A cooperative effort between the U.S. Department of Transportation, Federal Aviation Administration, and the international and domestic aviation community in the interest of safety
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NOTICE
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March 24, 1995

Dear Sir/Madam:

It is a pleasure to recommend this “Wake Vortex Training Aid” for use throughout the aviation industry. This training tool is the culmination of an aggressive, painstaking effort on the part of an industry and Government working group representing a broad segment of the aviation community.

Throughout 1994, this ATA sponsored, Boeing led, joint Government/industry team comprised of both domestic and international experts, representing a wide range of knowledge and interests, developed this consensus document. This fact gathering effort led to the group’s recommendations that pilots and air traffic controllers share the responsibility for reducing aircraft encounters with wake turbulence. The Federal Aviation Administration supports this view and offers this aid as a means of enhancing wake turbulence training for both pilots and air traffic controllers.

This training aid represents the most recent information available on wake turbulence avoidance in addition to providing a comprehensive discussion of the characteristics of this hazard. We are continuing to examine this threat; therefore, you should be alert for changes to existing wake turbulence guidance.

My thanks to the members of the Wake Turbulence Working Group. I strongly support the industry and Government partnership represented by the group’s activities. Through efforts such as these we can effectively and efficiently promote safety for the flying public.

Sincerely,

David R. Hinson
Administrator
Wake-turbulence accidents and incidents have been, and continue to be, a significant contributor to worldwide safety statistics. The National Transportation Safety Board (NTSB), in a report on safety issues related to wake-vortex encounters, stated that between 1983 and 1993 there were at least 51 accidents and incidents in the United States that resulted from probable encounters with wake vortices.

The goal of the Wake Turbulence Training Aid is to reduce the number of wake-turbulence related accidents and incidents by improving the pilot's and air traffic controller's decision making and situational awareness through increased and shared understanding and heightened awareness of the factors involved in wake turbulence. The major three objectives of the Wake Turbulence Training Aid are:
(1) to educate pilots and air traffic controllers on wake turbulence and avoidance of the phenomenon;
(2) to increase the wake-turbulence situational awareness of pilots and air traffic controllers; and
(3) to provide usable information to develop a ground training program.
## METRIC/ENGLISH CONVERSION FACTORS

### ENGLISH TO METRIC

#### LENGTH (APPROXIMATE)
- 1 inch (in) = 2.5 centimeters (cm)
- 1 foot (ft) = 3.0 centimeters (cm)
- 1 yard (yd) = 0.9 meter (m)
- 1 mile (mi) = 1.6 kilometers (km)

#### AREA (APPROXIMATE)
- 1 square inch (sq in, in²) = 6.5 square centimeters (cm²)
- 1 square foot (sq ft, ft²) = 0.09 square meter (m²)
- 1 square yard (sq yd, yd²) = 0.16 square kilometers (km²)
- 1 acre = 0.4 hectares (he) = 4,000 square meters (m²)  

#### MASS - WEIGHT (APPROXIMATE)
- 1 ounce (oz) = 28 grams (gr)
- 1 pound (lb) = 0.45 kilogram (kg)
- 1 short ton = 2,000 pounds (lb) = 0.9 tonne (t)

#### VOLUME (APPROXIMATE)
- 1 teaspoon (tsp) = 5 milliliters (ml)
- 1 tablespoon (tbsp) = 15 milliliters (ml)
- 1 fluid ounce (fl oz) = 30 milliliters (ml)
- 1 cup (c) = 0.24 liter (l)
- 1 pint (pt) = 0.47 liter (l)
- 1 quart (qt) = 0.96 liter (l)
- 1 gallon (gal) = 3.8 liters (l)

#### TEMPERATURE (EXACT)
- 

\[(x - 32)(\frac{5}{9})\]°F = y °C

#### METRIC TO ENGLISH

#### LENGTH (APPROXIMATE)
- 1 millimeters (mm) = 0.04 inch (in)
- 1 centimeters (cm) = 0.4 inch (in)
- 1 meter (m) = 2.2 feet (ft)
- 1 meter (m) = 1.1 yards (yd)
- 1 kilometer (km) = 0.6 mile (mi)

#### AREA (APPROXIMATE)
- 1 square centimeter (cm²) = 0.16 square inch (sq in, in²)
- 1 square meter (m²) = 1.2 square yards (sq yd, yd²)
- 1 square kilometer (km²) = 0.4 square mile (sq mi, mi²)
- 1 hectares (he) = 10,000 square meters (m²) = 2.5 acres

#### MASS - WEIGHT (APPROXIMATE)
- 1 gram (gr) = 0.036 ounce (oz)
- 1 kilogram (kg) = 2.2 pounds (lb)
- 1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons

#### VOLUME (APPROXIMATE)
- 1 milliliters (ml) = 0.03 fluid ounce (fl oz)
- 1 liter (l) = 2.1 pints (pt)
- 1 liter (l) = 1.06 quarts (qt)
- 1 liter (l) = 0.06 gallon (gal)

#### TEMPERATURE (EXACT)
- 

\[(\frac{9}{5})(y + 32)\]°C = x °F

### QUICK INCH-CENTIMETER LENGTH CONVERSION

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### QUICK FAHRENHEIT-CELCIUS TEMPERATURE CONVERSION

| °F | -40° | -22° | -4° | 14° | 32° | 50° | 68° | 86° | 104° | 122° | 140° | 158° | 176° | 194° | 212° |
|----|------|------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|
| °C | -40° | -30° | -20° | -10° | 0° | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° | 100° |

For more exact and or other conversion factors, see NBS Miscellaneous Publication 286, Units of Weights and Measures. Price $2.50. SD Catalog No. C1310286.