Data Quality Segments Repository

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LIGO-G030393-00-Z

What is it?

- **Centralized location for information on "bad" data intervals and other artifacts affecting more than one astrophysical search group**
  (infrastructure by P.Shawhan, DQ team information compiled by KR)

- **Segments indexed by initial list of science mode segments (reconciled merging of conlog / SegGener info)**
  H1 / H2 / L1 → 222 / 418 / 606 segments

- **Time intervals with known problems are manually flagged with mnemonic label having corresponding bit (e.g., Bad(Mich_Filt) = bit 2) → See example next page**

Example Entry

Example H1 entry in manually edited work file:

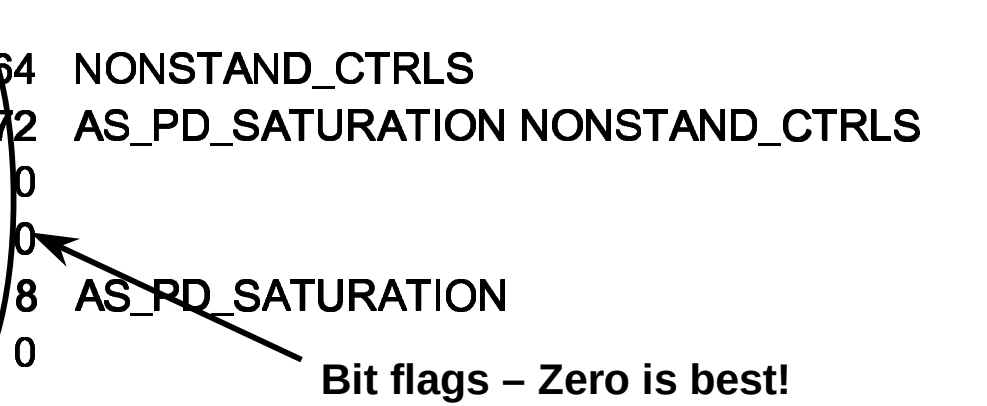
```
======== Segment 106 731491887 731492851 964
  Found in conlog | 731491884-731492851 |
  Found in db | 731491887-731492851 |
PeterS, 5 May 2003
  MICH FM5 "SB50:120" filter was OFF during this segment;
  normally ON during S2
  *BAD(MICH_FILT)
```

What is it?

At each version release, the IFO work files are scanned by scripts to determine subsegments of common flag status:

Example L1 entries after scan of work file:

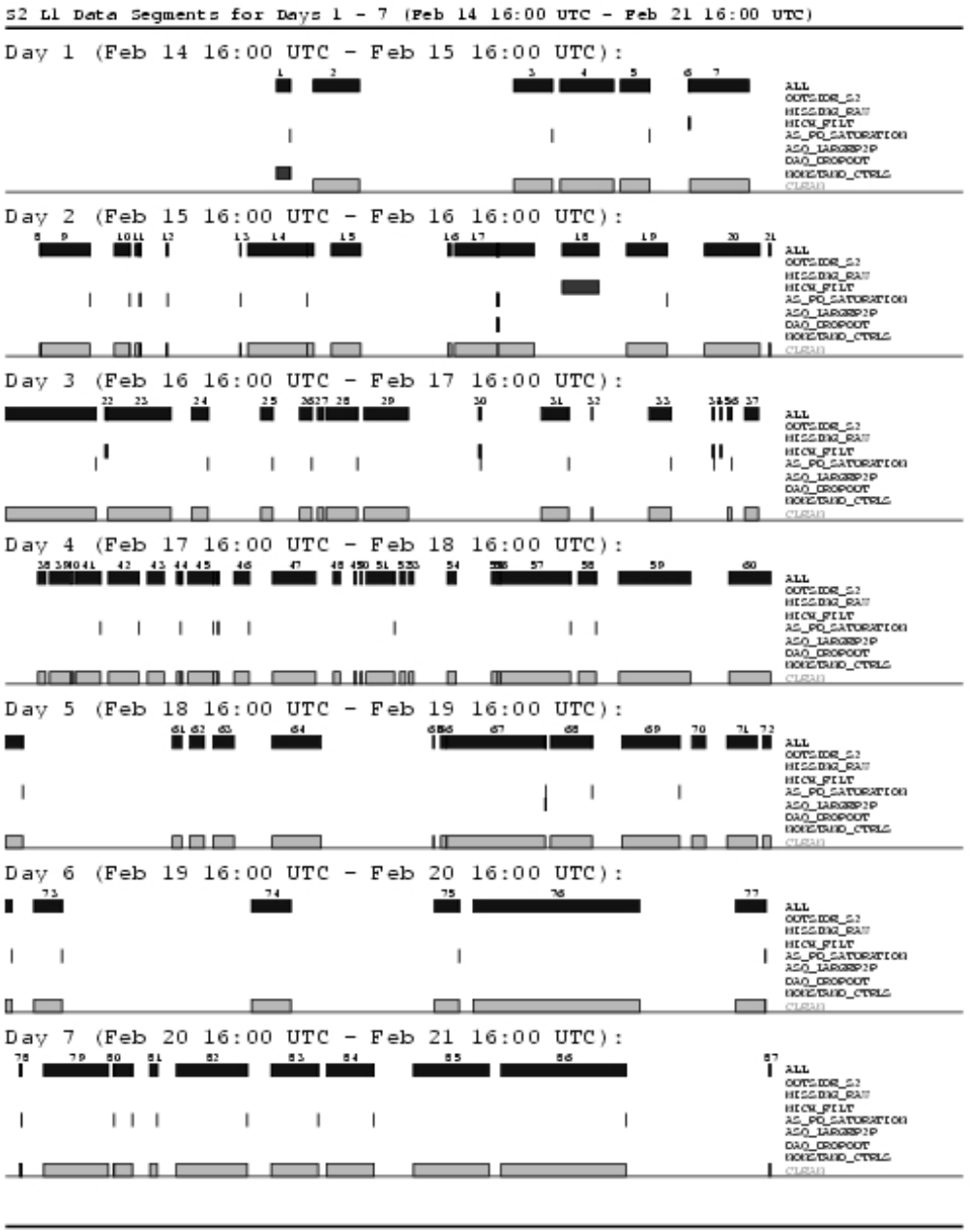
```
1 729304210  729305790  1580  64   NONSTAND_CTRLS
1 729305790  729305791     1  72   AS_PD_SATURATION NONSTAND_CTRLS
2 729308373  729313554  5181   0
3 729331024  729335368  4344   0
3 729335368  729335369     1   8   AS_PD_SATURATION
4 729336256  729342310  6054   0
```



- → **Segments 1, 3 broken into subsegments**
- → **Segments 2, 4 clean**

Bad-flag information can also be viewed graphically:

(example for L1 – days 1-7, version 2 segments)



Users can choose to cut on conditions important to their analysis by reading sub-segment file output directly or by running the handy program segwizard (P.Shawhan)

segwizard allows the user to choose (or veto) arbitrary combinations of quality flags and IFO's

- **Part of segments package in LIGOtools**
- **See sample GUI control panel**
- **Provides deadtime info for each flag**

segwizard control panel

(version 2 segments)

LIGO Analysis Segment Wizard

Quit

Run: S2 | Info at http://tenaya.physics.lsa.umich.edu/~keithr/S2DQ/S2seglists.html

Segment list version number: 02

Interferometer(s): H1H2L1 | Total time: 1144912 sec

Data quality flag	Affected time (sec)	Don't analyze	Analyze but veto	Analyze and keep
H1:MICH_FILT	17223	◆	◇	◇
H1:MISSING_RAW	6	◆	◇	◇
H2:AS_PD_SATURATION	1	◆	◇	◇
H2:MICH_FILT	36004	◆	◇	◇
H2:MISSING_RAW	6	◆	◇	◇
L1:AS_PD_SATURATION	351	◆	◇	◇
L1:ASQ_LARGEP2P	764	◆	◇	◇
L1:DAQ_DROPOUT	34	◆	◇	◇
L1:MICH_FILT	120050	◆	◇	◇
L1:NONSTAND_CTRLS	86	◆	◇	◇
Total times (reflecting any overlaps):	172160	172160	0	
Percentages (of 1144912 sec):	15.04	15.04	0.00	

Create segment list file | Create veto file

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Other information

Other information available on DQ segments page:

- **Links to minute trends:**
  - » **IFO performance (G.Gonzalez)**
  - » **Calibration line magnitudes/phases (M.Ashley)**
- **Link to DataQual DMT monitor summary info (J.Zweizig)**
- **Cautions:**
  - » **Byte-swapping error, magnetometers at LLO end stations**
  - » **Heads-up on certain DQ flags (eg., ASQ_OUTLIER_CORRELATED)**
- **Links to “raw information” from which DQ flags derived**

Status

Version 1 released May 6 – highlights:

- Barebones but carefully vetted list of science-mode segments
- Some known filtering changes flagged

Version 2 released June 19 – highlights:

- Focussed on L1 artifacts
- DAQ dropouts; ASQ saturations; inferred ADC/PD saturations
- End-of-lock-stretch misbehavior
- More control parameter changes
- Plots of minute trends of IFO performance
- Graphical summaries of DQ segments, day-by-day

Status

Version 3 almost released August 15 – highlights:

(Blackout of 2003 intervened…)

- **More uniform treatment of H1 and L1; H2 less addressed**
- **Calibration availability / validity**
- **RDS problems**
- **ASQ outliers (clustered and correlated)**
- **Excess powers in low-frequency and high-frequency bands**
- **Preview**

Will make this release highest priority once back in Michigan

Version 4 plans/hopes:

- **Address same artifacts in H2 as in H1, L1**
- **Violin mode ringdowns & ringups**
- **Glitchy data intervals**

Thanks!

Many thanks to the Data Quality team for included info:

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…and to other S2 investigation teams

…and extra-special thanks to

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