

Interpreting Code From the 2004 Quarknet DAQ Board

From the DAQ board, Hyper Terminal, lines of code for a single, 4 tick event appear as follows:

```
80EE0049 80 01 00 01 38 01 3C 01 7EB7491F 202133.242 080803 A 04 2 -0389
80EE004A 24 3D 25 01 00 01 00 01 7EB7491F 202133.242 080803 A 04 2 -0389
80EE004B 21 01 00 23 00 01 00 01 7EB7491F 202133.242 080803 A 04 2 -0389
80EE004C 01 2A 00 01 00 01 00 01 7EB7491F 202133.242 080803 A 04 2 -0389
80EE004D 00 01 00 01 00 39 32 2F 81331170 202133.242 080803 A 04 2 +0610
```

Using the **last** line of code:

1. Trigger Signal (1st Column): **80EE004D**
2. Channel “0” Output (2nd and 3rd Columns – Corresponds to Input #1 on DAQ Board)
 - a. **00** = Rise (Note: 80_{dec} or greater is required on this input to trigger an event)
 - b. **01** = Fall
3. Channel “1” Output (4th and 5th Columns Columns – Corresponds to Input #2 on DAQ Board)
 - a. **00** = Rise
 - b. **01** = Fall
4. Channel “2” Output (6th and 7th Columns Columns – Corresponds to Input #3 on DAQ Board)
 - a. **00** = Rise
 - b. **39** = Fall
5. Channel “3” Output (8th and 9th Columns Columns – Corresponds to Input #4 on DAQ Board)
 - a. **32** = Rise
 - b. **2F** = Fall
6. GPS Time Stamp (10th Column -- Latest IPPS): **81331170**
7. GPS Universal Time (11th Column): **202133.242**
20 h 21 min 33 sec .242 sec
8. GPS Date (12th Column): **080803**
August 8, 2003
9. GPS Satellite Status (13th Column): **V (Should be this instead of A???)**
Satellites Valid
- 10 # of Satellites: (14th Column) **4**

11. DAQ Status Flag: (15th Column): **2**
 Bit 0 = 0 = no IPPS pulse pending (if 1, IPPS pulse would be pending)
 Bit 1 = 1 = trigger interrupt pending = data in TMC (not empty) (possible high rate of
 bit1 is not 0 at end of event)
 Bit 2 = 0 = GPS Data o.k.
 Bit 3 = 0 = CPLD Frequency o.k.

12. GPS Time Correction Factor (Delay) (16th Column): **+0610**

$$\mathbf{ddd = + 0610 = 0.ddd = + .610}$$

Calculating Event Time:

$$\mathbf{hh:mm:ss.sss = 202133.242 = 20:21:33.242}$$

$$\mathbf{ss.sss = 33.242}$$

$$\mathbf{ddd = + .610}$$

$$\mathbf{ss = 33.242 + .610 = 33.852 : \text{round off to } ss = 33}$$

$$\mathbf{\text{trigger: } 80EE004D_{\text{hex}} = 2163081293_{10}}$$

$$\mathbf{\text{last IPPS (From Line 5): } 81331170_{\text{hex}} = 2167607664_{10}}$$

$$\mathbf{(\text{previous IPPS From Lines 1-4): } 7EB7491F_{\text{hex}} = 2125941023_{10}}$$

$$\mathbf{R_1 = 2167607664 - 2125941023 = 41666641 \text{ ticks/sec}}$$

$$\mathbf{t_{\text{nanosec}} = \frac{(2163081293 - 2125941023)}{41666641} = 0.891367029}$$

$$\mathbf{t_{\text{event}} = ss + t_{\text{nanosec}} = 33.891367029}$$

So, this event occurred at 20:21:33.891367029 on 8/8/03