

Extracts from:

NAVY DEPARTMENT
THE DAVID W. TAYLOR MODEL BASIN
WASHINGTON 7, D.C.

SGT. TRUMAN O. OLSON (YMP-2) EQUIPPED WITH
VOITH-SCHNEIDER CYCLOIDAL PROPELLERS
STANDARDIZATION TRIAL ANALYSIS
AND
MODEL RESISTANCE TEST RESULTS

By
George K. Brown
Prepared for The Board of
Inspection and Survey
July 1953 Report No. C-583

INTRODUCTI ON

The standardization trials of the Sgt. Truman O. Olson (YMP-2), an experimental controlled mine planting prototype utilizing cycloidal propeller drive were authorized by the Chief of Naval Operations, (1)*, The Voith-Schneider cycloidal propellers installed on the YMP-2 were captured enemy equipment secured by the Transportation Corps Technical Team of the U.S. Army of Occupation at Heidenheim, Germany, during World War II and were shipped to the United States for evaluation. Figure 1 is a photograph of the YMP-2 taken in dry dock showing the propeller installation. The purpose of these trials was to evaluate the design and performance characteristics of this mine planter. Standardization trials on YMP-2 were conducted under the supervision of the Board of Inspection and Survey, in accordance with the trial agenda letter, over the measured mile course at Kent Island, Maryland, on 21-25 May 31951 (2). Preliminary standardization curves and data were furnished the Board for distribution (3).

-3-

TABLE 1
SHIP CHARACTERISTICS

Length on waterline (LWL)	127.5 ft.
Maximum Beam at (LWL)	35.0 ft.
Appendages:	Centerline skeg and propellers.
PROPELLER CHARACTERISTICS	
Type	Voith-Schneider Cycloidal
BuShips Dwg. No.	Index Nos. 3,156,000 - 3,156,123 3,156,125 - 3,156,261
Number of Propellers	2
Speed reduction of Shaft RPM to Propeller RPM	3.28:1
Orbit Diameter	70.87 in.
Length of Blades	39.37 in.

Max. blade chord width-bottom	9.00 in.
Max. blade chord width-top	15.00 in.
Max. blade thickness-bottom	0.75 in.
Max. blade thickness-top	3.50 in.
Manufacturer	J.M. Voith Machine Works, Heidenheim, Germany

-4-

TABLE 2
SHIP TRIAL CONDITIONS

Trial Course: Kent Island, Maryland

Length of Trial Course: 6080 ft.

Depth of Water: 50 ft.

Ship underbody paint: Formula 15 HP (Hot Plastic)

	Full Load	Light Load
Date of Trial, 1951	21-24 May	25 May
Days out of Dock	4 - 7	8
Displacement in Tons	595	545
Mean Draft in ft.	9.78	9.30
Trim in inches, by stern	6	-
Trim in inches, by bow	-	2
Wetted Surface in sq. ft.	4797	4625
Specific Gravity of Sea Water	1.005	1.007
Temperature of Sea Water, °F.	65	63
Wind (Beaufort Scale)	2 - 4	0 - 1

Note: Test results in Appendix 4, Table 5 show maximum speed over the measured mile and horsepower as 9.56 knots and 838 SHP with air injected into rotor wells and 9.16 knots and 930 SHP without air injection.