Interferometer and modecleaner transients during the E2 run

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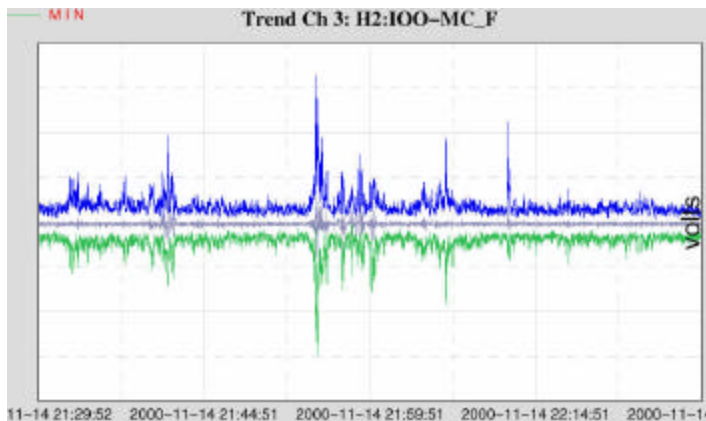## Rick Savage

LIGO Hanford Observatory

LIGO Scientific Collaboration Meeting

March 14-17, 2001

Investigations

- **Modecleaner/IOO Transients – R. Frey**
  - » Characterize transient behavior using Data Viewer in real time.
 - » Study in more detail off-line.

H2:IOO-MC_F

- **PSL Frequency Glitches – R. Rahkola, R. Savage**
  - » Use J. Zweizig's PSLmon monitor in effort to identify PSL frequency glitches previously observed using oscilloscope in the laboratory.
  - » Determine if previously observed PSL frequency glitches can be seen in the data channels.

- Some MC_F and AS_I transients induced by ground motion.

Data Display start at 00-11-14-21-33-21 (16 seconds)
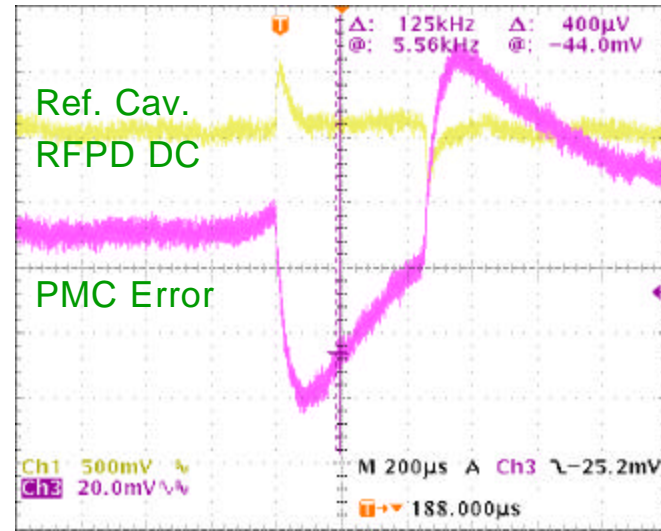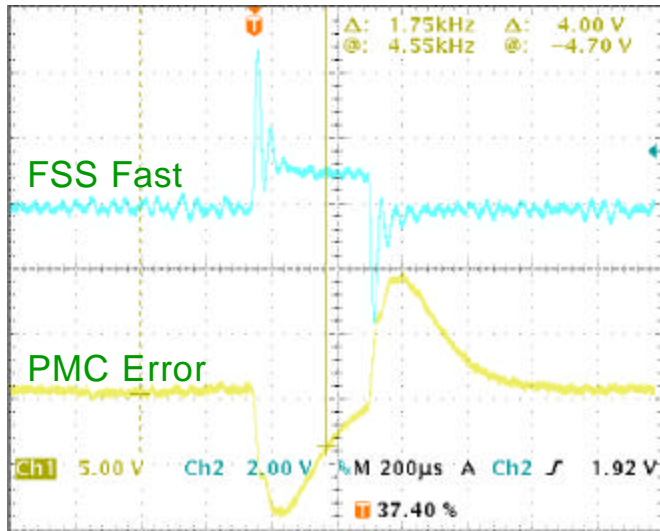
MC_F

AS_I

LVEA_SEISZ
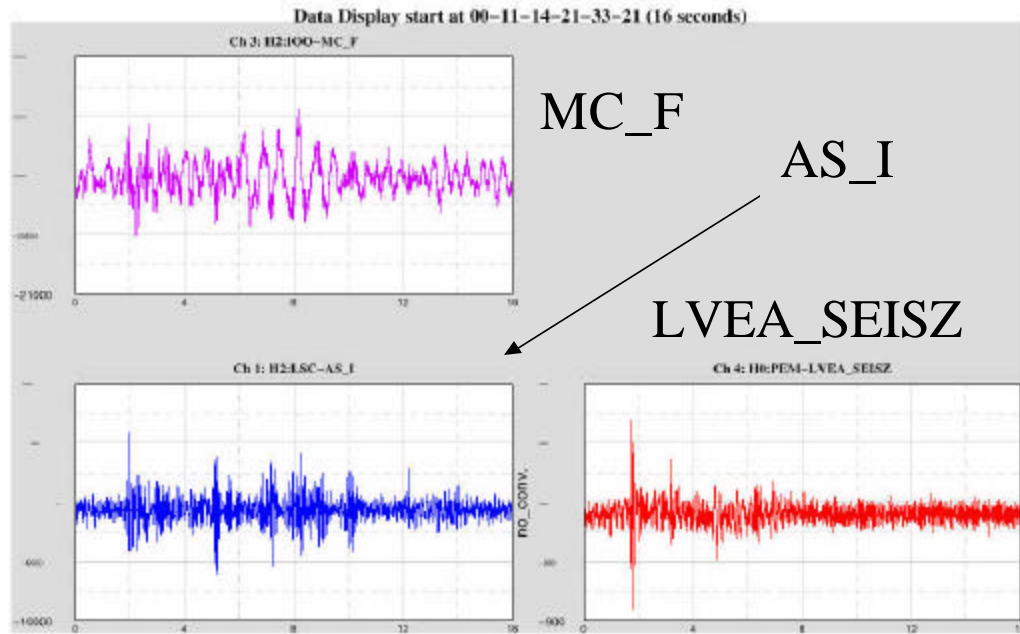
SEISZ transient preceedes MC_F and AS_I transients by ~ 0.2 sec.

MC_F transient peaks ~6 sec. after initial SEISZ Impulse.

- R. Schofield and D. Chin were able to induce similar transients by stomping on LVEA floor, driving over a bump, etc.

PSL Frequency glitches

FSS Fast

PMC Error

Ref. Cav.
RFPD DC

PMC Error

200 usec/div. (~3 counts/div)

-Observed 6/00 in lab at rate of 10's per second
- Eliminated (?) by adjusting NPRO pump diode current
by 0.02 amps

Approach

- **Use PSLmon monitor (J. Zweizig) on several PSL channels**
  - » Calculate standard deviation for each one second interval
  - » For each second that signal level exceeds a user-defined threshold, generate a trigger at the time of maximum deviation.
  - » Triggers recorded in the LDAS meta-database.
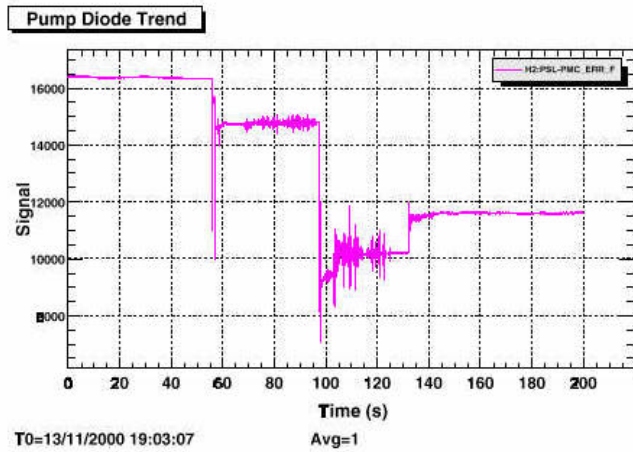 - » Investigate triggers using GUILD interface (P. Shawhan).
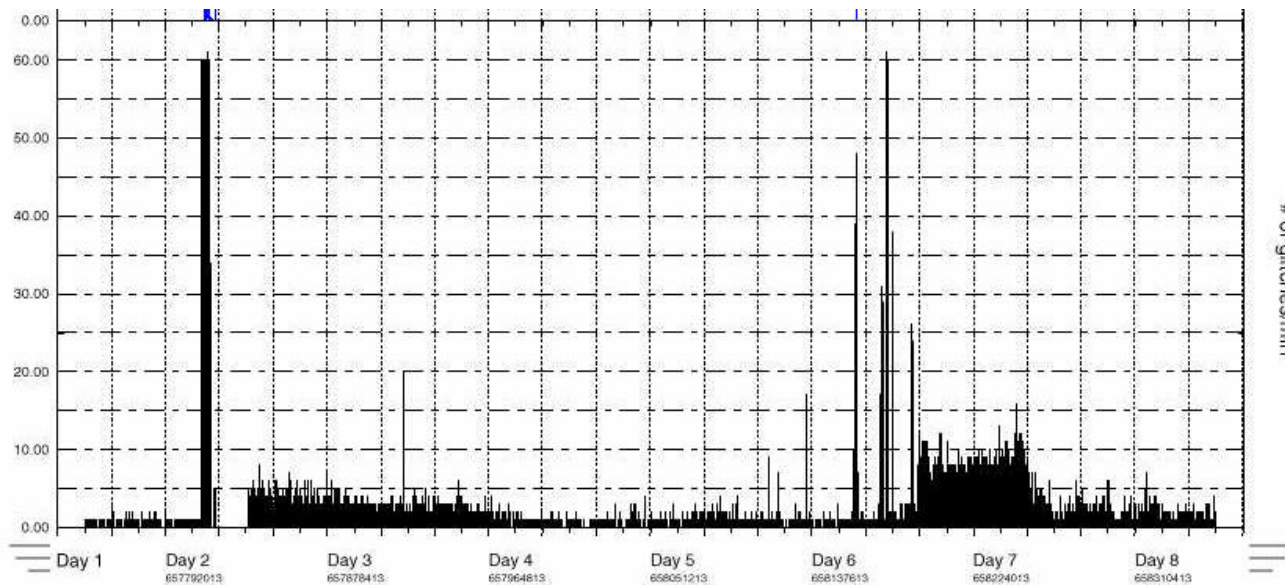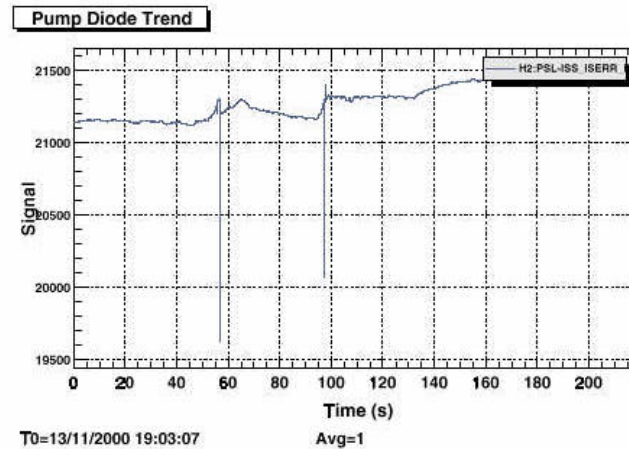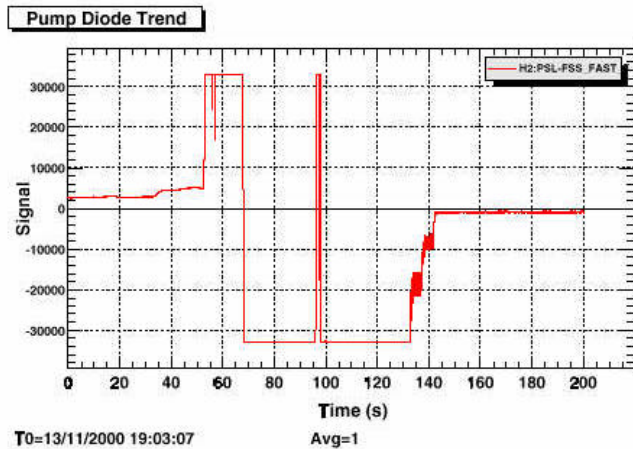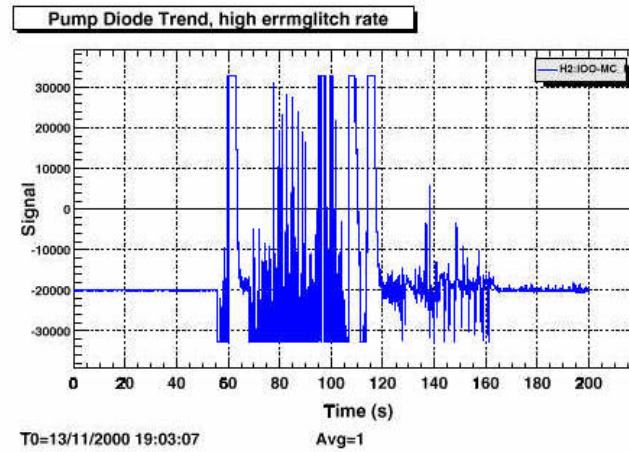
Glitches per minute for PMC_ERR_F

- ## Saturated signals

- ## Mode-cleaner loss of lock
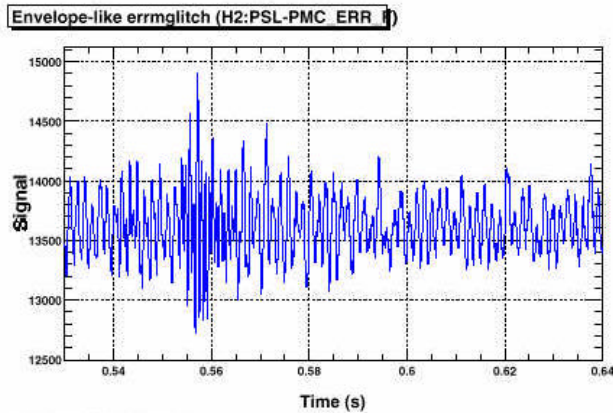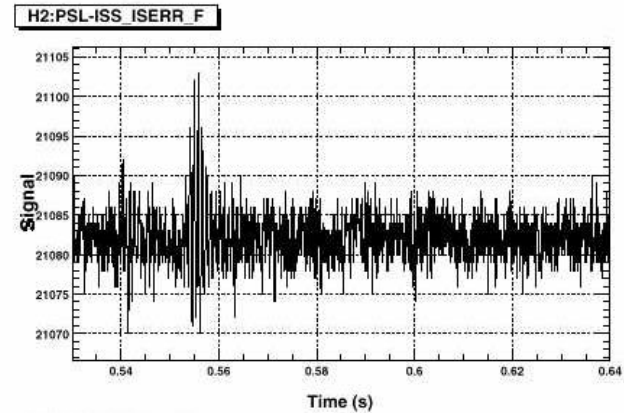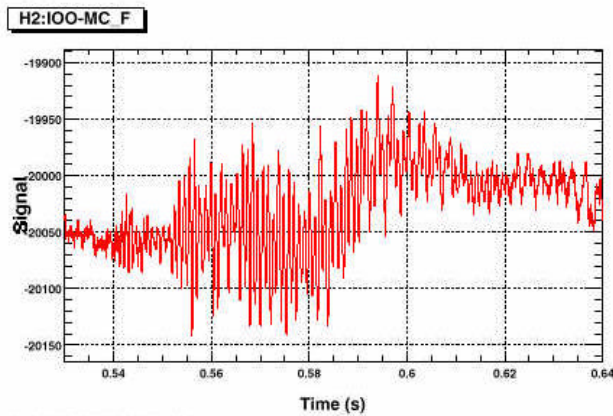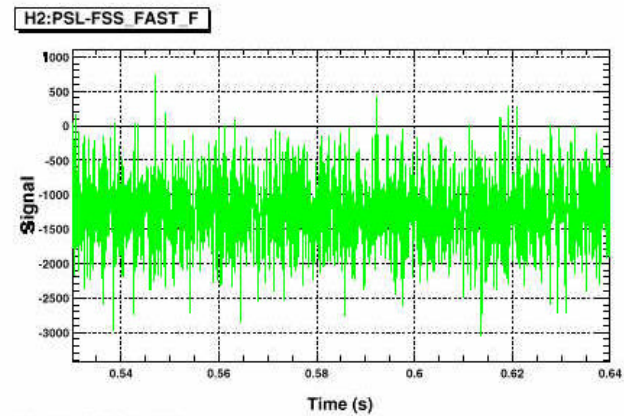
- Unidentified sources

- ## PSL frequency glitch?
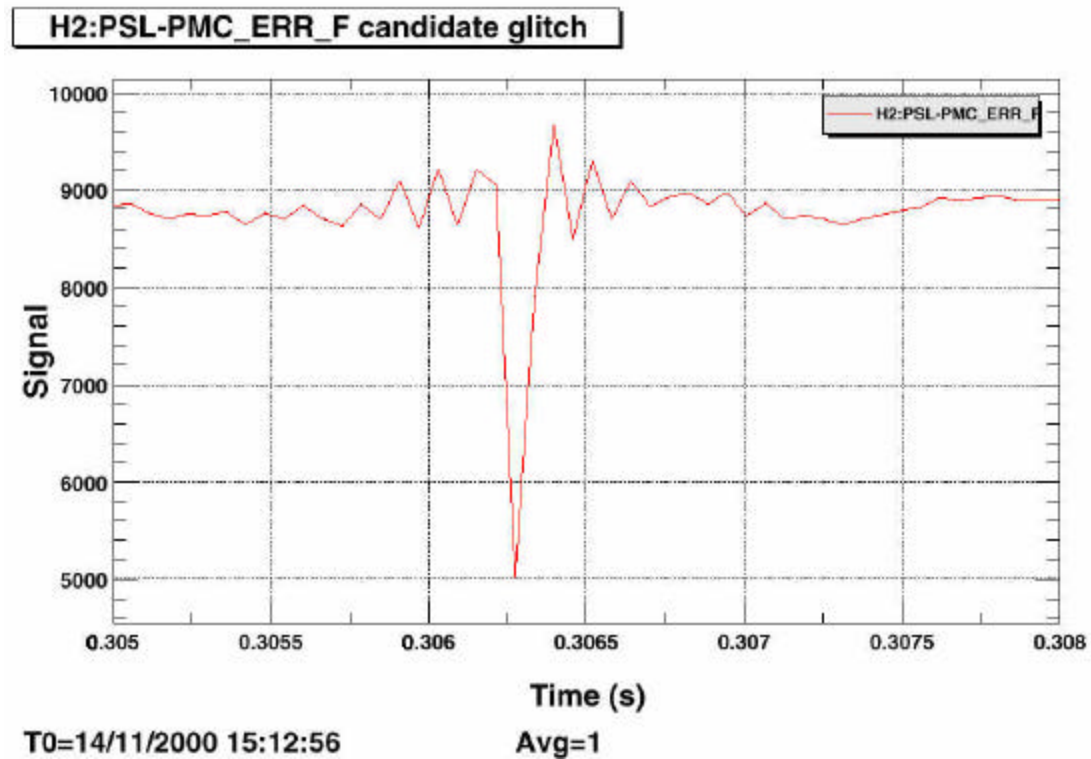
* Not seen in H2:PSL-FSS_FAST_F as expected.

Upgrades to monitor/future plans

- AC couple H2:PSL-PMC_PZT_F channel. (Done)

- Monitor PSL channels with oscilloscope to see if recent tuning of 10-W laser has eliminated glitches. (No glitches observed on 4/2/01)

- Suppress triggers when MC is out of lock and when signals are saturated.

- Reduce trigger rate by triggering on correlated events in two or more channels.

- Run new monitor (written by R. Rahkola) – check event rate, sample glitches. (not quite ready for E3 run).