



The Effectiveness of Guards in Mitigating Propeller Strikes

Introduction/Schedule

- Dick Blackman - ABYC, Bill Daley - CED
- Previous: WEBINAR on 12/12/2011–
rough draft for stakeholder review
- Today: second draft for review & comment
- Future: formal review of comments and
revisions
 - Spring ' 12 final delivery to Coast Guard
- Submit document comments by email to
“propellerinjuryproject@gmail.com”

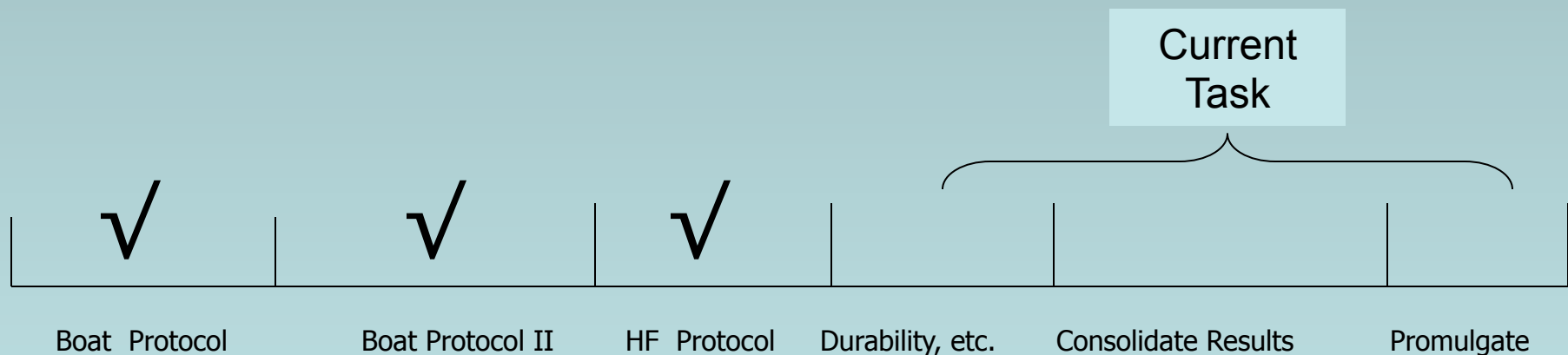
History

- BSAC Resolution in 2005 led to funding in 2006 and testing in 2007
- Goudey/Akers/MacNeil protocol 2009
- Additional testing/revision/validation 2009-2010



Components:

- Phase 1 – Human factors research
- Phase 2 – Boat characteristics testing
- Phase 3 – Device durability, practicality



Matrix Framework

- Three principle categories
 - Performance – speed & maneuverability
 - Ease of installation
 - Effectiveness
- Three types of guards
 - Cage
 - Ring
 - Concentric
- Each category will receive a rating

Matrix View

	Cage	Ring	Concentric
Performance – speed	Good	Best	Better
Performance – maneuverability	Good	Better	best
Ease of installation	Good	Best	Better
Effectiveness	Best (boarding)	Limited (wake/ trawl)	Blunt force (15mph)

Performance - Speed

- Based on Goudey/Akers/MacNeil protocol
 - Propeller Guard Performance Test Protocol, Propeller Guard System Evaluation, January 2, 2009
- Rating: reduction over unguarded
 - 25% reduction – Good
 - 10% to 25% - Better
 - < 10% - Best

Performance - Maneuverability

- Biomechanical evaluation based on Goudey/Akers/MacNeil protocol
- Key outcomes
 - Degree that steering effort & amount altered
 - Exceed human performance capabilities?
- Rating - peak torque statistical analysis
 - Significant difference – Good
 - Marginal difference - Better
 - No significant difference - Best
- If peak torque > 20 ft-lbs, then ‘fail’ rating

Ease of Installation

- Criterion
 - Time of installation
 - Installation difficulty (power tool required?)
- Rating

		Power tool required?	
		No	Yes
Installation time	< 1 hour	Best	Better
	> 1 hour	Better	Good

Effectiveness

- Based on SUNY Buffalo tank testing
- Three speeds: planing (15mph), wake/ trawling (5mph) & boarding (idle/rev)
- Limited: some degree of protection in some but not all cases

	Boarding	Wake/Trawl	Planing
Cage	Best	Best	Blunt force
Concentric	Better	Best	Blunt force
Ring	Limited	Limited	Blunt force

Conclusions

- No universal solution
- Propeller guards offer limited protection under certain conditions
 - One method of mitigating risk of injury
- Matrix provides workable system to evaluate guards
- Other mitigation methods can include
 - Alert technology
 - Training
 - Boat layout modification

Timeline

- 30 day formal review of comments and revisions
- Spring 2012 final delivery to Coast Guard

COMMENTING

Please submit your comments using a facsimile of the form below

Propeller Guard Protocol Comment Sheet

COMMENTS	PAGE/PARA ID	COMMENT/PROBLEM	SPECIFIC CHANGE RECOMMENDATION

COMMENTING

- Submit comments by email to propellerinjuryproject@gmail.com
- This presentation will be emailed to the mailing list after the Miami International Boat Show