

APPENDIX F – RT130 LOG FILE – USING LOGPEEK

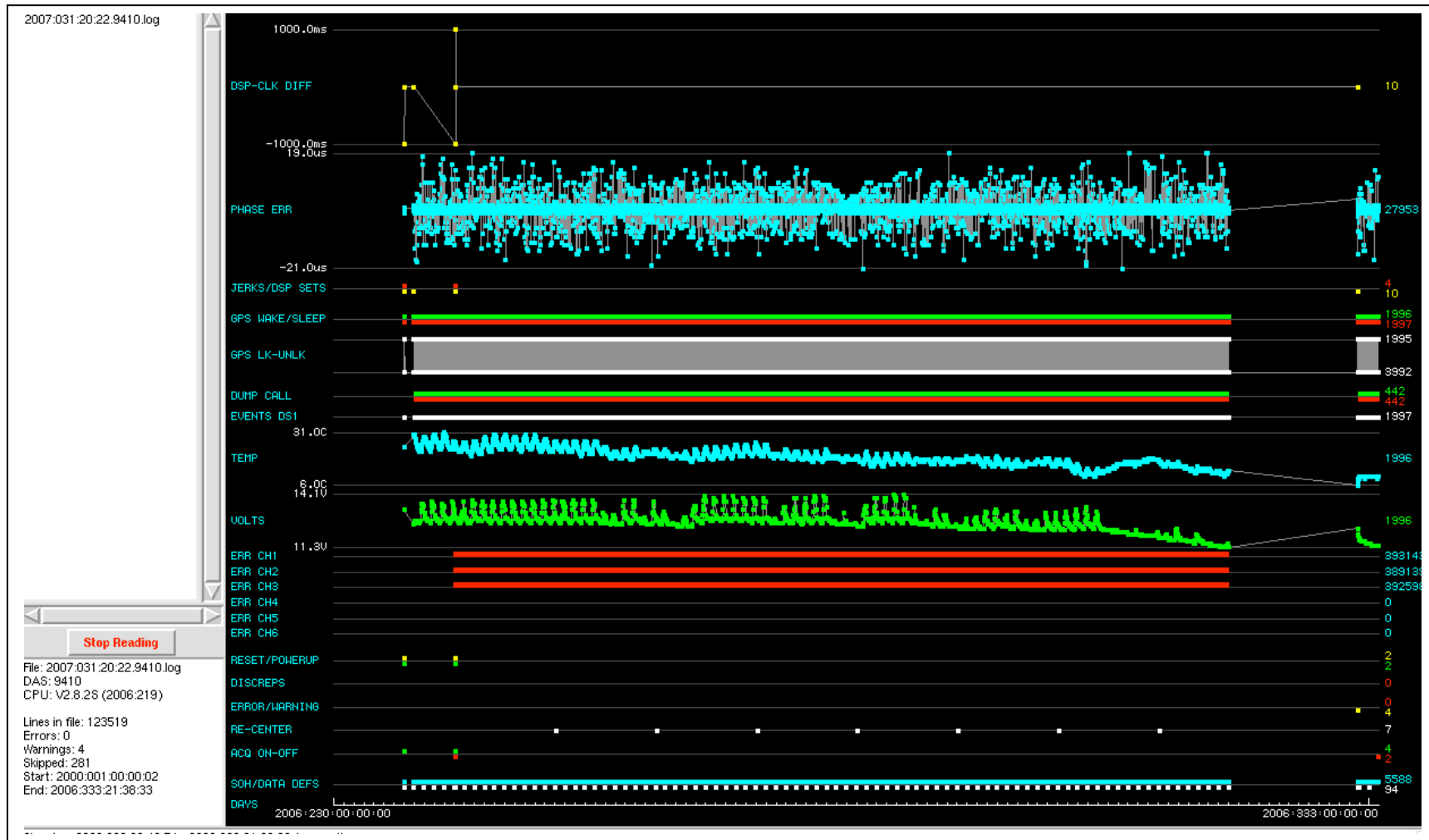


Figure 1. Logpeek display for a rt130 digitizer serial number 9410.

	TIMING MESSAGES	WHAT IT MEANS	From man logpeek (Bob Greschke)
LOG FILE	DSP-CLOK DIFF	This is the Digital Signal Processing chip that samples the analog data. The DSP clock resets every time a time jerk occurs. Since the DSP includes a separate counter for seconds and milliseconds, the reset may occur in two steps.	Points on this graph are generated by lines in the log files like: 172:01:41:21 DSP CLOCK DIFFERENCE: 0 SECS AND - 989 MSECS. This graph will only be displayed if these messages are in the log file.
	PHASE ERROR	Reports the difference between the internal and external clock. Small errors (in microseconds) indicate that external and internal clocks agree. Errors in the order of milliseconds are written when a clock has been unlocked for some time and then locked. If large enough, these should be associated with time jerks.	Points on this graph are generated by lines in the log file like: 172:02:41:19 INTERNAL CLOCK PHASE ERROR OF 3526 USECONDS
	JERKS/DSP SETS	This is a reset of the internal clock. It usually occurs if the phase error between the external and internal clock exceeds the limits of -5 and +11 milliseconds.	Points on this graph are generated by lines in the log file like: 172:23:41:44 INTERNAL CLOCK TIME JERK # 11 OCCURRED AT 23:41:44.994 172:23:41:45 DSP CLOCK SET: OLD=01:172:23:41:45.996, NEW=01:172:23:41:45.007
	GPS WAKE/SLEEP	Shows GPS status.	Points on this line are generated by lines like: 173:00:39:58 GPS: POWER IS TURNED ON (72-series instruments)

		173:00:39:58 EXTERNAL CLOCK WAKEUP (RT130-series instruments)
GPS LK-UNLK	GPS LOCK – means the external GPS clock is synchronized to the GPS satellites. GPS UNLOCK – If larger than the manufacturer specifications of +/- 0.5 ppm (+/- 40 milliseconds/day) perhaps you should consider for how long this happened, and if there are important events you would like to correct.	Points on this graph are generated by lines like: 173:00:41:53 EXTERNAL CLOCK IS LOCKED 173:00:46:53 EXTERNAL CLOCK IS UNLOCKED
DUMP CALL	DUMPING	Points on this line are generated by lines like: 173:01:17:25 AUTO DUMP CALLED 173:01:18:03 AUTO DUMP COMPLETE
EVENTS DS1	Refers to recorded events for each data stream.	Points on these lines are generated by lines like: DAS: 0108 EV: 0377 DS: 2 FST = 001:173:01:09:51:447 TT = 2001:173:01:09:51:447 NS: 144005 SPS: 40 ETO: 0 Which line a point is plotted on is determined by the data stream value following "DS:" in the log file line.
VOLTS	VOLTAGE	Points on this graph are generated by lines like: 173:02:17:04 BATTERY VOLTAGE = 13.5V
TEMP	TEMPERATURE	Points on this graph are generated by lines like: TEMPERATURE = 28C
RESET/ POWERUP	Indicates when resets or power ups happened during recording time.	
DISCREP	If any time discrepancies occur they will be shown here.	
ERROR/WARNINGS	Lines are placed in the log file by programs like ref2segy that have the word "ERROR" or "WARNING" in them. The position of the dots on the graph for these messages may, at times, not make any sense. These message lines in the log files do not have a time stamp, so the program just uses the time from the last line that had a time stamp, which, since a lot of the warning messages	

		have to do with clock problems, means that the dots will show up in the wrong place.	
	RE-CENTER	Indicates manual recentering during recording. Also shows programmed or configured center commands.	Generated by lines in the log file like: 086:16:04:36 SENSOR 1 MASS RE-CENTER: MANUAL
	ACQ ON-OFF	Reflects times when acquisition started or stopped.	Points on this line are generated by lines like: 159:15:09:11 ACQUISITION STARTED 253:22:57:43 ACQUISITION STOP REQUESTED
	SOH/DATA DEFS	State of Health Data Definition	SOH points on this line are generated by lines like: State of Health 01:159:15:06:02:839 ST: 0108 Data Definition points on this line are generated by lines like: Data Stream Definition 01:159:15:08:59:392 ST: 0108 This block of information is normally followed by lines for the other parameter blocks such as: Station Channel Definition 01:159:15:08:59:392 ST: 0108 Calibration Definition 01:159:15:08:59:392 ST: 0108
	NET UP/DOWN	Indicates when acquisition was started or stopped	From message: 277:20:37:06 RTP: Network layer is UP! 3:20:00:40 ACQUISITION STOP REQUESTED 053:20:00:40 ACQUISITION STOPPED
	DAYS	Indicates time span of data recording.	

File: 2007:065:15:36.9BC4.log	File name
DAS: 9BC4	Datalogger associated to the file
CPU: V2.8.2S (2006:219	Current firmware on DAS
Lines in file: 170023	Count of lines on log file
Errors: 0	Count of found errors
Warnings: 0	Count of found warnings

Skipped: 2

Start: 2006:277:20:36:39

Time of first record

End: 2007:053:20:00:40

Time of last record

Table 1. Timing issues when using logpeek to evaluate log file from rt130 datalogger

CHECK	Specifics	How to identify problem	How to fix it	Other suggestions
Timing issues	Timing errors larger than half the sample rate.	Use logpeek to check clock quality: <my_cpu>logpeek	Send us an e-mail to passcal@passcal.nmt.edu or data_group@passcal.nmt.edu describing the problem. Send an example, the accompanying log files, and any other information that can help to identify the problem so we can find a solution.	
	No GPSLOCK, Time questionable	Significant time spans without having gps locked	With <i>fixhdr</i> * you can set flags to the specific time range in question. Please read help for fixhdr to identify time spans with questionable timing.	
Check For Power Problems and System Reboots	Does the voltage drop over time? How many reboots do you see in the logs? What are they related to?	Use logpeek to view the station voltage and temperature chann	This helps mainly to keep in mind for further service runs. Feel free to e-mail us a description of the problem: passcal@passcal.nmt.edu or data_group@passcal.nmt.edu	

***Averaging
geographic
location***

From Noel Barstow:

You can get information from the RT130 positions in either of 2 ways, described below.

BUT, we also like people to use a good handheld GPS at the site to compare to. Earlier versions of RT130 firmware did not yield good locations because they did not power the clock long enough to get a lot of satellites. Fortunately, your RT130's are running CPU firmware version 2.8.2s, so your locations should be fairly good.

1) Get location through the logpeek program. Choose the 'Windows' option at the top, and then 'GPS Plot' and you will get a graph and statistics. (Statistics copied below for a sample station in Africa.)

Logpeek -> Windows -> GPS Plot

Statistics look like this:

Points plotted: 1165 of 1249

Mean location: Lat: 6.225 Long: 10.054

1 sigma degrees: Lat: 7.30E-06 Long: 1.49E-05

1 sigma meters: Lat: 0.81m Long: 1.65m

Elevation: +594.92m

2) Get location via a program called 'position' which uses the same info from the logfile. Example below with output for same station in Africa, so you can compare.

```
prompt> position s6-cm20-2007:046:19:45.9290.log
```

```
position: Version Number 2002.058
```

```
s6-cm20-2007:046:19:45.9290.log
```

```
Time of First Position 331:10:13:44
```

```
Time of Last Position 018:08:03:53
```

```
Average position 6.22522, 10.05368
```

```
Number of positions 1249 Standard deviation 4.85 in meters
```

```
Elevation average: 594.000000 std dev: 4.820579
```

```
MEDIAN position 6.22522, 10.05367
```

```
307 outliers (greater than one L1-sigma from median) removed.
```

```
New Average position 6.22522, 10.05368
```

```
Number of positions 942 New Standard deviation 4.53 in meters
```

<i>Endianess</i>	Everything should be BIG endian for submission to DMC	Using fixhdr, build a db and check Endianess. If BIG endian, data are OK. If not, please convert from little to big endian. You may run into this issue if you processed your data on a linux machine.
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Table 2. Checks and other information from log files and waveforms