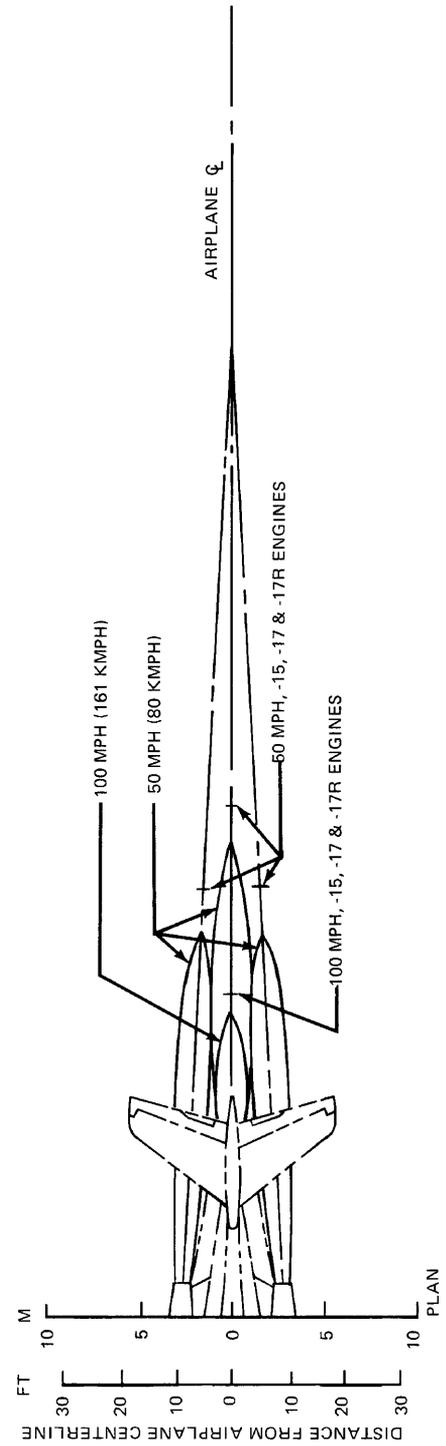
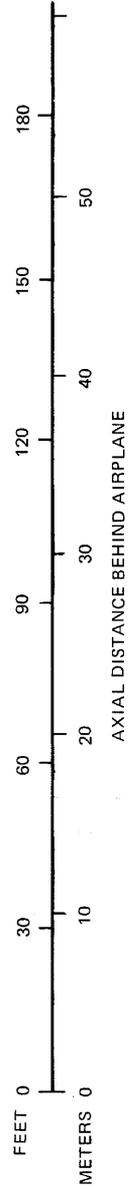
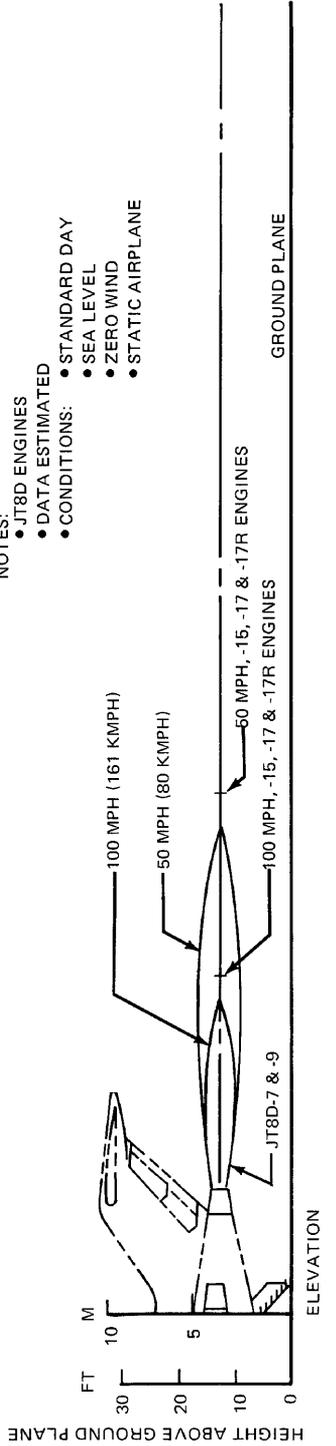


6.0 JET ENGINE WAKE AND NOISE DATA

6.1 Jet Engine Exhaust Velocities and
Temperatures

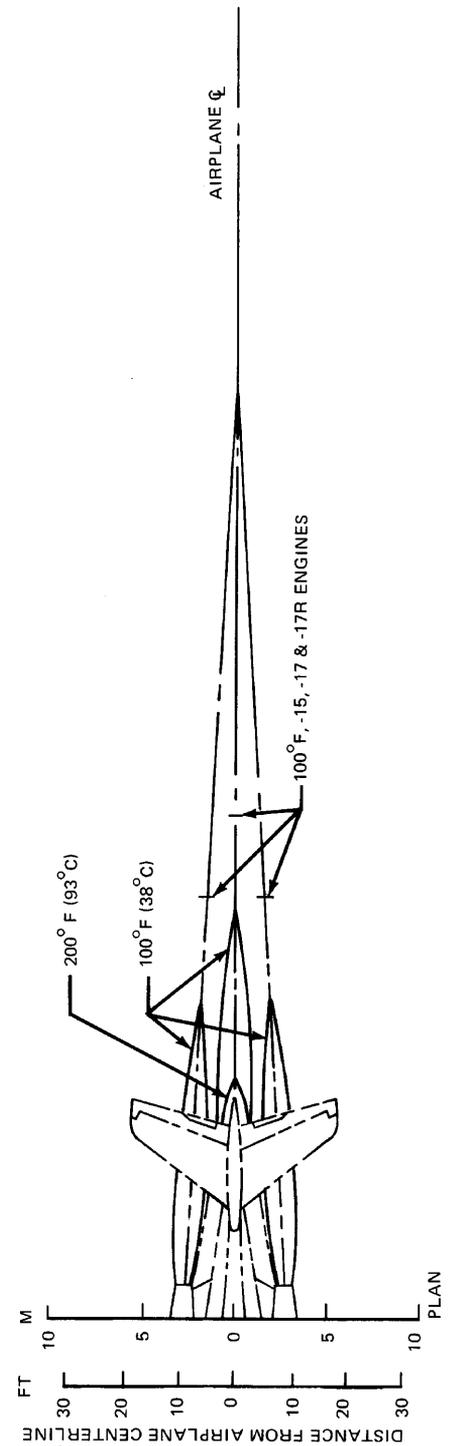
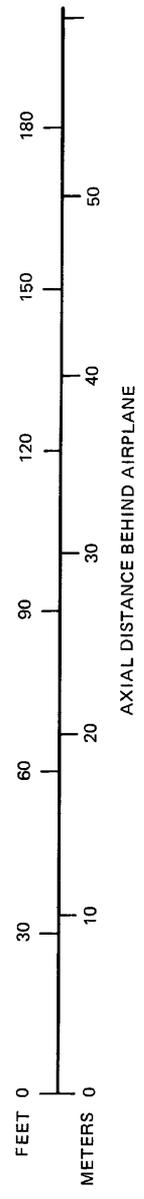
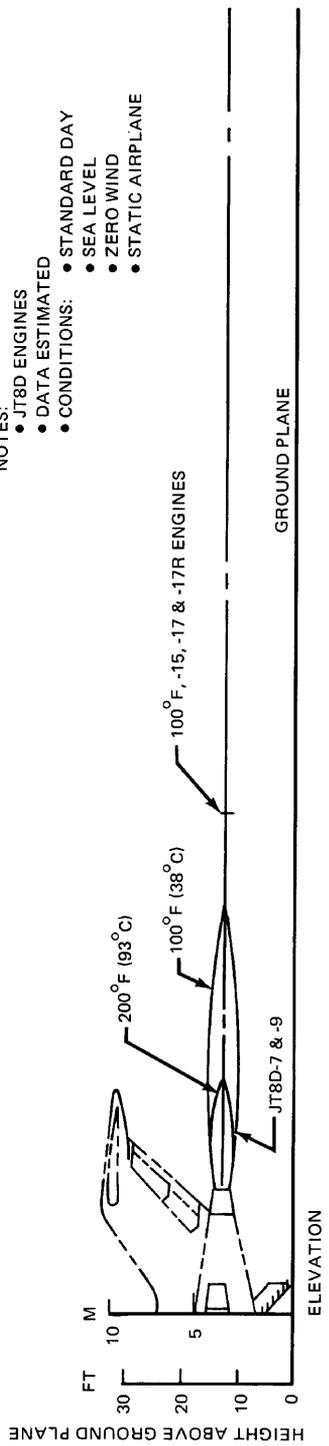
6.2 Airport and Community Noise

- NOTES:
- JT8D ENGINES
 - DATA ESTIMATED
 - CONDITIONS:
 - STANDARD DAY
 - SEA LEVEL
 - ZERO WIND
 - STATIC AIRPLANE



6.1 JET ENGINE EXHAUST VELOCITY CONTOURS—IDLE POWER
MODELS 727-100, -100C, -200

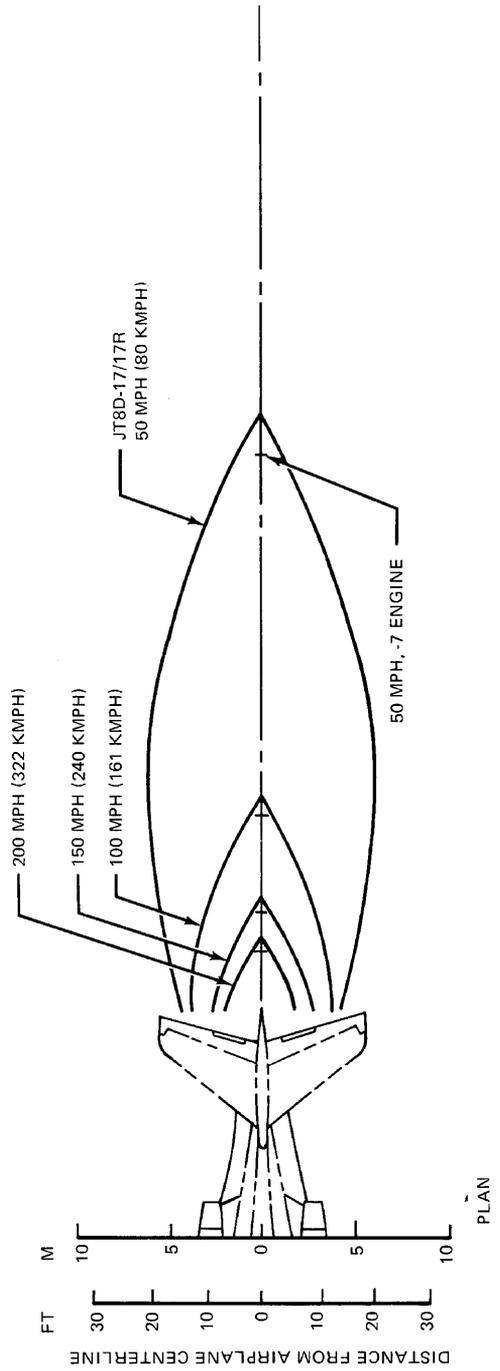
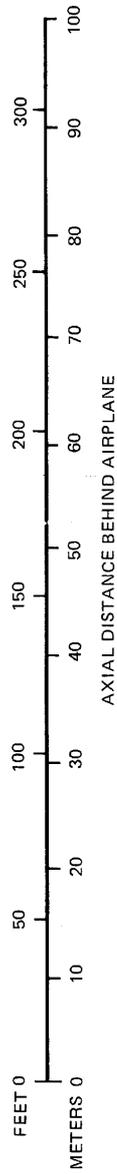
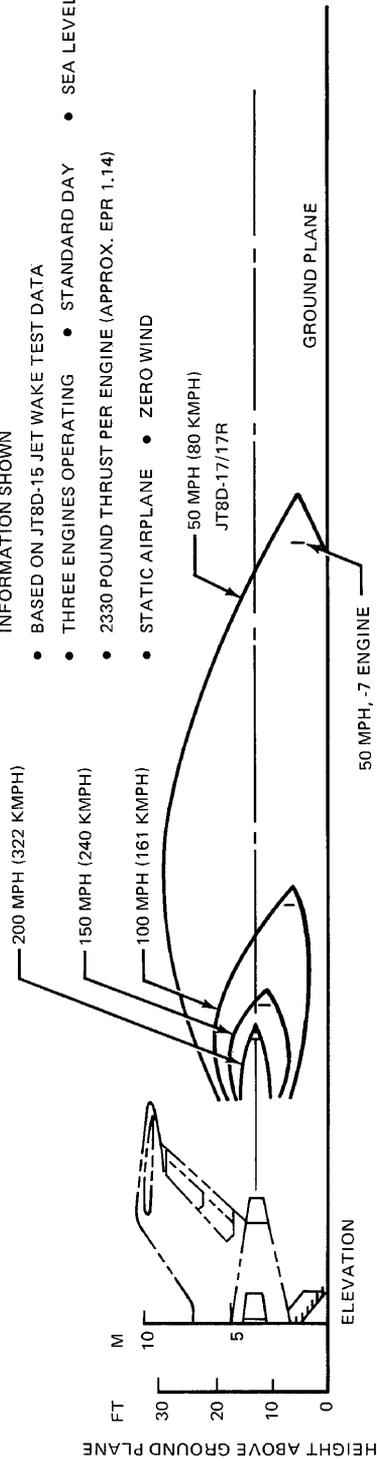
- NOTES:
- JT8D ENGINES
 - DATA ESTIMATED
 - CONDITIONS:
 - STANDARD DAY
 - SEA LEVEL
 - ZERO WIND
 - STATIC AIRPLANE



JET ENGINE EXHAUST TEMPERATURE CONTOURS—IDLE POWER
MODELS 727-100, -100C, -200

NOTES:

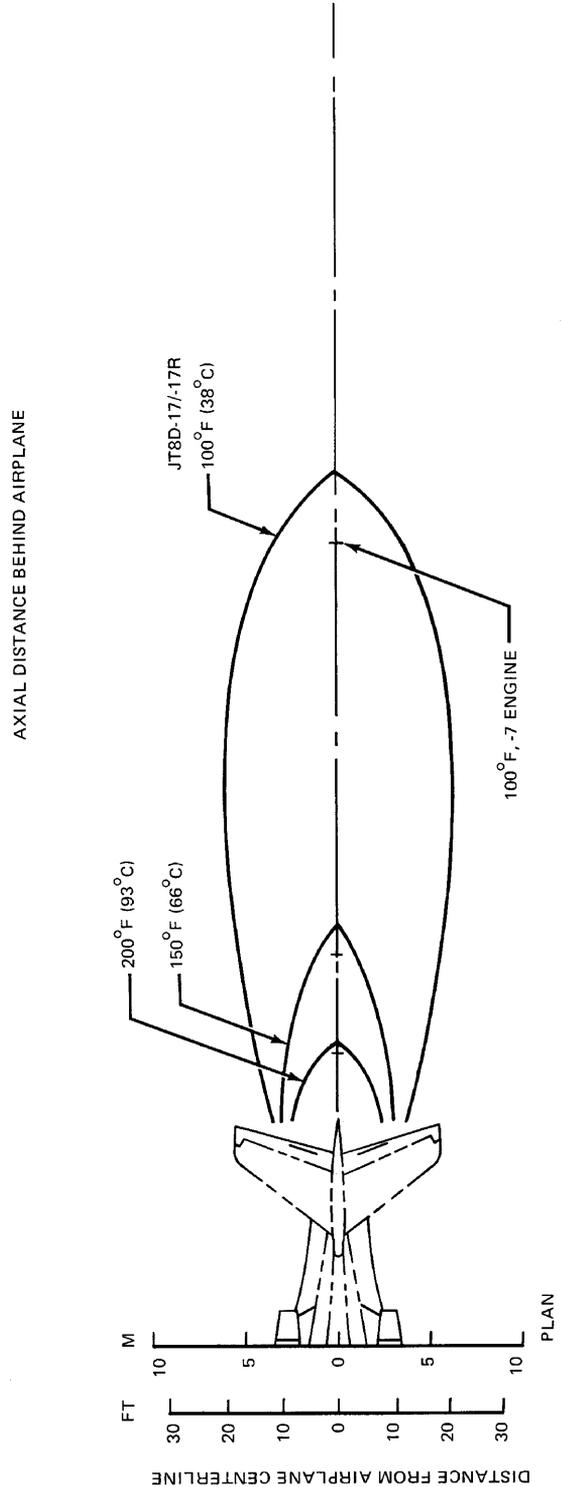
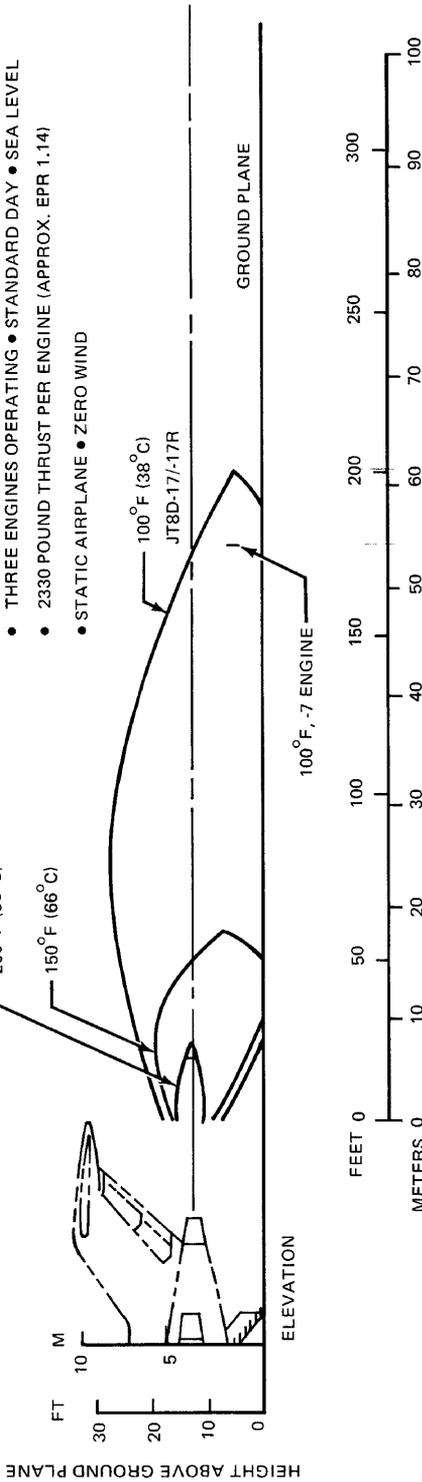
- ESTIMATED JT8D-17/17R ENGINE EXHAUST CONTOURS
- DATA FOR JT8D-9 AND -15 FALLS BETWEEN THE -7 AND -17 INFORMATION SHOWN
- BASED ON JT8D-15 JET WAKE TEST DATA
- THREE ENGINES OPERATING • STANDARD DAY • SEA LEVEL
- 2330 POUND THRUST PER ENGINE (APPROX. EPR 1.14)
- STATIC AIRPLANE • ZERO WIND



**JET ENGINE EXHAUST VELOCITY CONTOURS—BREAKAWAY THRUST
MODELS 727-100, -100C, -200**

NOTES:

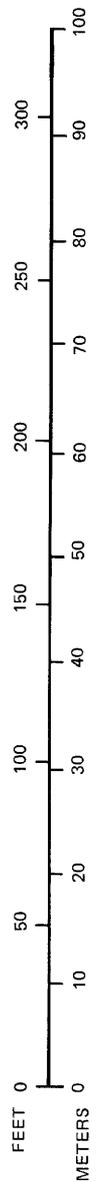
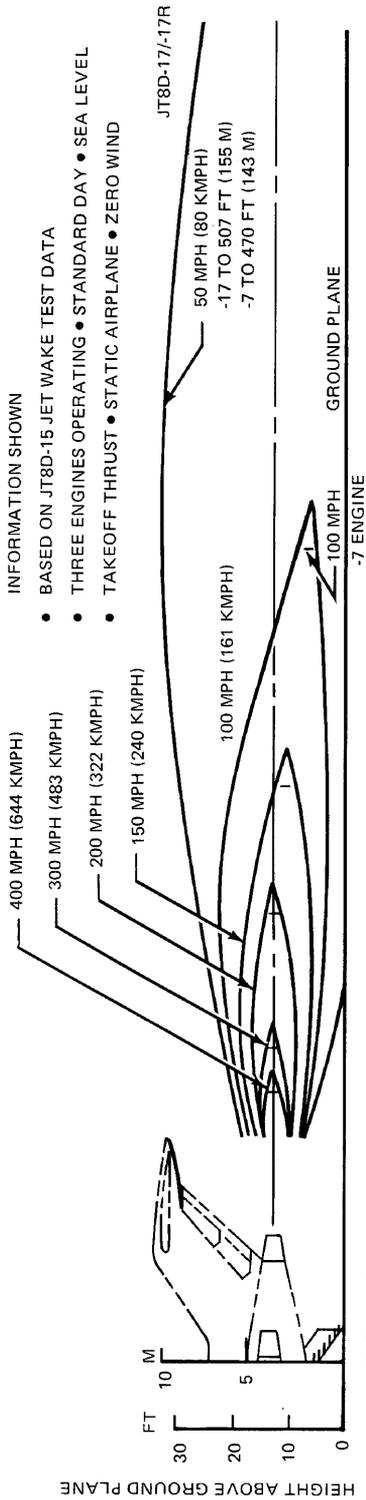
- ESTIMATED JT8D-17/-17R ENGINE EXHAUST CONTOURS
- DATA FOR JT8D-9 AND -15 FALLS BETWEEN THE -7 AND -17 INFORMATION SHOWN
- BASED ON JT8D-15 JET WAKE TEST DATA
- THREE ENGINES OPERATING • STANDARD DAY • SEA LEVEL
- 2330 POUND THRUST PER ENGINE (APPROX. EPR 1.14)
- STATIC AIRPLANE • ZERO WIND



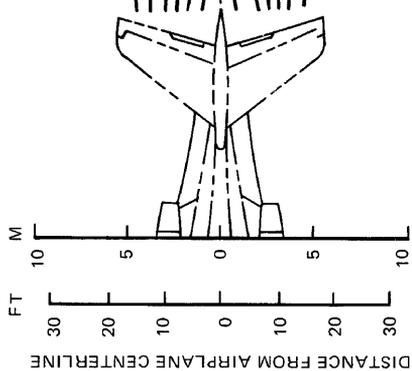
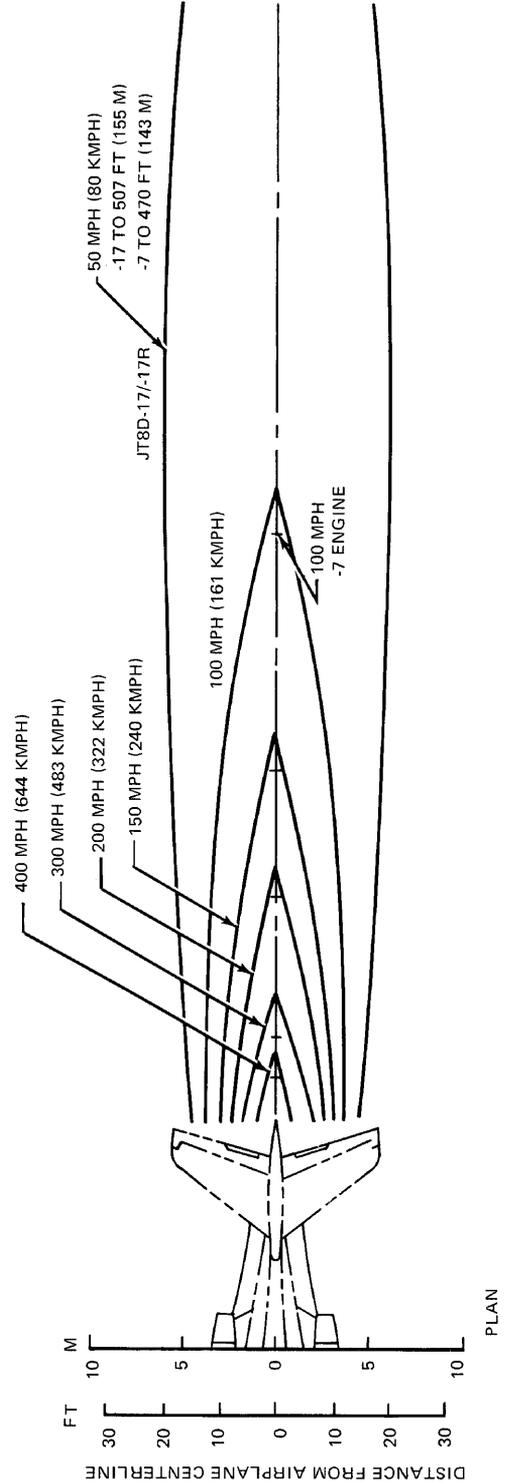
JET ENGINE EXHAUST TEMPERATURE CONTOURS—BREAKAWAY THRUST
MODELS 727-100, -100C, -200

NOTES:

- ESTIMATED JT8D-17/-17R ENGINE EXHAUST CONTOURS
- DATA FOR JT8D-9 AND -15 FALLS BETWEEN THE -7 AND -17 INFORMATION SHOWN
- BASED ON JT8D-15 JET WAKE TEST DATA
- THREE ENGINES OPERATING • STANDARD DAY • SEA LEVEL
- TAKEOFF THRUST • STATIC AIRPLANE • ZERO WIND



AXIAL DISTANCE BEHIND AIRPLANE

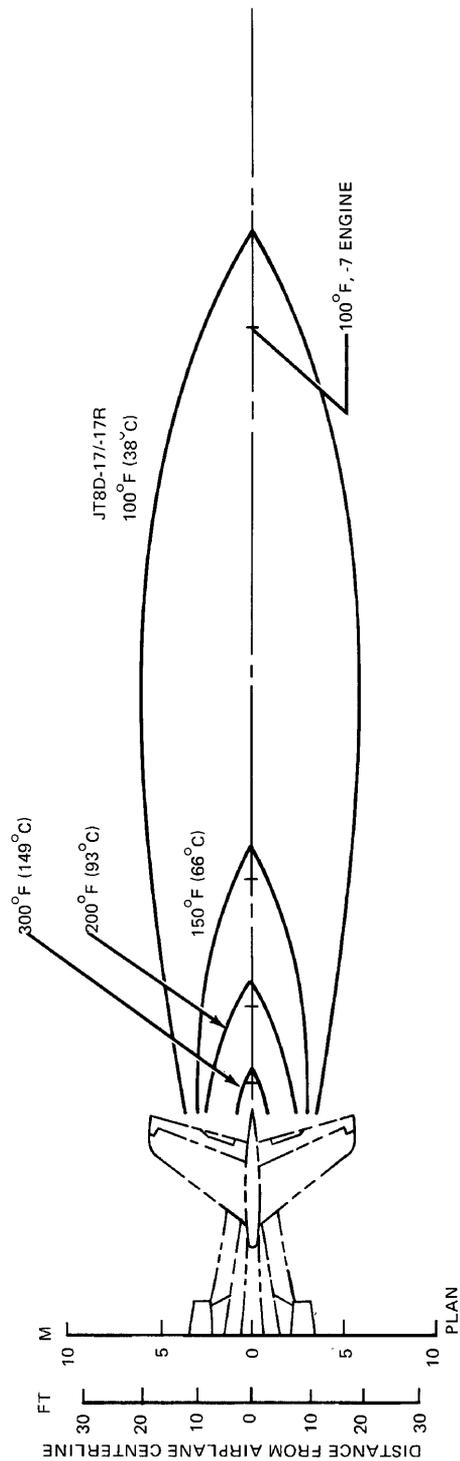
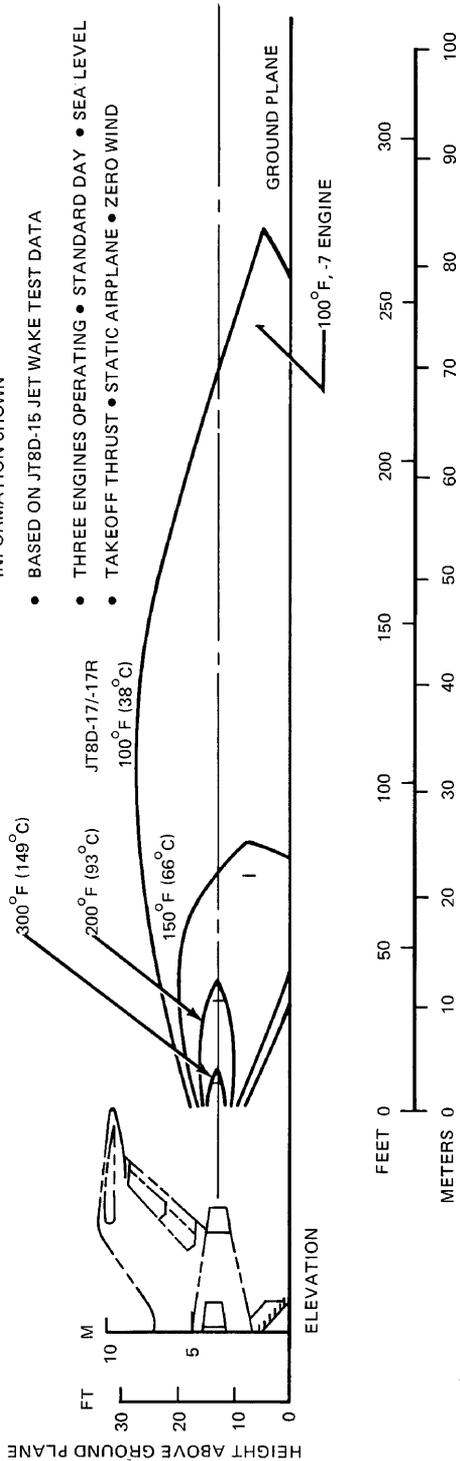


PLAN

JET ENGINE EXHAUST VELOCITY CONTOURS-TAKEOFF THRUST
 MODELS 727-100, -100C, -200

NOTES:

- ESTIMATED JT8D-17/-17R ENGINE EXHAUST CONTOURS
- DATA FOR JT8D-9 AND -15 FALLS BETWEEN THE -7 AND -17 INFORMATION SHOWN
- BASED ON JT8D-15 JET WAKE TEST DATA
- THREE ENGINES OPERATING • STANDARD DAY • SEA LEVEL
- TAKEOFF THRUST • STATIC AIRPLANE • ZERO WIND



JET ENGINE EXHAUST TEMPERATURE CONTOURS—TAKEOFF THRUST
MODELS 727-100, -100C, -200

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.

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° Approach

84°F

Humidity 15%

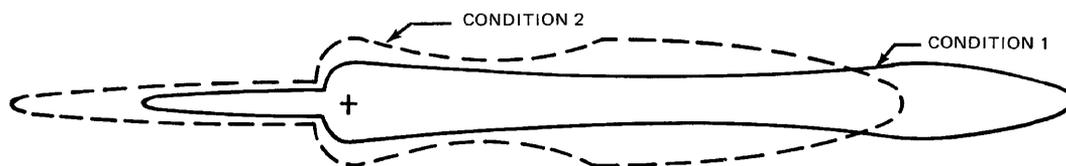
Takeoff:

Maximum Gross Takeoff Weight

Zero Wind

84°F

Humidity 15%



Condition 2

Landing:

85% of Maximum Structural
Landing Weight
10-knot Headwind
3° Approach
59°F
Humidity 70%

Takeoff

80% of Maximum Gross
Takeoff Weight
10-knot Headwind
59°F
Humidity 70%

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.