REVIEW Q330 State of Health (SOH) and WAVEFORM CHANNELS

Version: 2012.081
Category: Passive source, Quanterra-Dataloggers, State of health
Objective: Brief description of main SOH channels recorded by the Q330 and what to look for.

	Channel Name	Conversion	Description
State of health channels (SOH)	ACE	miniseed; not a time series	VCO quality expressed as SEED timing blockette 500
	LCE	1 microsecond / count	Absolute clock phase error
	LCQ	1 % / count	Clock quality GPS lock interval (pql –m filename)
	LOG	miniseed; not a time series	State of health expressed as ASCII miniseed records Largest time jump after initial lock/adjustment (qlog logfilename | grep –i jump)
	OCF	miniseed; not a time series	Q330 configuration parameters expressed as opaque data records (B2000)
	VCO	Count / count	VCO control voltage
	VEA	1 milliamp / count	GPS antenna current
	VEC	1 milliamp / count	Q330 system current
	VEP	150 millivolt / count	Input (system) voltage
	VKI	1 Celsius / count	Q330 system temperature
	VMU/VM1	100 millivolt / count	Boom position of Z or U component
	VMV/VM2	100 millivolt / count	Boom position of N or V component
	VMW/VM3	100 millivolt / count	Boom position of E or W component
	VPB	0.1 % / count	Q330 buffer usage Baler dump % or time interval (pql –m filename)
Waveforms	?H?	Trace sample rates : (mseedhdr filename | grep sps) ; Station name in trace headers (sdrsplit –C filename) Network code in trace headers (sdrsplit –C filename) ; Channel name in trace headers (sdrsplit –C filename Location code in trace headers (sdrsplit –C filename)	
	?H? & LOG	qlog logfilename | grep –i "last boot"; qlog logfilename | grep –i jump) **	

Table 1 – Q330 State of health channels and waveform channels – what they mean and how to look at them

Possible issues when evaluating soh channels – Q330

CHECK	What -specifics	How to identify the problem	Suggestions
Timing issues	Timing errors larger than half the sample rate.	Use the pql to check clock quality SOH channels on Q330 (*LC*) <my_cpu> pql -m *LC*	Send us an e-mail: passcal@passcal.nmt.edu or data_group@passcal.nmt.edu. Describe the problem: send an example, log files, any information that can help to identify the problem and find a solution.
	No GPSLOCK, Timing questionable	Looking at the % of data quality in the log files <60% questionable	With ***fixhdr*** you can set up flags to the specific time. Please read the help for fixhdr, and identify time spans with questionable timing.
Check for power problems and system reboots	Is the voltage dropping down in time? How many reboots do you see in the logs? What are they related to?	Use pql to view the station's current, voltage, and temperature channels. <my_cpu> pql -m *.VE?* *.VKI* Use qlog to search for System Reboots. <my_cpu> qlog *LOG* | grep -i "last boot" | more	This helps mainly to keep in mind for further services. Feel free to e-mail us at: passcal@passcal.nmt.edu or data_group@passcal.nmt.edu
Geographic location	Just to know the location from the log files	Use qlog to identify location as follows: <my_cpu> qlog *LOG* | grep "(Latitude:|Longitude:|Height:)" | more	
Averaging geographical location	Using gpsq330locate (contributed antelope software from Gary Pavlis) <my_cpu> man gpsq330locate q330gpslocate - estimates station location from Q330 log file		
Endianess	Everything should be BIG endian	Using fixhdr, build a db and check Endianess. If BIG endian, data are OK. If not BIG, please convert from little to big endian. You may run into this issue if you processed your data on a Linux machine or an Intel Mac.	

Table 2 – Q330 channels - What to look at from the state of health channels and waveforms