

12 February 2009
10:00 am Ocean View Conference Room

MBARI Project 900907 Meeting
High Resolution Near-Surface Seismic Refraction Tomography

Attending: David Caress, Rich Henthorn, Mark Chaffey, Paul McGill, Bill Kirkwood,
Bill Burgess

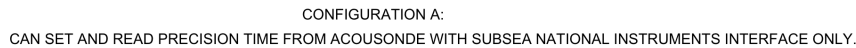
Meeting Location

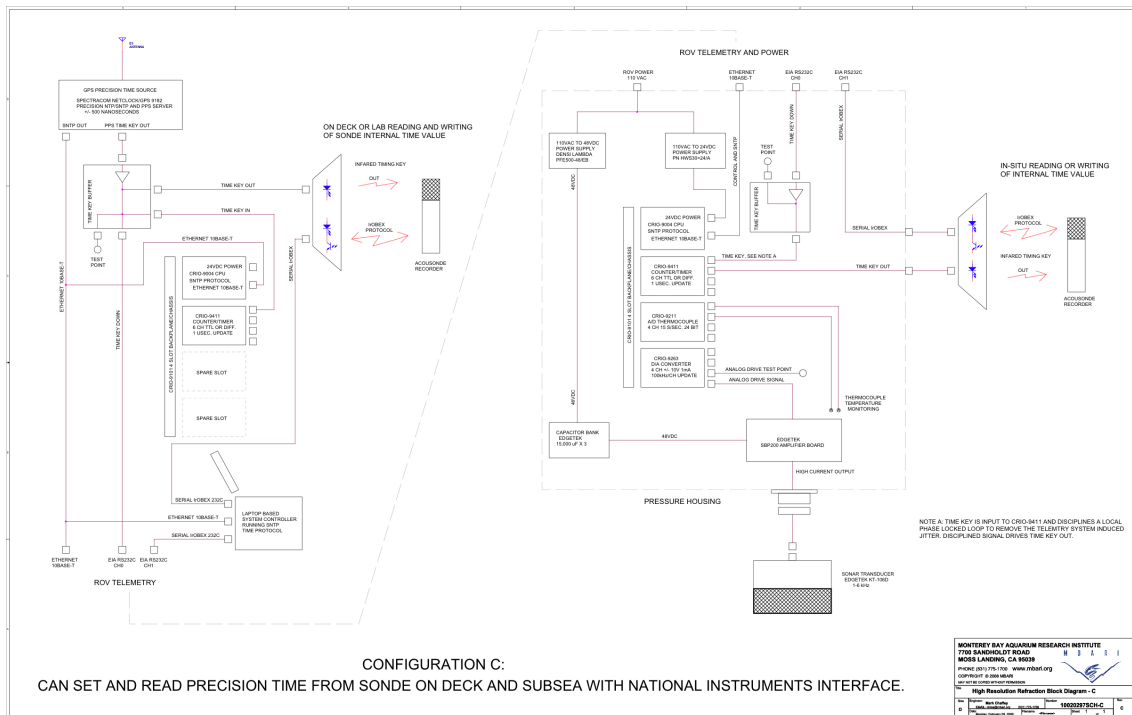
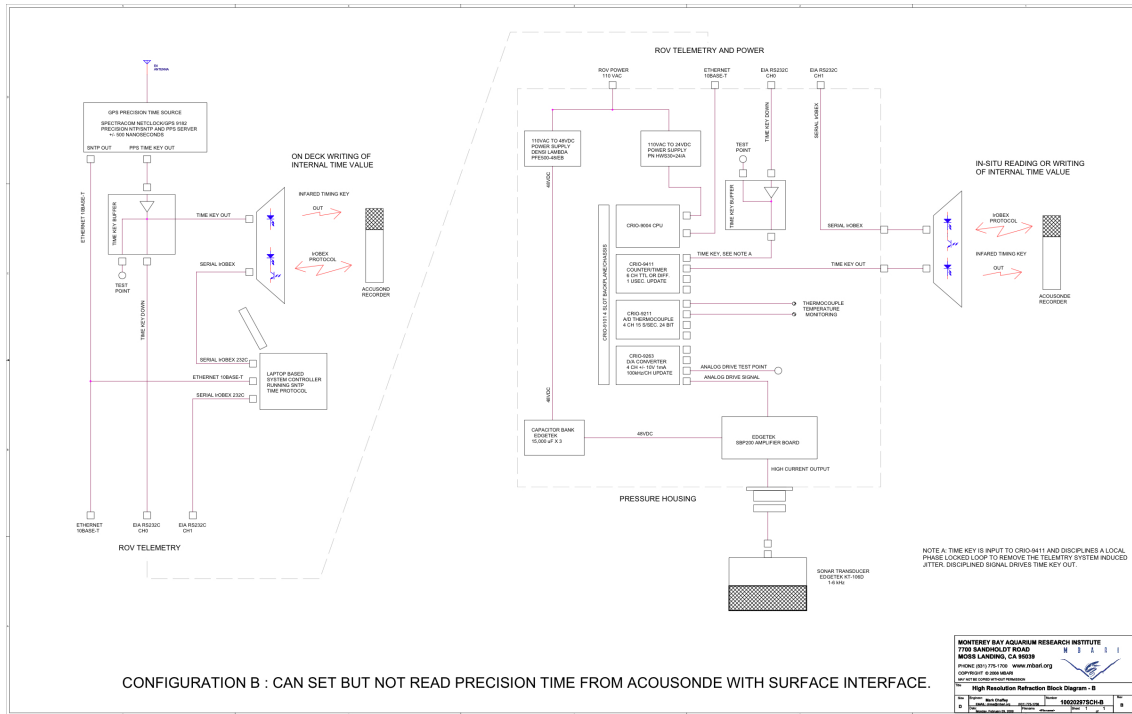
- Regular meetings will now be in Ocean View, every Thursday 10 am

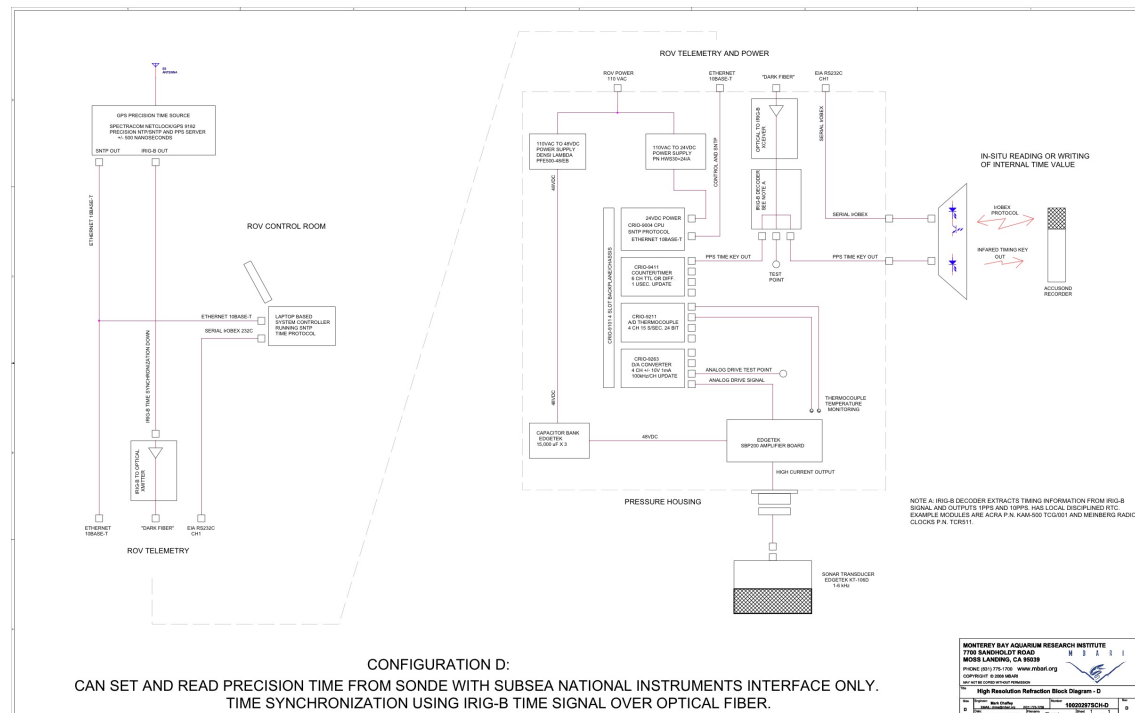
System Block Diagram

- Mark Chaffey developed four block diagrams for the overall systems, with modifications after comments by Paul.
- Here are Mark's comments from an email:
 - The only place where knowledge of precision time is located is in the cRIO chassis. The application would set the Acousonde, that's pretty straight forward, but to read it, the application would set the sonde to report the next pulse receipt time, this pulse time would also be captured precisely by the cRIO and when queried, reported to the application to check the accuracy of the sonde clock.
 - Not being familiar with the Labview capabilities yet, the challenge as I see it is going to be:
 1. Maintaining an accurate real time clock (RTC) in the cRIO in the presence of (TBD) ROV telemetry system jitter. Probably want a PLL function for noise and jitter rejection.
 2. Being able to also discipline the clock with the SNTP values for the coarser values so that there is coarse system synchronization between the IrOBEX application and the cRIO, as well as having accurate month-day-year information in the time stamps.
 3. Having application being able to remotely read the cRIO precision RTC value and the precision time key receipt information though the cRIO Ethernet port.
 4. Synchronizing, or at least logging, the acoustic transmit pulse transmission time and reporting through the Ethernet port to the surface PC logging application. This is probably the easiest of the list.
 - I also added a block diagram of how a system might be put together using IRIG-B timing protocol distribution. Note that both PPS, SNTP and IRIG are all supported by the GPS precision time base reference source. This variant would require a "dark fiber", but would eliminate the need for a cRIO based RTC and bypass ROV telemetry issues.

- Here are four variations of the system block diagrams:







- Next meeting Wednesday rather than Thursday
- PDR scheduled for following Friday, Feb 20

- Rich would like to distribute materials to reviewers next Wednesday. Keep in mind this is a 4-day week and we have Monday off.
- PDR agenda from Rich
 - Introduction - Dave
 - Objective of the project
 - Year 1
 - Year 2 and beyond
 - Description of high-level concept-of-operation – ROV deploys OBH array, ROV runs lines, etc.
 - Requirements – Rich
 - Paying particular attention to timing requirements
 - Describe COTS components, including Gene Massion's system
 - Why we believe they are sufficient for year 1
 - Listen for alternatives for use in later years (better hydrophones, etc.)
 - System Design Block Diagram – Mark
 - Describe design while pointing-out timing error estimates
 - Conclusion should show that design could meet the timing requirements
 - Theory of Operation – Ensemble
 - Present step-by-step operating procedures
 - Goal is to show how it assures timing that is precise enough for our needs
 - Note suggestions for improved methods, less-complex operations, etc.