SOLO2/S2A Status

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AST-14

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SOLO2 versus S2A

• SOLO2 (SIO IDG) and S2A (MRV) differ only in their designation at AIC.

• Software improvements and enhancements are shared between IDG and MRV. WHOI also involved in development and diagnosing problems.

• Hardware improvements are shared as well.

• Decoding software and uplink web-page available to Argo Community.
Performance

SOLO-II
• High failure rate for first 15 deployed April 2011 due to bladder tears.
• 91 of next 93 (SIO Argo + NZ Argo + OKMC) are still active
• 18 additional OKMC SOLO-II floats being deployed this month.

S-2A
• 72 S-2A floats have been deployed by SIO Argo, WHOI Argo and Australian Argo
• The first batch, 20 SIO Argo instruments, deployed in Sept 2011 has 4 failed out of 20.
• SIO 50/52 deployed since then are active.
• WHOI 46/48 are active.
Energy Budget

9.5 KJ per cycle

For 2 battery packs, de-rated by 33%, capacity = 2016 KJ, approximately 200 cycles, or 5.5 years

For 3 battery packs, capacity = 3024 KJ or over 300 profiles or 8.2 years

Engineering plots at: http://argo.whoi.edu/solo2/

Note CTD on continuously 2000 dbar to the surface, 32% of energy budget, rise rate = 11 cm/sec
MRV Production Facility

Note new antenna, Carbon shaft, with encapsulated antenna.
New GPS/Iridium Antenna

1. Low cost
2. Easy to Manufacture
   - Consistent and reproducible
   - low production reject rate
3. low water absorption, long-term stability
4. High durability
5. smaller volume/less weight
6. ease of changing form factor
7. 6000 dbar version for deep Argo
8. ability to integrate Bluetooth
Have all timing and pressure information needed to define subsurface information for Traj3.0 format.

Note repeatable descent and ascent behavior
Ascent spent = 11 cm/sec
Improvements

• Simplified internal design removed 800 gm.
• Will add 3\textsuperscript{rd} battery pack. This should allow for over 300 profiles.
• New low SWR Iridium/GPS antenna. Improved performance, better manufacturing procedures, increased reliability and durability.
• Identified possible reset due to reflected RF energy from antenna.
Controller Replacement

- New controller nearing completion
- based on ARM, low power CPU
- reworking software for improved portability
  - improved board layout, in production
  - enhanced onboard memory to store profiles, for example for under-ice deployments
- More ports for easily adding other sensors
Conclusions

• SOLO-2 and S2A floats are the same

• Collaboration between SIO, MRV, and WHOI will maintain the same hardware and software.

• MRV and JFE Advantech Co. (JAC) have signed distribution agreement. S2A floats are now available for Asian Argo partners.

• SOLO-2 and S2A floats are working well.