

National Transonic Facility

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Activity:

National Aeronautics and Space Administration
Langley Research Center

HAMPTON , Virginia 23681
United States

Updated as of: Mar 21, 1996

Facility Type:

- Wind Tunnels
- Wind Tunnels, Transonic

Description:

The National Transonic Facility (NTF) is a fan driven, closed circuit, continuous flow, pressurized wind tunnel. The test section is 8.2 ft by 8.2 ft and 25 ft long, with a slotted-wall configuration. The facility's unique operating capability of high Reynolds number research, up to 120×10^6 at Mach 1.0 (based on a reference chord length of 9.84 inches) provides a customer with near-full-scale research conditions. High Reynolds number research conditions are achieved by utilizing cryogenic technology (nitrogen gas). Dry air may also be used as the research medium. The tunnel operating Mach number range is from 0.2 to 1.2, the temperature range is from +150 to -250 degrees F, and the total pressure operating range is from 15 to 130 psia. The NTF also provides the capability to test full-span (sting mounted) or half-span (wall mounted) models. With both temperature and pressure as research variables, three types of investigations are available; these include Reynolds number effects at constant Mach number and dynamic pressure, model aeroelastic effects at constant Reynolds number and Mach number, and Mach number effects at constant dynamic pressure and Reynolds number. As a result of these unique capabilities, the facility is rated as "World Class".

Available data file(s)

- Transonic Wind Tunnel Facilities

Facility Capability:

- aero-/aerothermo-dynamics
- cryogenic test
- wind tunnel/transonic

Parameters:

Name	Unit of Measure	Values		Type
<u>angle-of-attack</u>	degrees	-11.0	19.0	Range
<u>angle-of-yaw</u>	degrees	-180.0	180.0	Range
<u>mach #</u>	unitless	0.2	1.2	Range
<u>pressure capability</u>	psia	14.7	132.3	Range
<u>reynolds #</u>	millions per foot	120.0	120.0	Maximum
<u>roll angle</u>	degrees	-180.0	180.0	Range
<u>temperature range - fahrenheit</u>	degrees-fahrenheit (+/-)	-250.0	150.0	Range
<u>test section height</u>	feet	8.2	8.2	Discrete
<u>test section length</u>	feet	25.0	25.0	Discrete
<u>test section width</u>	feet	8.2	8.2	Discrete

Programs Supported:

Program	Customer	Start	End
<u>Advanced Subsonic Transportation</u>	<u>Boeing, McDonnell</u>	1993	2000
<u>High Speed Research</u>	<u>Boeing, McDonnell</u>	1993	2000
<u>Boeing 767</u>	<u>BOEING CO.</u>	1990	1996
<u>C-17</u>	<u>Douglas Aircraft Company</u>	1989	1995

Status:

Percent Utilization: 100%
Based On: 2
Occupancy Year: 1982
Current Status: Active
Condition: Good
Non Owner Use: Yes
Military: Yes
Civilian Government: Yes
Commercial: Yes

Contact:

For information concerning the facility described on this page contact:

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