descriptions to the dataset.cat files explaining that there are significant sources of time varying magnetic contamination in the data. Also describe how the changes in the reference voltages and temperatures impact the team’s ability to calibrate the data.