

HSSRT PDR Minutes – Feb 20, 2009

Project Team:

- Dave Caress
- Mark Chaffey
- Rich Henthorn
- Bill Kirkwood
- Paul McGill

Attending:

- Jim Birch
- Mark Brown
- Andy Hamilton
- Kent Headley
- Ed Mellinger
- DJ Osborne
- Keith Raybould
- Brent Roman
- Hans Thomas

Comments:

Acoustic Source

1. Pulse duration spec should be “Minimum pulse duration of 100ms” – Brent
 - a. OK
2. There should be a “duty-cycle” spec – Hans
 - a. Agreed
 - b. Important to heating of xducer and electronics
3. Signal envelope: simple chirp? Hbridge or linear amplifier?
4. What is the cap bank inrush current?
 - a. Limited by power supply, but must not be shutdown
5. Sound pressure-level spec? – Keith
 - a. Louder is better, but is there a minimum? Don’t really know yet
6. Why 1-6kHz sweep?
 - a. Need 1kHz max lower end, availability, xducer size
 - b. Signal is 30db down at 1kHz
 - c. Sweep enables needed time resolution
7. Peter Brewer may have a spare 3000m EdgeTech housing

Acoustic Performance of Receiver

8. Frequency vs. range?
 - a. Dunno until we try
9. 15kHz recording frequency
 - a. Need very good filter to record full bandwidth of source at that recording spec

- b. Or, increase the recording frequency to 4-5 times source
- 10. Need to be tolerant of noise sources like ships, animals
- 11. Total dynamic range: 16bit digitize (96dB) with a 20 dB gain switch
- 12. Recorder can record 2 different channels at 2 different gains
 - a. Phase delay between channels?
 - b. Can it be done in real-time between pings?
 - c. Requires firmware mods
 - d. Is recording SW fast enough?
 - e. Project not counting on being able to switch gains during experiment
 - f. May have to accept clipping on near arrivals
- 13. Direct arrivals used to locate receiver relative to source
- 14. How omni-directional is the Acousonde?
- 15. At 300m, there will likely be a significant surface bounce
 - a. Ping interval should be longer for shallow tests
- 16. Freq range of receiver ceramic (does it go as low as needed?) - Hans
 - a. Rolls off less badly than source
 - b. Spec sheet does not specify that low corner
- 17. Check spectra from vehicle with simple test
 - a. Place receivers in sediment, and drive ROV over
 - b. Piggy-back on another dive
 - c. EITS collected monotone sound data - DJ
- 18. Tags are new product
 - a. Lee Freitag option?
 - b. B-probe?
 - c. Packaging – work with DMO
 - d. Homer-type anchor/float envisioned
 - e. 0-1m above seafloor
 - f. Nice to have radar/sonar reflector
 - g. Place receivers 25-50m apart

Timing Assurance

- 19. What are pressure, temp, EM effects on oscillator?
 - a. Don't know
 - b. Will do cold-room test
 - c. Pressure test?
 - d. Clock 2ppm over entire temp spec
 - e. Need 3-4 ppb at constant temp/pressure
 - f. Characterize performance, then apply correction methods as needed
- 20. Could we train clock in-situ?
 - a. Expensive bottom-time testing
- 21. Does IR work well underwater?
 - a. Dave Wright had worked with IR in-situ – Bill
- 22. Why not use IRIG-B?
 - a. Possibly a better proof-of-concept
 - b. No need for Phase-lock loop in cRIO
 - c. Dark fiber availability

- d. Simpler, more portable to use serial line
- 23. Could use time-certain source to provide in-situ background heartbeat - Hans
 - a. Track receiver clock drift
 - b. Linksys unit?