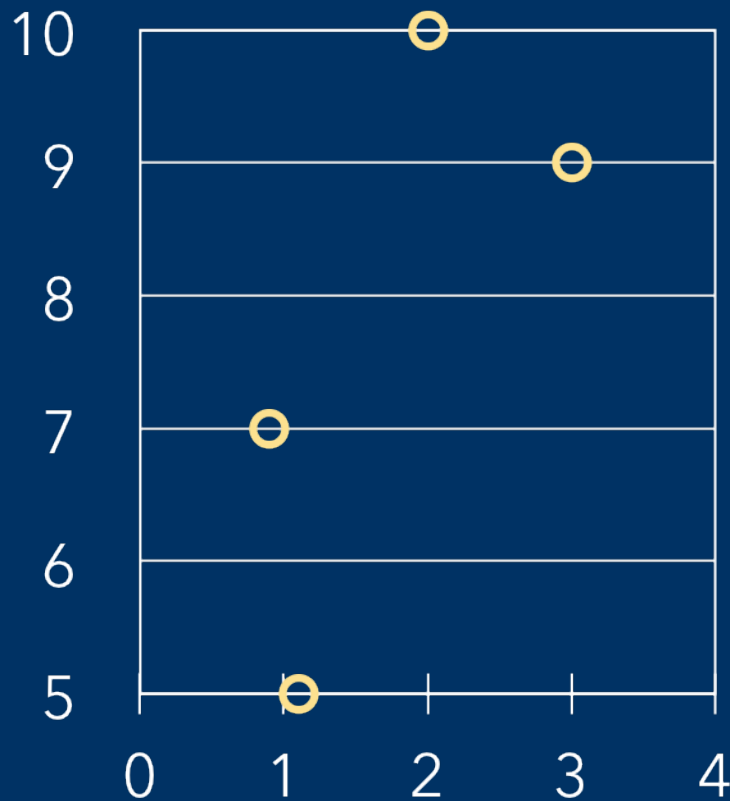


# Jason PCARs

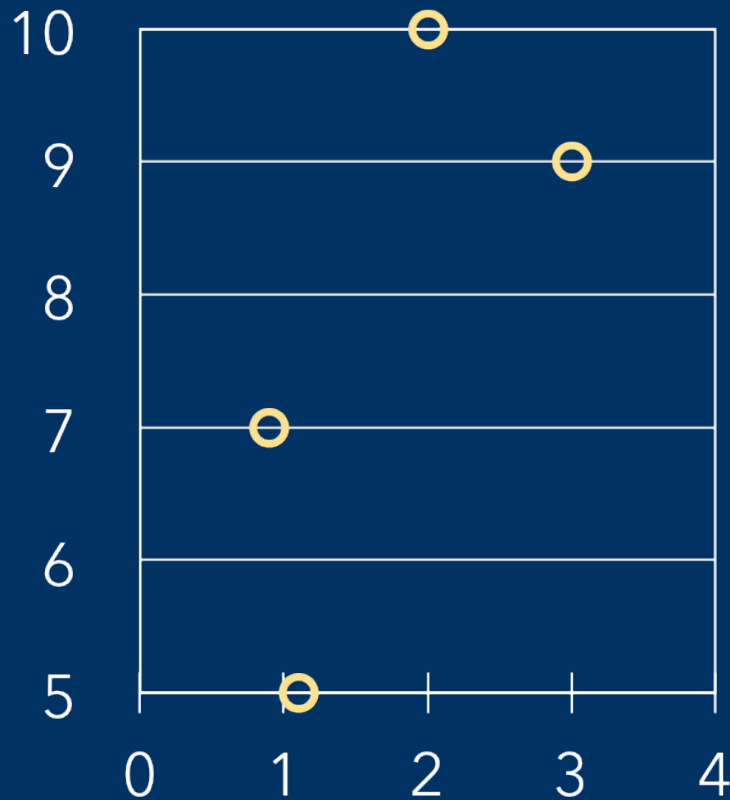
Q2. Effectiveness of pre-cruise activities  
*mean = 7.75, min/max = 5/10*



- Pre-cruise planning was in general fine, though it was clear that communications between Scripps ship ops and Ship's agent in Guam were very poor [...]. At this time - against my advice - the decision to use the old, damaged Scripps cable for Jason operations was made. This should have never been allowed and the voice of the chief scientist should have been considered instead of dismissed as this had a major impact on the outcome of our cruise.

# Jason PCARs

Q2. Effectiveness of pre-cruise activities  
*mean = 7.75, min/max = 5/10*

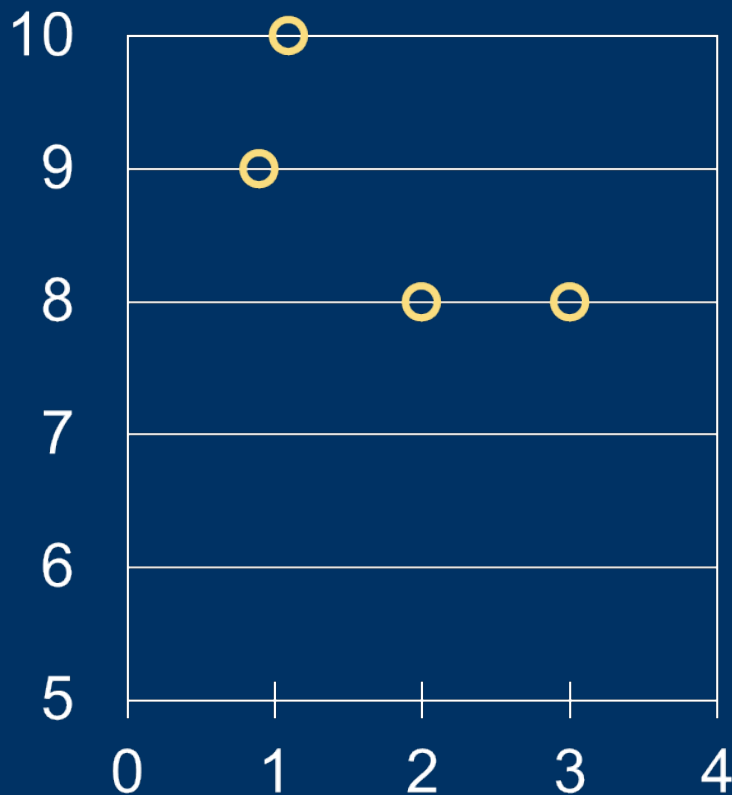


## Pre-cruise planning and Cable selection:

- NDSF relies on the UNOLS winch and wire pools, teamed with the operators to provided the needed infrastructure within a collaborative framework
- Several lessons have been learned with corrective action to be discussed at the RVTECH meeting on November:
  - Improve monitoring of cables with specific attention to the mechanical condition
  - Institute formal processes to ensure periodical inspection of the cables

# Jason PCARs

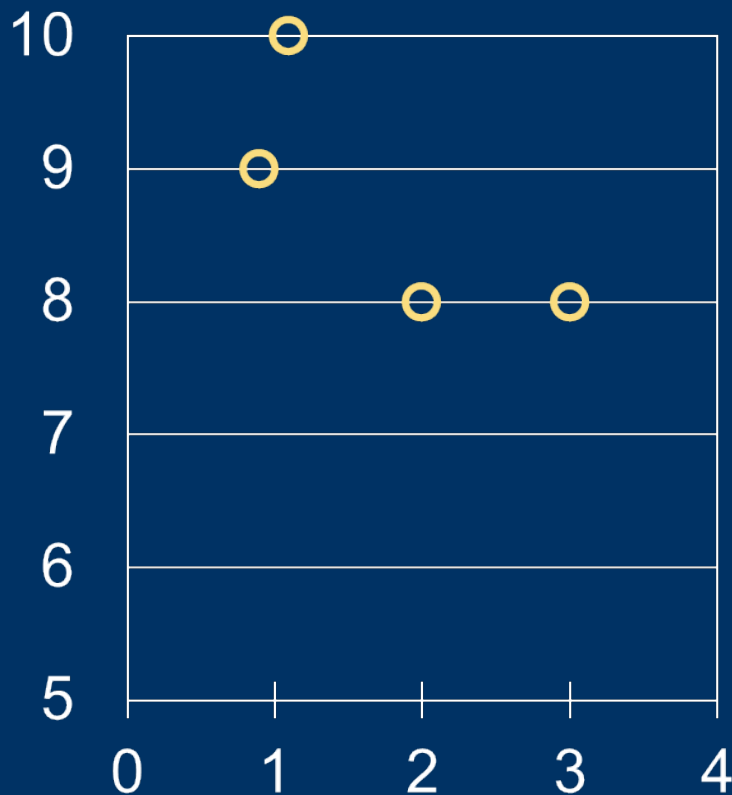
Q4. Vehicle-supplied scientific equipment  
*mean = 8.75, min/max = 8/10*



- Aside from faulty cable, everything that the Jason Group supplied worked out fine. Clearly they work well as a team.
- There were issues with the Jason manipulators that forced 3 dives to be aborted.
- The vehicle worked great, with these few exceptions: (1) The Reson multibeam sonar had communications problems when it was mounted on the vehicle for 1 dive and could not be resolved after 8 hours of troubleshooting. In the end, we chose to have AUV Sentry collect the multibeam data that we had planned for Jason to collect, which was probably a better idea in the end anyway (so this did not impact our science).  
*...continued on next slide...*

# Jason PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 8.75, min/max = 8/10*

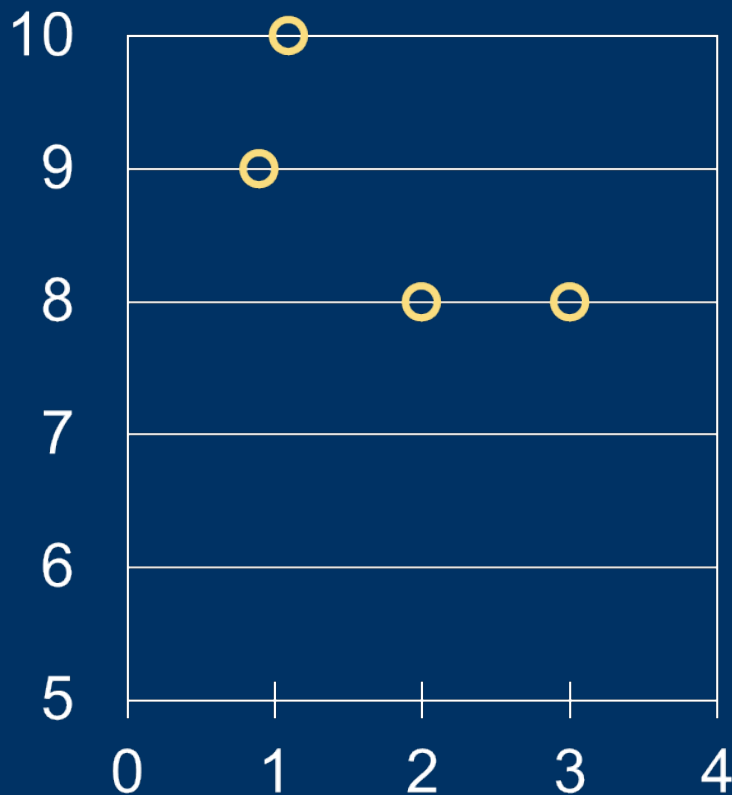


## *Jason Manipulators:*

- *Recent addition of the Schilling T4 manipulators has been a step to address reliability and performance of the Jason Manipulators with limited success*
- *While there maybe a “learning curve” associated with these new manipulators, we would not have expected such difficulties with reliability*
- *NDSF will undertake two activities within the next reporting period:*
  - *Have at least two of the permanent Jason Ops team formally trained on maintenance and repair for the T4 system*
  - *Examine historical reliability of the manipulators to seek common patterns of failure and institute corrective actions as required*

# Jason PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 8.75, min/max = 8/10*



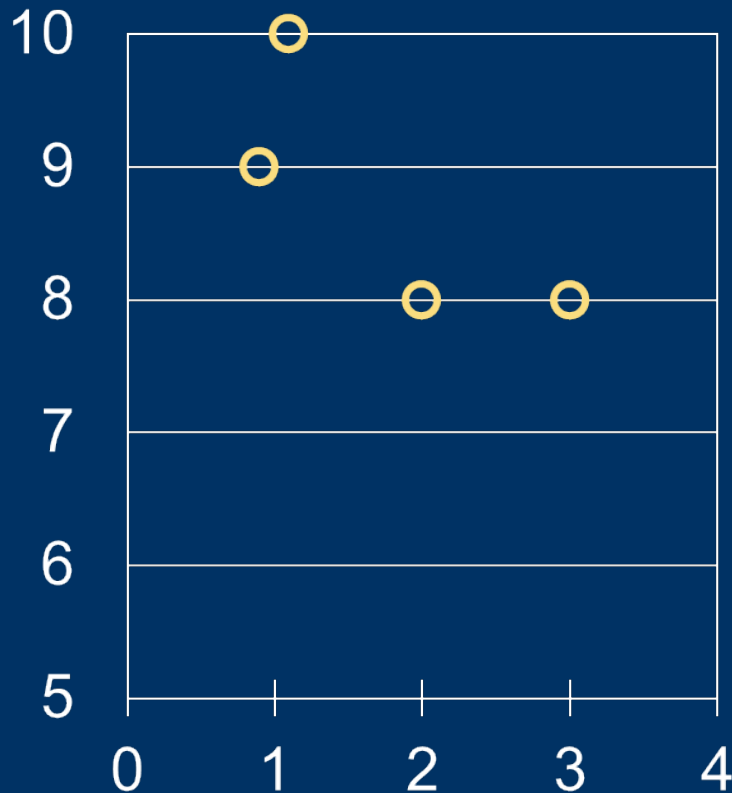
*...continued from previous slide...*

- 2) The hydraulic ram on the Jason basket failed and caused a dive to be aborted, and an 8-hour repair was needed before the dive could be resumed. (3) **The Jason elevator did not release on command after it was deployed to perform the USBL calibration [...] and required a Jason "bounce dive" to recover the elevator. The feet of the elevator were also somewhat stuck in the muddy bottom, but it was unclear how much of a problem that was since the anchor did not release until manually tripped by Jason.**

*...continued on next slide...*

# Jason PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 8.75, min/max = 8/10*

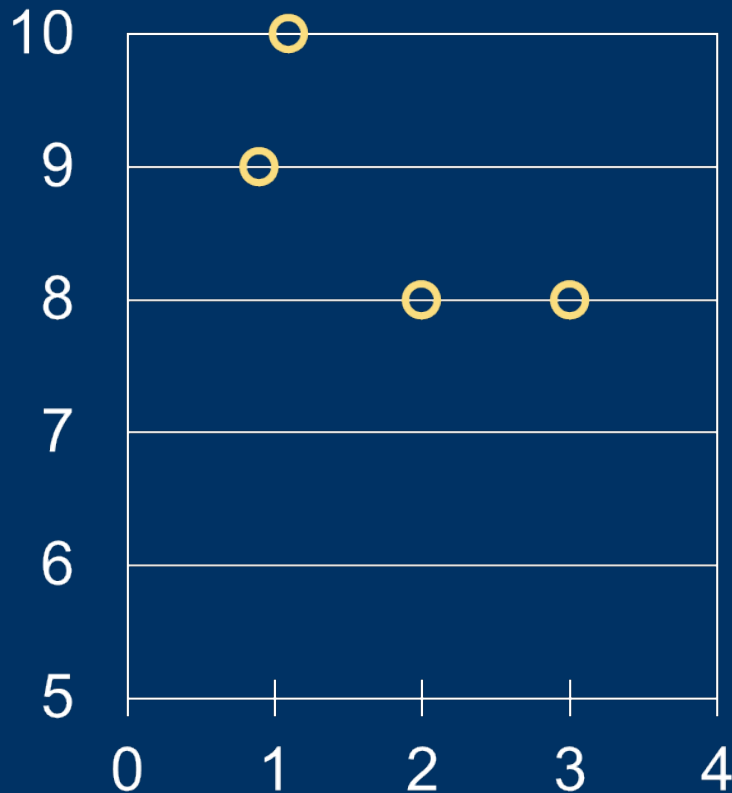


## *Elevator Release:*

- *Difficulties with the WHOI weight release have been noted in several instances and are a consequence of "pushing" a design beyond its safe limits because of an incremental increase in elevator payload requirements.*
- *A new design has been developed and is now in use with the Jason elevators*

# Jason PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 8.75, min/max = 8/10*

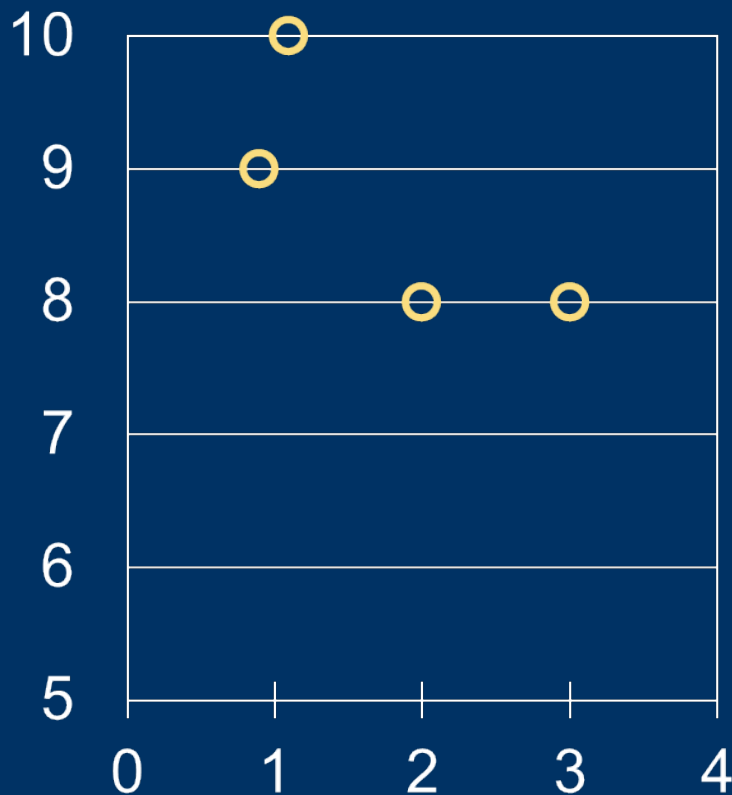


*...continued from previous slide...*

- The USBL calibration was performed by the Sentry team on board and took 14 hours to complete (from elevator deployment to the 1st attempted elevator release), considerably longer than the 6-8 hours that had been previously estimated by the Jason team. It was unclear to me why it took so long and whether this is the "new normal" or not.

# Jason PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 8.75, min/max = 8/10*



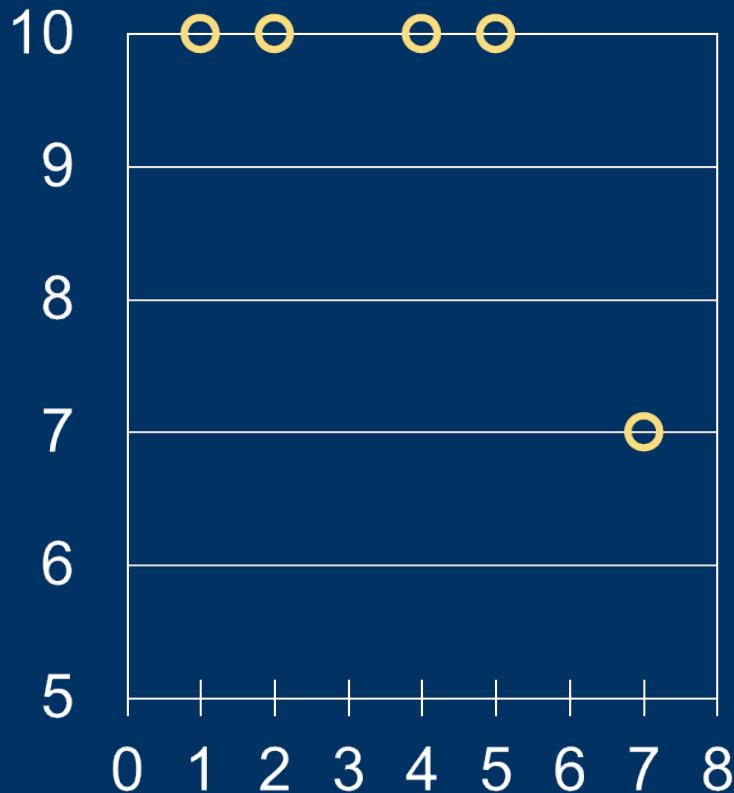
## USBL calibration time allowance:

- USBL calibration is required each time the system is installed any ship
- Ships with embedded USBL do not require survey each time they are used
- 8 hours remains a reasonable estimate.
- In the observed case we believe unanticipated difficulties with transponder deployment/recovery coupled with other considerations increased the time allowance estimate by 6 hours



# Sentry PCARs

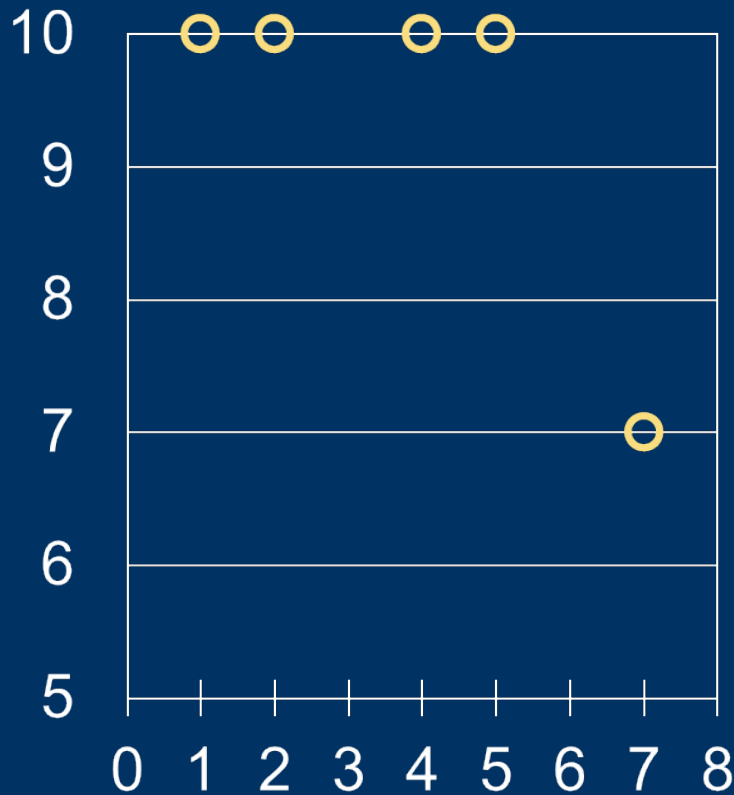
Q4. Vehicle-supplied scientific equipment  
*mean = 9.4, min/max = 7/10*



- The vehicle performed very well, but during the first two dives the Reson multibeam sonar did not function properly...I must say the Sentry team's efforts were extraordinary and much appreciated to resolve the sonar problem as soon as possible. After the sonar was fixed, we had 4 Sentry dives that collected great multibeam sonar data.
- The photos were better than what we expected and close to what we were hoping for...We were also impressed with the area we were able to cover during a normal dive.

# Sentry PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 9.4, min/max = 7/10*

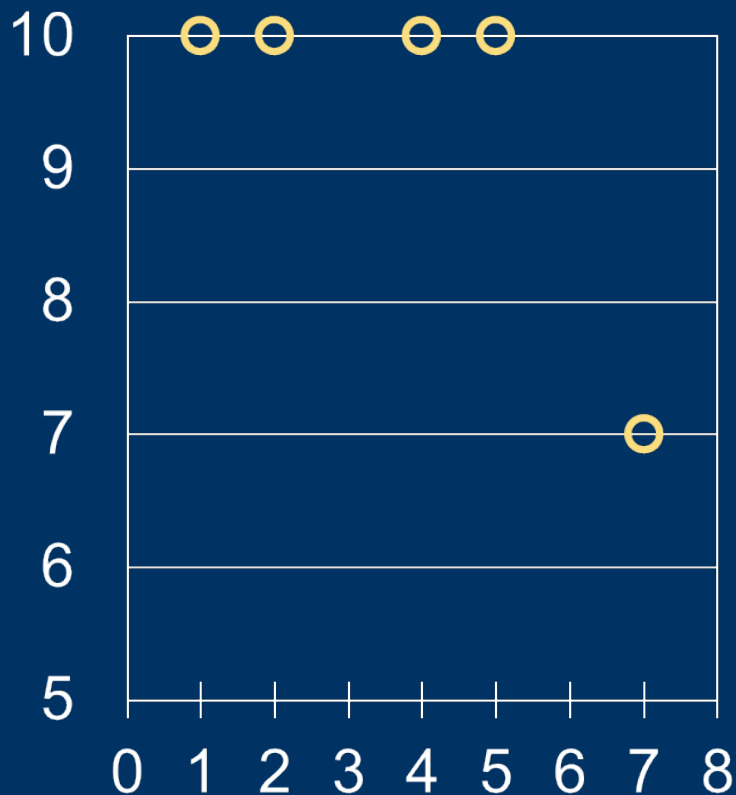


## Reson Sonar:

- Poor support from Reson is the main contributing factor to difficulties encountered. In a recent notable case, it was clear that the equipment was not only incorrectly configured but that it had not even been tested prior to shipment
- Both WHOI and MBARI have had recurring issues with this vendor and we are working collectively to assist Reson to supply us with the best service possible.
- While Reson still offers the best solution to deep sea mapping, we are actively monitoring the development of competitive solutions

# Sentry PCARs

Q4. Vehicle-supplied scientific equipment  
*mean = 9.4, min/max = 7/10*



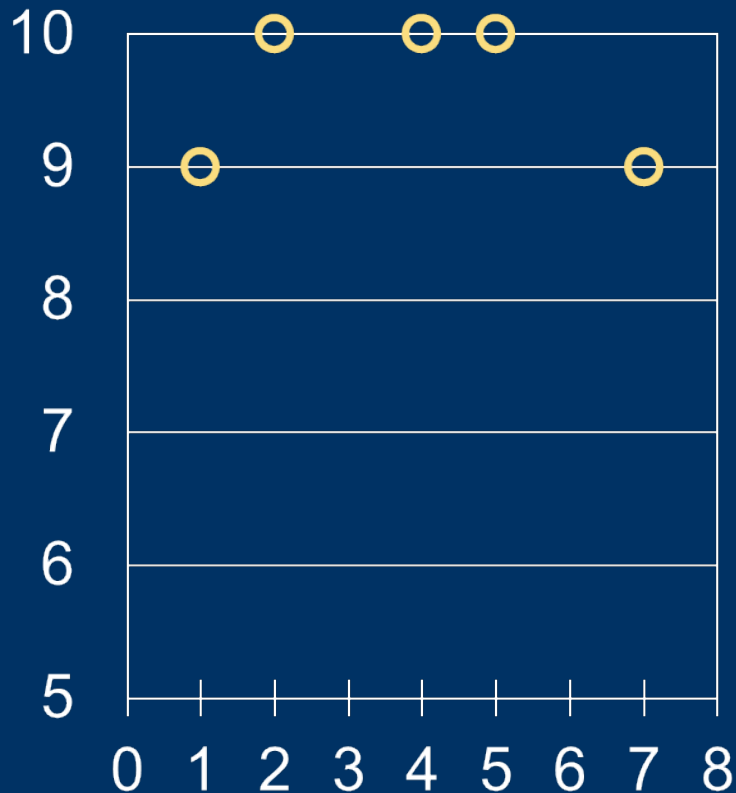
## Reson Sonar (con't):

- We will work with Reson to formally document factory tests and require written certification of testing
- We will Assess what pre-cruise or pre-dive testing we can implement within the constraints of a two day mobilization and five person team
- We will hope for improvements from Reson or confirmation of the functionality of the R2 system at 6000m.

# Sentry PCARs

Q8. Data transfer

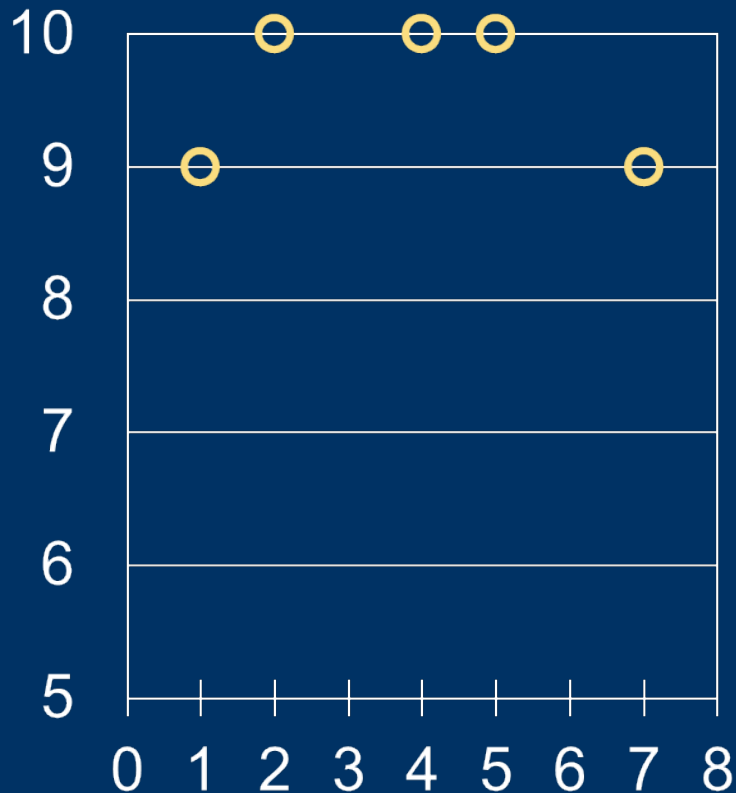
*mean = 9.6, min/max = 9/10*



- Data transfer (and protocol set for generating cruise data) was excellent.
- Data transfer was easy and everything was as we expected it would be. The one item worth mentioning was the long amount of time it took processing the photos, and more specifically adding the overlays of requested navigation data to each photo.
- No issues.

# Sentry PCARs

Q8. Data transfer  
*mean = 9.6, min/max = 9/10*



## Time to delivery processed photos:

- For the cruise in question a custom overlay was requested

- A post-processing software bug has since been found and corrected

## However:

- Sentry is capable of bringing back over 100,000 photos per dive now.
- Each photo receives half a dozen post processing steps and gets turned into 4-5 products totaling nearly 100MB per photo.
- Users should continue to expect a 24 - 96 hour lag and more with back to back dives. On photo only cruises with short transits, photos may not all be delivered on demob.
- The only alternative to this involves investing ~\$100k+