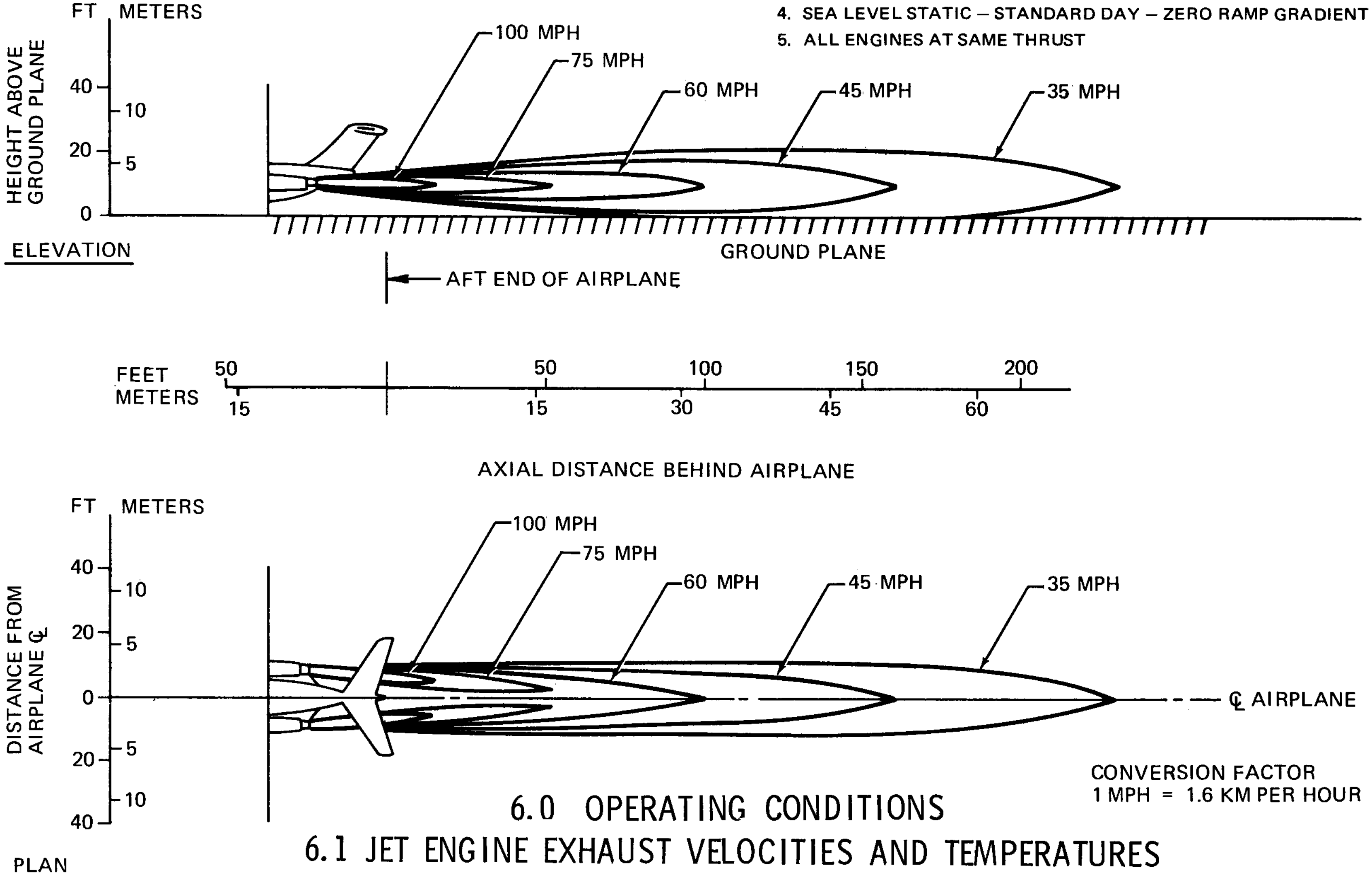
6.0 OPERATING CONDITIONS

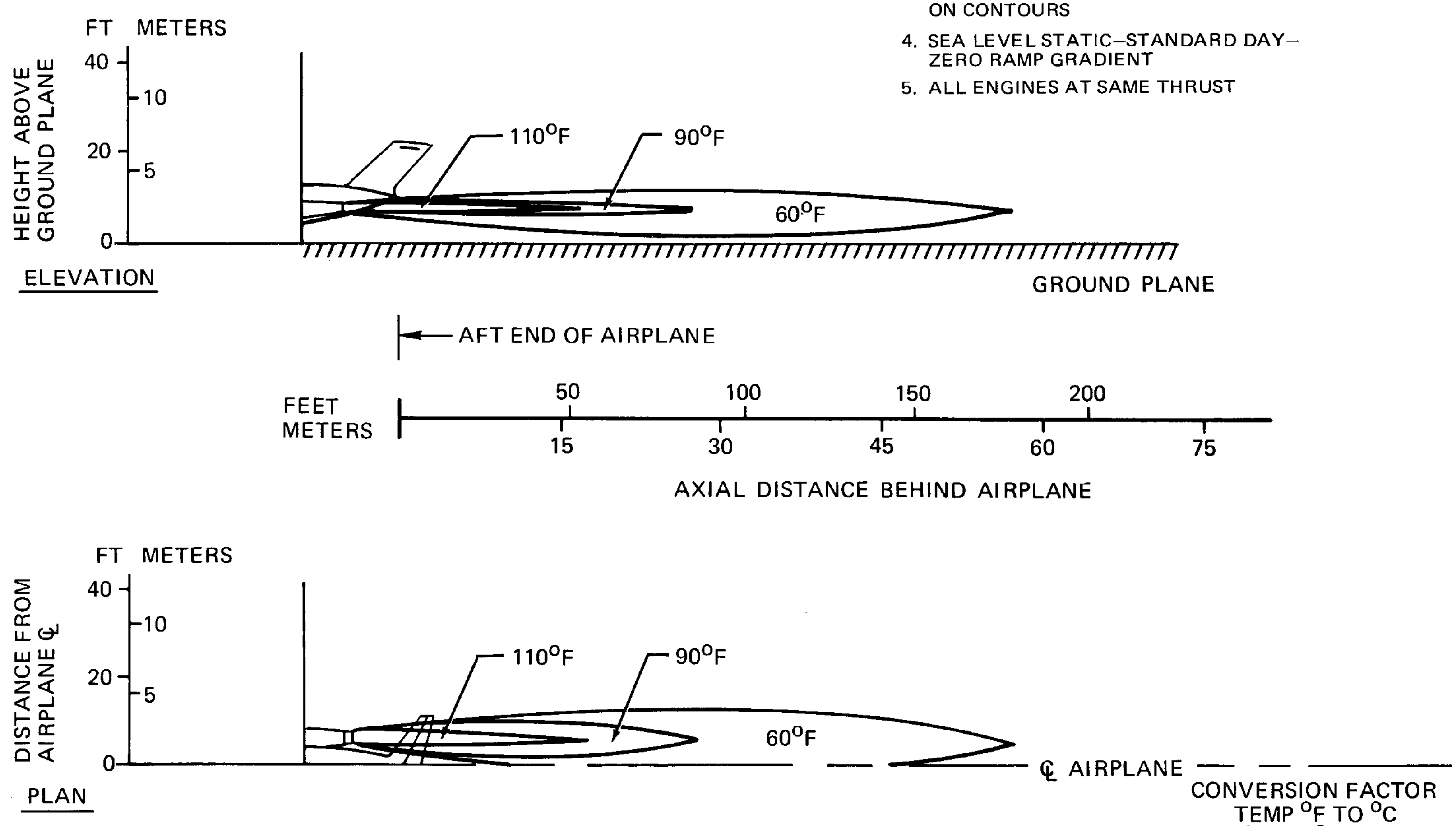
NOTES:
1. THESE CONTOURS ARE TO BE USED AS GUIDELINES ONLY SINCE OPERATIONAL ENVIRONMENT VARIES GREATLY – OPERATIONAL SAFETY ASPECTS ARE THE RESPONSIBILITY OF THE USER/PLANNER
2. ALL VELOCITY VALUES ARE STATUTE MILES PER HOUR
3. CROSSWINDS WILL HAVE CONSIDERABLE EFFECT ON CONTOURS
4. SEA LEVEL STATIC – STANDARD DAY – ZERO RAMP GRADIENT
5. ALL ENGINES AT SAME THRUST



CONVERSION FACTOR
1 MPH = 1.6 KM PER HOUR

6.0 OPERATING CONDITIONS
6.1 JET ENGINE EXHAUST VELOCITIES AND TEMPERATURES
6.1.1 JET ENGINE EXHAUST VELOCITY CONTOURS, BREAKAWAY POWER
DC-9 MODELS
(SERIES 10 THROUGH 50)

NOTES:
1. ALL TEMPERATURES ARE DEGREES FAHRENHEIT
2. THESE CONTOURS ARE TO BE USED AS GUIDELINES ONLY SINCE OPERATIONAL ENVIRONMENT VARIES GREATLY – OPERATIONAL SAFETY ASPECTS ARE THE RESPONSIBILITY OF THE USER/PLANNER
3. CROSSWINDS WILL HAVE CONSIDERABLE EFFECT ON CONTOURS
4. SEA LEVEL STATIC–STANDARD DAY–ZERO RAMP GRADIENT
5. ALL ENGINES AT SAME THRUST

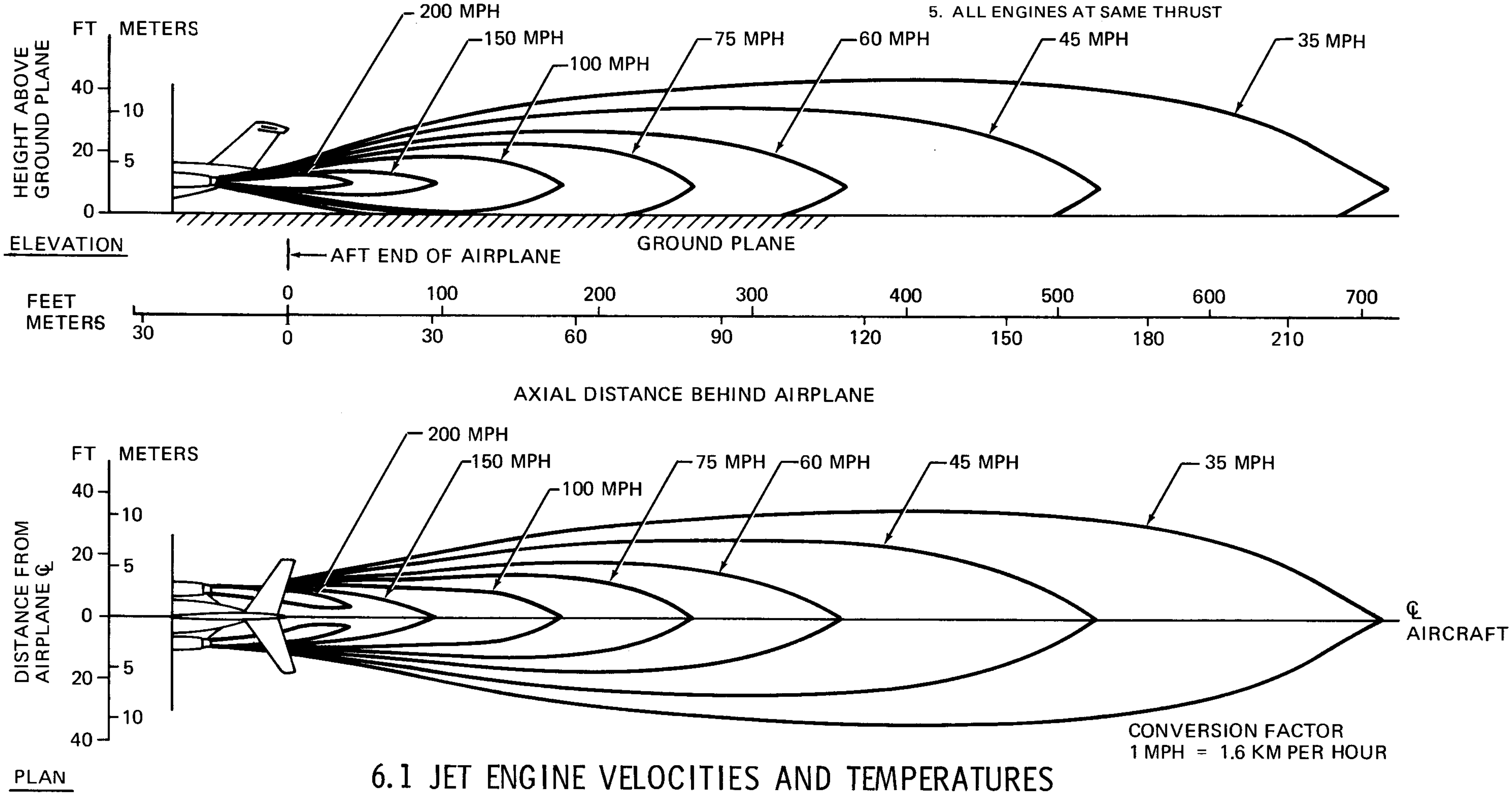


CONVERSION FACTOR
TEMP °F TO °C

$$°C = \frac{(°F - 32)}{1.8}$$

6.1 JET EXHAUST VELOCITIES AND TEMPERATURES
6.1.2 JET ENGINE EXHAUST TEMPERATURE CONTOURS, BREAKAWAY POWER
DC-9 MODELS
(SERIES 10 THROUGH 50)

NOTES:
1. THESE CONTOURS ARE TO BE USED AS GUIDELINES ONLY SINCE OPERATIONAL ENVIRONMENT VARIES GREATLY – OPERATIONAL SAFETY ASPECTS ARE THE RESPONSIBILITY OF THE USER/PLANNER
2. ALL VELOCITY VALUES ARE STATUTE MILES/HOUR
3. CROSSWINDS WILL HAVE CONSIDERABLE EFFECT ON CONTOURS
4. SEA LEVEL STATIC–STANDARD DAY–ZERO RAMP GRADIENT
5. ALL ENGINES AT SAME THRUST



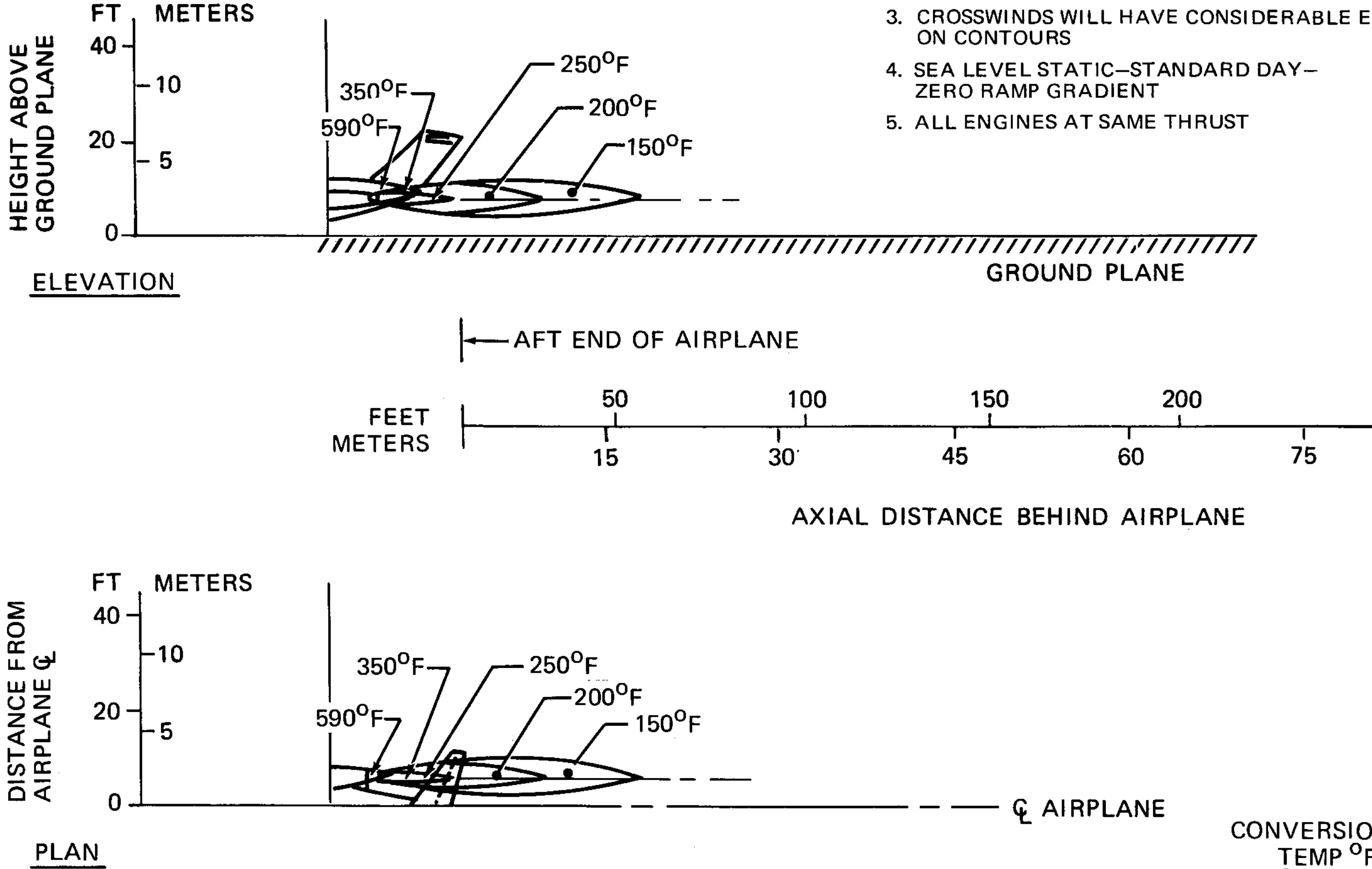
6.1 JET ENGINE VELOCITIES AND TEMPERATURES

6.1.3 JET ENGINE EXHAUST VELOCITY CONTOURS, TAKEOFF POWER

DC-9 MODELS

(SERIES 10 THROUGH 50)

NOTES:
1. ALL TEMPERATURES ARE DEGREES FAHRENHEIT
2. THESE CONTOURS ARE TO BE USED AS GUIDELINES ONLY SINCE OPERATIONAL ENVIRONMENT VARIES GREATLY – OPERATIONAL SAFETY ASPECTS ARE THE RESPONSIBILITY OF THE USER/PLANNER
3. CROSSWINDS WILL HAVE CONSIDERABLE EFFECT ON CONTOURS
4. SEA LEVEL STATIC–STANDARD DAY–ZERO RAMP GRADIENT
5. ALL ENGINES AT SAME THRUST

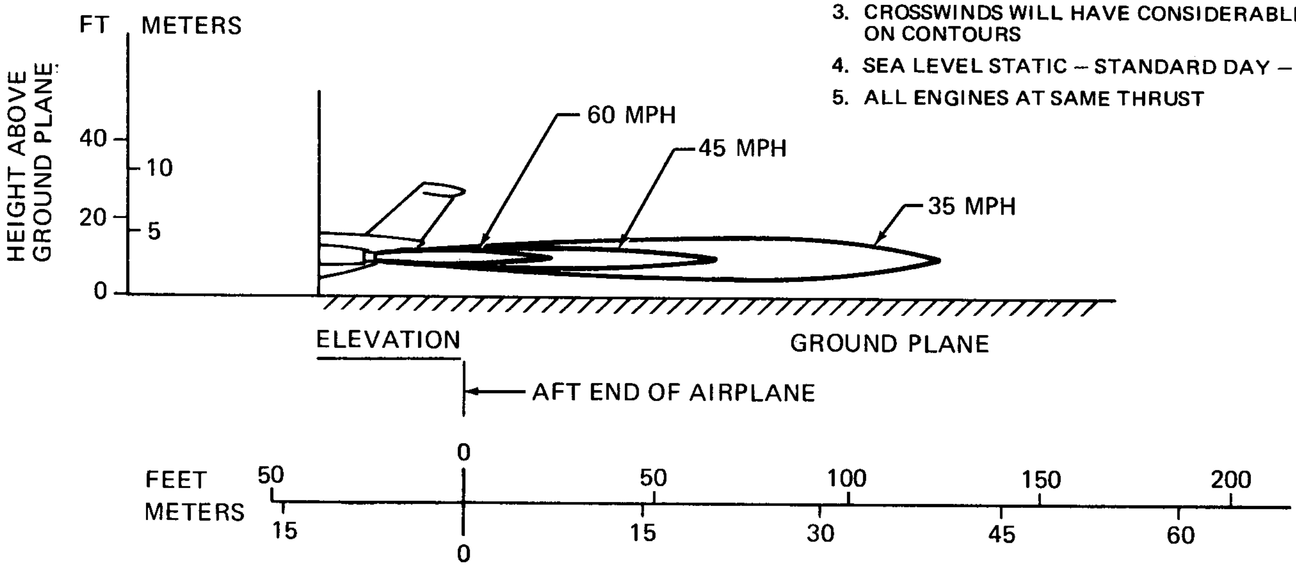


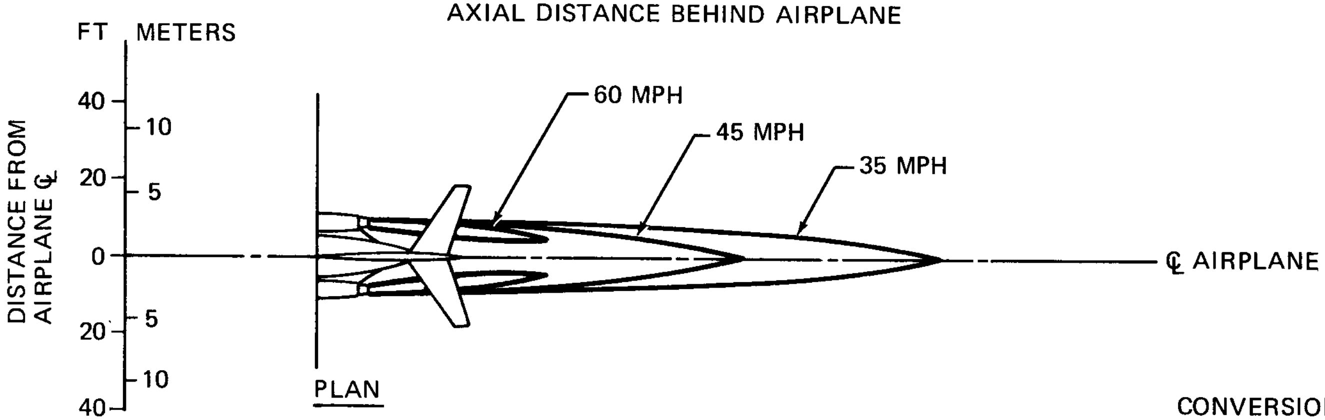
CONVERSION FACTOR
TEMP °F TO °C

$$^{\circ}C = \frac{(^{\circ}F - 32)}{1.8}$$

6.1 JET ENGINE VELOCITIES AND TEMPERATURES
6.1.4 JET ENGINE EXHAUST TEMPERATURE CONTOURS, TAKEOFF POWER
DC-9 MODELS
(SERIES 10 THROUGH 50)

NOTES:
1. THESE CONTOURS ARE TO BE USED AS GUIDELINES ONLY SINCE OPERATIONAL ENVIRONMENT VARIES GREATLY – OPERATIONAL SAFETY ASPECTS ARE THE RESPONSIBILITY OF THE USER/PLANNER
2. ALL VELOCITY VALUES ARE STATUTE MILES PER HOUR
3. CROSSWINDS WILL HAVE CONSIDERABLE EFFECT ON CONTOURS
4. SEA LEVEL STATIC – STANDARD DAY – ZERO RAMP GRADIENT
5. ALL ENGINES AT SAME THRUST

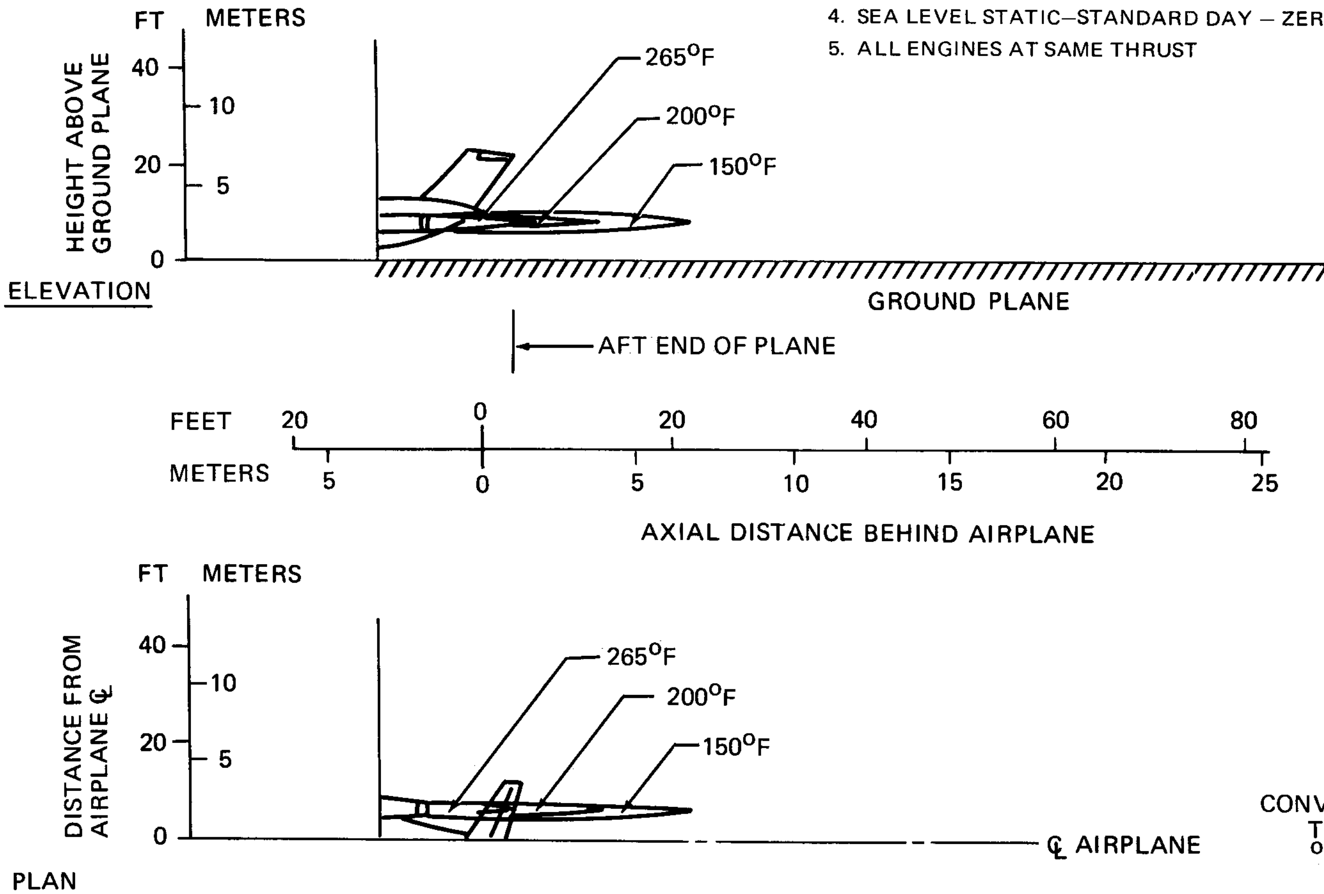




CONVERSION FACTOR
1 MPH = 1.6 KM PER HOUR

6.1 JET ENGINE VELOCITIES AND TEMPERATURES
6.1.5 JET ENGINE EXHAUST VELOCITY CONTOURS, IDLE POWER
DC-9 MODELS
(SERIES 10 THROUGH 50)

NOTES:
1. ALL TEMPERATURES ARE DEGREES FAHRENHEIT
2. THESE CONTOURS ARE TO BE USED AS GUIDELINES ONLY SINCE OPERATIONAL ENVIRONMENT VARIES GREATLY – OPERATIONAL SAFETY ASPECTS ARE THE RESPONSIBILITY OF THE USER/PLANNER
3. CROSSWINDS WILL HAVE CONSIDERABLE EFFECT ON CONTOURS
4. SEA LEVEL STATIC–STANDARD DAY – ZERO RAMP GRADIENT
5. ALL ENGINES AT SAME THRUST



CONVERSION FACTOR
TEMP °F TO °C

$$°C = \frac{(°F - 32)}{1.8}$$

6.1. JET ENGINE VELOCITIES AND TEMPERATURES

6.1.6 JET ENGINE EXHAUST TEMPERATURE CONTOURS, IDLE POWER DC-9 MODELS (SERIES 10 THROUGH 50)

6.2 Airport and Community Noise

Aircraft noise is of major concern to the airport and community planner. The airport is a major element in the community's transportation system and, as such, is vital to its growth. However, the airport must also be a good neighbor, and this can be accomplished only with proper planning. Since aircraft noise extends beyond the boundaries of the airport, it is vital to consider the impact on surrounding communities. Many means have been devised to provide the planner with a tool to estimate the impact of airport operations. Too often they oversimplify noise to the point where the results become erroneous. Noise is not a simple subject; therefore, there are no simple answers.

The cumulative noise contour is an effective tool. However, care must be exercised to ensure that the contours, used correctly, estimate the noise resulting from aircraft operations conducted at an airport.

The size and shape of the single-event contours, which are inputs into the cumulative noise contours, are dependent upon numerous factors. They include:

1. Operational Factors

   (a) Aircraft Weight – Aircraft weight is dependent on distance to be traveled, en route winds, payload, and anticipated aircraft delay upon reaching the destination.

   (b) Engine Power Settings – The rates of ascent and descent and the noise levels emitted at the source are influenced by the power setting used.

   (c) Airport Altitude – Higher airport altitude will affect engine performance and thus can influence noise.

Condition 2

Landing:
- 85 Percent of Maximum Structural Landing Weight
- 10-Knot Headwind
- 3-Deg Approach
- 59°F
- Humidity 70 Percent

Takeoff:
- 80 Percent of Maximum Gross Takeoff Weight
- 10-Knot Headwind
- 59°F
- Humidity 70 Percent

As indicated from these data, the contour size varies substantially with operating and atmospheric conditions. Most aircraft operations are, of course, conducted at less than maximum gross weights because average flight distances are much shorter than maximum aircraft range capability and average load factors are less than 100 percent. Therefore, in developing cumulative contours for planning purposes, it is recommended that the airlines serving a particular city be contacted to provide operational information.

In addition, there are no universally accepted methods for developing aircraft noise contours or for relating the acceptability of specific noise zones to specific land uses. It is therefore expected that noise contour data for particular aircraft and the impact assessment methodology will be changing. To ensure that currently available information of this type is used in any planning study, it is recommended that it be obtained directly from the Office of Environmental Quality in the Federal Aviation Administration in Washington, D.C.

It should be noted that the contours shown herein are only for illustrating the impact of operating and atmospheric conditions and do not represent the single-event contour of the family of aircraft described in this document. It is expected that the cumulative contours will be developed as required by planners using the data and methodology applicable to their specific study.

2. Atmospheric Conditions – Sound Propagation

(a) Wind – With stronger headwinds, the aircraft can take off and climb more rapidly relative to the ground. Also, winds can influence the distribution of noise in surrounding communities.

(b) Temperature and Relative Humidity – The absorption of noise in the atmosphere along the transmission path between the aircraft and the ground observer varies with both temperature and relative humidity.

3. Surface Condition Shielding, Extra Ground Attenuation (EGA)

(a) Terrain – If the ground slopes down after takeoff or up before landing, noise will be reduced since the aircraft will be at a higher altitude above ground. Additionally, hills, shrubs, trees, and large buildings can act as sound buffers.

All of these factors can alter the shape and size of the contours appreciably. To demonstrate the effect of some of these factors, estimated noise level contours for two different operating conditions are shown below. These contours reflect a given noise level upon a ground level plane at runway elevation.

Condition 1

Landing:
Maximum Structural Landing Weight
10-knot Headwind
3-Deg Approach
84^{o}F
Humidity 15 Percent

Takeoff:
Maximum Gross Takeoff Weight
Zero Wind
84^{o}F
Humidity 15 Percent