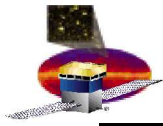


# GLAST Large Area Telescope:

## SVAC Data Products

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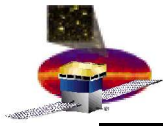




# Outline

---

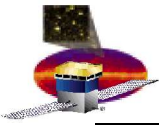
- **What**
  - **Description of data products, and where to find documentation**
- **How**
  - **How to find the data**
- **Where**
  - **Description of directory structure**



# 5 File Types

---

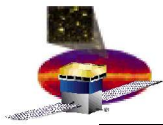
- **LDF**
  - Raw
- **Digi**
  - Raw
- **Merit**
  - Cooked
- **Recon**
  - Details on the process of cooking
- **SVAC**
  - Half-baked



# Raw Data Types

---

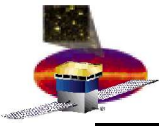
- **LDF**
  - Provided by Online
  - Raw data in electronics space (topological)
  - Raw (.ldf) and FITS (.fits) flavors
  - FITS is the official product
  - Opaque (but FITS can separate events)
- **Digi**
  - Raw data in detector space (geometrical)
  - Tree
  - <http://confluence.slac.stanford.edu/display/WB/digiRootData>



# Cooked Data Types

---

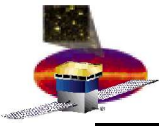
- **Recon**
  - Reconstructed data, plus details of recon process
  - Tree
  - <http://confluence.slac.stanford.edu/display/WB/reconRootData>
- **Merit**
  - High-level summary of reconstructed data
  - Tuple
  - <http://confluence.slac.stanford.edu/display/WB/Merit+Ntuple>
- **SVAC**
  - High and low-level data
  - Tuple, plus fixed-size arrays
  - <http://www.slac.stanford.edu/exp/glast/ground/software/SVAC/E>  
(Doc)
  - <http://www-glast.slac.stanford.edu/IntegrationTest/SVAC/Ins>  
(Rationale & tutorial)



# Where?

---

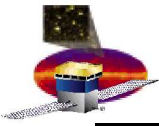
- Data may be on different disks, or even move from disk to disk
- Best way to find a run is to use the shift log
  - <http://www.slac.stanford.edu/cgi-wrap/eLog.pl/index>
  - Click on a “SvacReport,” then work your way up
- Wherever the data are, the structure of a run directory will be the same
  - Details to follow
  - \$(HEAD) represents the location of the run directory in following slides



# Uncalibrated Data

---

- `$(HEAD)/rawData/$(runID)/`
  - LDF, configuration snapshots, schema, run report
- `$(HEAD)/rootData/$(runID)/grRoot`
  - Digi, MC
- `$(HEAD)/rootData/$(runID)/config`
  - Configuration report
- `$(HEAD)/rootData/$(runID)/digi_report`
  - Report on contents of Digi file

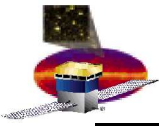


# Calibrated Data

---

- **\$(HEAD)/rootData/\$(runID)/\$(calib\_ver)/**
  - **Everything that depends on calibration**
- **.../\$(calib\_ver)/grRoot**
  - **Recon & Merit**
- **.../\$(calib\_ver)/recon\_report**
  - **Report on contents of recon (& digi) files**
- **.../\$(calib\_ver)/svacRoot**
  - **SVAC “tuple”**

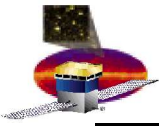




# Configuration Report

---

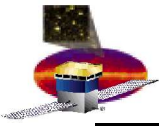
- **Describes instrument configuration used for run**
- **Current contents**
  - **CAL DAC thresholds**
  - **TKR split points**
- **To be added**
  - **Time delays**
  - **CAL zero supression**
  - **?**
- **Currently HTML only, PS and PDF will be added**



# SVAC Reports

---

- Detail contents of recon & digi files
- Include text, tables, distributions, and graphs
- See Xin's talk

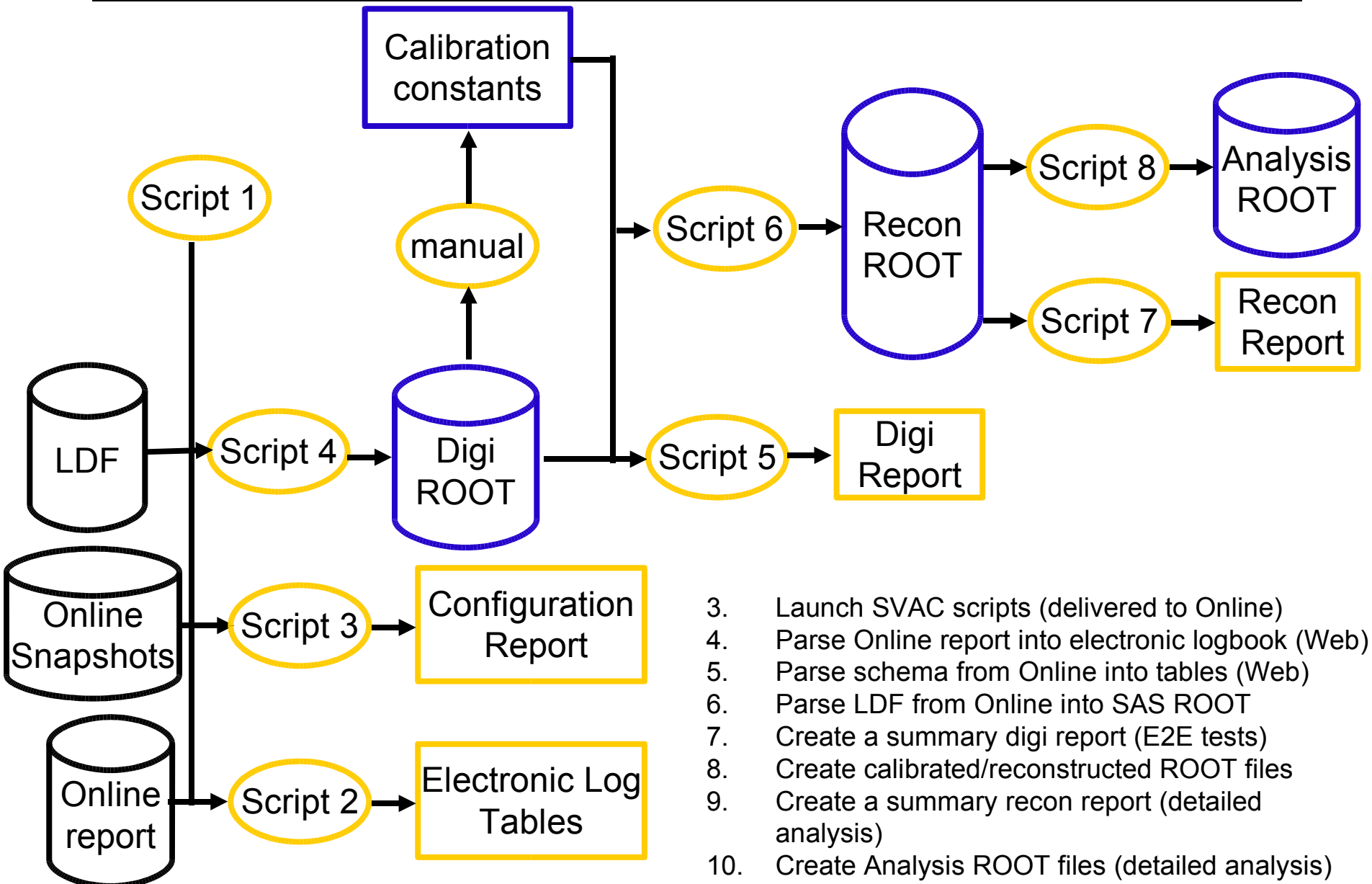


# Reprocessing

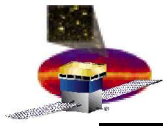
---

- **Reasons for reprocessing**
  - **Major software update (EM package, Calibration algorithm)**
  - **New calibration constants**
- **Since it may be time consuming to reprocess all the data, a review is required to decide whether it is necessary to do the reprocessing**
- **Procedure to do the reprocessing**
  - **Determine appropriate directory tree to hold reprocessed data**
  - **Create a new version of task in the pipe line**
  - **Run the new task**
  - **SAS database will automatically track multiple versions of the “same” data product**
  - **Determine whether the reprocessed data should be present on the web (the eLog can only display one set of data)**

# Scripts for the Data Processing



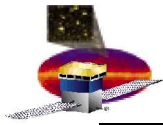
3. Launch SVAC scripts (delivered to Online)
4. Parse Online report into electronic logbook (Web)
5. Parse schema from Online into tables (Web)
6. Parse LDF from Online into SAS ROOT
7. Create a summary digi report (E2E tests)
8. Create calibrated/reconstructed ROOT files
9. Create a summary recon report (detailed analysis)
10. Create Analysis ROOT files (detailed analysis)



# End

---

- **Following slides are backup**



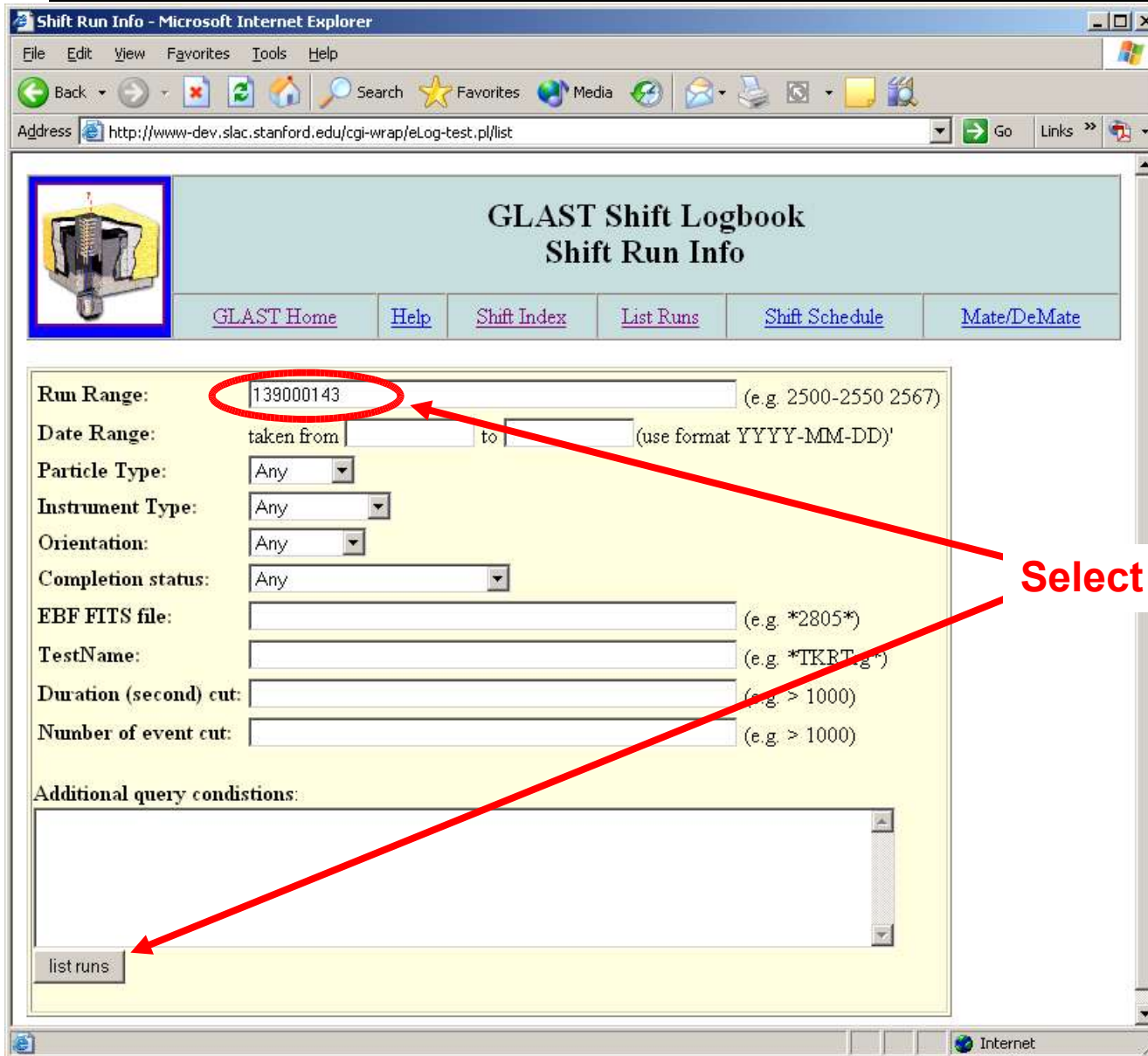
# Runs Database - Overview

---

- The runs database is
  - used to support the data analysis
  - part of the electronic logbook
    - for details on other usage see the Online Peer Review
- The runs database stores information about
  - Data runs
  - Instrument settings
  - Trigger conditions

<http://www.slac.stanford.edu/cgi-wrap/eLog.pl/index>

# Run selection (1)



Shift Run Info - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://www-dev.slac.stanford.edu/cgi-wrap/eLog-test.pl/list> Go Links

## GLAST Shift Logbook Shift Run Info

[GLAST Home](#) [Help](#) [Shift Index](#) [List Runs](#) [Shift Schedule](#) [Mate/DeMate](#)

Run Range:  (e.g. 2500-2550 2567)

Date Range: taken from  to  (use format YYYY-MM-DD)

Particle Type:

Instrument Type:

Orientation:

Completion status:

EBF FITS file:  (e.g. \*2805\*)

TestName:  (e.g. \*TKRTg\*)

Duration (second) cut:  (e.g. > 1000)

Number of event cut:  (e.g. > 1000)

Additional query conditions:

Select a run

# Run selection (2)

The screenshot shows the 'GLAST Shift Logbook Shift Run Info' page in a Microsoft Internet Explorer browser. The page contains several search filters and a table of run data.

**Search Filters:**

- Run Range: 139000143 (e.g. 2500-2550 2567)
- Date Range: taken from [ ] to [ ] (use format YYYY-MM-DD)
- Particle Type: Any
- Instrument Type: Any
- Orientation: Any
- Completion status: Any
- EBF FITS file: [ ] (e.g. \*2805\*)
- TestName: [ ] (e.g. \*TKRTrg\*)
- Duration (second) cut: [ ] (e.g. > 1000)
- Number of event cut: [ ] (e.g. > 1000)

**Additional query conditions:** [ ]

**list runs**

Run	TestReport	ConfigReport	Events	Duration (s)	Start (GMT)	End (GMT)	Status	Particle	Instrument	Orientation
<a href="#">139000143</a>	<a href="#">TestReport</a>	<a href="#">ConfigReport</a>	14400	520	2004-06-29 17:39:31	2004-06-29 17:44:51	UNDEFINED	Cosmics	TKR EM	Vertical

Get run info produced by on line

Get report containing info extracted from digi root file

Get configuration info



# Query List of Runs via the Web

The screenshot shows a Mozilla browser window displaying the 'GLAST Shift Logbook Shift Run Info' page. The page has a navigation bar with links: [GLAST Home](#), [Help](#), [Shift Index](#), [List Runs](#), [Shift Schedule](#), and [Mate/DeMate](#). Below the navigation bar is a search form with the following fields:

- Run Range:** 0-1000000000 (e.g. 2500-2550 2567)
- Date Range:** taken from 2004-06-01 to 2004-06-30 (use format YYYY-MM-DD)
- Particle Type:** Cosmics
- Instrument Type:** Minitower
- Orientation:** Vertical
- Completion status:** Any
- EBF FITS file:** (e.g. \*2805 \*)
- TestName:** (e.g. \*TKRTrg\*)
- Duration (second) cut:** (e.g. > 1000)
- Number of event cut:** >50000 (e.g. > 1000)

Below the search form is a section for 'Additional query conditions' with a text input area. At the bottom of the page is a table with the following data:

Run	TestReport	ConfigReport	Events	Duration(s)	Start(GMT)	End(GMT)	Status	Particle	Instrument	Orientation	RAW file
139000001	not available	ConfigReport	180273	20637	2004-06-24 18:47:23	2004-06-25 00:31:21	UNDEFINED	Cosmics	Minitower	Vertical	

Red annotations in the image point to the following fields:

- Run number:** Points to the 'Run Range' field.
- Date:** Points to the 'Date Range' field.
- Particle source:** Points to the 'Particle Type' dropdown.
- Hardware type:** Points to the 'Instrument Type' dropdown.
- Hardware orientation:** Points to the 'Orientation' dropdown.

# Configuration Report

Shift Run Info - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop <http://www.slac.stanford.edu/cgi-wrap/eLog.pl/list> Search Print

Home Bookmarks Google SLAC Seminars MapQuest Google Groups

**GLAST Shift Logbook**  
Shift Run Info

[GLAST Home](#) [Help](#) [Shift Index](#) [List Runs](#) [Shift Schedule](#) [Mate/DeMate](#)

Run Range: 0-1000000000 (e.g. 2500-2550 2567)

Date Range: taken from 2004-06-01 to 2004-06-30 (use format YYYY-MM-DD)

Particle Type: Cosmics

Instrument Type: Minitower

Orientation: Vertical

Completion status: Any

EBF FITS file: (e.g. \*2805\*)

TestName: (e.g. \*TKRTrg\*)

Duration (second) cut: (e.g. > 1000)

Number of event cut: >50000 (e.g. > 1000)

Additional query conditions:

list runs

Run	TestReport	ConfigReport	Events	Duration(s)	Start(GMT)	End(GMT)	Status	Particle	Instrument	Orientation	RAW file
139000001	not available	<a href="#">ConfigReport</a>	180273	20637	2004-06-24 18:47:23	2004-06-25 00:31:21	UNDEFINED	Cosmics	Minitower	Vertical	

**Register Settings**

# Register settings

Configuration for run 139000001 - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop <ftp://ftp-glast.slac.stanford.edu/glast/u01/EM2/rootData/139000001/config/ConfigTables.html> Search Print

Home Bookmarks Google SLAC Seminars MapQuest Google Groups

## Configuration for run 139000001

Created from files:  
 snapshot: /nfs/slac/g/svac/focke/talks/PeerReview/tables/fake/rawData/139000001/rsb040624184654.xml  
 schema: /nfs/slac/g/svac/focke/talks/PeerReview/tables/fake/rawData/139000001/MiniCaland4LayerTkr.xml

### Low Energy Trigger Discriminator

Low Energy Trigger Discriminator for Tower 0 side +X

layer	crystal											
	0	1	2	3	4	5	6	7	8	9	10	11
0	5	4	1	0	3	0	3	0	1	2	3	0
2	0	0	0	0	2	1	2	0	0	0	0	1
4	5	2	0	0	1	1	1	0	0	0	2	2
6	2	0	0	0	5	0	0	0	2	3	2	1

Low Energy Trigger Discriminator for Tower 0 side +Y

layer	crystal											
	0	1	2	3	4	5	6	7	8	9	10	11
1	2	2	0	0	1	3	1	2	2	0	3	2
3	1	0	5	0	3	0	0	1	1	3	5	1
5	0	0	0	0	3	5	2	4	0	0	0	0
7	0	0	3	0	0	0	3	0	5	0	3	4

### CAL FLE DAC Settings

Low Energy Trigger Discriminator for Tower 0 side -X

layer	crystal											
	0	1	2	3	4	5	6	7	8	9	10	11
0	0	4	0	0	3	3	3	0	0	3	0	0
2	1	0	0	0	0	3	1	0	2	3	3	1
4	0	2	3	0	0	0	7	0	0	0	0	0
6	5	0	4	0	0	2	3	1	0	0	0	4

Low Energy Trigger Discriminator for Tower 0 side -Y

layer	crystal											
	0	1	2	3	4	5	6	7	8	9	10	11
1	2	0	0	5	6	0	7	0	0	2	0	1
3	8	0	0	3	0	1	7	0	0	0	0	0
5	5	0	5	0	2	0	0	3	5	3	0	4
7	1	0	4	0	1	2	0	3	0	0	7	4

### Tracker Split Points

Tracker Split Points (Left:Right)

Layer	Tower 0 X	Tower 0 Y
5	Absent	Absent
4	12:12	12:12
3	12:12	12:12
2	12:12	12:12
1	4:20	12:12
0	0:0	0:0

**TKR GTRC Splits**