

# NDSF Vehicle Debrief Interviews

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## Goals:

- Candid assessment of NDSF performance at sea from science user's point-of-view
- Confidentiality
- Way for DESSC to track problems and implementation of solutions
- Facilitates constructive communication between science users and NDSF

# NDSF Vehicle Debrief Interviews

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Standardized 10-point questionnaire:

- 1) Pre-cruise planning
- 2) Mobilization
- 3) Operations - Vehicle
- 4) Operations - NDSF provided equipment
- 5) Operations - User provided equipment
- 6) NDSF Personnel - Expedition Leader
- 7) NDSF Personnel - Team as a whole
- 8) Data hand-over
- 9) Demobilization
- 10) Recommendations

# NDSF Vehicle Debrief Interviews

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- Chief Scientist interviewed by phone after each *Alvin/Jason/ABE-Sentry* cruise
- Chris German (CSDS) & one DESSC rep.
- Write-up agreed to by all participants, then archived at UNOLS for DESSC (not public)
- Summary of debriefs presented at next DESSC meeting (public, but comments anonymous)
- Opportunity for NDSF to respond
- Sensitive or confidential issues discussed in DESSC executive session (not public)

# Jason debrief summaries - 12/07

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Fisher	June 2007	Ron Brown	Gulf of Mexico
Rathburn	July 2007	Atlantis	Monterey, California
Chadwick/ Dilorio	Aug 2007	Atlantis	JdFR
Garcia	Sep 2007	Kilo Moana	Hawaii
Moyer	Oct 2007	Kilo Moana	Hawaii
Wooding	Nov 2007	Kilo Moana	Hawaii

# Jason debrief issues - 12/07

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## 1) 12-hour turn-around time between dives

- Current procedures optimal for long dives
- But some science users require short-turn arounds for time-sensitive sampling, or to visit many different dive sites
- Elevators can help, but it is not always possible to use them: in deep water, in bad weather, on some ships (Kilo Moana)
- For some users, this severely limits what science they can do (or get funded)
- Solution: re-thinking Jason watch schedules?

# Jason debrief issues - 12/07

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## **2) Air-weight limitation for Jason (& crane?)**

- Currently limits how much science gear can be on the vehicle - especially biological samplers that hold water
- Can this be improved?

## **3) Catastrophic failure of Kilo Moana cable during testing**

- How can this be prevented in the future?
- Do standard protocols exist for cable testing?
- Was the team at sea too inexperienced?

# Jason debrief issues - 12/07

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## **4) Kilo Moana Jason ops**

- Can operate in rougher sea states, but...
- More limited number of berths for science
- Restrictions on elevator usage
- Will work for some cruises and not others

## **5) Pre-cruise planning could be improved**

- Equipment promised but not brought on board
- Proactive about needs of inexperienced users
- Expedition leader should participate

# Jason debrief issues - 12/07

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## **6) Equipment issues:**

- Kraft arm
- Science video camera position and lighting
- Digital still camera results mixed



# Jason Debrief Issues - 12/07

## • Turnaround Time

- NDSF published document defining turn around time policy (on web)
  - Current model provides flexibility at the discretion of the EL
  - Anticipate incremental improvements, including:
  - Considering 12-hour watch, 2 operators vs. 3, will impact product
  - Input from other ROV operators
  - Better use of elevators (on a wire, guided, improved transfer capabilities)
  - Developing ways to move biological samples better
  - Launch/recovery manpower issues

## • Air Weight Limitations

- Looking at alternate crane and base again
  - Bigger crane is a difficult, expensive solution due to ship deck strength and space constraints
- Looking at ways to reduce air weight of *Jason*
- Better use of elevators can help

## • Cable Failure



# Jason Debrief Issues - 12/07

- **Pre-cruise planning** to include CSDS, EL and ROV manager
- All **equipment** requests must be in writing unless specifically identified as standard. Science-provided equipment must be identified. Web-based template needs to be used. We are updating our web forms.
- **EL/PI need to communicate daily** during cruise to facilitate common goals
- **EL** needs to lead the group and exhibit a **positive attitude**
- We will continue to field the **most qualified team** available
- The **PIs need better communication** among themselves, especially on multi-PI cruises
- **Cameras and lighting**
  - Building a new mount to move the P&T to the light bar for some circumstances
  - Purchased one new HMI light head to add to existing spares
  - Continuing with proposed upgrade to the camera systems as outlined by Bill Lange



# Jason Debrief Issues - 12/07

- The **data set** is delivered at the end of the cruise to the Chief Sci or designee. Since there has been confusion, we'll institute a sign off. The Chief Sci of record must take the data or sign off for the designee to take it.
- **Equipment repairs performed as needed - no overhaul period required**
  - Kraft arm is going to manufacturer for overhaul and upgrade of jaw closure from 200 lb to 1,000 lb. Ready by start of '08 ops.
  - Schilling arm: \$58k for overhaul is too much short term; purchasing more spares
  - Long term, a new manipulator system to be requested in '08 budget
  - Vehicle weight reduction exercise to commence this winter
  - Effer crane maintenance: spares, paint, etc.
  - Sharps to be upgraded this winter
  - SM2K currently being assessed to determine if it needs to be sent to manufacturer for repair
  - 300 kHz Doppler has one dead beam after recent overhaul by manufacturer. This model Doppler may have design flaws.
  - Considering LED lighting for *Jason* based on HROV tests



# Fiber Optic Cable Failure

- *Jason* system has experienced two independent cable failures
  - UNOLS Pool Winch in 2006
  - University of Hawaii RV *Kilo Moana* 2007
- 2006 failure analysis was inconclusive but likely explanation is thought to be to either a manufacturing or cable heating issue
- 2007 failure is currently being analyzed by three parties:
  - The Rochester Corporation
  - Tension Member Technologies
  - Cable Testing Labs
- Extensive WHOI re-examination/testing of the *Jason* power system has not uncovered anything unusual
- In addition to the physical analysis of the failed cable samples, WHOI is seeking outside consultation on vehicle power system

