

INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILITIES
TOWING TANKS, SEAKEEPING AND MANOEUVRING BASINS

DAVID TAYLOR MODEL BASIN , Carderock Division, NSW BETHESDA, MD 20084-5000, Phone: (301) 227-1578, FAX: (301) 227-3679	UNITED STATES		
CIRCULATING WATER CHANNEL (1944)			
Approx. Length of water circuit measured around the centerlines = 99 m (325 ft)			
DESCRIPTION OF FACILITY: Vertical plane, open to the atmosphere test section with a free surface in a closed recirculating water circuit, variable speed, rectangular cross-sectional shape with constant inside width of 6.7 m (22 ft) (except at the pumps), 9.1 m (30 ft) long enlargement section with an adjustable surface control lip at the upstream end of the test section, 10 large viewing windows on either side of the test section at different elevations & 9 in the bottom; movable bridge spans the test section for ease & versatility in mounting models, rigging bridge is capable of taking towing loads at any one of numerous points up to 35,584 N (8000 lbs); overhead traveling cranes for handling large & heavy models; filters keep water photographically clear.			
TYPE OF DRIVE SYSTEM: Two 3.8 m (12.5 ft) diameter adjustable pitch two bladed axial flow impellers operating in parallel, impeller blade angle is controlled by a hydraulic servo system capable of maintaining test section water velocity within ± 0.01 knot.			
TOTAL IMPELLER MOTOR POWER: Two each 932 kW (1250 hp), 80 rpm constant speed, pumps rotate in opposite directions			
WORKING SECTION MAX. VELOCITY: 5.1 m/s (16.9 ft/s, 10 knots)			
WORKING SECTION DIMENSIONS: Length = 18.3 m (60 ft), width = 6.7 m (22 ft), max. water depth = 2.7 m (9 ft) with 1.0 m (3.3 ft) of freeboard above the free water surface; it is possible to lower the water depth & operate at reduced speeds.			
INSTRUMENTATION: Dye injection system for flow visualization experiments, pressure sensors, force measuring dynamometers, high speed photographic system, model motor power supplies - (1) 5 kW, 125 volts DC; (2) 60 kW, 15-400 volts variable voltage DC; (3) 12.5 kVA regulated, 120 volts, 60 hertz AC.			
MODEL SIZE RANGE: Lengths from 1.2 - 9.1 m (4-30 ft), tow points can be rigged either above, at or below the water surface, on the channel centerline or near one side.			
TESTS PERFORMED: <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> (1) flow visualization on ship hulls, rudders, fairings, appendages, submerged bodies, etc. (2) stack gas flow studies over ship superstructures at various headings </td> <td style="width: 50%; vertical-align: top;"> (3) towed body experiments (4) tanker oil spill evaluations (5) diver & diving suit performance evaluations when operating in a current </td> </tr> </table>		(1) flow visualization on ship hulls, rudders, fairings, appendages, submerged bodies, etc. (2) stack gas flow studies over ship superstructures at various headings	(3) towed body experiments (4) tanker oil spill evaluations (5) diver & diving suit performance evaluations when operating in a current
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PUBLISHED DESCRIPTION:			
<ul style="list-style-type: none"> • Saunders, H. E. & Hubbard, C. W. "The Circulating Water Channel of the David W. Taylor Model Basin," SNAME Transactions Vol. 52 (1944) 			
<ul style="list-style-type: none"> • Lee, C. A. "The Characteristics and Utilization of the David W. Taylor Model Basin Circulating Water Channel," Proceedings of the Third Hydraulics Conference, Iowa City, Iowa (Jun 1946) 			