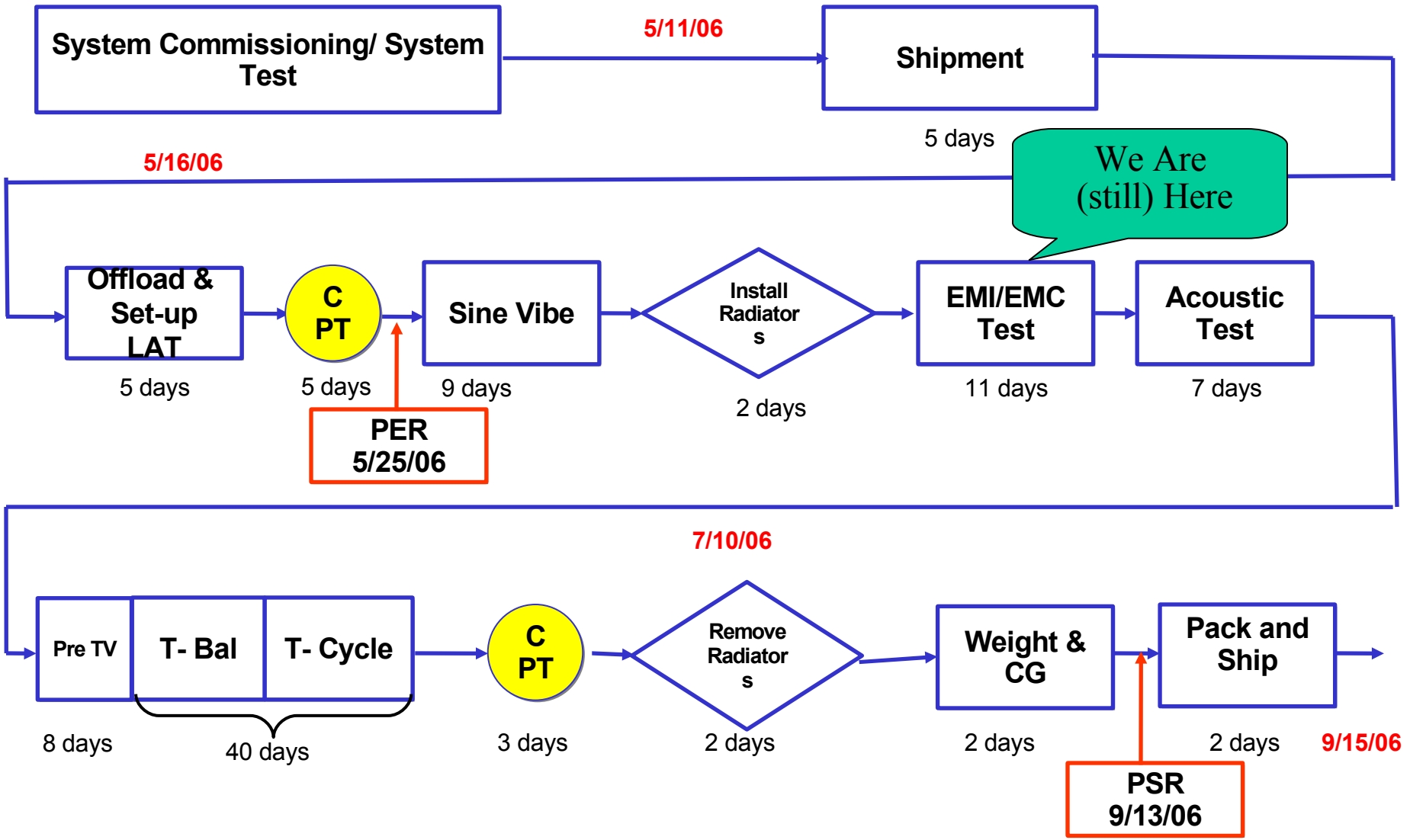
Instrument Analysis Status

Anders W. Borgland

Science
Verification,
Analysis and
Calibrations
/
ISOC

LAT@NRL

From ISOC All Hands Meeting



Instrument Analysis Activities

- April/May: Supported LAT commissioning at SLAC!
  - Data processing aka pipeline
  - Data monitoring
  - 'Flight Software' debugging:
    - Several FSW problems first seen in offline
    - Because we were looking :-)
      - » Not always as quickly as we could have ..... :-(
  - Data analysis:
    - Not as much as I had hoped for – mostly because .....
- Commissioning support completely overwhelmed us here at SLAC!
  - SVAC got completely sucked into operations!
    - We had to! We had lots of fun!
    - But .....
  - Coordination of analysis activities suffered.
- Continue support during environmental testing at NRL:
  - Data is transferred from NRL to the SLAC pipeline
  - All data processing is done at SLAC!
    - Plus ca change .....

Testing@NRL

- Lot of activity going on at NRL:
  - Test scripts and reports being written by each subsystem
  - Lots of data to look at after each test!
    - And signing off on .....
  - CAL:
    - http://www.slac.stanford.edu/exp/glast/ground/Calibrations/TestReports/NRL/EMC-EMI/CAL
  - ACD:
    - http://www.slac.stanford.edu/exp/glast/ground/Calibrations/TestReports/NRL/EMC-EMI/ACD
  - TKR:
    - http:///www.slac.stanford.edu/~suguzaki/glast/TkrNoise/TkrNoiseRep_index.html
- Alignment:
  - Johann has started inter-tower alignment monitoring:
    - It would be nice to know if towers moved during the shake test .....
      - NB!
    - This is just a monitoring tool, not a real inter-tower alignment! Johann and Eric will start working on this.
- This is the time to catch problems:
  - And we catch them by looking at the data!
    - It sounds kind of obvious, doesn't it? ;-)

It's Easy To Contribute

- During environmental testing at NRL:
  - Each subsystem is looking at subsystem specific quantities:
    - Typically pedestals, hot strips etc
  - Things that would quickly flag a problem in their subsystem
  - And they do this well:
    - See report links on the previous page
  - You can also contribute:
    - A very nice example is Yvonne's light tight analysis:
      - » See IA talks for details
    - Lessons learned:
      - » We all learn (to appreciate things) from these high level analyses from non-expert users
      - » Even a high-level ntuple analysis can give us a detailed description of the instrument performance
      - » And especially tell us that there is no significant problem after a specific NRL test
  - Dialogue: subsystem expert – general user!
    - There is still a lot of information and knowledge that is "known" by a few experts.
    - IA meetings help spread this knowledge! Not only sharing the pain :-)

Hey! It's Your Instrument (Analysis)!

- Instrument Analysis:
  - How are we doing?
  - In some ways, very well!
    - Subsystems are doing a great job analysing the NRL test data.
- But I am worried .....
  - Why?
  - Well, I have a list of things to look at:
    - Time structure of LAT Charge Injection runs:
      - » Can we speed up LCI runs?
    - Run start up:
      - » Trigger rates in the first few seconds not always what they should be
    - Deadzone events:
      - » Rate as expected? What are they?
    - Extrapolate muon hypothesis tracks to the ACD:
      - » Geometry, efficiencies ....
    - Performance when LAT is horizontal (for TVAC)
  - But that is not the real problem .....

What Did We Miss?

- It's not so much what I can think of:
  - It's the Rumsfeld 'unknown unknowns'!
- I would like people to look at the data!
  - In ways we couldn't think of:
    - Find bugs or problems or features we didn't find.
- Science Working Groups needs:
  - What do you need for your physics analysis?
  - Well, think about it now!
    - If somebody $#$#@ up, this is the time to discover it.
- Example of what I would like to see:
  - Dave:
    - Pulsars need good absolute timing!
    - Can we guarantee that it's correct/within specs?
    - Starts asking questions:
      - » See Friday IA talk
      - » And gets people thinking
      - » (Nice occasion to learn about Time Tones!)
    - Why should we worry?
      - » Chandra HRC event time, Mars Climate Orbiter .....

200M muons Can't Be Wrong

- We have lots .... but really lots of muons ....
  - And gammas and .... whatever else we have in cosmic rays
- And a very nice fully calibrated instrument!
- I can only encourage you to use it
  - Yeah, I know:
    - You're busy with DCn simulations and analysis ....
    - and beamtest
- But don't forget:
  - This is the Instrument
  - With Flight SoftWare
  - What you see is what you get!
    - In Orbit!
- What you don't learn about now:
  - You will regret later!
- SVAC is at your service:
  - If you need anything, let us know!
    - MC, special (muon) processing .....
  - If you have questions about the instrument:
    - Don't hesitate!

Summary

- We're in the middle of EMI testing at NRL:
  - Limited set of people looking at lots of data!
- Soon to come:
  - TVAC!
  - Will run 24/7 - for 40 days:
    - Will need to spread the ~~burden~~ joy!
  - And remember:
    - We will run horizontally!
    - Lots of horizontal data from SLAC to look at!
- Subsystem specific analyses:
  - Going well!
  - But help always appreciated!
- Instrument analysis:
  - Need help:
    - For some specific topics
  - But especially for people to look at the data from a complete instrument point of view:
    - Think about what you need for the science you want to do!
  - Lots of data to play with!

Afterword

Help, I need somebody,
Help, not just anybody,
Help, you know I need someone, help.

When I was younger, so much younger than today,
I never needed anybody's help in any way.
But now these days are gone, I'm not so self assured,
Now I find I've changed my mind and opened up the doors.

Help me if you can, I'm feeling down
And I do appreciate you being round.
Help me, get my feet back on the ground,
Won't you please, please help me?

Four guys from the town of the best football club ever!