Testing of Propeller Guards

by the Propeller Guard Information Center

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This document is a directory of propeller guard tests. If you are aware of any testing not listed here or have other comments, please contact us. You can reach us by email at polsong@virtualpet.com.

Propeller Guard Tests		
Date	Test/Report	Group
1969	OMC Report on efforts to increase speed of boat with an OMC Gale ring guard. Theodore Haltermann deposition 19 March 1991 Jeffery James Eggen case Pgs. 6-7. (May be Marine Engineering Report, Project No. D-217, No. 40, November 12, 1969 below.)	OMC
1969 Nov. 12	OMC Comparative tests of Gale Propeller Guard and experimental Kort Nozzles on OMC engines. Part of deposition file of Theodore Haltermann deposition 19 March 1991 Jeffery James Eggen case.	OMC Marine Engineering Group
1974-1976	OMC Project OD 3301 and OMC Project OD 2989. Test of "Thrust Ring" from a company called Patent Engineering. Theodore Holtermann deposition deposition 19 March 1991 Jeffery James Eggen case Pgs. 9-10 and 12-13. Reports and other materials associated with both tests are part of the deposition file. OD 2989 includes a test report by Patent Engineering, while OD 3301 includes a test report by OMC.	OMC
1976	"Power Performance of Planing Boats With the Effect of Propeller Selection and Propeller Guard Design." Daniel M. Ladd.	Oregon State University M.S. thesis by Daniel Ladd
1976 published in December	"A Study on Propeller-Guards for High Speed Small Crafts." Journal of the Kansai Society of Naval Architects, Japan. Testing guards for protection from floating driftwood. Sea trials proved one guard reduced damage by 40 percent while not harming speed performance or handling.	Tetsuo Takahei and Tetsuo Tagori of Japan
1977 June 15	OMC Project #441 - Propeller Guard Efficiency. MInimize performance penalty of Kort nozzle or shroud device at normal runabout speed.	Ted Holtermann OMC

Propeller Guard Tests		
1977 Nov. 01	OMC testing shrouds on 70HP outboard on 15 foot Glastron boat. Test data and calculations are part of deposition file of Theodore Haltermann deposition 19 March 1991 Jeffery James Eggen case.	OMC
1979 Apr. 20	Balius Guard on Disney Boats and Fishing Boat.	Mercury Marine
1979 Oct. 22 test completed	OMC Marine Engineering test. Theodore Holtermann deposition deposition 19 March 1991 Jeffery James Eggen case Pgs. 25-28. These documents are know as Group Exhibit 5 in this case. The test report is part of the deposition file. It compares boat performance with the National Council Safety Guard (Australian Guard) vs. boat performance with the OMC Gale Guard. They tested speed and fuel economy. See deposition Pgs. 25, 26, 29, 30, 39, 64, 208, 247 of the deposition.	OMC Marine Engineering Group
1980 Jan. 25 initiated	OMC Project #443 - Propeller Guard- determine impact on performance on water skiing outboard. Recorded speed and fuel consumption data. See U.S. Patent 4,304,558. Also used rubber feet to check penetration - see Theodore Holtermann deposition deposition 19 March 1991 Jeffery James Eggen case Pgs. 45-46.	Ted Holtermann OMC
1980 July 28	Williams Ring Guard on a MerCruiser stern drive for performance. Included underwater video. Conducted at Oshkosh.	Mercury Marine Charles/Chuck Mapes and Ted Morgan
1980 Oct. 10	Sausage testing of Balius cage guard and Williams ring guard on Green Lake	Mercury Marine
1980 Dec. 02	Sausage testing of Balius and Williams Guards at Baileys Harbor/Door County	Mercury Marine Chuck Mapes, Lee & John Reed

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1980 Dec. 15	Unpublished Dick Snyder letter to Al Marmo of the USCG summarizing the sausage testing above.	Mercury Marine Dick Snyder
1981 Oct. 7-10	Sausage testing of Balius cage guard and Williams ring guard on Big Carr Lake WI	Mercury Marine Dick Snyder
between 1981- 1988	OMC test of Flood-Schultz guard in Florida. Theodore Holtermann deposition 11 Apr 1988 in Brian Chrzanowski case. Pgs 45-47.	Ted Holtermann OMC
1987 Oct 28	OMC Chadwell Guard test at Fox Lake in IL. Theodore Holtermann deposition 11 Apr 1988 in Brian Chrzanowski case. Pgs 47-51. Test data is for a 90HP and 175HP outboard with and without the Chadwell Guard. They collected performance, acceleration and fuel consumption data at both full in and optimized trim position. Test data is a separate file. There is yet one more file of handwritten notes listing those present including Jim Wynne and Donald Blount, the raw data and comments.	Phil McGowan OMC
1988	Simulated Underwater Limb Impact Tests (SULIT). 21 minute video	Mercury Marine
listed in 1988 NBSAC report	Mercury and OMC Log Jumps. 4 minute video.	Mercury Marine and OMC
listed in 1988 NBSAC report	Chadwell Propeller Device On-Water Tests. 8 minute video.	Mercury Marine
1989 March 01	March 1989 San Diego Tests. Bruton Tapes. Underwater Video, High Speed Film, Speed Runs.	
1989 August 09 test date	Ben Hogan / stunt man video propeller guard tests. 2 videos.	Ben Hogan

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1990 November 20 - December 15	State University of New York (SUNY) at Buffalo testing at their CRESE (Center for Research and Education in Special Environments) circular tank using Dick Snyder's cage guard. They impacted an anatomical dummy and human cadaver parts. Several technical papers were written later based on this work.	Mercury Marine and OMC
1992 published	"The Anatomical Consequences of Underwater Impacting of Human Cadaver Legs with a Pro-Guarded Outboard Motor."	David Porta, Peter Fuller, A. Kress and John Snider. Based on the OMC/ Mercury Testing at SUNY
1993 Nov. IRCOBI Conf.	"Injury analysis of Impacts Between a Cage-Type Propeller Guard and a Submerged Head".	John Labra, Herbert Guzman, James Benedict, Harry Smith and James Ziegler. Based on the OMC/Mercury Testing at SUNY
1996 Apr. 01	"Impact Biomechanics of the Human Body" Part 10: Biomechanical Effectiveness of a Safety Device: A Boat Motor Cage-Type Propeller Guard.	Tyler A. Kress PhD Dissertation at University of Tennessee, Knoxville. Based of the OMC/Mercury Testing at SUNY.
1996 IRCOBI Conference	"An Underwater Impact Biomechanics Study to Evaluate a Boat Motor Cage-Type Propeller Guard as a Protective Device."	T.A. Kress, David J. Porta, John N. Snider, and Pete M. Fuller. Part of the OMC/Mercury Testing at SUNY
1997 Sept.	Propeller Injury Protection: An Evaluation of the State of the Art of Recreational Water Propulsion Systems.	Prepared for the USCG by the Marine Technology Society. Mancil W. Milligan and Jefferey S. Tennant.
1998 June 01	An Assessment of Propeller Guards Designed for Inboard Vessels on Vessel Operation and Manatee Protection.	Prepared for Florida Dept. of Environmental Protection Division of Marine Resources Protected Species Management. Mancil W. Milligan and Jeffery S. Tenant.

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1998 July 09-17	PropGuard test in California. Pole test, speed test, and speed test towing a loaded boat.	W.C. Schultz Engineering, Inc.
1998 Oct.	Propeller Injury Protection: An Evaluation of Commercially Available Protection Devices.	Prepared for the USCG by the Marine Technology Society. Mancil W. Milligan and Jefferey S. Tennant.
1998	“Prop Buddy: The Next Generation Propeller Guard. Stacy Roberts, Hiromi Nakamura, Kari Chaney. OCE 4541: Ocean Engineering Design. Florida Institute of Technology. This paper was a 1998 topic for this class and is also available as a SNAME paper (1999). The students experimented with several Prop Buddy guard variables.	OCE 4541: Ocean Engineering Design Class. Florida Institute of Technology.
1999	“Propeller Injury Protection.” U.S. Coast Guard Boating Safety Circular 81. December 1999. Report on the study, “Injury Protection- An Evaluation of Commercially Available Devices” the result of a USCG grant to Marine Technology Society (G-OPB-3).	Marine Technology Society on a USCG grant
2003 Sept. 18-20	Forever Resorts test of PropGuard at Lake Mead including pole test and speed tests on two different boats.	W.C. Schultz Engineering, Inc.
2003 late 2003	Royal Yachting Association (RYA) of U.K. tested performance, handling, and human factors using pig legs. They found ZapCat guards to be one of the better designs.	Royal Yachting Association (RYA) of U.K.
2004 June-July published	Prop Guard (New Zealand) tested for speed, performance, and sea weed handling.	Propeller Magazine (New Zealand)

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2005	Australia Army Marine performed a full Safety Class Study (SCS) investigating 8 different outboard motor propulsion systems including propeller cages and ringed propellers. They were assessed for safety and fitness for purpose. The Australian Army Modified Ringed Propeller was selected as the best balance between safety and performance.	Australia Army Marine Amphibious and Afloat Support SPO
2005 published	“Prop of a Different Twist.” Reports on fuel efficiency, submerged object testing, impact testing sheep carcass over a buoy, and impact testing a large sausage with RingProp propeller.	DIY Boat Owner Magazine reporting on RingProp.
2006 May 19 televised	Three-P-O Navigator propeller guard video running over large squash and a dummy.	Guy Taylor and KUTV
2007 Oct. 11 IBEX meeting	Brief Report on USCG testing of the new protocol using three guards (octagonal ring, full cage, ring/nozzle type)	Richard Blackman USCG and John Addy ABYC
2008 March Symposium	“Development of a Performance Test Protocol for Small Power Boats”. Paper on developing and verifying the USCG propeller guard protocol.	Richard Akers, Clifford Goudey, and Robert McNeill. USCG Protocol Development.
2009 June Symposium	“A Viable Approach to Propeller Safety fro Small Craft: Ringed Propellers” First International Symposium on Marine Propulsors. Trondheim Norway June 2009 reports on Ring Prop testing including CFD simulations, full scale testing, cavitation tunnel testing, bollard pull, performance testing, and impacting dead pigs in the circular tank at SUNY.	Mark Chapple (RingProp) and Martin Renilson (Australian Maritime College).

USCG = United States Coast Guard
OMC = Outboard Marine Corporation