

Load Handling System Symposium (INMARTECH Meeting – October 2006)



EXPLICIT GOAL

Review of existing technologies and systems to develop a set of standard Functional Requirements (specs) to show “Proof of Concept” for new capabilities.

~ NOT to evaluate any particular vendor~

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- *Looked at numerous systems, vendors, and vessels both domestically (US) and world-wide.*
- *Talked with vessel operators and technical staff.*
- *Committee combined various features and capabilities into one set of “Functional Requirements”.*
- *Web Site: www.unols.org > Committees > RVOC > LHS Symposium.*

Load Handling System Symposium (INMARTECH Meeting – October 2006)

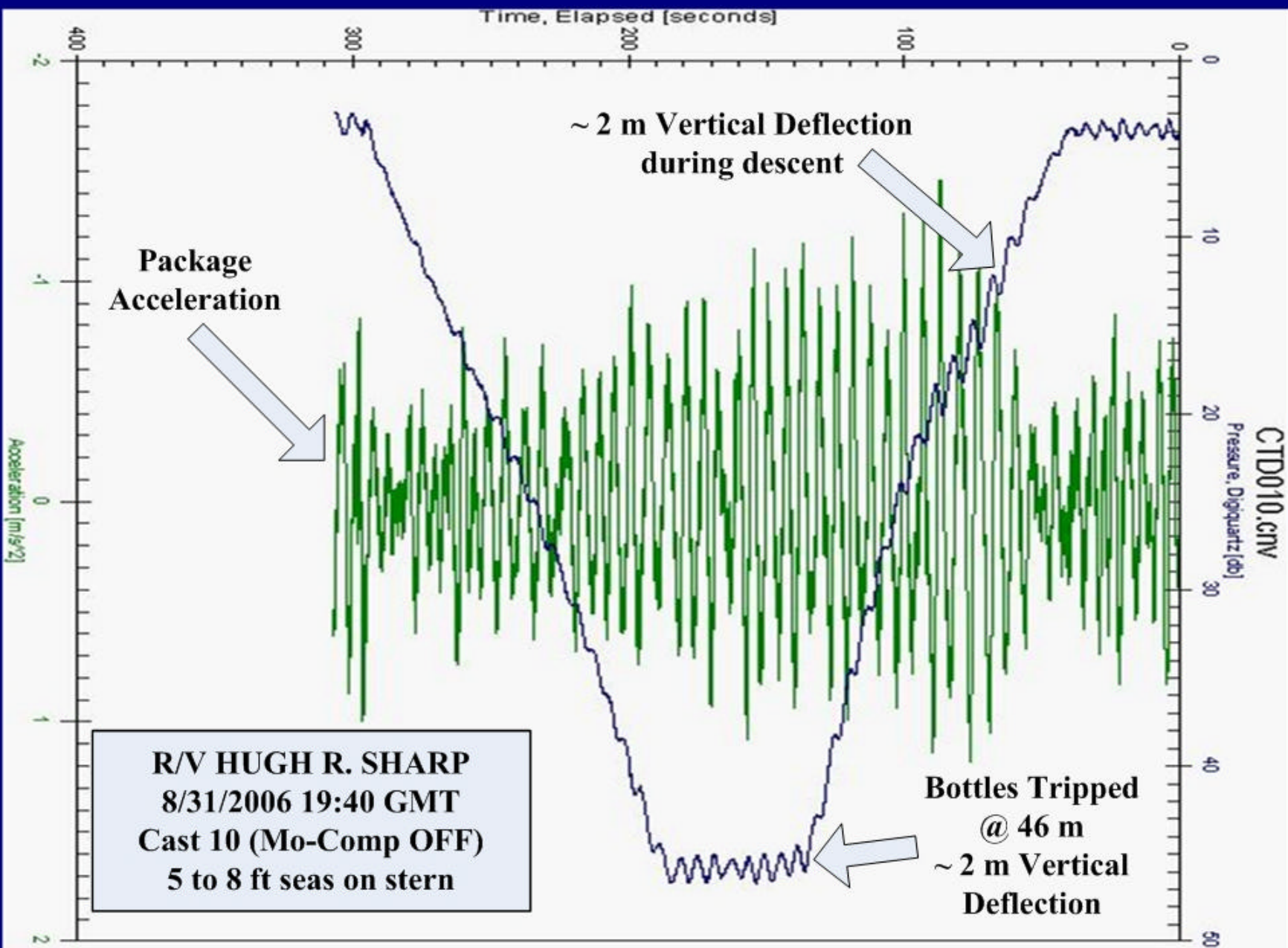
- Two systems produced following “Functional Requirements” developed during the study (*Caley Ocean Systems, Ltd*):
 - *R/V SHARP (Delivered – funded by UD)*
 - *R/V KILO MOANA (In progress)*
- Conceptually the same – different handling appliance and size of winch.
- Final Phase - Field evaluations after installation and systems in operation.

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New Capabilities

- Motion Compensation by winch pay-in/pay-out – reduces heave of package in water column for better data resolution and lower cable strain.
- Docking Head with “Auto-Position” capability – no tag lines. Operator can set package on deck without assistance.
- “Tow Mode” (Auto Render) – used for towing and in dealing with wire SWL issues.

Play Movies Here!



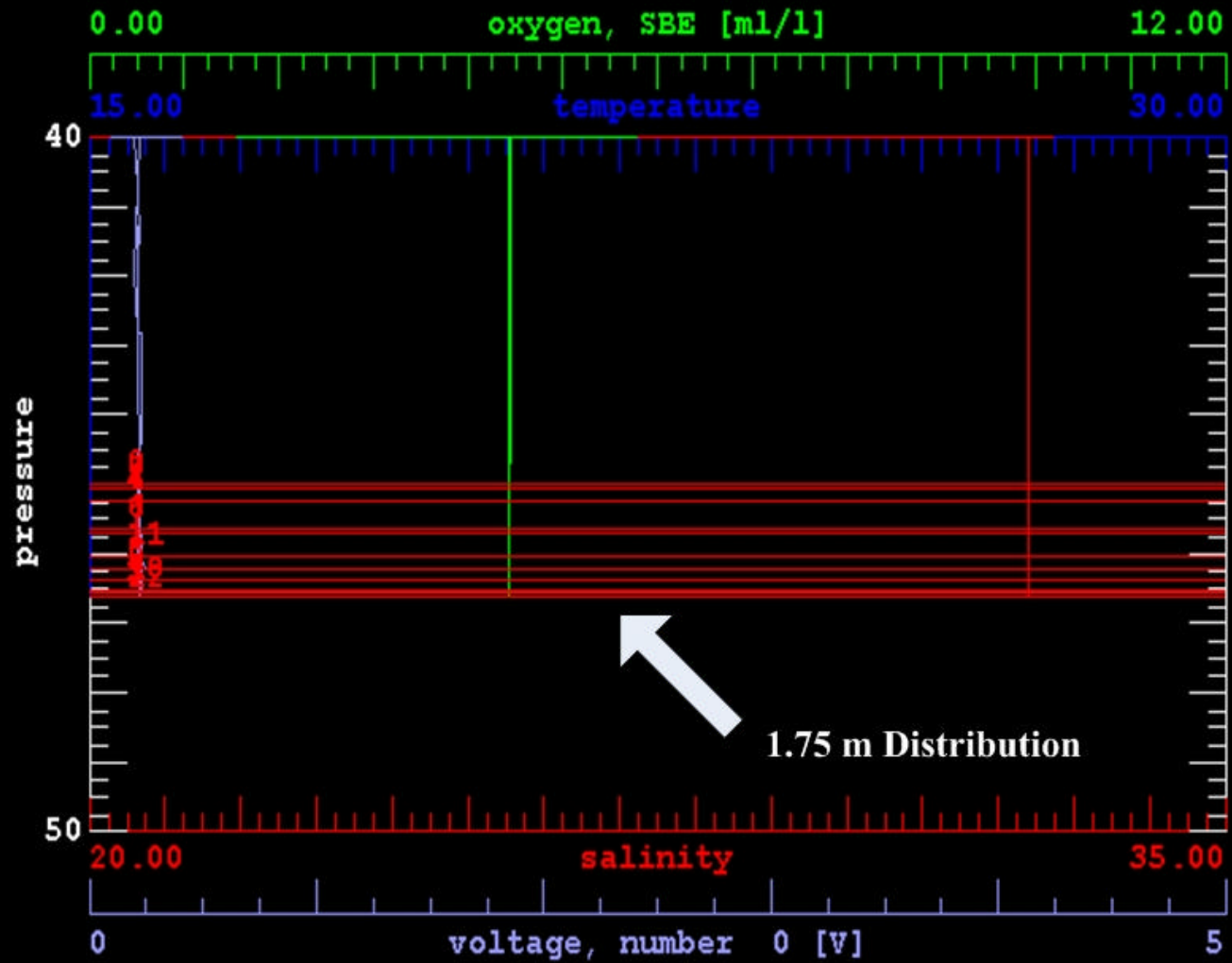
R/V HUGH R. SHARP
8/31/2006 19:40 GMT
Cast 10 (Mo-Comp OFF)
5 to 8 ft seas on stern

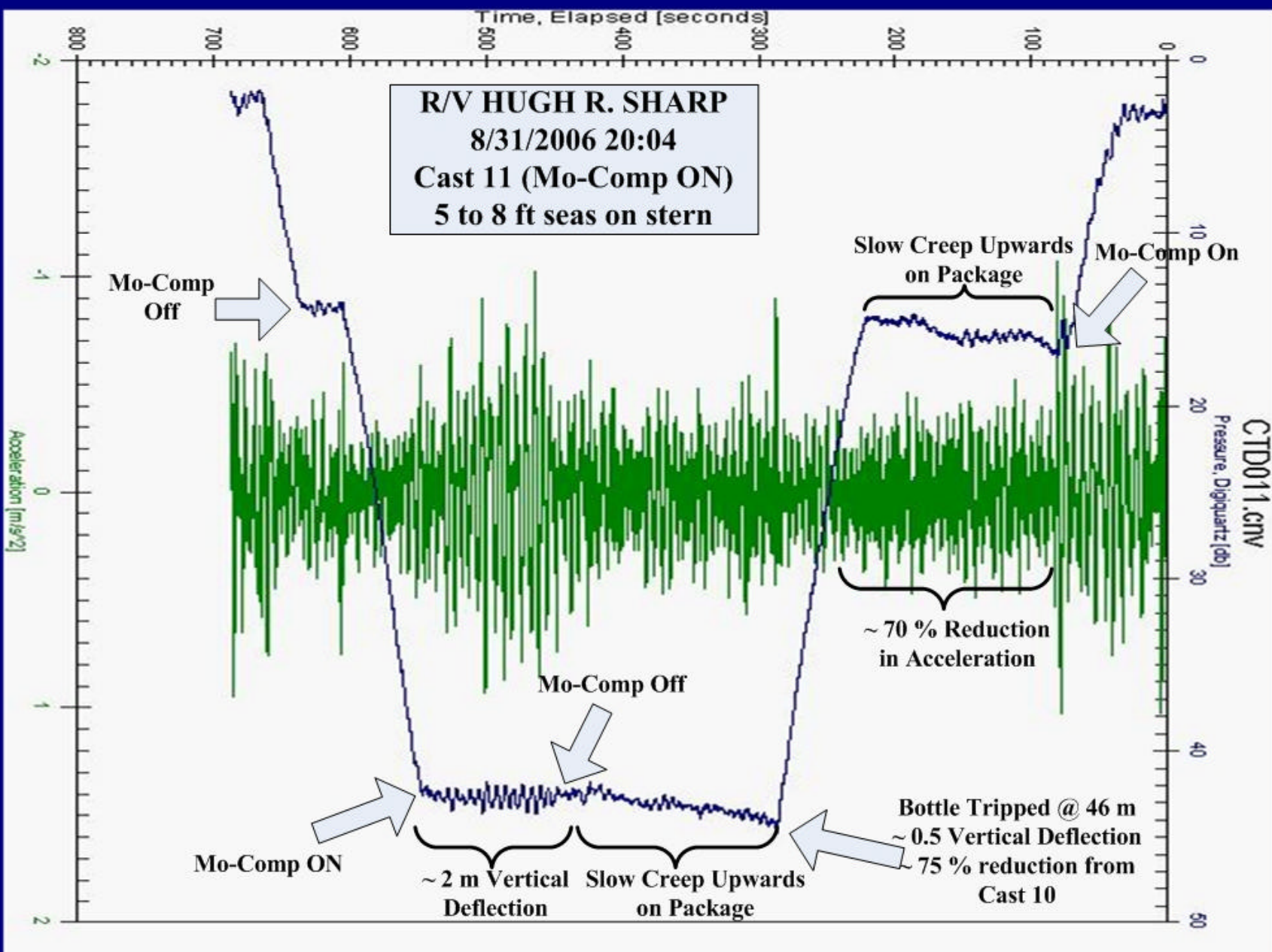
Package Acceleration

~ 2 m Vertical Deflection during descent

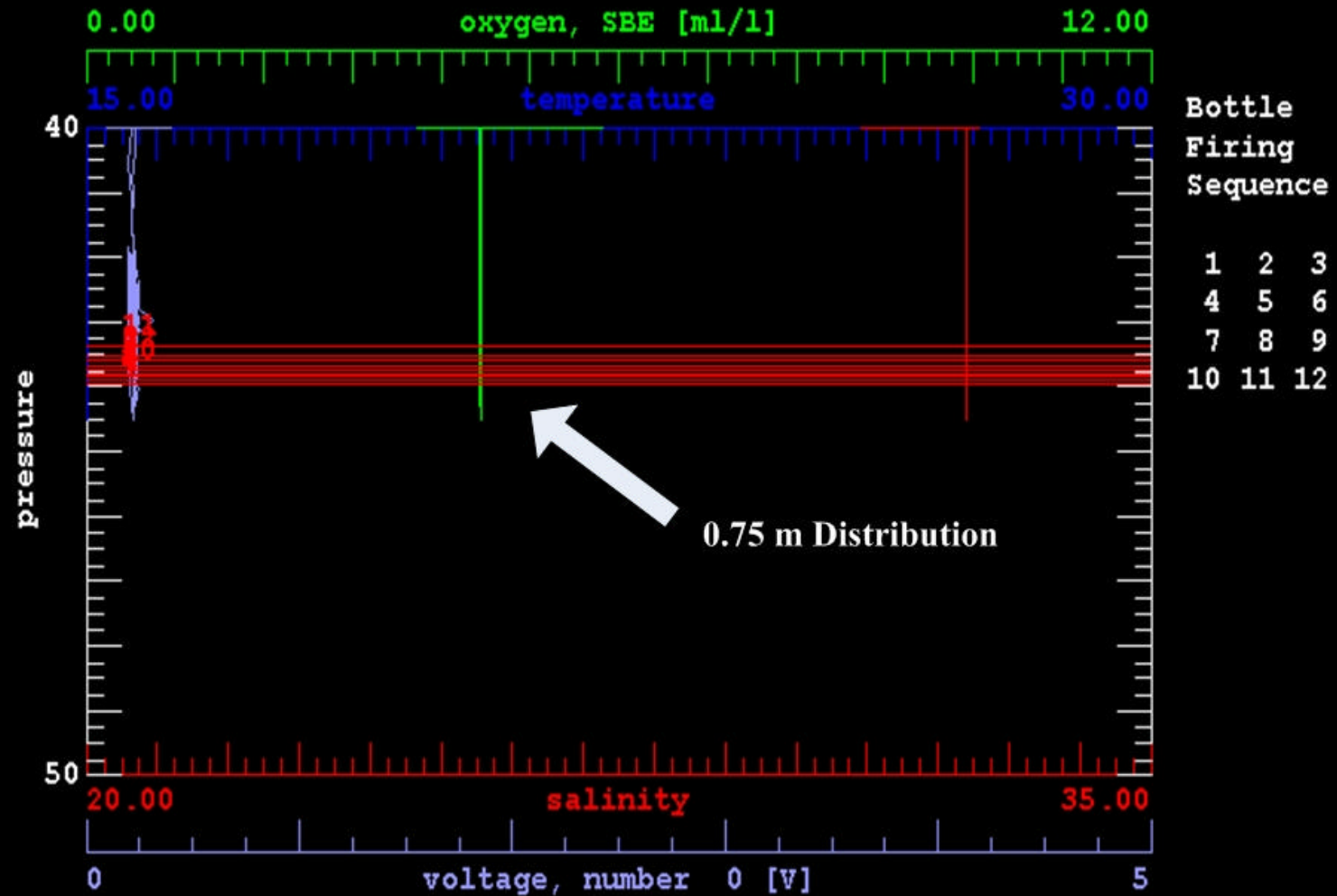
Bottles Tripped @ 46 m ~ 2 m Vertical Deflection

CTD010.dat:





CTD011.dat:



CTD Accelerations					
	% Improvement	Maximum	Minimum	Average	*Standard Deviation
	Overall	51.7%	38.4%	76.8%	62.6%
	Descent	60.2%	68.5%	124.5%	77.0%
	At Depth	47.2%	23.1%	205.9%	65.9%
	Ascent	33.8%	39.8%	49.9%	57.6%
ACCELERATIONS (m/s²)	Motion Compensation ON	Maximum	Minimum	Average	Standard Deviation
	Overall	0.5700	-0.9000	-0.0011	0.1549
	Descent	0.4700	-0.4600	0.0053	0.1352
	At Depth	0.5700	-0.9000	-0.0047	0.1690
	Ascent	0.49000	-0.59000	-0.00292	0.15019
	Motion Compensation OFF	Maximum	Minimum	Average	Standard Deviation
	Overall	1.1800	-1.4600	-0.0046	0.4136
	Descent	1.1800	-1.4600	-0.0216	0.5868
	At Depth	1.0800	-1.1700	0.0044	0.4959
	Ascent	0.7400	-0.9800	-0.0058	0.3539
<i>For each cast, depth ≥ 15m</i>					

*The standard deviation is defined as the average amount by which scores in a distribution differ from the mean, ignoring the sign of the difference.

**Data taken from two back-to-back CTD casts to the same depths. For comparison purposes, only data at or deeper than 15 meters were analyzed

Thanks to: Tim McGovern, UH

Control Panel



Issues To Be Evaluated

- *Cost* – was it worth it? (\$500 - \$750K)
- *Complexity* – can we handle it? (*no pun intended!*)
- *Motion Compensation* – does it work? Is it of benefit to BOTH vessel and science? Appears so – but:

Need tests with greater depth/higher tensions

- *Docking Head* – Does it work? Is it safer? Appears so.
- “*Tow Mode*” (Auto Render) – Does it work? Is it safer? How do we test? Can it satisfy USCG and ABS? In Progress.
- *ABS Standards* – Comparison with same system under Sub-Chapter U. Weight savings? Greater Operational flexibility?
In Progress.

Step Forward?

Time will tell . . .

Final Word (Related Subject)

- DRAFT UNOLS Wire Safe Working Load (SWL) standards currently under review by RVOC Safety Committee.
- Reviewed by RVTECH on October 16th
- Eventual Inclusion in RVSS
- Submission to ABS and US Coast Guard?