# ACA_MON

**Description: This tool collects data from the ASPECT L1 pipes and checks the appropriate Colunms. This tool is directed against SE03 5.6.2.1.2.4- 5.6.2.1.2.5.**

**Open Issues:**

1. ASC handeling of the monitor stars is not yet defined.
2. Fid light names are not uniquly defined.

**Inputs:**

- FIDPROPS FILE
- GSPROPS FILE
- ACACENT FILE

**Outputs:**

- MTA Summary page. Accessed from normal MTA OBS ID page

```
Please select an Observation ID:

ACIS Pages:
...

HRC Pages:

...
PCAD
          ACA level 1 Fid lights
     1009     Last updated: Dec, 23 14:18
     1010     Last updated: Dec, 23 14:18
     1011     Last updated: Dec, 23 14:18
     1013     Last updated: Dec, 23 14:18
     1014     Last updated: Dec, 23 14:18
```

```
1015     Last updated: Dec, 23 14:18


    ACA level 1 slots
1009     Last updated: Dec, 23 14:18
1010     Last updated: Dec, 23 14:18
1011     Last updated: Dec, 23 14:18
1013     Last updated: Dec, 23 14:18
1014     Last updated: Dec, 23 14:18
1015     Last updated: Dec, 23 14:18
```

- database entries

**Parameters:** obs_id # (for monitoring applications)
**Aspect Level 1 Fids:**

- 1-8 Rows in fidprops is generated per aspect interval.
- Grab the following columns:

```
slot, ID_num,id_status, id_string
mag_i_avg, mag_i_min, mag_i_max
```

- Grab the following keywords:

```
Tstart, Tstop, OBS_ID
```

- Monitoring is done on a per L1 file basis so there is likely only one set of rows, these are displays via HTML as follows. In this example Fid lights 1,2,10 and 13 were used during the day. Three aspect intervals occured this day. Anywhere from 1 to three files were input. Notice that all 14 fid lights are always displayed whether or not they are used. The fid light ID_string (e.g. HRC-I-2) can be taken from the fidprops files as well or hard coded once science knows the names of the fid lights.

FID LIGHT Monitoring

| | STATUS | | | | | | |
|---|---|---|---|---|---|---|---|
| FID Light | Good | Marginal | Bad | Number | avg mag | min mag | max mag |
| 1 HRC-I-1 | 100 | 0.0 | 0.0 | 3 | 10.2 | 10.3 | 10.1 |
| 2 HRC-I-2 | 100 | 0.0 | 0.0 | 3 | 10.1 | 10.2 | 10.0 |
| ... | | | | | | | |
| 13 ACIS-S-3 | 66.7 | 33.3 | 0.0 | 3 | 10.0 | 10.0 | 10.0 |
| 14 ACIS-S-4 | 0.0 | 0.0 | 0.0 | 0 | NAN | NAN | NAN |

- The numbers in the “Good”, “Marginal” and “Bad” columns are the fractional number of samples which had that value (i.e. row 13 is the result of having 3 values, 2 good and 1 marginal 0 bad.avg mag = the average of the mag_i_avgs, min mag = the minimum of the mag_i_min and max mag = the max of mag_i_max. Number is the number of samples.
- Alerts shall be sent for Marginal and bad occurances, Priority 4A, Problem ID: 1251

  Additional text should read

```
Marginal (bad) fid light data was observed for fid light (ID_NUM , NAME)
the aspect interval had a start time of (Tstart) and a stop time of Tstop.
The FIDPROPS file can be found  at :(filename)
```

- No Monitor plots are generated.
- Limits for mag_i_avg should be kept in the normal MTA limits data base. One per fid light named: mag_i_avg#. The nominal values should be initially set to:
  red high =12
  yellow high =11
  yellow low =5
  red low =4
  for all fid lights.
- Alerts shall be sent for mag_i_avg violations Priority 3A, Problem ID: 125.
  Additional text should read

```
YELLOW 12/31/1999 14:18:16.100 mag_i_avg_13    "FID LIGHT HRC-S-3"
     had a range  of  4.9 to 4.9 (yellow limit 5 ) for   6500 secs.
     in file:
     /proj/sciops/data/mta/test_checklimits/fid_props423523.fits
```

**Aspect Level 1 Centroids and Slots**

- Pull angynea(1-8) and angznea(1-8) from the ACACENT file.
- This section uses the data grabbed for the previous page plus the following columns from GSPROPS

  ```
  slot, agasc_id,type,id_status, ra_offset_obs, dec_offset_obs
  mag_aca_avg, mag_aca_min, mag_aca_max, mag_aca
  ```

- Grab the following keywords:

  ```
  Tstart, Tstop, OBS_ID
  ```

- SLOT monitoring is done on a per OBI basis. It should be accessed from the ACIS and HRC OBS-ID monitoring pages.

SLOT Monitoring
OBS_ID:XXXX

| | STATUS | | |
|---|---|---|---|
| SLOT | GOOD | MARGINAL | BAD |
| 1 | 98.1 | 1.2 | 0.7 |
| 2 | 96.4 | 1.4 | 2.2 |
| .. | | | |
| 7 | 88.1 | 9.3 | 1.4 |
| 8 | 92.3 | 1.3 | 6.4 |
| AVG | 95.3 | 2.4 | 2.3 |

Parameters

| SLOT | Type | name | RMS RA ERR | RMS DEC ERR | RMS $\Delta$ mag | Number | RMS nea Y | RMS nea Z | Number |
|---|---|---|---|---|---|---|---|---|---|
| 1 | fid | HRC-I-2 | NAN | NAN | 10.1 | 3 | NAN | NAN | NAN |
| 2 | guide | 1242 | 0.123 | 0.123 | 10.2 | 5 | 0.113 | 0.101 | 324 |
| ... | | | | | | | | | |
| 7 | mon | 1341 | 0.234 | 0.241 | 10.0 | 7 | 0.099 | 0.100 | 324 |
| 8 | guide | 21232 | 0.314 | 0.139 | 10.0 | 5 | 0.093 | 0.100 | 324 |

- Notice that the number of enties from id_status, ra_offset_obs and dec_offset_obs is much smaller than angy(z)nea(1-8). Hence two seperate number columns.

- For all relevent tables, The value in each of the three status columns is always arrived at the same way:
  Good =number_of_times_status_was_good/ (total_number_of_entries_for_that_slot)X100
  Marginal = number_of_times_status_was_Marginal/ (total_number_of_entries_for_that_slot)X10
  Bad= number_of_times_status_was_bad/ (total_number_of_entries_for_that_slot)X100

- Ra_err and Dec_err come from ra_offset_obs and dec_offset_obs respectivly. They are the RMS average values of ra_offset_obs and dec_offset_obs for the times that the slot status is "good" *do not use marginal or bad values in this computation.* Other values are the same as the previous table

- RMS RA ERR = Root mean square of the "good" values of ra_offset_obs.
  RMS Dec ERR = Root mean square of the "good" values of dec_offset_obs.
  RMS nea Y = Root mean square of all values of angynea().
  RMS nea Z = Root mean square of all values of angznea().

- Alerts shall be sent for Marginal and bad occurances, priority 4A. Alerts shall also be sent for RA or Dec errors greater than 0.05 (yellow) or 0.1 (red) (both TBR), priority 4A. Problem ID: 124 Additional text should read:

  ```
  Marginal (bad) fid light data was observed for guide star (agasc_id).
  The aspect interval had a start time of (Tstart) and a stop time of (Tstop).
  The GSPROPS file can be found  at :(filename)
  ```

- No Monitor plots are generated.

**Inputs to Database Tables:**

The following are the appropriate entries for the database table.

- FROM FIDROPS: slot_ID, ID_num,id_status, OBS_ID,mag_i_avg, mag_i_min, mag_i_max for each time interval in FIDPROPS.

- FROM GSPROPS: slot_ID, agasc_id ,id_status, OBS_ID, mag_aca_avg, mag_aca_min, mag_aca_max, for each time interval in GSPROPS.
- FROM ACACENT angynea(1-8), angznea(1-8) this is a total of 16 elements for each time interval in ACACENT.
- Other notes for the data base: id_status (0= good,5=marginal 9=bad) time = (tstop+tstart)/2, dt = tstop -tstart if there is only one entry and no time is specified (I can't tell from the ICD if that is the case).
- There is NO MTA status file generated by this code.

**Release:** 4

**Group:** DSOPS

**Analysis Domain:**

**DS Tool Class:** 2

**DS Tool Category:** Monitoring

**Spec Name:** ACA_MON.tex

**Spec Category:** New

**Code Type:** ASCDS

**Code Source:** New

**Specification Version:** 0.4

**Change Control:** 0.3 to 0.4 changes based on 3/3/99 meeting.

**Last Edit:** March 5, 1999