SOLO2/S2A Status

Breck Owens

AST-14

Wellington March 18-21

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

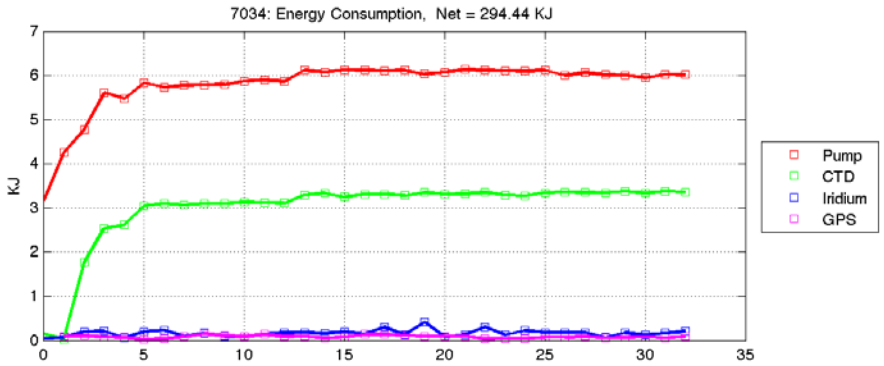
SOLO-II

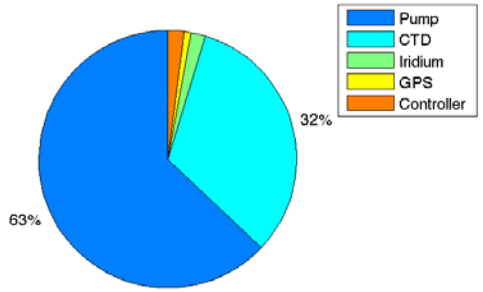
- High failure rate for first 15 deployed April 2011 due to bladder tears.
- 91 of next 93 (SIO Argo + NZ Argo + OKMC) are still active
- 18 additional OKMC SOLO-II floats being deployed this month.

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





WHOI Argo:13-Mar-2013

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

9.5 KJ per cycle

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

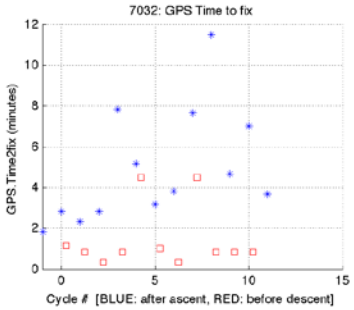
For 3 battery packs, capacity = 3024 KJ or over 300 profiles or 8.2 years

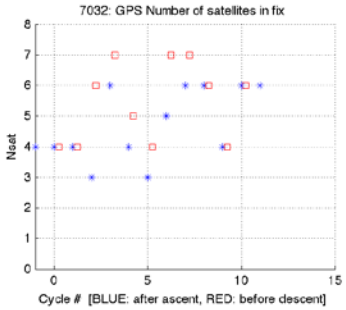
Engineering plots at: http://argo.whoi.edu/solo2/

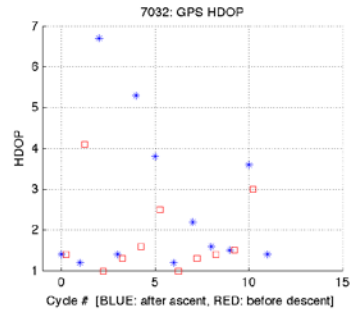
MRV Production Facility

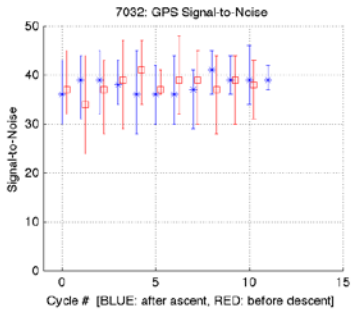
Note new antenna, Carbon shaft, with encapsulated antenna.

New GPS/Iridium Antenna



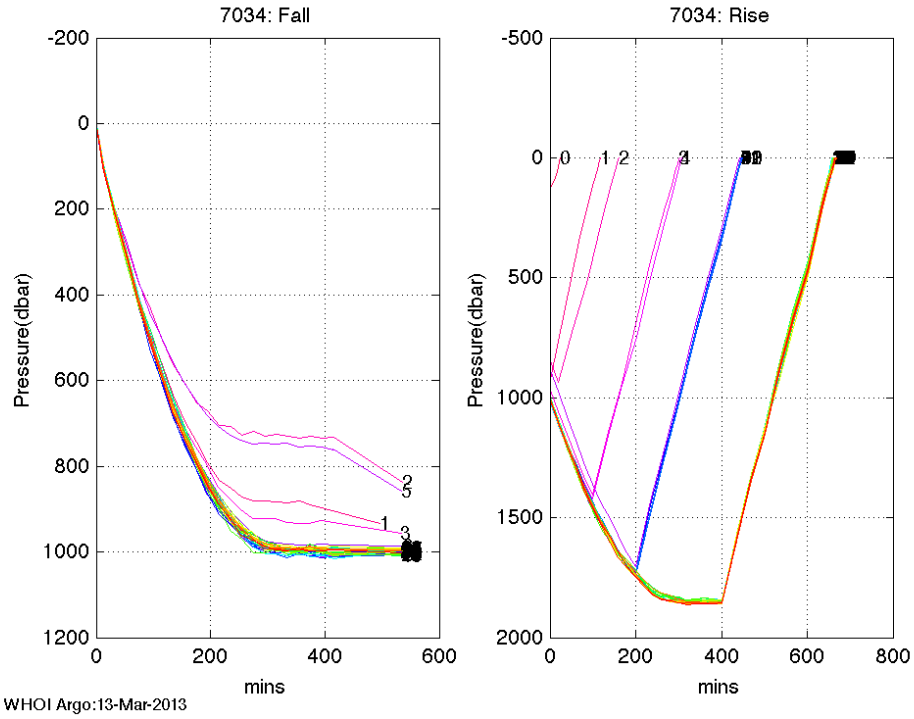






1. Low cost
2. Easy to Manufacture
   - Consistent and reproducible
   - low production reject rate
3. low water absorption, long-term stability
4. High durability
5. smaller volume/less weight
6. ease of changing form factor
7. 6000 dbar version for deep Argo
8. ability to integrate Bluetooth

Descent/Ascent Information



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 3rd 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.