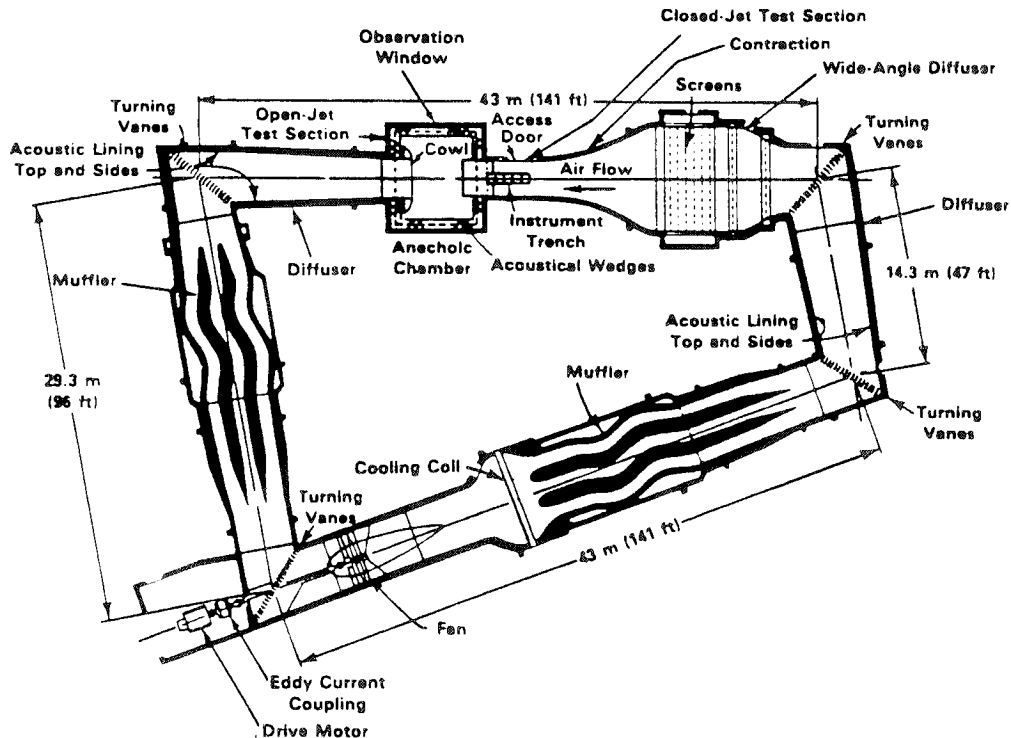


AIR TESTS FACILITIES

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ANECHOIC FLOW FACILITY (1971)



DESCRIPTION OF FACILITY: Atmospheric pressure type, horizontal plane, closed circuit, continuous flow, low noise, low turbulence subsonic wind tunnel with anechoic chamber; tunnel is constructed from reinforced concrete of rectangular cross sections with corner fillets; specially designed mufflers and acoustic treatment of critical sections provide attenuation of fan and machinery noise; a total of 8 anti-turbulence screens and a 10:1 contraction ratio provide a turbulence level of 0.1 percent; the tunnel loop contains a closed-jet test section followed by an open-jet test section (anechoic chamber) which provides a unique capability for conducting experiments in either test section, or utilizing both test sections simultaneously; the CLOSED-JET test section has a square cross sectional area, an access door 2.4 m by 2.4 m (8 ft by 8 ft), and an observation window on one wall, an axially adjustable model support carriage-strut assembly rides on ways in the floor of the test section; the OPEN-JET test section is acoustically lined and has a square cross sectional area; it can be used as an anechoic chamber when no air is flowing, a wire cable walkway and platforms are provided at a level below the test jet for working on models, it has a 457 mm by 610 mm (18 in. by 24 in.) observation window in one wall, lighting fixtures, instrumentation, and electrical connections for model power.

TYPE OF DRIVE SYSTEM: 3.5 m (11.5 ft) diameter 24-bladed vane-axial fan, manually adjustable pitch on individual fan blades with rotor stopped, eddy current coupling and brake type drive system with electronic speed regulator capable of maintaining any desired preset shaft speed in the 100 to 500 rpm range with an accuracy of ± 0.25 percent of maximum speed.

TOTAL PROPELLER MOTOR POWER: 1596 kW (2140 hp), 600 rpm synchronous motor (driving eddy current coupling)

WORKING SECTION MAX. VELOCITY: 61 m/s (200 ft/s, 118.5 knots)

WORKING SECTION DIMENSIONS:

CLOSED-JET TEST SECTION: 2.4 m (8 ft) x 2.4 m (8 ft) sq., length = 2.7 m (8.9 ft);

OPEN-JET TEST SECTION: 7.2 m (23.5 ft) x 7.2 m (23.5 ft) sq., length = 6.4 m (21.1 ft)

INSTRUMENTATION: Microphones and associated instrumentation, hot wire anemometers, digital spectral analyzers, minicomputers for data collection and on-line analysis, variable frequency motor generator sets.

TESTS PERFORMED: Aerodynamic and acoustic flow investigations in airframe noise, vortices, wakes, laminar and turbulent flows, and general flow noise research, including effects of:

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| (1) appendages and protuberances | (4) roughness |
| (2) cavities | (5) pressure gradients on flow and noise |
| (3) surface discontinuities | (6) measuring devices on the parameters to be measured |

PUBLISHED DESCRIPTION:

- Vincent, Capt. M. da C., "The U.S. Navy's Center of Excellence for Ship Research," DTMB (NSRDC) Report 3039 (Nov 1971)
- (also, 2nd Pan American Congress of Naval Engineering and Maritime Transports, Rio de Janeiro, Brazil (Jun 1969))