1st Ice Prediction Workshop
Ice Accretion Test Case Data

Case-241

Ice accretion on 2D geometry: 18-in NACA23012 at α = 2, rime ice ***Baseline***

Icing Branch Run Number: ED1977
Test Date: December 13, 2012
MVD = 30 μm
LWC = 0.42 g/m^3
MOD1 Nozzles, P_{air} = 13.2 psig, ΔP_{water} = 46.6 psid
V = 200 knots
Avg. Total Temp = -17.8 C
Avg. Static Temp = -23.0 C
Static Pressure = 13.42 psia
Re = 3.8×10^6 (based upon 18-inch chord)
M = 0.325
Spray Time = 5 min.

Data files

- ✓ Model Cp data [*Case-241-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-241-Drop Size Distribution.dat*]
- ✓ Ice shape cross section—MCCS—Based upon 3 cuts over center 0.2 inches of span [*Case-241-MCCS.dat*]
- ✓ 3D Scan data [*Case-241-Scan.stl*]

Case-242

Ice accretion on 2D geometry: 18-in NACA23012 at α = 2, glaze ice ***Baseline***

Icing Branch Run Number: ED1978
Test Date: December 14, 2012
MVD = 15 μm
LWC = 0.81 g/m^3
STD Nozzles, P_{air} = 47.5 psig, ΔP_{water} = 8.1 psid
V = 200 knots
Avg. Total Temp = -1.9 C
Avg. Static Temp = -7.1 C
Static Pressure = 13.48 psia
Re = 3.4×10^6 (based upon 18-inch chord)
M = 0.31
Spray Time = 5 min.

Data files

- ✓ Model Cp data [*Case-242-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-242-Drop Size Distribution.dat*]
- ✓ Ice shape cross section—MCCS—Based upon 3 cuts over center 0.2 inches of span [*Case-242-MCCS.dat*]
- ✓ 3D Scan data [*Case-242-Scan.stl*]

Case-251

Ice accretion on 2D geometry: 72-in NACA23012 at α = 2, SLD {bi,mono}modal ***Optional***

Icing Branch Run Number EG2820
Test Date: April 20, 2017
MVD = 21.5 μm (Monomodal)
LWC = 1.64 g/m^3
STD Nozzles, P_{air} = 25.1 psig, ΔP_{water} = 22.9 psid
V = 200 knots
Avg. Total Temp = -7.3 C
Avg. Static Temp = -12.6 C
Static Pressure = 13.3 psia [*--*Estimated*]
Spray Time = 6.63 min.

Data files

- ✓ Model Cp data [*Case-251-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-251-Drop Size Distribution.dat*]
- ✓ Ice shape cross section—MCCS—Based upon 3 cuts over center 0.2 inches of span [*Case-251-MCCS.dat*]
- ✓ 3D Scan data [*Case-251-Scan.stl*]

Case-252

Ice accretion on 2D geometry: 72-in NACA23012 at α = 2, SLD {bi,mono}modal ***Optional***

Icing Branch Run Number EG2819
Test Date: April 20, 2017
MVD = 21.5 μm (Bimodal)
LWC = 1.64 g/m^3
MOD1 Nozzles, P_{air} = 15.0 psig, ΔP_{water} = 80.0 psid
+ STD Nozzles, P_{air} = 15.0 psig, ΔP_{water} = 6.8 psid
V = 200 knots
Avg. Total Temp = -7.3 C
Avg. Static Temp = -12.6 C
Static Pressure = 13.3 psia [*--*Estimated*]
Spray Time = 6.63 min.

Data files

- ✓ Model Cp data [*Case-252-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-252-Drop Size Distribution.dat*]
- ✓ Ice shape cross section—MCCS—Based upon 3 cuts over center 0.2 inches of span [*Case-252-MCCS.dat*]
- ✓ 3D Scan data [*Case-252-Scan.stl*]

Case-361

Ice accretion on 3D geometry: 30-deg-swept NACA0012 at α = 0, rime ice ***Baseline***

Icing Branch Run Number AF2146
Test Date: March/April 2014
MVD = 34.7 μm
LWC = 0.50 g/m^3
MOD1 Nozzles, P_{air} = 10 psig, ΔP_{water} = 33.8 psid
V = 200 knots
Static Temp = 257 K
Static Pressure = 92321 Pa
Spray Time = 20 min.
*--*Not able to independently verify the test conditions*

Data files

- ✓ Model Cp data—data for identical configuration obtained from different test campaign [*Case-361-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-361-Drop Size Distribution.dat*]
- ✓ Ice shape cross sections—digitized pencil tracings at two spanwise locations taken perpendicular to the leading edge. [*Case-361-Tracings.dat*]

Case-362

Ice accretion on 3D geometry: 30-deg-swept NACA0012 at α = 0, glaze ice ***Baseline***

Icing Branch Run Number AF2145
Test Date: March/April 2014
MVD = 34.7 μm
LWC = 0.50 g/m^3
MOD1 Nozzles, P_{air} = 10 psig, ΔP_{water} = 33.8 psid
V = 200 knots
Static Temp = 266 K
Static Pressure = 92321 Pa
Spray Time = 20 min.
*--*Not able to independently verify the test conditions*

Data files

- ✓ Model Cp data—data for identical configuration obtained from different test campaign [*Case-362-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-362-Drop Size Distribution.dat*]
- ✓ Ice shape cross sections—digitized pencil tracings at two spanwise locations taken perpendicular to the leading edge. [*Case-362-Tracings.dat*]

Case-363

Ice accretion on 3D geometry: 30-deg-swept NACA0012 at α = 0 with ice scan ***Optional***

Icing Branch Run Number: AF2881
Test Date: October 23, 2017
MVD = 20.5 μm
LWC = 0.50 g/m^3
MOD1 Nozzles, P_{air} = 19.4 psig, ΔP_{water} = 49.9 psid
V = 224 knots
Avg. Total Temp = -3.4 C
Avg. Static Temp = -10.0 C
Static Pressure = 13.1 psia [*--*Estimated*]
Spray Time = 17.7 min.

Data files

- ✓ Model Cp data—data for identical configuration obtained from different test campaign [*Case-363-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-363-Drop Size Distribution.dat*]
- ✓ Ice shape cross section—MCCS—Based upon 31 cuts over center 3 inches of span perpendicular to the leading edge. [*Case-363-MCCS.dat*]
- ✓ 3D Scan data [*Case-363-Scan.stl*]

Case-364

Ice accretion on 3D geometry: 30-deg-swept NACA0012 at α = 0 with ice scan ***Optional***

Icing Branch Run Number: AF2892
Test Date: October 25, 2017
MVD = 20.5 μm
LWC = 0.50 g/m^3
MOD1 Nozzles, P_{air} = 19.4 psig, ΔP_{water} = 49.9 psid
V = 222 knots
Avg. Total Temp = -6.8 C
Avg. Static Temp = -13.4 C
Static Pressure = 13.0 psia [*--*Estimated*]
Spray Time = 17.7 min.

Data files

- ✓ Model Cp data—data for identical configuration obtained from different test campaign [*Case-364-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-364-Drop Size Distribution.dat*]
- ✓ Ice shape cross section—MCCS—Based upon 31 cuts over center 3 inches of span perpendicular to the leading edge. [*Case-364-MCCS.dat*]
- ✓ 3D Scan data [*Case-364-Scan.stl*]

Case-371

Ice accretion on 3D geometry: 45-deg-swept NACA0012 at α = 0, rime ice ***Baseline***

Icing Branch Run Number AF1799
Test Date: April 14, 2010
MVD = 32 μm
LWC = 0.50 g/m^3
MOD1 Nozzles, P_{air} = 11.8 psig, ΔP_{water} = 44.7 psid
V = 200 knots
Static Temp = 257 K
Static Pressure = 94463 Pa
Spray Time = 20 min.
*--*Not able to independently verify the test conditions*

Data files

- ✓ Model Cp data—data for identical configuration obtained from different test campaign [*Case-371-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-371-Drop Size Distribution.dat*]
- ✓ Ice shape cross sections—digitized pencil tracings at two spanwise locations taken perpendicular to the leading edge. [*Case-371-Tracings.dat*]

Case-372

Ice accretion on 3D geometry: 45-deg-swept NACA0012 at α = 0, glaze ice ***Baseline***

Icing Branch Run Number AF1795
Test Date: April 14, 2010
MVD = 32 μm
LWC = 0.50 g/m^3
MOD1 Nozzles, P_{air} = 11.8 psig, ΔP_{water} = 44.7 psid
V = 200 knots
Static Temp = 266 K
Static Pressure = 94463 Pa
Spray Time = 20 min.
*--*Not able to independently verify the test conditions*

Data files

- ✓ Model Cp data—data for identical configuration obtained from different test campaign [*Case-372-Model Cp Data.dat*]
- ✓ Drop size distribution [*Case-372-Drop Size Distribution.dat*]
- ✓ Ice shape cross sections—digitized pencil tracings at two spanwise locations taken perpendicular to the leading edge. [*Case-372-Tracings.dat*]