

INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILITIES  
 AIR TESTS FACILITIES

<b>DAVID TAYLOR MODEL BASIN, Carderock Division, NSWC</b> BETHESDA, MD 20084-5000, Phone: (301) 227-1578, FAX: (301) 227-3679		<b>UNITED STATES</b>																																					
<b>2.5 x 3 m (8 x 10 ft) SUBSONIC WIND TUNNEL (1943)</b>																																							
<p><b>DESCRIPTION OF FACILITY:</b> Horizontal plane, closed circuit, variable speed, general purpose fluid dynamic research wind tunnel with closed atmospheric pressure test section; steel shell; strut or sting-mounts for models; full width floor and ceiling turntables in test section; removable inserts to produce 0.91 m (3 ft) wide test section; compressed air, vacuum, variable frequency electric power, and hydraulic power available to models.</p> <p><b>TYPE OF DRIVE SYSTEM:</b> AC wound rotor electric motor with variable frequency controller driving 4.88 m (16 ft) diameter fixed pitch four-bladed propeller. Downstream of the propeller are seven stator blades and a five-bladed axial flow windmill which smooth the flow.</p> <p><b>TOTAL PROPELLER MOTOR POWER:</b> 746 kW (1000 hp)</p> <p><b>WORKING SECTION MAX. VELOCITY:</b> 83.8 m/s (275 ft/s, 163 knots)</p>																																							
<p><b>INSTRUMENTATION:</b> Fixed 6-component dynamometer surrounds exterior of test section &amp; is available for use with strut-mounted models; approximately thirty three 6-component strain gaged force balance dynamometer units are available for installation inside either strut-mounted or sting-mounted models.</p> <p><b>RANGES OF DYNAMOMETERS:</b></p> <table border="1"> <thead> <tr> <th></th> <th>FIXED EXTERNAL DYNAMOMETER</th> <th>SMALLEST INTERNAL DYNAMOMETER</th> <th>LARGEST INTERNAL DYNAMOMETER</th> </tr> </thead> <tbody> <tr> <td>• Lift Force</td> <td>± 7117 N (± 1600 lbs)</td> <td></td> <td></td> </tr> <tr> <td>• Normal Force</td> <td></td> <td>± 44.5 N (± 10 lbs)</td> <td>± 11,120 N (± 2500 lbs)</td> </tr> <tr> <td>• Drag Force</td> <td>+ 3558 N (+ 800 lbs) - 449 N (- 100 lbs)</td> <td></td> <td></td> </tr> <tr> <td>• Axial Force</td> <td></td> <td>± 35.6 N (± 8 lbs)</td> <td>± 1112 N (± 250 lbs)</td> </tr> <tr> <td>• Side Force</td> <td>± 7117 N (± 1600 lbs)</td> <td>± 44.5 N (± 10 lbs)</td> <td>± 667 N (± 1500 lbs)</td> </tr> <tr> <td>• Pitching Moment</td> <td>± 1084 Nm (± 800 lb-ft)</td> <td>± 3.39 Nm (± 2.5 lb-ft)</td> <td>± 1129 Nm (± 833 lb-ft)</td> </tr> <tr> <td>• Rolling Moment</td> <td>± 1084 Nm (± 800 lb-ft)</td> <td>± 1.69 Nm (± 1.25 lb-ft)</td> <td>± 339 Nm (± 250 lb-ft)</td> </tr> <tr> <td>• Yawing Moment</td> <td>± 1084 Nm (± 800 lb-ft)</td> <td>± 2.84 Nm (± 2.1 lb-ft)</td> <td>± 678 Nm (± 500 lb-ft)</td> </tr> </tbody> </table>					FIXED EXTERNAL DYNAMOMETER	SMALLEST INTERNAL DYNAMOMETER	LARGEST INTERNAL DYNAMOMETER	• Lift Force	± 7117 N (± 1600 lbs)			• Normal Force		± 44.5 N (± 10 lbs)	± 11,120 N (± 2500 lbs)	• Drag Force	+ 3558 N (+ 800 lbs) - 449 N (- 100 lbs)			• Axial Force		± 35.6 N (± 8 lbs)	± 1112 N (± 250 lbs)	• Side Force	± 7117 N (± 1600 lbs)	± 44.5 N (± 10 lbs)	± 667 N (± 1500 lbs)	• Pitching Moment	± 1084 Nm (± 800 lb-ft)	± 3.39 Nm (± 2.5 lb-ft)	± 1129 Nm (± 833 lb-ft)	• Rolling Moment	± 1084 Nm (± 800 lb-ft)	± 1.69 Nm (± 1.25 lb-ft)	± 339 Nm (± 250 lb-ft)	• Yawing Moment	± 1084 Nm (± 800 lb-ft)	± 2.84 Nm (± 2.1 lb-ft)	± 678 Nm (± 500 lb-ft)
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<p><b>TESTS PERFORMED:</b></p> <ol style="list-style-type: none"> <li>(1) fluid dynamics of underwater vehicles and underwater portions of ships, drilling rigs, and other vessels</li> <li>(2) wind effects on above water portion of ships</li> <li>(3) ship/aircraft interface studies</li> <li>(4) aircraft performance, stability, and control</li> <li>(5) effect of wind on structures such as ship and aircraft components, antennae, bridges and buildings</li> <li>(6) fluid dynamics of land transportation vehicles</li> </ol>																																							
<p><b>PUBLISHED DESCRIPTION:</b></p>																																							