

- **31 operating days**
- **1 cruise completed**  
*MAR – Pop Rocks*
- **10 dives, 82 hrs submerged**
- **Longest: 9 hrs**
- **Average: 8.2 hrs**
- **Average bottom time: 5.3 hrs @ 4000m**
- **1 'OV' (Alvin Observation Vehicle) cruise completed**  
*NTSB/EI FARO SURVEY – VDR Search/Identification*



### AT33-03 Mark Kurz Cruise, 07 Mar – 02 Apr, MAR – Pop Rocks

- Joint operations with *Sentry*
- 9 dives - cruise interrupted due to ship issues – loss of 18 dive days/3 – PIT dives
- 1 engineering dive
- Exercised new weight droppers to achieve faster ascent/descent times (40 m/m average)
- New batteries, faster transit = longer bottom times at 4000m including many dives with bottom times in excess of 6 hours
- No dives ended due to power restrictions





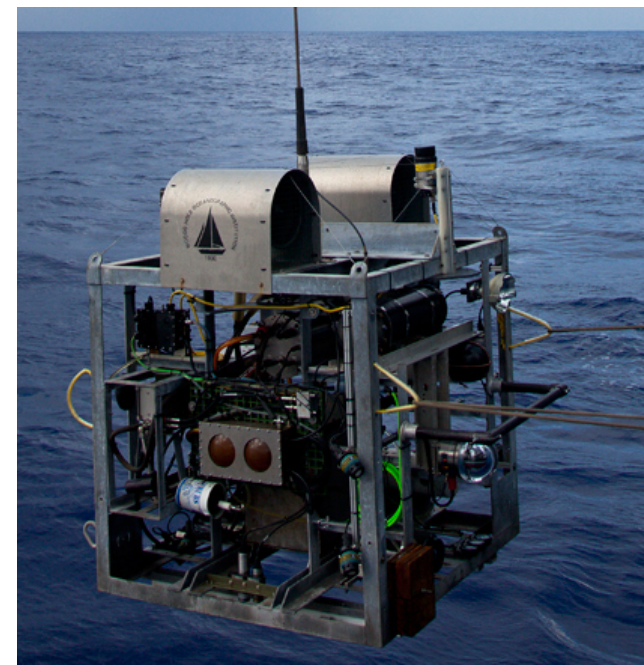
# NDSF 2016 Vehicle Operations Summary

## Alvin Highlights



### AT33-04 NTSB/EL FARO SURVEY, 18 APR – 05 MAY

- Joint wreck survey operations with AUV *Sentry*
- Alvin 'Observation Vehicle' outfitted for use as video/still camera survey platform
- HD Patz camera, Seaking sonar, LED lighting and other Alvin available gear used to augment capabilities
- Multiple lowerings including 24 hour and 48 hour continuous surveys of El Faro and debris field
- Played critical role in finding, identifying and surveying mast and VDR
- Excellent opportunity to evaluate platform for use with Alvin & gain experience at depths > 4500m



ALVIN 'OV' ON LAUNCH

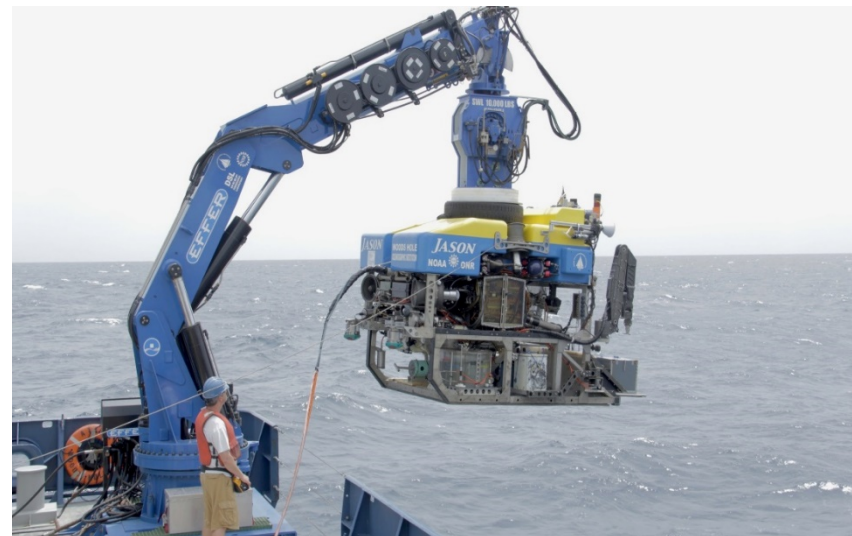


# NDSF 2016 Vehicle Operations Summary

## Jason Operations



- **37 operating days**
- **3 cruises completed**
  - TRM Cascadia Initiative
  - Deployment of seafloor optical fiber interfero-metric Strainmeter & Jason Engineering
  - Jason for OOI upgrade test cruise
- **30 dives, 145 total hrs**
- **On bottom: 90 hrs**
- **Longest: 23 hrs**
- **Average: 4:50 hrs**
- **Vessels used:** *Thompson, Sikuliaq*





# NDSF 2016 Vehicle Operations Summary

## Jason Highlights



- **Jason Upgrade for OOI test cruise very successful**
- **Represents a substantial improvement in capabilities.**
- **New LARS hydraulic power unit provides improved crane performance with added feature to deck-test *Jason's* manipulators**
- **New Rochester steel tube FO cable has been successfully integrated; protects fibers from compression loads on direct-drive Rapp winch**
- **CSDS (and team) load-tested the *Jason* sample drawer**





# NDSF 2016 Vehicle Operations Summary

## Sentry Operations



- **142 operating days**
- **3 cruises since Dec. DeSSC**
  - Marian Back Arc
  - Mid Atlantic Ridge
  - El Faro
- **23 dives, 433 hrs in water**
- **Total bottom time: 376 hrs**
- **Average dive time: 18:49 hr**
- **954.96 km of survey**
- **Vessels used:** R/V Falkor, R/V Atlantis





## Sentry Highlights

- **El Faro Voyage Data Recorder Location**
  - With NTSB and Alvin Observation Vehicle located the voyage data recorder in just over 4 days
- **New batteries**
  - 28-hour multibeam missions
  - 50 to 60-hour photo missions
  - Same turnaround time
- **850kHz Dynamic Focus Sidescan now online and making beautiful images**
  - Need some more work on post processing pipeline
- **50lbs additional payload in February overhaul**
- **Photo mosaicing pipeline ready for field trials**