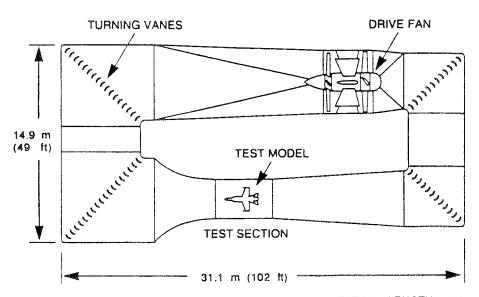
INTERNATIONAL TOWING TANK CONFERENCE CATALOGUE OF FACILIYIES AIR TESTS FACILITIES

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UNITED STATES

2.5 x 3 m (8 x 10 ft) SUBSONIC WIND TUNNEL (1943)



TEST SECTION: LENGTH = 4.3 m (14 ft)
WIDTH = 3 m (10 ft)
HEIGHT = 2.4 m (8 ft)

DESCRIPTION OF FACILITY: Horizontal plane, closed circuit, variable speed, general purpose fluid dynamic research wind tunnel with closed atmospheric pressure test section; steel shell; strut or string-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.

TYPE OF DRIVE SYSTEM: 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

TOTAL PROPELLER MOTOR POWER: 746 kW (1000 hp)

WORKING SECTION MAX. VELOCITY: 83.8 m/s (275 ft/s, 163 knots)

INSTRUMENTATION: Fixed 6-component dynamometer surrounds exterior of test section & 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.

RANGES OF DYNAMOMETERS:

	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 bs)	± 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 to-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)

TESTS PERFORMED:

- (1) fluid dynamics of underwater vehicles and underwater portions of ships, crilling rigs, and other vessels
- (2) wind effects on above water portion of ships
- (3) ship/aircraft interface studies
- (4) aircraft performance, stability, and control
- (5) effect of wind on structures such as ship and aircraft components, antennee, bridges and buildings
- (6) fluid dynamics of land transportation vehicles

PUBLISHED DESCRIPTION: