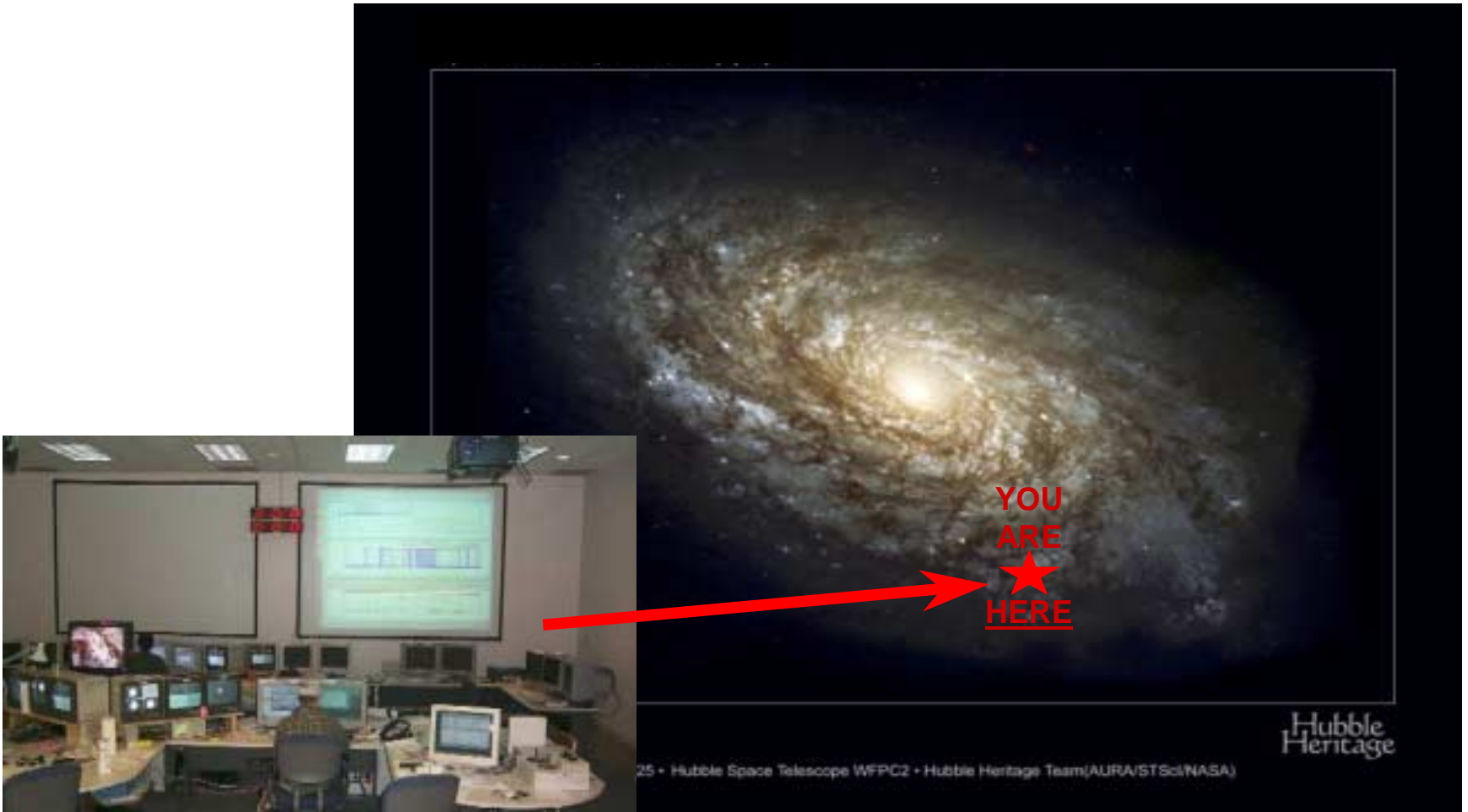# Notifying the Control Room of GRBs in Real-Time

R. Rahkola

(also D. Barker, C. Parameswariah, J. Smith, J. Garofoli)

(many thanks to Sz. Marka, H. Tariq, S. Barthelmy [GCN], K. Hurley [IPN], K. Scholberg [SNEWS])
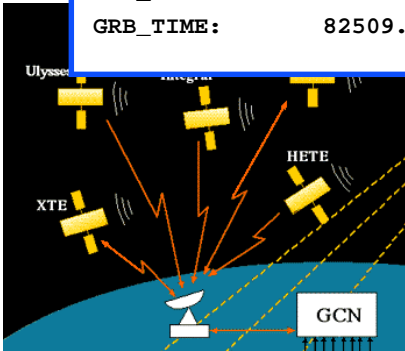
Combating ICRS*

YOU
ARE
★
HERE

LSC Meeting, March 15-18

* Isolated Control Room Syndrome

Re-cap from November's LSC

LIGO

```
Date: Thu, 8 May 2003 18:55:58 -0400
From: Bacodine <vxw@capella.gsfc.nasa.gov>
To: sn@ligo.caltech.edu
Subject: GCN/HETE_POSITION
TITLE:          GCN/HETE BURST POSITION NOTICE
NOTICE_DATE:    Thu 08 May 03 22:55:45 UT
NOTICE_TYPE:    HETE S/C_Alert
TRIGGER_NUM:    2705,   Seq_Num: 1
GRB_DATE:       12767 TJD;   128 DOY;   03/05/08
GRB_TIME:       82509.54 SOD {22:55:09.54} UT
```

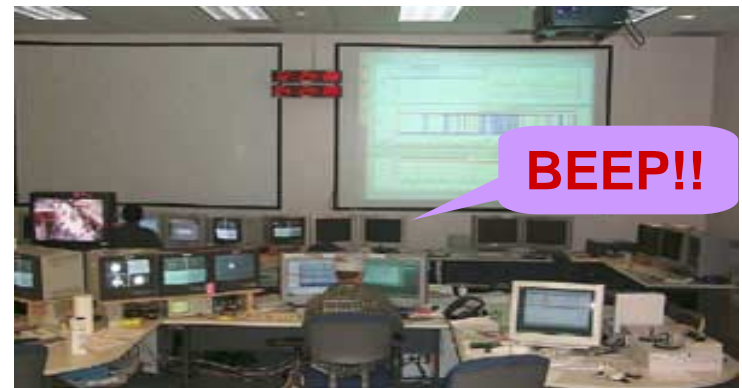TCP/IP → **???** (GEO receiver)

TCP/IP → **london** (LLO receiver)

red (LHO receiver)
- Get event timestamps, type
- Set EPICS records
- Trigger EPICS alarm
- Write event to log file
(continuously running)

TCP/IP →

event_type
event_start
"stand-down" time

acrux.ligo.caltech.edu

(email handling / parsing)

- Check event time with current time
- Scrap test emails, emails which arrive too late, etc.
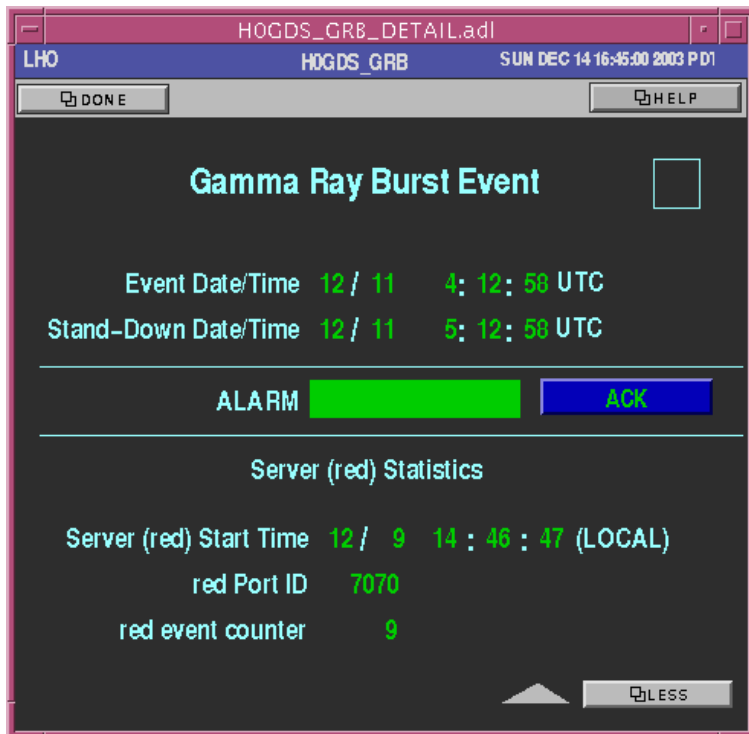
BEEP!!

Highlights from S3

Clips from the E-log

12/19 10:06 Day shift GRB Alarm with triple-coincidence lock!
   Believe it or not, we have all IFOs in lock when a GRB alarm occurs at about 18:00 UTC We will endeavor to stay in Science Mode for the next hour. Many thanks to the operators. (keitht)

(GRB indicator on LHO site overview MEDM screen)

12/22 16:32 GRB alarm at 21:31:17 UTC, for this alarm was hard to maintain SM on IFOs, seismic. Several Watchdog alarms and others due to quake. (gmoreno)

12/24 08:21 ...Fortuitously, a GRB trigger arrived in the middle of this interval, with an event date/time of 11:50:29 UTC. (pshawhan)

12/26 15:18 GRB keepalive dead -- I note that the GRB 1Hz keepalive has ceased blinking. Notified DBarker, RRakhola. (landry_m)

1/2 07:04 GRB really is back with us. (hugh)

1/7 07:56 GRB Event Alarm at 7:45am Local. Luckily H1 is safely in Science Mode. H2 is slowly making its way back... (8:52) Ifo has since been in SM for the last 30+ min, thus contributing a little bit of data during our recent GRB window. (corey)

(GRB Event MEDM screen)

Current Status

Email handling:

- ➤ Only handles HETE real-time notices (7 non-HETE notices since 12/03)
- ➤ Saves full trigger information in LIGO-LW format files

LHO:

- ➤ EPICS alarm is up, safety measures in place to check ethernet connection
- ➤ GRB operator check sheet is in progress
- ➤ Working policy with commissioning schedule:
  - ▪ 1 IFO – ignore alarm
  - ▪ 2 IFOs – halt invasive commissioning;
    keep in science mode until stand-down time

LLO:

- ➤ Waiting for Chethan to return; installation should be identical to LHO
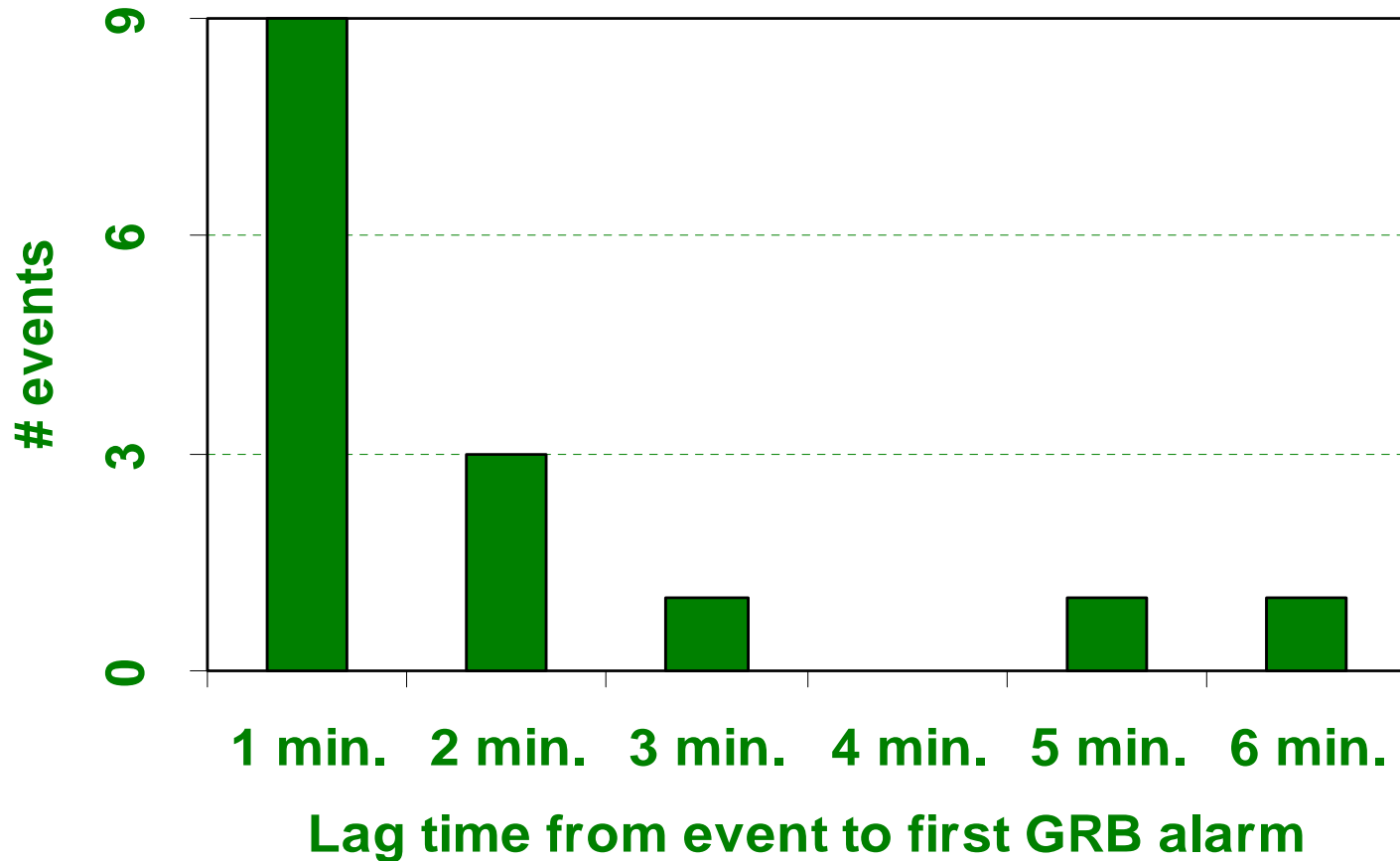
GEO:

- ➤ Uses LabView instead of EPICS
- ➤ Uncertain how to work across firewall (via remote control room?)

Future Plans & Questions

- Start receivers at GEO, LLO (in works)
- Parse other GCN, SNEWS notices
- Finish operator check sheet to determine data quality (to be used for possible extra-science run search)
- 'One-click' RDS for GRB triggers
- Data storage for triggered RDS?
- Commissioning policy for notices? (~.5/day, but expected to rise!)

Delay between GRB and control room notification

 # events (y-axis: 0, 3, 6, 9)

Lag time from event to first GRB alarm (x-axis: 1 min., 2 min., 3 min., 4 min., 5 min., 6 min.)

Case Study: GRB030329 (one of the first S2 results!)

LIGO

4K Science mode drop/h1adcuex reboot/IR tweak:

Since we had a timing error on EX ADCU GPS RAMP, took the 4k out of science mode remote rebooted h1adcuex.The h1adcuex telnet session has been running on Control0.
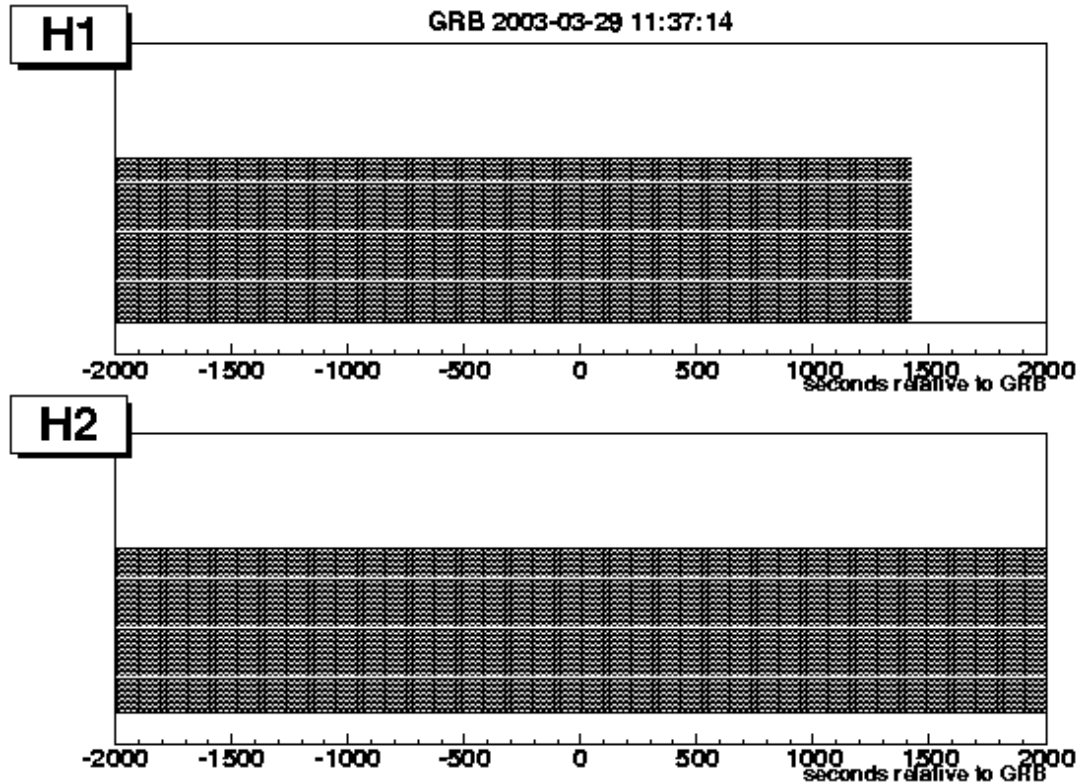
While we were out of science mode,relieved WFS and tweaked the available DOFs to improve the IR. Reducing the AS_DC to ~4300 (from ~4900) seems to have helped in increasing the IR to 420kpc (from ~370kpc). The arm powers did go up by a few counts. - *vagesh*

(segment plot by K. Rawlins)