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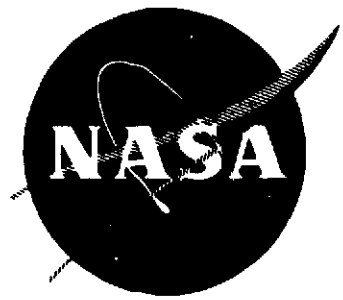

PHASE I - FINAL REPORT
JT8D-100 TURBOFAN ENGINE

UNITED AIRCRAFT CORPORATION
Pratt & Whitney Aircraft Division

Prepared for
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA-Lewis Research Center
Contract NAS3-17840

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JT3D/JT8D Refan Project Office, Arthur A. Medeiros, Manager
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16. Abstract

The JT8D turbofan engine, widely used in short and medium range transport aircraft, contributes substantially to airport community noise. The jet noise is predominant in the JT8D engine and may be reduced in a modified engine, without loss of thrust, by increasing the airflow to reduce jet velocity.

A configuration study evaluated the effects of fan airflow, fan pressure ratio, and bypass ratio on noise, thrust, and fuel consumption. The cycle selected for the modified engine was based upon an increased-diameter, single-stage fan and two additional core engine compressor stages, which replace the existing two-stage fan. Modifications were also made to the low-pressure turbine to provide the increased torque required by the larger diameter fan.

The resultant JT8D-100 engine models have the following characteristics at take-off thrust, compared to the current JT8D engine: Airflow and bypass ratio are increased, and fan pressure ratio and engine speed are reduced. The resultant engine is also longer, larger in diameter, and heavier than the JT8D base model, but these latter changes are compensated by the increased thrust and decreased fuel consumption of the modified engine, thus providing the capability for maintaining the performance of the current JT8D-powered aircraft.

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28 June 1974

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Subject: JT8D-100 Phase I Final Report, NASA CR-134654
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References: (a) Contract NAS3-17840
(b) Letter, Medeiros to McRae, dated 17 June 1974

Enclosures: Final Report, CR-134654

1. In accordance with Exhibit A Task VIII(c) of the reference (a) contract, the Phase I Final Report for the JT8D-100 engine, NASA CR-134654 (PWA-4790) is submitted herewith. The report distribution is being made in accordance with the distribution list enclosed with the reference (b) letter and made part of the subject report as Appendix D.

UNITED AIRCRAFT CORPORATION
Pratt & Whitney Aircraft Division

G. M. McRae
Program Manager

1. SUMMARY

The JT8D turbofan engine is widely used in the air transport industry to power short and medium range commercial transport aircraft. These aircraft serve a large number of airports in the United States and, because of their wide usage, are responsible for a substantial amount of the airport community noise. Compressor design features and acoustic linings for inlets, fan ducts and exhaust systems have been developed to reduce fore and aft radiated machinery noise. However, application of these features to the current JT8D engine cycle would reduce engine noise a relatively small amount because jet noise would become predominant. To reduce JT8D noise during high thrust operation, reduced jet velocity is required. In order to reduce jet velocity without loss of thrust, airflow must be increased. The object of the work done in the performance of this contract was to design modifications to the JT8D engine which would reduce jet velocity, be suitable for retrofit installation on existing engines and would maintain or improve engine performance and durability.

A configuration study was conducted to evaluate the effect of variations in fan airflow, fan pressure ratio and bypass ratio (duct airflow/core airflow) on noise characteristics, thrust, thrust specific fuel consumption and compatibility with the core engine parts to be retained during retrofit. Fans both with and without inlet guide vanes were studied. The study indicated that the state-of-the-art in fan design and the work capability of the low pressure turbine limited the jet velocity reduction at approximately the same point. The cycle selected at the completion of the study was based on a 22.1 cm (8.7 in) increased diameter single stage fan, with inlet guide vanes, having the following characteristics at takeoff thrust: total airflow 211.8 kg/s (467 lbs/sec), pressure ratio 1.67, bypass ratio 2.00, tip speed 488 m/sec (1600 ft/sec) and rotor speed 7450 rpm. Comparable characteristics for the JT8D-9 base model are: total airflow 144.7 kg/s (319 lbs/sec), pressure ratio 1.97, bypass ratio 1.05, tip speed 435 m/sec (1425 ft/sec) and rotor speed 8045 rpm. The selected cycle increased thrust at all conditions and decreased thrust specific fuel consumption at normal flight conditions.

A modified JT8D engine, designated the JT8D-100, was designed for the selected cycle. The existing two stage fan was replaced with the single stage fan described above and two new core engine stages. Increased diameter fan cases replaced the existing cases. The turbine exhaust section was modified to be compatible with the change in turbine exit conditions caused by the increased power extraction from the low pressure turbine. The resultant engine is 31.2 cm (12.3 in) longer, 24.13 to 29.46 cm (9.50 to 11.6 in.) larger in diameter and 258 kg (570 lbs) heavier than the JT8D-9 base model. This increased engine length, diameter and weight is compensated by the increased thrust and decreased fuel consumption of the chosen cycle, thus providing the capability for maintaining the current JT8D powered aircraft performance.

The data presented in this document are for a JT8D-9 retrofit version of the JT8D-100 (JT8D-109); however, other model conversions would have similar incremental performance and noise changes.

The units used for the principal measurements and calculations during the Phase I design effort are the English units. These units are shown throughout this report parenthically following the International System of Units (SI units).

II. INTRODUCTION

The principal objective of this program is to design, fabricate and test certifiable modifications of the JT8D engine which will reduce the noise generated by JT8D powered aircraft. These JT8D powered aircraft comprise a large part of the airlines fleet in use today, so a significant reduction in their noise levels would have a major favorable effect on the noise environment in the vicinity of airports. This noise reduction objective is to be accomplished without affecting the demonstrated reliability and maintainability of the JT8D engine; at an acceptable retrofit cost; with no degradation of current JT8D powered aircraft performance.

Phase I of this program, conducted by Pratt and Whitney Aircraft under Contract NAS3-16808, covered preliminary definition and design of the engine modifications. Phase II of the program covers the development of the engine modifications necessary to demonstrate achievement of the objective of significantly reducing engine generated noise.

This final report document, covering the work accomplished during the Phase I portion of the JT8D refan program, includes a discussion of the configuration selected to meet the objectives of the program, a definition of the modified engine design configuration, a description of the pertinent installation interface dimensions and the estimated resultant performance and noise levels.

Reference documents submitted to date on this program are:

Report Title	Report No.	Date Submitted
Preliminary Engine Definition and Characteristics	PWA™-4568	14 October 1972
	PWA-4568 Supplement 1	22 December 1972
	PWA-4671	26 February 1973
Engine Definition and Characteristics	PWA-4713	13 April 1973
Design Report	PWA-4789	31 July 1973

III. RESULTS AND DISCUSSION OF RESULTS

A. CYCLE SELECTION

The JT8D engine is a relatively low bypass fan engine with a relatively high primary jet velocity. Means for attenuating fan generated engine noise using nacelle treatment have been developed, but no practical method for reducing the noise generated by the interaction of the primary jet stream with the ambient air, by means external to the engine, has been developed. For the JT8D engine, jet noise is predominant at takeoff power, and also at lower power conditions when fan duct acoustic treatment is incorporated. Thus, a significant reduction in the overall flyover noise level can only be achieved by reducing this jet noise by lowering the primary jet velocity. A cycle selection study was undertaken to evaluate the feasibility of reducing jet noise by varying the basic engine cycle to avoid producing the acoustic energy in the exhaust jet.

Several paths are theoretically available to reduce the jet velocity of a less than perfectly mixed common flow exhaust JT8D turbofan engine. These may be illustrated by considering the total thrust as the sum of theoretical bypass stream thrust and core stream thrust. This simplification ignores the partial mixing that does occur, which produces a gradient layer of air between the higher velocity core stream and the lower velocity bypass stream, for which the total thrust equation is modified when performing actual mixed stream thrust calculations. At constant thrust, the three general paths that result in decreased primary stream jet velocities, indicated by this simplified illustration, are: increasing core stream airflow, increasing bypass stream jet velocity, or increasing bypass stream airflow.

The retrofit concept involved selecting a path which would require the least total number of parts to be changed. Due to the complexity of the core engine, it was apparent that the configuration changes required to reduce core jet velocity should be restricted to the fan section and bypass ducts as much as possible. Thus, the path of increasing core stream airflow was ruled out because core compressor section modifications would be required. This path would also have required reduced turbine temperature levels to achieve the core jet velocity reduction. This would have been inconsistent with the fact that the maximum capability of the core engine with respect to pressure, flow, and temperature levels must be used to maintain an efficient, competitive engine.

The selection of increased bypass stream airflow over increased bypass stream jet velocity involved evaluating the characteristics of the various types of noise produced by the engine components and the available means of reducing these noise levels. Increasing bypass stream jet velocity can only be accomplished by increasing the fan pressure ratio which would then increase fan generated turbomachinery noise. While fan noise could be minimized by the proper blade and vane spacing and by the proper choice of the number of blades and vanes in each row, increasing bypass stream jet velocity was not feasible because the single stage fan dictated by the spacing requirements would not have the necessary pressure rise capability. The addition of a two stage fan for the modified engine would result in an unacceptable number of design compromises for the required large axial spacing.

A single stage fan with the diameter increased to increase bypass stream air flow was selected. To minimize the diameter increase and tip speed, the fan was designed for the highest levels of flow per unit area consistent with maintaining high efficiency levels in the range of cruise operation. The design pressure ratio was selected to maintain current stability levels. The final level of bypass airflow was limited by several factors:

1. The need to be compatible with the airframe inlet size available within the constraint of practicality.

2. The requirement to be within engine low shaft torque-carrying capabilities, defined by material properties and the constraint imposed by the concentric high rotor shaft.

3. The consideration of the work extraction capabilities of the current three stage low pressure turbine, defined by avoiding operation with excessive performance penalties.

The fan rotor diameter consistent with the airflow limits would have produced unacceptable stress levels in the rotor if operated at the current JT8D low rotor speed levels. Thus, it was necessary to slow the low rotor down to the highest level consistent with satisfactory fan stress levels. Although the lower rotor speeds could be accommodated within the new fan rotor design, compensation for the reduced core engine airflow pumping capability was required. Two new core low pressure compressor stages were required to maintain the current JT8D core airflow levels. At the 727 center engine inlet airflow limits, the torque levels were within the capability of an improved low shaft and the low turbine efficiency levels were acceptable if the available JT8D-1, -7 fourth turbine blade, 4° open relative to the JT8D-9 blade, was used.

An extensive evaluation was undertaken to determine the feasibility of eliminating the inlet guide vanes, since this concept could be advantageous in reducing fan generated noise and the overall weight of the modified engine. It was concluded that, even though the inlet guide vanes may generate additional aft radiated fan noise, the full length fan duct of the JT8D engine provides sufficient area for peripheral acoustic treatment to attenuate the noise generated in the fan. The subsequent weight advantage of a non inlet guide vane configuration had an insignificant effect on overall aircraft performance. Because of these aforementioned conclusions, the inlet guide vane was retained to reduce the fan rotor tip relative Mach number and provide increased core engine airflow pumping capability by adding preswirl at the root of the fan rotor.

The selected cycle, obtained by a combination of an increased diameter single stage fan with inlet guide vanes, a full length bypass duct, a single common flow exhaust nozzle, and two new core low compressor stages, doubled the amount of bypass air while maintaining current JT8D levels of core engine airflow, pressure rise, and turbine inlet temperature. This cycle provides increased takeoff thrust and reduced cruise fuel consumption when cruise power requirements are high. The effectiveness of the higher bypass ratio in reducing cruise fuel

consumption was partially counteracted by a reduction in low turbine efficiency caused by the increased work extraction at lower rotor speed; an increased level of turbine exit strut loss caused by incidence angles and increased local Mach number; and an increased fan exit guide vane pressure loss caused by the lower cruise fan operating line that results from a high bypass ratio, low exhaust pressure ratio cycle.

With both lower bypass and core stream jet velocities, the relative velocity between the two streams is similar to the current JT8D cycle. The predicted jet noise reductions assume that the amount of bypass/primary stream mixing is also similar to the current JT8D. If an effective exhaust stream mixer can be developed in the future, further exhaust noise reductions are possible.

B. DESIGN CONFIGURATION

The JT8D-100 engine is a two-spool turbofan engine with a mechanically coupled fan and low-pressure compressor. It has a single-stage fan, six low-compressor stages and seven high-compressor stages. The compressor system generates a takeoff compressor pressure ratio of approximately 15.8 and a 2.00 bypass ratio. The burner section consists of nine separate combustion chambers in an annular array. The JT8D-100 derivative of a particular engine model uses the air-cooled or uncooled single-stage high-pressure turbine applicable for the rating of the particular current engine model, and a three-stage low-pressure turbine. A cross section of the JT8D-109 engine, including the instrumentation stations, is depicted in Figure 1.

The JT8D-100 series engines were designed as low-noise retrofit configurations, obtainable from any of the current JT8D engine models. The fundamental design concept was to provide a higher bypass ratio engine which would lead to a lower jet exhaust velocity and, therefore, lower jet noise. Fan and compressor noise levels were reduced through the elimination of a fan stage, increased fan rotor/exit guide vane spacing and the proper selection of blade and vane numbers. The fan noise was further reduced through the use of acoustical treatment forward of the fan rotor and downstream in the fan ducts. The JT8D-100 acoustical treatment is shown in Figure 2.

The types of loading considered for the structural analysis of the JT8D-100 engine components are indicated on Figures 3 and 4.

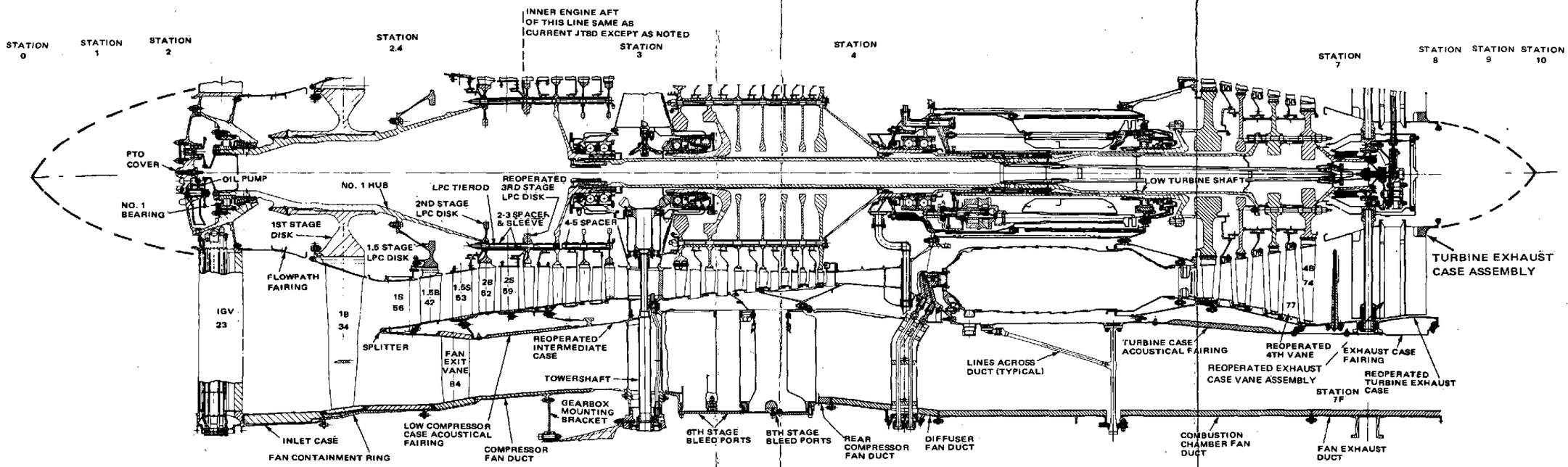
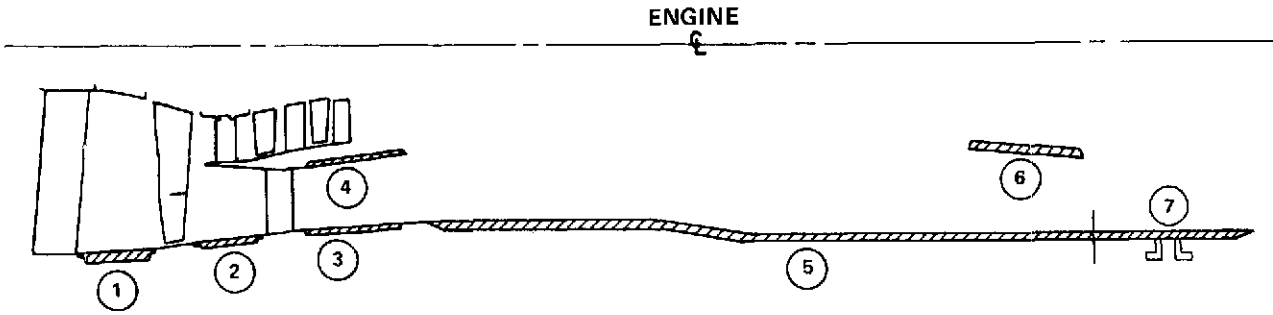


Figure 1 JT8D-109 Engine Cross Section



FAN DUCT LOCATION	TREATMENT LENGTH M (IN)	PASSAGE HEIGHT M (IN)	LENGTH/HEIGHT L/H	FACE SHEET MATERIAL	TOP SHEET HOLE DIA. CM (IN)	TOP SHEET THICKNESS CM (IN)
1	0.177 (7.0)	N.A.	N.A.	AMS 4027 (AL)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)
2	0.152 (6.0)	0.221 (8.7)*	1.5	AMS 4027 (AL)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)
3	0.286 (11.25)	0.155 (6.1)	–	AMS 4027 (AL)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)
4	0.213 (8.4)	0.155 (6.1)	1.6	AMS 4027 (AL)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)
5	1.42 (56.0)	0.226 (8.9)	2.5	AMS 4027 (AL)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)
6	0.279 (11.0)	0.213 (8.4)	1.3	AMS 5520 (SST)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)
7	0.395 (15.6)	0.201 (7.9)	1.0	AMS 4027 (AL)	0.114 – 0.152 (0.045 – 0.060)	0.0405 (0.016)

FAN DUCT LOCATION	% OPENING FACE SHEET	CORE HONEYCOMB CELL SIZE M (IN)	APPROX. DEPTH OF HONEYCOMB M(IN)	HONEYCOMB FOIL MAT'L	BACK SHEET MAT'L	CASE MAT'L	BONDED (INTEGRAL TO STRUCT)	REMOVABLE (PANEL SEGMENTS)
1	20	0.0095 (0.375) HEX	0.0254 (1.0)	PWA 122**	AMS 4027 (AL)	N. A.	NO	YES
2	12	0.0095 (0.375) HEX	0.0127 (0.5)	PWA 122	AMS 4027 (AL)	N.A.	NO	YES
3	12	0.0095 (0.375) HEX	0.0064 (0.25)	PWA 122	N. A.	AMS 4153 (AL)	YES	NO
4	12	0.0095 (0.375) HEX	0.0064 (0.25)	PWA 122	AMS 4027 (AL)	N.A.	NO	YES
5	12	0.0095 (0.375) HEX	0.0127 (0.5)	PWA 122	N.A.	SEE Δ BELOW	YES	NO
6	12	0.0095 (0.375) SQ.	0.0127 (0.5)	AMS 5520(SST)	AMS 5520 (SST)	N.A.	NO	YES
7	12	0.0095 (0.375) HEX	0.0127 (0.5)	PWA 122	PWA 411 FIBERGLASS	N.A.	NO	YES

N.A. = NOT APPLICABLE ** PWA 122 IS CORROSION RESISTANT AMS4004 Δ THREE FAN DUCTS: 2 AMS 4135 (AL), 1 AMS 4027 (AL)

*H_{EFF} = 0.1016 (4.0)

Figure 2 JT8D-100 Fan Duct Acoustic Treatment

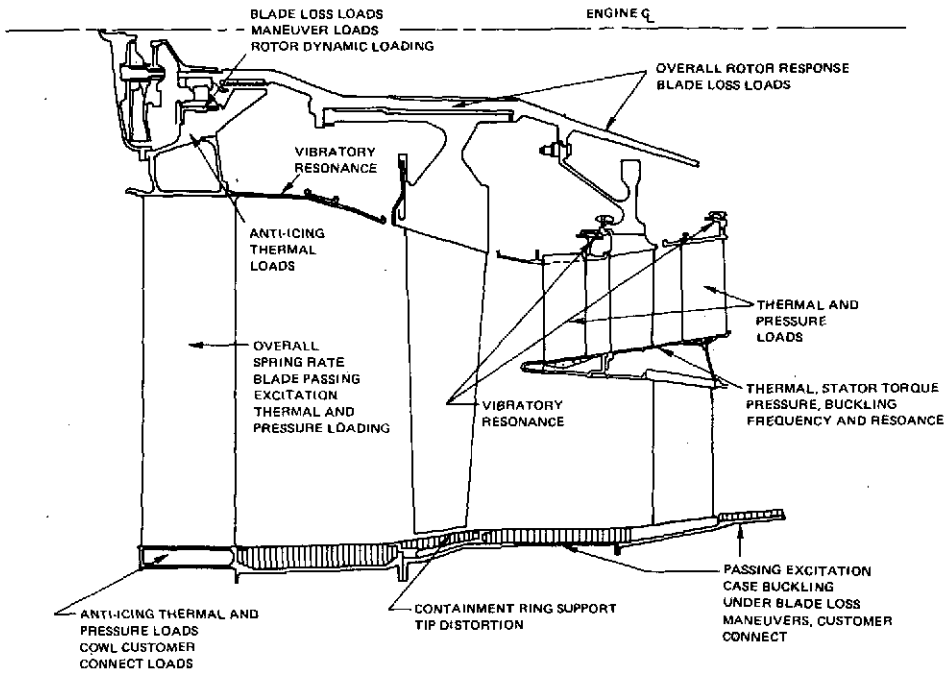


Figure 3 JT8D-100 Basic Engine Structural Design Considerations

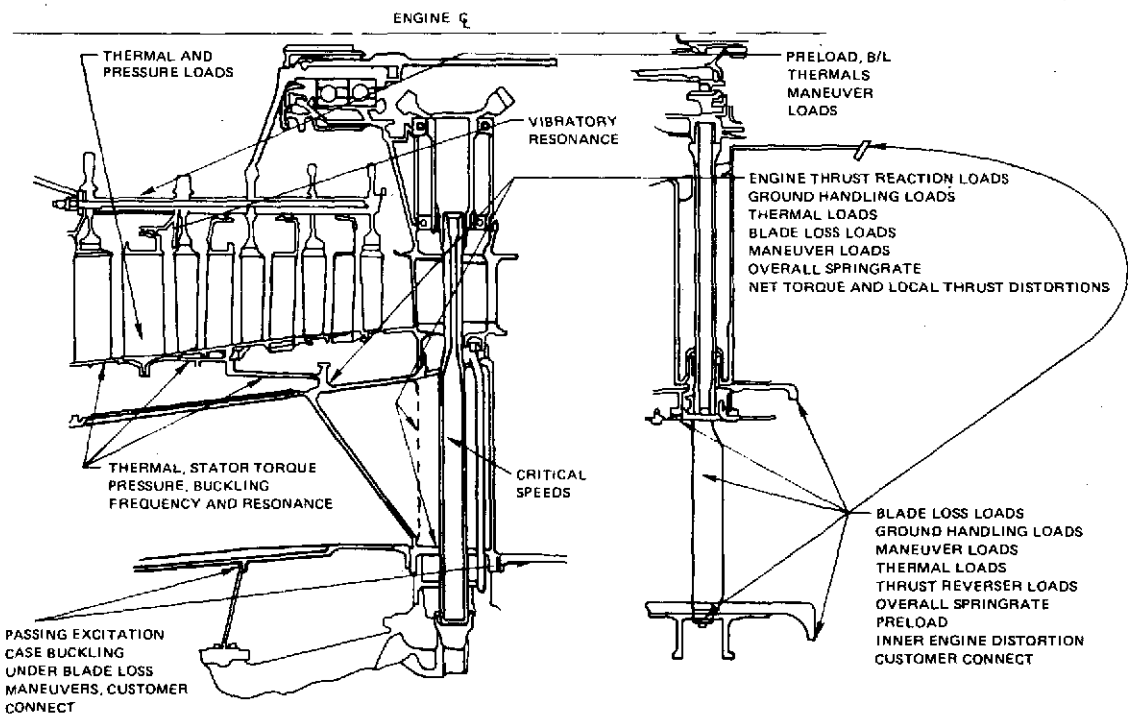


Figure 4 JT8D-100 Basic Engine Structural Design Considerations

1. Fan, Low Pressure Compressor

The JT8D-100 series engine fan is a single-stage unit which has an increased diameter compared to current JT8D parts to increase the fan bypass ratio. The blade design configuration is based upon current production engine design technology to minimize development risk. A wide-chord fan blade with a single, part-span shroud was selected rather than a narrow-chord, two part-span shroud blade to reduce cost and achieve the aerodynamic requirements. This single-stage unit of increased diameter produces an increased fan duct air flow at lower pressure and velocity compared to the two-stage JT8D fan configuration.

The low-pressure compressor has six stages compared to the four-stage unit for the current JT8D engine. The compressor operates at a lower speed (approximately 7%) compared to the current JT8D to reduce noise and limit the blade tip speed of the larger diameter fan stage. Thus, to maintain the core engine pressure ratio and air flow rate at this lower speed, with the single-rather than two-stage fan assembly, two new stages were added to the current four-stage low compressor. These core engine characteristics are required in order to achieve the thrust level requirements at the reduced low-rotor operating speed. The JT8D-109 and JT8D-9 engines are compared in Table I.

TABLE I

JT8D-109, JT8D-9 FAN, LOW PRESSURE COMPRESSOR PERFORMANCE AT SEA LEVEL TAKE OFF

	JT8D-109	JT8D-9
Corrected Total Flow	211.83 kg/s (467 lb/sec)	144.7 kg/s (319 lb/sec)
Corrected Total Flow/Area	205.06 kg/s/m^2 (42.0 lb/sec/ft^2)	199.2 kg/s/m^2 (40.8 lb/sec/ft^2)
Duct Flow/Engine Flow	2.0	1.045
Corrected N_1 - RPM	7450	8045
Fan Tip Diameter	1.25m (49.2 in.)	1.03 m (40.5 in.)
$U_{TIP}/\sqrt{\theta_{T2}}$	488 m/s (1600 ft/sec)	435 m/s (1425 ft/sec)
Relative Mach No.	1.5	1.23
No. Fan Stages	1	2
No. Low Pressure Compressor Stages	6	4
Duct Pressure Ratio	1.672	1.966
Fan Efficiency (Aft. of Fan Exit Guide Vane)	0.793	0.788
Pressure Ratio (Station 3/ Station 2)	4.199	4.135
Efficiency (Station 3/Station 2)	0.866	0.867

Noise reduction was a major parameter which governed various aspects of the fan, low-compressor design. The numbers of blades and vanes in the fan and new low-compressor stages were selected to minimize noise generation. The axial spacing of these new stages was also selected to reduce noise generation. Acoustic treatment was incorporated in the fan duct walls before and after the fan blade to reduce the radiated noise.

a. Fan Inlet Case

The titanium fan inlet case depicted in Figure 5 is similar to current JT8D inlet cases except for the integral attachment of one of the fan cases to the inlet guide vane structure and the addition of external attachment flanges. The welding of one of the titanium fan ducts to the inlet case structure resulted in a weight saving because of the elimination of two flanges and a set of bolts at this location. The integral external front flange was designed to support the airframe-supplied nacelle inlet duct. The other external flanges were designed to support engine airframe accessories. The inner ring was designed to support the airframe-supplied nose cone. The allowable limit shear load, axial load, and overhung moment for the fan inlet case connections are defined in Figure 6.

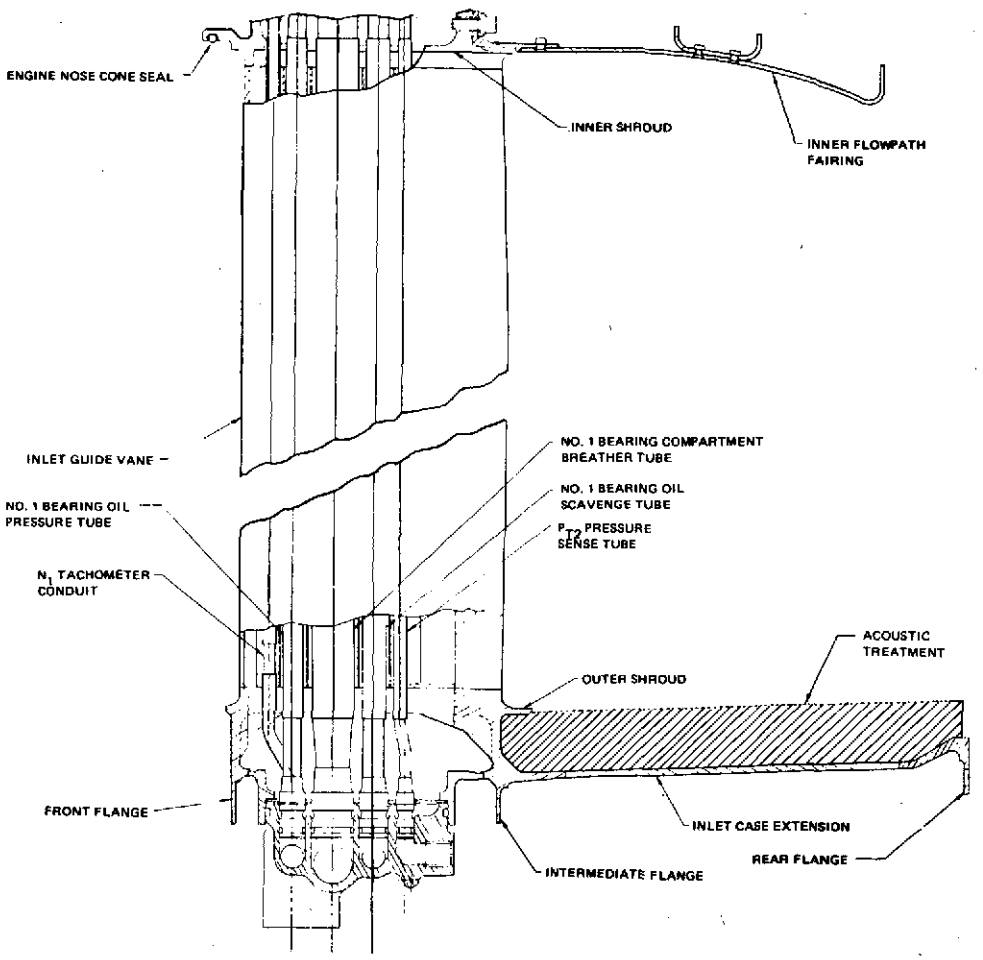


Figure 5 JT8D-100 Inlet Cross Section

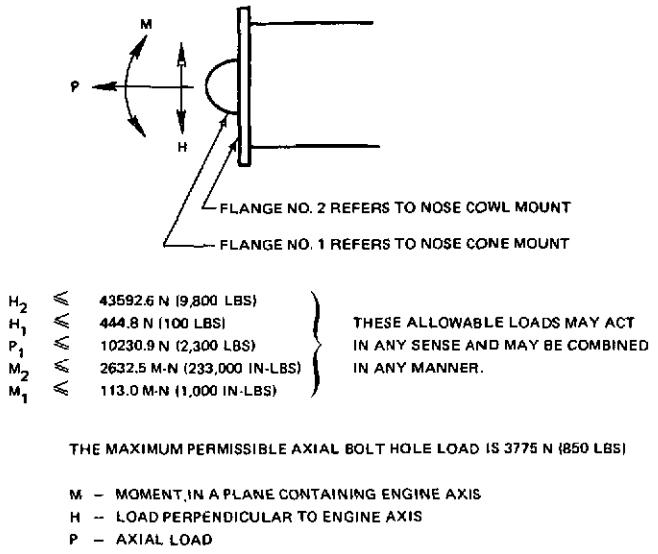


Figure 6 JT8D-100 Allowable Limit Loads for Inlet Case Attachment

The addition of an inlet guide vane (IGV) aids in the attainment of fan stress and surge margin goals by permitting a lower fan rotor tip speed for a given root loading and pressure ratio. The IGV turns the air opposite to the direction of rotor rotation at the root and in the direction of rotation at the tip, thereby raising the root Mach number and lowering the tip Mach number, relative to designs without the IGV, as indicated in Figure 7. In addition, the IGV allows an increase in fan root work without raising the root loading and acts as a case stiffener to help reduce tip clearance. The IGV set consists of twenty-two vanes with a 7% thickness ratio and one vane with a 15% thickness ratio to carry service and instrumentation lines. The thick vane is cambered to maintain the design exit air angles, and the two vanes on each side of this vane are spaced to equalize passage area distribution.

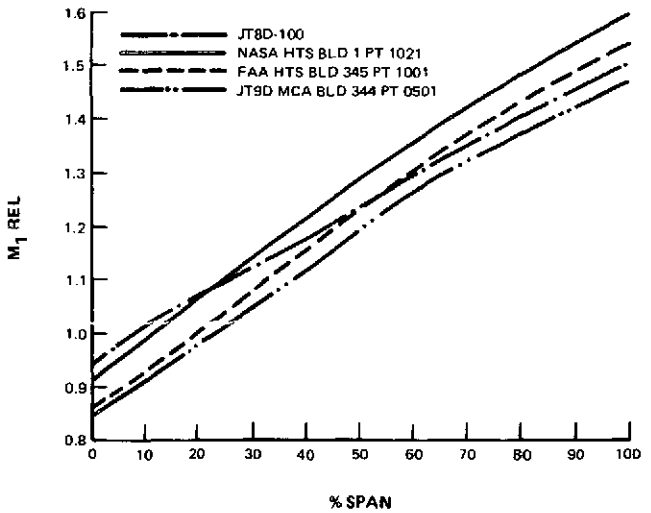


Figure 7 JT8D-100 Fan Inlet Relative Mach Number

The inlet guide vanes are NACA 63 ($C_{10}A_4K_6$) series airfoils made of welded sheet metal construction, similar to current JT8D vanes. An aerodynamic and geometry summary of the inlet guide vane is provided in Table II. As mentioned, the vane on the bottom vertical centerline is thicker than the others to accommodate the N_1 tachometer wire conduit, No. 1 bearing compartment service tubes, and the compressor inlet total pressure (P_{t2}) sense tube. The number of vanes (23) and the axial spacing between the vanes and fan blades are optimized to provide a low noise level configuration. Gussets are machined integral with the outside of the outer shroud to provide a distributed load transition from the vanes to the OD of the outer ring and ultimately into the inlet case extension.

To prevent inlet guide vane icing, eighth-stage compressor air is piped to the outer-ring manifold. This hot air is distributed to the vanes where it flows radially inward through the forward section of the 22 thinner vanes and through the forward and aft sections of the thick vane to the inner ring. It then exits through the scallops of the inner ring front flange where it is used to anti-ice the engine nose cone.

The O-ring seal on the front cover was changed from outboard of the jumper tubes on current JT8D engines to inboard on this design. This eliminated the need for jumper tubes from the connectors on the inner ring to the front cover for the N_1 tachometer conduit and the P_{t2} pressure sense tube. Elimination of the two jumper tubes and the improved visibility of the remaining jumper tubes will ease assembly of the front cover to the inlet case.

The inner flowpath fairing is a riveted aluminum assembly attached to and extending rearward from the aft flange of the inner ring. A small cut-out is provided at the aft end of the fairing near the bottom centerline to permit insertion of a rivet tool for installation of trim balance weights on the first-stage blade lock flange. Both self-locking inserts and lockwire are used at the attachment of the fairing to the inner ring to prevent loss of bolt heads and/or shanks into the engine flowpath.

The aluminum acoustic treatment in the outer flowpath is mechanically retained, replaceable panels, as defined on Figure 2.

TABLE II-A

JT8D-100 INLET GUIDE VANE
AERODYNAMIC AND GEOMETRIC SUMMARY
23 NASA 63 ($C_{l_0}A_4K_6$) AIRFOILS

Percent Total Flow	Hub 0.0	3.0	9.0	15.0	21.0	27.0	Splitting Streamline 33.0	43.3	53.6	63.9	74.2	84.6	94.9	Tip 100.0
							Inlet							
Diameter – m	0.4064	0.4572	0.5450	0.6203	0.6872	0.7479	0.8039	0.8920	0.9720	1.046	1.115	1.1805	1.2425	1.2725
V – m/s	171.79	171.03	171.37	172.36	173.35	174.20	174.89	175.41	175.52	175.29	174.73	173.91	173.05	172.78
V_m – m/s	171.79	171.03	171.37	172.36	173.35	174.20	174.89	175.41	175.52	175.29	174.73	173.91	173.05	172.78
V_θ – m/s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
β – deg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M	0.518	0.516	0.517	0.520	0.523	0.526	0.528	0.530	0.530	0.529	0.527	0.525	0.522	0.521
							Exit							
Diameter – m	0.4064	0.4616	0.5525	0.6278	0.6939	0.7537	0.8089	0.8956	0.9744	1.0471	1.1154	1.1802	1.2422	1.2725
V – m/s	165.53	168.50	172.99	175.85	177.75	178.91	179.64	181.09	181.93	182.22	182.03	81.20	179.53	178.46
V_m – m/s	155.55	161.46	169.81	174.77	177.44	178.81	179.63	181.05	181.66	181.58	180.90	179.49	177.17	175.75
V_θ – m/s	–56.61	–48.19	–32.98	–19.45	–10.42	–6.18	–2.21	4.10	9.88	15.23	20.19	24.79	29.01	30.99
β – deg	–20.00	–16.62	–10.99	–6.35	–3.36	–1.98	0.71	1.3	3.11	4.79	6.37	7.86	9.3	10.0
M	0.498	0.508	0.522	0.531	0.537	0.541	0.543	0.548	0.550	0.549	0.551	0.548	0.543	0.539
P_{03}/P_{02}	0.98403	0.98791	0.99258	0.99439	0.99500	0.99519	0.99526	0.99540	0.99545	0.99494	0.99333	0.98991	0.98464	0.98167
$\bar{\omega}$	0.09543	0.07286	0.04452	0.03330	0.02937	0.02800	0.02739	0.02645	0.02612	0.02909	0.03862	0.05890	0.09054	0.10657
D	1.7639	1.7589	1.6404	1.4412	1.0254	1.0271	1.0882	1.1572	1.3640	1.5826	1.8122	2.0471	2.2810	2.3957
							Geometry							
22 Thin Vanes	c = 0.1143m			t/c = 0.070			RLE = 0.0013m							
Diameter – m	0.4064	0.4595	0.5486	0.6241	0.6904	0.7508	0.8065	0.8938	0.9733	1.046	1.115	1.180	1.242	1.273
RTE – m	0.0020	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0020
β_2^* – deg	7.8	7.0	5.0	3.0	1.5	1.1	0.3	–1.0	–2.7	–4.5	–6.2	–8.2	–11.2	–12.1
ϕ – deg	27.7	23.5	19.2	9.5	5.5	3.4	1.3	–2.2	–6.3	–10.0	–13.4	–18.0	–23.5	–25.1
1 Thick Vane	c = 0.1143m			t/c = 0.15			RLE = 0.0018m		RTE = 0.0017m					
Diameter – m	0.4064	0.4595	0.5486	0.6241	0.6904	0.7508	0.8065	0.8938	0.9733	1.046	1.115	1.180	1.242	1.273
β_2^* – deg	8.5	7.5	5.5	3.2	2.0	1.0	0.3	–1.0	–2.7	–4.9	–6.2	–8.3	–11.2	–12.1
ϕ – deg	29.7	26.3	18.0	10.7	6.0	3.7	1.4	–2.2	–6.3	–10.0	–13.4	–18.0	–23.5	–25.1
σ	0.2059	0.1821	0.1525	0.1341	0.1212	0.1114	0.1038	0.0936	0.0860	0.0800	0.0750	0.0709	0.0674	0.0658

TABLE II-B

JT8D-100 INLET GUIDE VANE
AERODYNAMIC AND GEOMETRIC SUMMARY
23 NACA 63 ($C_{l_0}A_4K_6$) AIRFOILS

Percent Total Flow	Hub 0.0	3.0	9.0	15.0	21.0	27.0	Splitting Streamline 33.0	43.3	53.6	63.9	74.2	84.6	94.9	Tip 100.00
							Inlet							
Diameter – in	16.000	18.001	21.456	24.421	27.054	29.445	31.649	35.117	38.269	41.182	43.906	46.477	48.920	50.100
V – ft/sec	563.61	561.11	562.24	565.47	568.74	571.51	573.77	575.50	575.84	575.11	573.27	570.58	567.76	566.87
V_m – ft/sec	563.61	561.11	562.24	565.47	568.74	571.51	573.77	575.50	575.84	575.11	573.27	570.58	567.76	566.87
V_θ – ft/sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
β – deg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M	0.518	0.516	0.517	0.520	0.523	0.526	0.528	0.530	0.530	0.529	0.527	0.525	0.522	0.521
							Exit							
Diameter – in	16.000	18.175	21.750	24.717	27.319	29.675	31.846	35.261	38.361	41.226	43.913	46.463	48.908	50.100
V – ft/sec	543.08	552.82	567.54	576.94	583.16	586.99	589.38	594.14	596.88	597.84	597.20	594.48	589.00	585.50
V_m – ft/sec	510.33	529.73	557.13	573.40	582.16	586.64	589.33	593.98	595.99	595.75	593.52	588.89	581.26	576.60
V_θ – ft/sec	–185.74	–158.10	–108.21	–63.81	–34.19	–20.27	–7.26	13.45	32.43	49.97	66.25	81.34	95.18	101.67
β – deg	–20.00	–16.62	–10.99	–6.35	–3.36	–1.98	.71	1.3	3.11	4.79	6.37	7.86	9.3	10.0
M	0.498	0.508	0.522	0.531	0.537	0.541	0.543	0.548	0.550	0.549	0.551	0.548	0.543	0.539
P_{03}/P_{02}	0.98403	0.98791	0.99258	0.99439	0.99500	0.99519	0.99526	0.99540	0.99545	0.99494	0.99333	0.98991	0.98464	0.98167
$\overline{\omega}$	0.09543	0.07286	0.04452	0.03330	0.02937	0.02800	0.02739	0.02645	0.02612	0.02909	0.03862	0.05890	0.09054	0.10657
D	1.7639	1.7589	1.6404	1.4412	1.0254	1.0271	1.0882	1.1572	1.3640	1.5826	1.8122	2.0471	2.2810	2.3957
							Geometry							
22 Thin Vanes	c = 4.5 in.			t/c = 0.07			RLE = 0.05 in.							
Diameter – in	16.000	18.09	21.60	24.57	27.18	29.56	31.75	35.19	38.32	41.20	43.91	46.46	48.91	50.10
RTE – in.	0.080	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.080
β_2^* – deg	7.8	7.0	5.0	3.0	1.5	1.1	0.3	–1.0	–2.7	–4.5	–6.2	–8.3	–11.2	–12.1
ϕ – deg	27.7	23.5	19.2	9.5	5.5	3.4	1.3	–2.2	–6.3	–10.0	–13.4	–18.0	–23.5	–25.1
1 Thick Vane	c = 4.5 in.			t/c = 0.15			RLE = 0.0717 in		RTE = 0.0675 in.					
Diameter – in	16.000	18.09	21.60	24.57	27.18	29.56	31.75	35.19	38.32	41.20	43.91	46.46	48.91	50.10
β_2^* – deg	8.5	7.5	5.5	3.2	2.0	1.0	0.3	–1.0	–2.7	–4.5	–6.2	–8.3	–11.2	–12.1
ϕ – deg	29.7	26.3	18.0	10.7	6.0	3.7	1.4	–2.2	–6.3	–10.0	–13.4	–18.0	–23.5	–25.1
σ	0.2059	0.1821	0.1525	0.1341	0.1212	0.1114	0.1038	0.0936	0.0860	0.0800	0.0750	0.0709	0.0674	0.0658

b. **Fan Containment Case, Fan Blade Tip Treatment, Fan Exit Guide Vanes, and Forward Fan Case**

The fan containment case, fan blade tip treatment, fan exit guide vanes and forward fan case are shown in Figure 8.

The fan containment case is an AMS 4928 titanium forging, machined all over, with conventional flanges at both ends. The containment case is made of titanium to take advantage of its relatively light weight, while retaining containment capability similar to steel. Provisions have been made for attaching the removable aluminum tip treatment retention ring and acoustic panels.

Fan blade tip treatment has been added to the retrofit configuration in order to obtain adequate fan surge margin. Angled or skewed passages fabricated in the case wall surrounding the fan blade tip are formed from expandable aluminum honeycomb. The expanded honeycomb is formed into curved panels, bonded to aluminum backing sheets, and the edges of the skewed cells are filled with epoxy foam. The tip treatment is in the form of ten removable cartridges and is held in place by radial screws and an aluminum retention ring tightly fitted to the containment case.

The fan exit guide vanes (FEGV) are eighty-four solid aluminum vanes positioned in the fan case aft of the fan blades and the engine flow splitter. The number of vanes (84) was selected to be acoustically compatible with 34 fan blades (2N + 16 vanes required where N is the number of fan blades). The vanes are contoured to aerodynamically straighten the flow from the fan blades and improve overall fan performance. The type of airfoil is series 65/circular arc. Pertinent information on the FEGV airfoil is summarized in Table III.

The fan exit guide vane assembly has been configured in four clusters of twenty-one vanes. The vane detail is an aluminum (AMS 4153) extrusion, coined to final shape. The vanes are fixtured together with inner and outer aluminum shrouds and potted with PWA 597 polyurethane elastomer. Each cluster of vanes is attached to the fan duct outer wall by six bolts. At the root, the platforms have slots between vanes that engage lugs on the aluminum splitter fairing to provide tangential restraint but still allow radial freedom of the vanes for thermal expansion.

The fan exit guide vane design was a compromise between the large incidence swing implied by the surge margin requirement, choking at the minimum cruise condition and structural requirements of the aluminum strip stock vane. The vane was designed as thin as could be justified structurally and with incidence as large as could be justified at the surge condition. Surge incidence and loading are shown in Figure 9 compared to the NASA low tip speed, redesigned stator. Figure 10 is a predicted fan map and shows the points used in the choke analysis. The resulting choke margin will not impose a significant penalty in the cruise range. Figure 11 shows FEGV minimum A/A* spanwise distribution at the aerodynamic design point and Figure 12 is an estimate of the FEGV performance in the cruise operating range compared to the NASA low tip speed, redesigned stator performance.

TABLE III-A

JT8D-100 FAN DUCT EXIT GUIDE VANE
AERODYNAMIC AND GEOMETRIC SUMMARY
84 STRIP STOCK AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

Percent Duct Flow	Hub 0.0	15.38	30.77	46.15	61.54	76.92	92.31	Tip 100.0
				Inlet				
Diameter-m	0.8573	0.9169	0.9726	1.0254	1.077	1.1279	1.1822	1.2129
V-m/s	253.25	253.83	254.16	253.10	248.58	240.12	226.91	213.94
V_m-m/s	202.89	203.44	202.23	198.79	191.12	176.13	150.78	126.90
V_θ-m/s	151.56	151.79	153.96	156.66	158.94	163.21	169.57	172.24
β-deg	36.76	36.13	37.28	38.24	39.75	42.82	48.49	53.88
M	0.721	0.721	0.720	0.714	0.699	0.670	0.627	0.587
				Exit				
Diameter-m	0.8788	0.9310	0.9797	1.0263	1.0713	1.1158	1.1617	1.1862
V-m/s	221.09	218.58	215.35	211.70	206.79	198.58	181.31	169.08
V_m-m/s	219.79	218.55	215.31	211.65	206.72	198.47	181.31	166.43
V_θ-m/s	12.981	−3.191	−4.331	−4.523	−5.236	−6.721	.0640	29.852
β-deg	3.37	−0.84	−1.15	−1.23	−1.45	−1.94	0.02	10.17
M	0.622	0.613	0.601	0.589	0.573	0.547	0.494	0.458
P_{03}/P_{02}	0.9570	0.9820	0.9907	0.9907	0.9891	0.9840	0.9657	0.9619
$\bar{\omega}$	0.14716	0.06169	0.03184	0.03227	0.03908	0.06148	0.14739	0.18360
D	0.24538	0.28017	0.30567	0.32884	0.34881	0.37747	0.43151	0.42382
				Geometry				
		RLE = 0.00036m			RTE = 0.00036m			
Diameter-m	0.8680	0.9176	0.9671	1.0166	1.0662	1.1157	1.1652	1.1982
c-m	0.07416	0.07417	0.07409	0.07392	0.07363	0.07301	0.07155	0.06965
t/c	0.0477	0.0477	0.0477	0.0478	0.0480	0.0484	0.0494	0.0508
β_2^*-deg	35.84	35.61	36.30	37.51	39.58	43.75	51.71	62.37
ϕ-deg	44.49	44.27	45.19	47.12	50.29	56.49	68.92	82.48
σ	2.284	2.161	2.048	1.944	1.846	1.750	1.642	1.554

TABLE III-B

JT9D-100 FAN DUCT EXIT GUIDE VANE
AERODYNAMIC AND GEOMETRIC SUMMARY
84 STRIP STOCK AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

Percent Duct Flow	Hub 0.000	15.38	30.77	46.15	61.54	76.92	92.31	Tip 100.
				Inlet				
Diameter-in	33.750	36.099	38.291	40.372	42.387	44.404	46.542	47.750
V-ft/sec	830.87	832.77	833.87	830.38	815.54	787.80	744.46	701.91
V_m-ft/sec	665.66	667.46	663.47	652.19	627.05	577.85	494.70	416.35
V_θ-ft/sec	497.24	498.00	505.12	513.97	521.46	535.46	556.32	565.10
β-deg	36.76	36.13	37.28	38.24	39.75	42.82	48.49	53.88
M	0.721	0.721	0.720	0.714	0.699	0.670	0.627	0.587
				Exit				
Diameter-in	34.6	36.652	38.571	40.405	42.179	43.931	45.737	46.7
V-ft/sec	725.36	717.12	706.53	694.54	678.44	651.52	594.86	554.74
V_m-ft/sec	721.11	717.04	706.39	694.38	678.22	651.15	594.86	546.03
V_θ-ft/sec	42.59	−10.47	−14.21	−14.84	−17.18	−22.05	.21	97.94
β-deg	3.37	−.84	−1.15	−1.23	−1.45	−1.94	.02	10.17
M	0.622	0.613	0.601	0.589	0.573	0.547	0.494	0.458
P_{03}/P_{02}	0.9570	0.9820	0.9907	0.9907	0.9891	0.9840	0.9657	0.9619
$\bar{\omega}$	0.14716	0.06169	0.03184	0.03227	0.03908	0.06148	0.14739	0.18360
D	0.24538	0.28017	0.30567	0.32884	0.34881	0.37747	0.43151	0.42382
				Geometry				
		RLE = 0.014 in.			RTE = 0.014 in.			
Diameter-in	34.175	36.125	38.075	40.025	41.975	43.925	45.875	47.825
c-in	2.9195	2.9202	2.9171	2.9104	2.8989	2.8743	2.8168	2.7422
t/c	0.0477	0.0477	0.0477	0.0478	0.0480	0.0484	0.0494	0.0508
β^*_2-deg	35.84	35.61	36.30	37.51	39.58	43.75	51.71	62.37
ϕ - deg	44.49	44.27	45.19	47.12	50.29	56.4902	68.92	82.48
σ	2.284	2.161	2.048	1.944	1.846	1.750	1.642	1.554

The forward fan case is an AMS 4153 aluminum extrusion. This case forms the outer fan flowpath between the fan exit guide vanes and the intermediate case (front mount structure) with a flange at each end to attach to the containment case and the intermediate case. An intermediate dummy flange is provided to mount accessories and support the forward end of the accessory gearbox. The rear portion of the case has integral aluminum acoustical treatment.

The duct area was opened downstream of the FEGV so that the local corrected specific flow would be the same as that in the JT8D-9 to keep the duct losses at least as low as in the present engine. The flow path was contoured at the intermediate case to minimize the blockage effects caused by the fairings and struts.

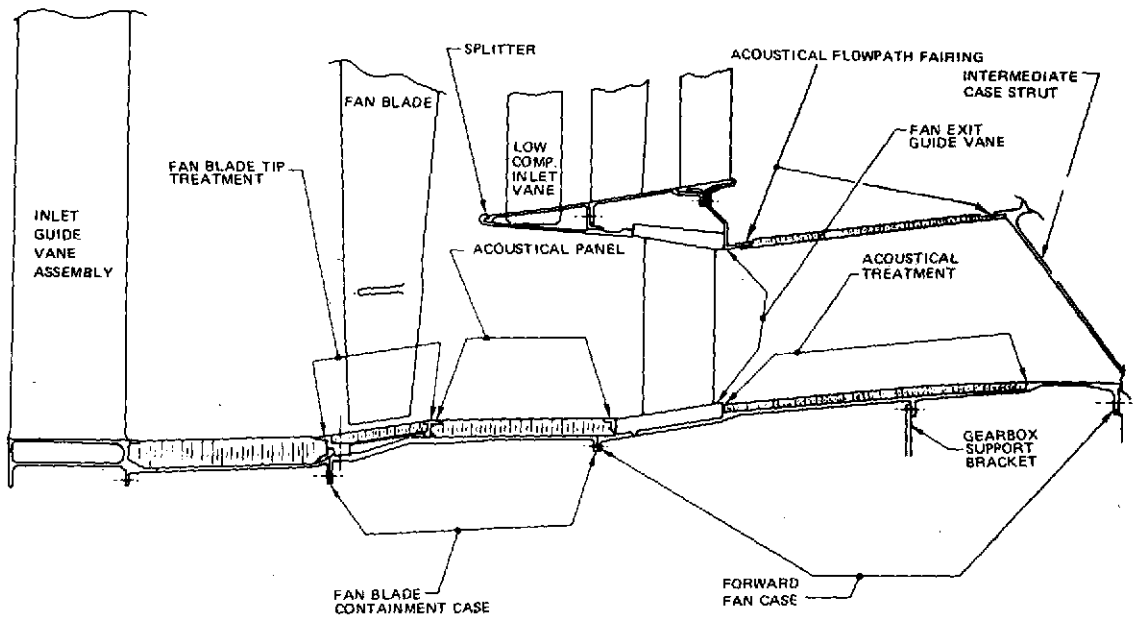


Figure 8 JT8D-100 Containment Case, Fan Blade Tip Treatment, Fan Exit Guide Vane, Forward Fan Case

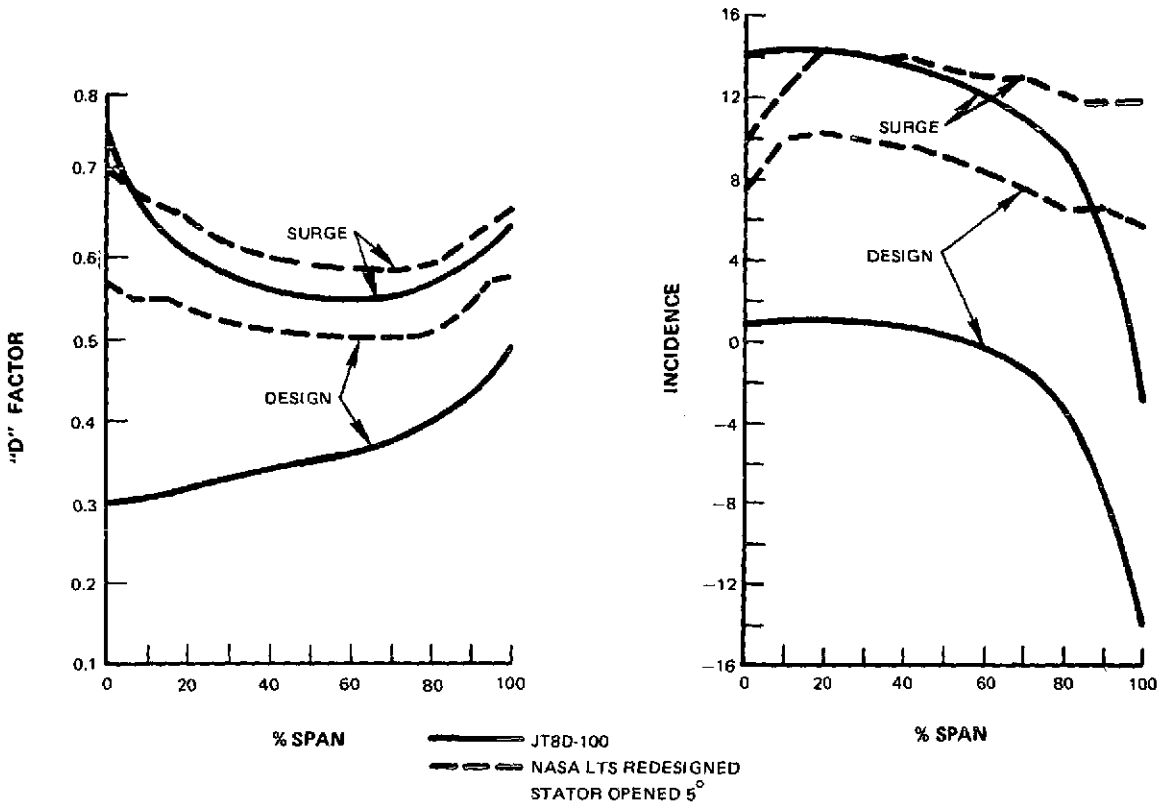


Figure 9 JT8D-100 Fan Exit Guide Vane - Estimated Surge Incidence and Loading Compared to the NASA Low Tip Speed Redesigned Stator

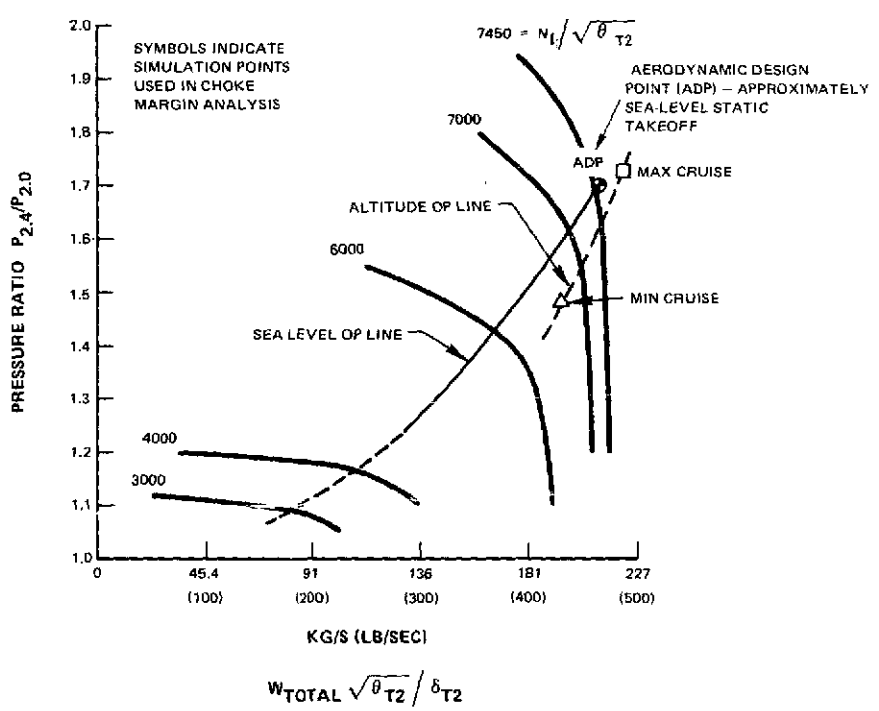


Figure 10 JT8D-100 Fan Exit Guide Vane - Predicted Fan Map

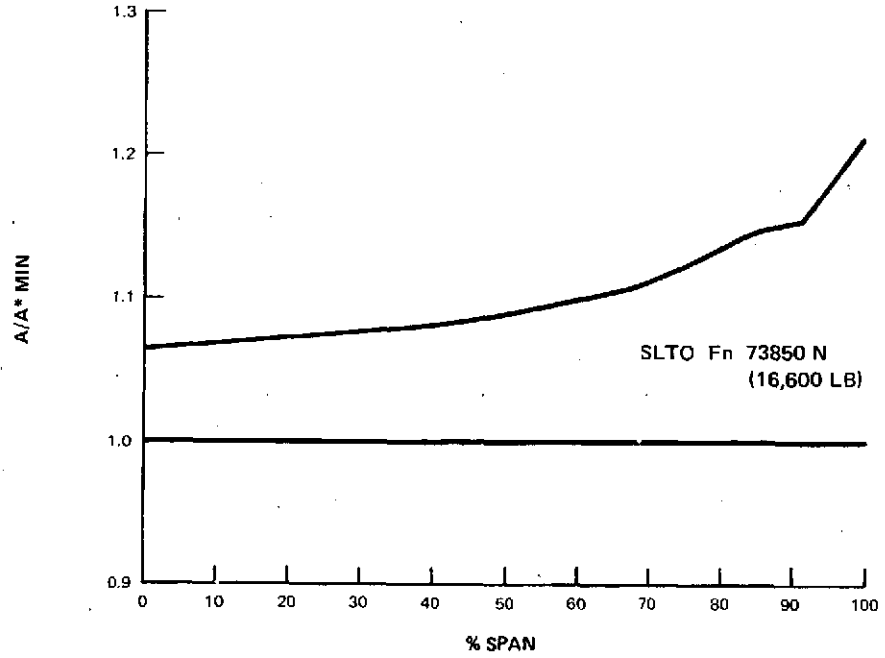


Figure 11 JT8D-100 Fan Exit Guide Vane - Spanwise Distribution of Choke Margin at the Aerodynamic Design Point (ADP in Figure 10)

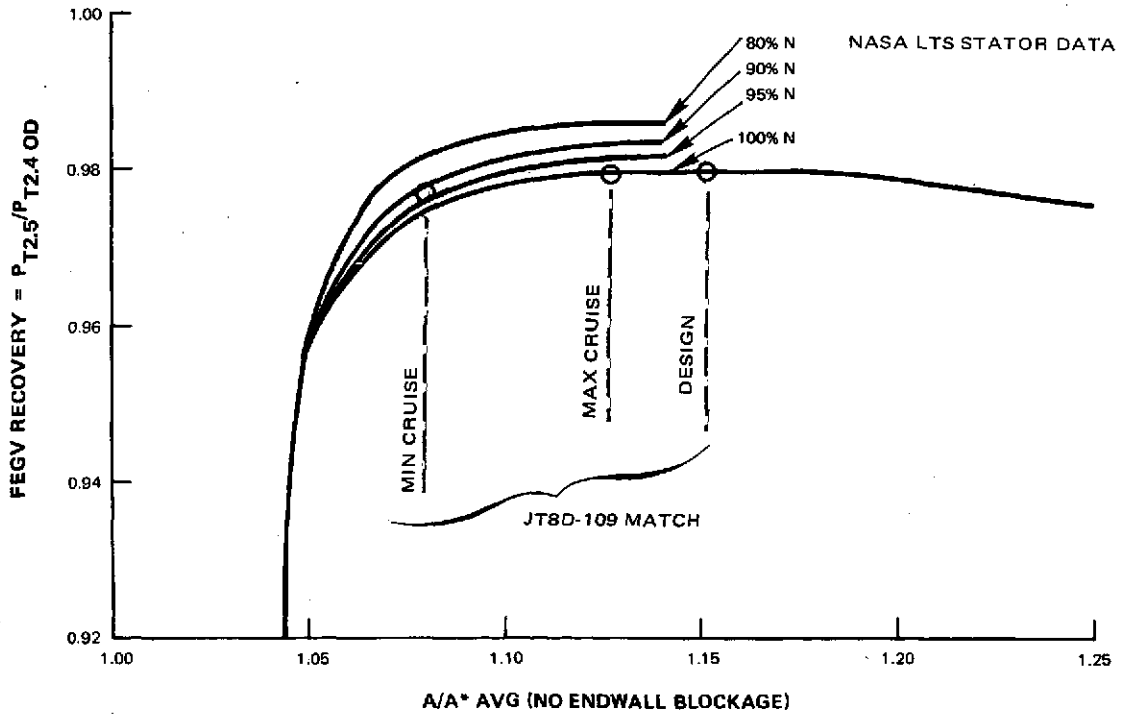


Figure 12 JT8D-100 Fan Exit Guide Vane - Estimated Total Pressure Recovery vs. Choke Margin at Cruise Compared to NASA Low Tip Speed Redesigned Stator Performance

c. Low Pressure Compressor Fairing, Stators, and Splitter

The low-pressure compressor fairing, stators and splitter are shown in Figure 13. The aluminum splitter which divides the incoming air between the primary and fan streams consists of an inner and outer section. The outer section supports the fan exit guide vane and the inner section supports the No. 1 stator.

The AMS 5613 steel No. 1 stator vanes are damped by potting the vane in polyurethane at the root and riveting the vanes to the splitter at the tip. The stage 1.5 and stage 2 stators are fabricated from AMS 4135 aluminum forgings and are of single-rail design at the tip and conventional JT8D double-rail construction at the root. The single-rail design offers light weight and low cost. A description of the stators is given in Table IV. The airseals are similar to current JT8D design except for the first stator airseal. Abradable material was used at that location to make the seal more tolerant of deflections under maneuver conditions.

The inner fan duct fairing provides acoustic treatment in the duct and establishes the inner passage of the diffuser section of the fan duct. The aluminum acoustic treatment is in the form of two removable, non-structural fairing segments.

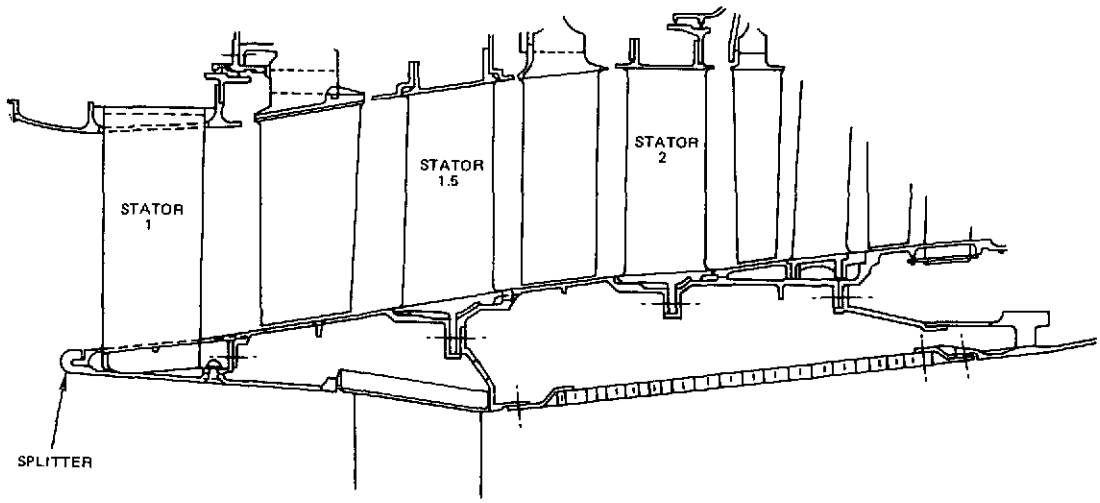


Figure 13 JT8D-100 Low Pressure Compressor Fairing, Stators and Splitter

TABLE IV-A

JT8D-100 STATOR 1
AERODYNAMIC AND GEOMETRIC SUMMARY
56 STRIP STOCK DOUBLE CIRCULAR ARC AIRFOILS

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-m	0.5702	0.5951	0.6420	0.6867	0.7302	0.7723	0.8128
V-m/s	326.47	307.86	283.07	267.40	255.88	247.08	240.25
V_m-m/s	244.44	237.54	214.05	206.36	194.26	186.54	179.36
V_θ-m/s	216.40	195.84	176.08	170.06	166.56	162.02	159.85
β-deg	41.52	39.50	38.46	39.49	40.61	40.97	41.71
M	0.953	0.894	0.816	0.767	0.730	0.702	0.680
				Exit			
Diameter-m	0.5639	0.5882	0.6342	0.6775	0.7190	0.7595	0.8001
V-m/s	218.49	208.85	206.34	201.80	196.15	188.58	176.28
V_m-m/s	213.55	205.41	201.93	286.44	188.06	179.87	163.25
V_θ-m/s	42.217	37.655	42.449	51.956	55.781	56.641	66.495
β-deg	12.21	10.39	11.87	14.92	16.52	17.48	22.16
M	0.608	0.582	0.577	0.565	0.548	0.525	0.489
P_{03}/P_{02}	0.9516	0.9583	0.9843	0.9914	0.9898	0.9807	0.9616
$\overline{\omega}$	0.1094	0.1030	0.0443	0.0266	0.0342	0.0687	0.1444
D	0.4753	0.4679	0.4130	0.3851	0.3771	0.3846	0.4066
				Geometry			
		RLE = 0.00020m		RTE = 0.00020m			
Diameter-m	0.5696	0.5909	0.6406	0.6879	0.7234	0.7707	0.8062
c-m	0.06024	0.06065	0.06104	0.06109	0.06099	0.06076	0.06040
t/c	0.0506	0.0503	0.0500	0.0499	0.0500	0.0502	0.0505
β_2^*-deg	47.10	38.85	36.99	39.27	41.77	45.23	48.75
ϕ-deg	44.26	37.71	30.81	29.46	31.32	35.83	41.71
σ	1.885	1.829	1.698	1.583	1.503	1.405	1.336

TABLE IV-B

JT8D-100 STATOR 1
AERODYNAMIC AND GEOMETRIC SUMMARY
56 STRIP STOCK DOUBLE CIRCULAR ARC AIRFOILS

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter - in.	22.450	23.429	25.275	27.036	28.747	30.407	32.00
V - ft/sec	1071.09	1010.03	928.72	877.29	839.51	810.63	788.23
V_m - ft/sec	801.98	779.33	702.26	677.02	637.32	612.02	588.46
V_θ - ft/sec	709.96	642.51	577.68	557.93	546.45	531.55	524.43
β - deg	41.52	39.50	38.46	39.49	40.61	40.97	41.71
M	0.953	0.894	0.816	0.767	0.730	0.702	0.680
				Exit			
Diameter - in	22.200	23.156	24.969	26.672	28.309	29.902	31.500
V - ft/sec	716.83	685.19	676.98	662.07	643.55	618.71	578.34
V_m - ft/sec	700.62	673.93	662.50	639.75	616.98	590.14	535.61
V_θ - ft/sec	151.63	123.54	139.27	170.46	183.01	185.83	218.16
β - deg.	12.21	10.39	11.87	14.92	16.52	17.48	22.16
M	0.608	0.582	0.577	0.565	0.548	0.525	0.489
P_{03}/P_{02}	0.9516	0.9583	0.9843	0.9914	0.9898	0.9807	0.9616
$\bar{\omega}$	0.1094	0.1030	0.0443	0.0266	0.0342	0.0687	0.1444
D	0.4753	0.4679	0.4130	0.3851	0.3771	0.3846	0.4066
				Geometry			
		RLE = 0.008 in.		RTE = 0.008 in.			
Diameter - in.	22.425	23.263	25.220	27.082	28.480	30.343	31.74
c - in.	2.3715	2.3878	2.403	2.405	2.401	2.392	2.378
t/c	0.0506	0.0503	0.0500	0.0499	0.0500	0.0502	0.0505
β_2^* - deg.	47.10	38.85	36.99	39.27	41.77	45.23	48.75
ϕ - deg.	44.26	37.71	30.81	29.46	31.32	35.83	41.71
σ	1.885	1.829	1.698	1.583	1.503	1.405	1.336

TABLE IV-C

JT8D-100 STATOR 1.5
AERODYNAMIC AND GEOMETRIC SUMMARY
53 AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

Percent Engine Flow	Hub 0.0	9.09	27.3	45.5	63.6	81.8	Tip 100.0
				Inlet			
Diameter-m	0.5248	0.5522	0.5989	0.6421	0.6830	0.7219	0.762
V-m/s	216.95	227.68	230.18	227.23	224.79	219.90	199.67
V_m-m/s	162.93	186.72	191.79	186.67	183.21	178.14	151.58
V_θ-m/s	143.25	130.22	127.27	129.57	130.24	128.93	129.96
β-deg	41.32	34.91	33.57	34.77	35.41	35.90	40.61
M	0.567	0.620	0.634	0.626	0.619	0.600	0.543
				Exit			
Diameter-m	0.5024	0.5319	0.5804	0.6238	0.6640	0.7026	0.7417
V-m/s	147.43	173.60	188.67	191.91	193.82	191.82	172.82
V_m-m/s	144.59	171.50	185.22	186.52	186.34	182.24	159.10
V_θ-m/s	28.80	26.93	35.87	45.20	53.328	59.85	67.47
β-deg	11.27	8.92	10.96	13.62	15.92	18.18	22.98
M	0.391	0.466	0.510	0.521	0.526	0.519	0.466
P_{03}/P_{02}	0.9879	0.9913	0.9952	0.9967	0.9962	0.9949	0.9946
$\overline{\omega}$	0.05831	0.03812	0.02059	0.01452	0.01671	0.0235ϵ	0.02965
D	0.4784	0.3762	0.3094	0.2830	0.2615	0.2468	0.2589
				Geometry			
		t/c - 0.070	RLE = 0.00020m		RTE = 0.00030m		
Diameter-m	0.5136	0.5375	0.5850	0.6327	0.6685	0.7160	0.7518
c-m	0.05255	0.05306	0.05413	0.05522	0.05601	0.05704	0.05786
β_2^*-deg	45.59	40.16	36.72	38.53	39.94	41.642	43.77
ϕ-deg	47.80	39.47	31.34	30.12	29.31	29.766	32.90
σ	1.726	1.666	1.561	1.472	1.413	1.344	1.298

TABLE IV-D

JT8D-100 STATOR 1.5
AERODYNAMIC AND GEOMETRIC SUMMARY
53 AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-in	20.66	21.74	23.58	25.28	26.89	28.42	30.00
V-ft/sec	711.77	746.99	755.17	745.51	737.49	721.46	655.07
V_m-ft/sec	534.54	612.60	629.24	612.43	601.09	584.44	497.31
V_θ-ft/sec	469.98	427.24	417.54	425.11	427.30	423.00	426.37
β - deg.	41.32	34.91	33.57	34.77	35.41	35.90	40.61
M	0.567	0.620	0.634	0.626	0.619	0.600	0.543
				Exit			
Diameter-in	19.78	20.94	22.85	24.56	26.14	27.66	29.20
V - ft/sec	483.69	569.56	618.98	629.64	635.88	629.33	566.99
V_m - ft/sec	474.37	562.67	607.69	611.93	611.34	597.91	521.99
V_θ - ft/sec	94.49	88.34	117.68	148.31	174.96	196.37	221.35
β - deg.	11.27	8.92	10.96	13.62	15.92	18.18	22.98
M	0.391	0.466	0.510	0.521	0.526	0.519	0.466
P_{03}/P_{02}	0.9879	0.9913	0.9952	0.9967	0.9962	0.9949	0.9946
$\bar{\omega}$	0.05831	0.03812	0.02059	0.01452	0.01671	0.02356	0.02965
D	0.4784	0.3762	0.3094	0.2830	0.2615	0.2468	0.2589
				Geometry			
		t/c = 0.070	RLE = 0.008 in		RTE = 0.012 in.		
Diameter-in	20.22	21.16	23.03	24.91	26.32	28.19	29.60
c - in	2.069	2.089	2.131	2.174	2.205	2.246	2.278
β_2^* - deg.	45.59	40.16	36.72	38.53	39.94	41.642	43.77
ϕ - deg	47.80	39.47	31.34	30.12	29.31	29.766	32.90
σ	1.726	1.666	1.561	1.472	1.413	1.344	1.298

TABLE IV-E

JT8D-100 STATOR 2
AERODYNAMIC AND GEOMETRIC SUMMARY
59 AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-m	0.4928	0.5210	0.5669	0.6091	0.6490	0.6873	0.7264
V-m/s	196.11	215.10	218.69	216.92	216.63	215.98	203.41
V_m-m/s	144.17	174.90	183.94	181.44	178.45	173.03	149.27
V_θ-m/s	132.95	125.21	118.29	118.88	122.82	129.25	138.18
β-deg	42.69	35.62	32.75	33.23	34.54	36.76	42.79
M	0.513	0.567	0.582	0.578	0.577	0.574	0.538
				Exit			
Diameter-m	0.4928	0.5197	0.5644	0.6055	0.6441	0.6812	0.7188
V-m/s	153.95	181.81	189.50	188.02	186.63	184.31	169.26
V_m-m/s	150.55	179.79	187.03	184.40	181.79	177.73	157.05
V_θ-m/s	32.18	27.08	30.52	36.75	42.21	48.80	63.13
β-deg	12.07	8.57	9.27	11.27	13.09	15.35	21.9
M	0.398	0.475	0.500	0.497	0.493	0.485	0.444
P_{03}/P_{02}	0.9887	0.9911	0.9946	0.9957	0.9949	0.9935	0.9934
$\overline{\omega}$	0.06895	0.04529	0.02659	0.0218	0.02516	0.03240	0.03678
D	0.3563	0.2853	0.2557	0.2549	0.2640	0.2781	0.3043
				Geometry			
	t/c = 0.070	RLE = 0.00020m		RTE = 0.00030m			
Diameter-m	0.4928	0.5156	0.5618	0.6078	0.6421	0.6881	0.7226
c-m	0.04689	0.04739	0.04835	0.04932	0.05004	0.05098	0.05169
β_2^*-deg	43.65	40.179	39.155	40.391	42.764	45.413	48.42
ϕ-deg	45.57	40.143	36.632	35.737	36.347	37.889	39.64
σ	1.787	1.726	1.6166	1.524	1.463	1.391	1.343

TABLE IV-F

JT8D-100 STATOR 2
AERODYNAMIC AND GEOMETRIC SUMMARY
59 AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-in	19.40	20.51	22.32	23.98	25.55	27.06	28.60
V-ft/sec	643.40	705.71	717.50	711.67	710.73	708.60	667.34
V_m-ft/sec	472.99	573.82	603.47	595.28	585.46	567.70	489.73
V_θ-ft/sec	436.18	410.80	388.10	390.03	402.96	424.06	453.34
β - deg.	42.69	35.62	32.75	33.23	34.54	36.76	42.79
M	0.513	0.567	0.582	0.578	0.577	0.574	0.538
				Exit			
Diameter-in	19.40	20.46	22.22	23.84	25.36	26.82	28.30
V - ft/sec	505.08	596.50	621.72	616.87	612.29	604.69	555.33
V_m-ft/sec	493.92	589.85	613.60	604.98	596.42	583.10	515.26
V_θ-ft/sec	105.59	88.85	100.14	120.58	138.49	160.12	207.12
β - deg.	12.07	8.57	9.27	11.27	13.09	15.35	21.9
M	0.398	0.475	0.500	0.497	0.493	0.485	0.444
P_{03}/P_{02}	0.9887	0.9911	0.9946	0.9957	0.9949	0.9935	0.9934
$\overline{\omega}$	0.06895	0.04529	0.02659	0.0218	0.02516	0.03240	0.03678
D	0.3563	0.2853	0.2557	0.2549	0.2640	0.2781	0.3043
				Geometry			
	t/c = 0.070	RLE = 0.008 in.		RTE = 0.012 in.			
Diameter-in	19.40	20.30	22.12	23.93	25.28	27.09	28.45
c - in	1.846	1.8658	1.9035	1.9419	1.9702	2.007	2.035
β_2^* - deg.	43.65	40.179	39.155	40.391	42.764	45.413	48.42
ϕ - deg.	45.57	40.143	36.632	35.737	36.347	37.889	39.64
σ	1.787	1.726	1.6166	1.524	1.463	1.391	1.343

d. Fan, Low Pressure Compressor Rotor

The JT8D-100 fan and low-pressure compressor rotor (LPC) as shown in Figure 14 consists of a single stage fan and six core stages. The rotor is simply supported between the No. 1 (inlet case) roller bearing and the No. 2 (intermediate case) dual ball thrust bearing. The last four disk and blade assemblies are common with the corresponding parts in the current JT8D front compressor, except as noted herein.

The basic rotor structure between the No. 1 and No. 2 bearings consists of:

1. A long front hub-shaft extending from the No. 1 bearing to the second-stage disk,
2. Cylindrical spacers from the second to third and third to fourth stage disks,
3. The second and third stage disks, and
4. A conical rear hub which is integral with the fourth-stage compressor disk. The rear of the cone extends aft to the No. 2 bearing. At this location the low turbine shaft is splined to the LPC rotor. Driving torque from the turbine is applied here, and low rotor thrust is transmitted to the static structure.

The stiff bearing critical speed mode shape of the low rotor between the No. 1 and No. 2 bearings is illustrated in Figure 15. The low rotor excited engine criticals are shown in Figures 16, 17, and 18.

The first-stage (fan) rotor is double-piloted on and splined to the AMS 4928 titanium front hub and is retained by a spanner nut. The single-stage fan has 34 blades and provides pressurization for the fan duct and primary pressurization for the low compressor. The number of blades was chosen as optimum for acoustic reasons, and the even number also facilitates use of moment-weight classified pairs. The blade material is AMS 4928, the same as used on current JT8D engines.

The fan blade airfoil is multiple circular arc (MCA) and has a single part-span shroud at 65.7% span to damp vibrations. The multiple circular arc airfoil design was selected for the fan rotor since this design has demonstrated better performance than the double circular arc airfoils used in the present JT8D fan at the higher Mach numbers required for this design. The principle design considerations were to keep the design loading low enough to obtain 25% surge margin and to efficiently pass the flow required at the maximum cruise condition. Overall fan design parameters are compared to previous designs in Table V. Spanwise distribution of relative Mach number and loss are shown in Figures 7 and 19; both are within the design experience of previous successful MCA fans. Surge limits for the fan rotor were based on D factor. The JT8D-100 fan was tip limited, and the tip D factor/aspect ratio correlation was used to set the surge point. Figure 20 compares D factor vs. % span for the JT8D-100 rotor and the FAA high tip speed design at the design point. The JT8D-100 fan surge margin is estimated to be equal to that of the FAA high tip speed fan, because peak loadings are comparable and the higher required tip loading of the JT8D-100 fan is compensated by its reduced tip aspect ratio. An aerodynamic and geometric summary of the fan blade is provided in Table VI. Figure 21 is a Cambell diagram for the JT8D-100 fan.

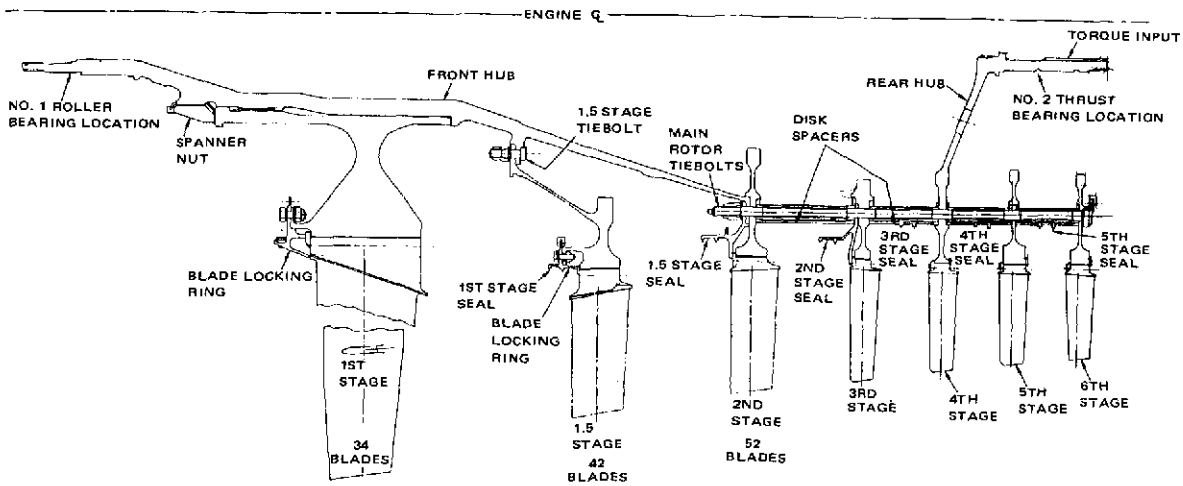


Figure 14 JT8D-100 Fan, Low Pressure Compressor Rotor Cross Section

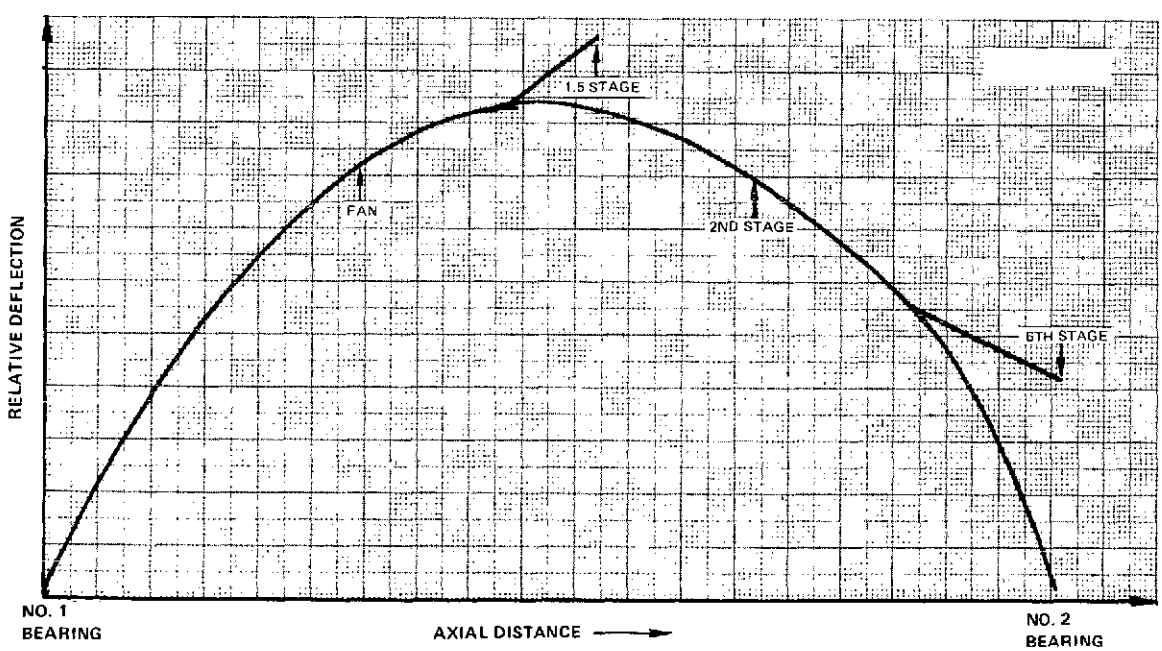


Figure 15 JT8D-100 Fan-Low Rotor Critical Speed, 9698 N_1

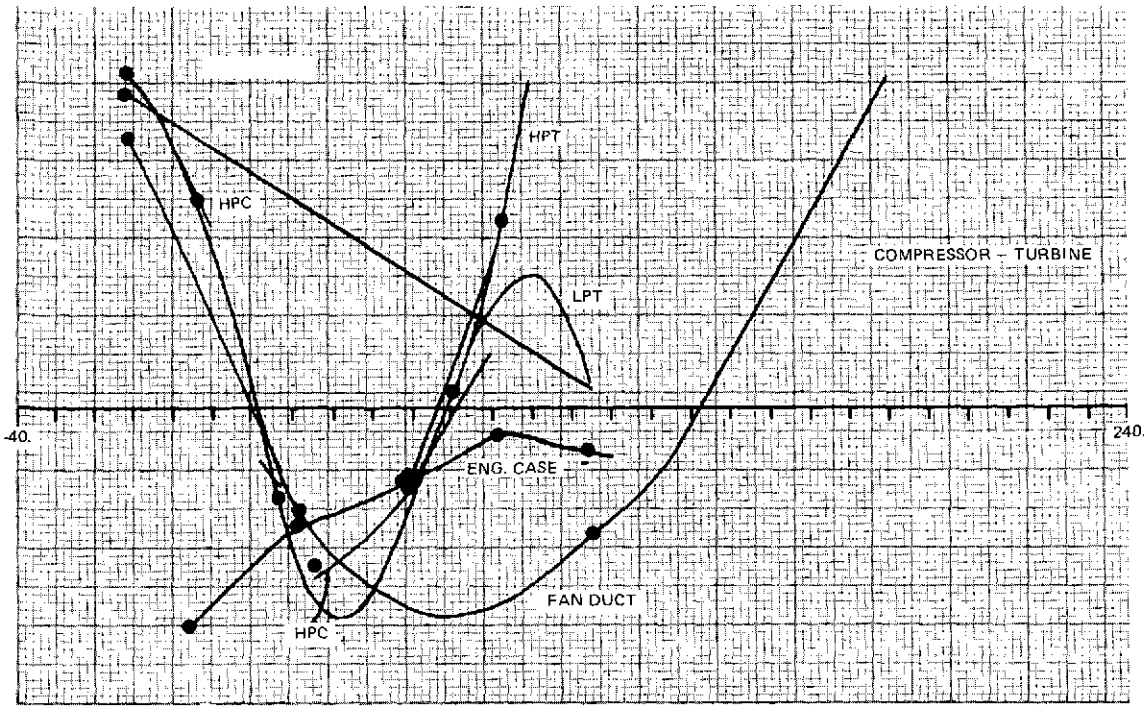


Figure 16 JT8D-100 Low Rotor Excited Critical Engine Speed, 5771 N_1

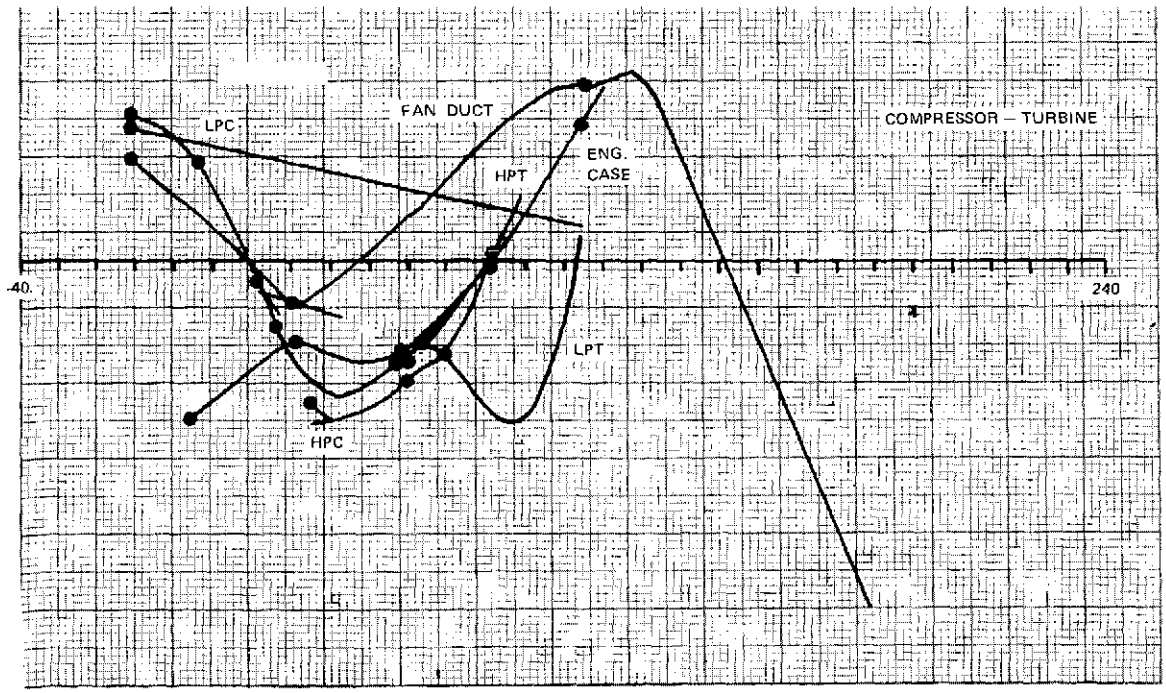


Figure 17 JT8D-100 Low Rotor Excited Critical Engine Speed, 7208 N_1

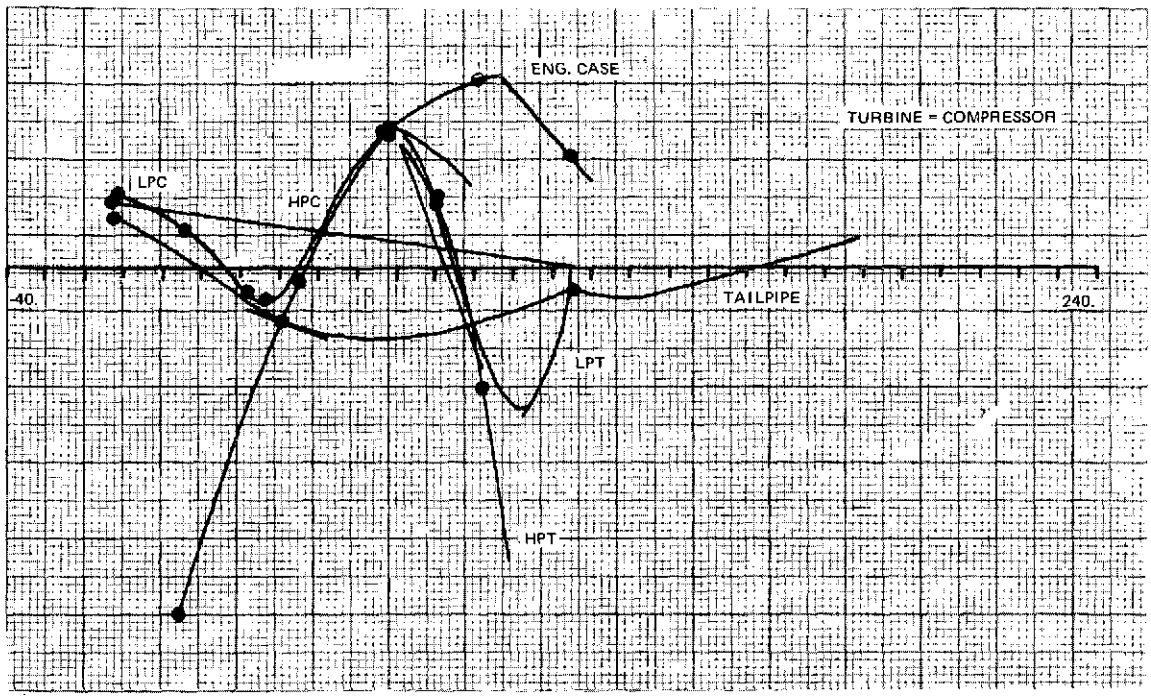


Figure 18 JT8D-100 Low Rotor Excited Critical Engine Speed, 7659 N_1

TABLE V

FAN DESIGN PARAMETERS

	JT8D-100	NASA HTS	FAA HTS	JT9D-MCA 105% N_1
Corrected Flow/ Area, Rotor Inlet	205.06 kg/s/m^2 (42.0 lb/sec/ft^2)	202.6 kg/s/m^2 (41.5 lb/sec/ft^2)	204.6 kg/sec/m^2 (41.9 lb/sec/ft^2)	209.5 kg/s/m^2 (42.9 lb/sec/ft^2)
$P_{T2.4}/P_{T2}$ Full Span	1.693	1.762	1.623	1.620
$\eta_{2.4}/2$ Full Span	0.843	0.840	0.848	0.843
$U_{TIP}/\sqrt{\theta_{T2}}$	488 m/s (1600 ft/sec)	488 m/s (1600 ft/sec)	483 m/s (1586 ft/sec)	455 m/s (1492 ft/sec)
Fan Tip Relative Mach No.	1.50	1.59	1.54	1.46
No. Part Span Shrouds	1	0	2	2
Hub/Tip Ratio	0.389	0.5	0.384	0.384
Span/Root Chord	3.57	1.66	4.75	4.59
Span/Tip Chord	2.50	1.66	3.29	3.55
Surge Margin	25%	23%	25%	22%

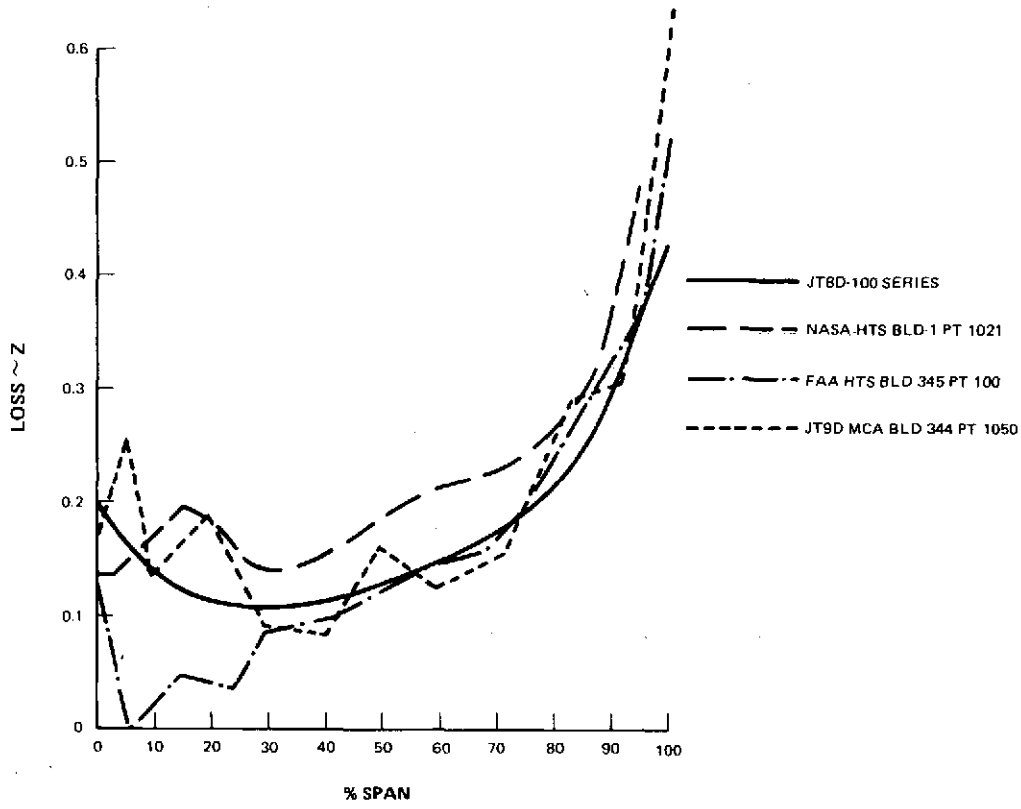


Figure 19 JT8D-100 Fan Rotor Loss

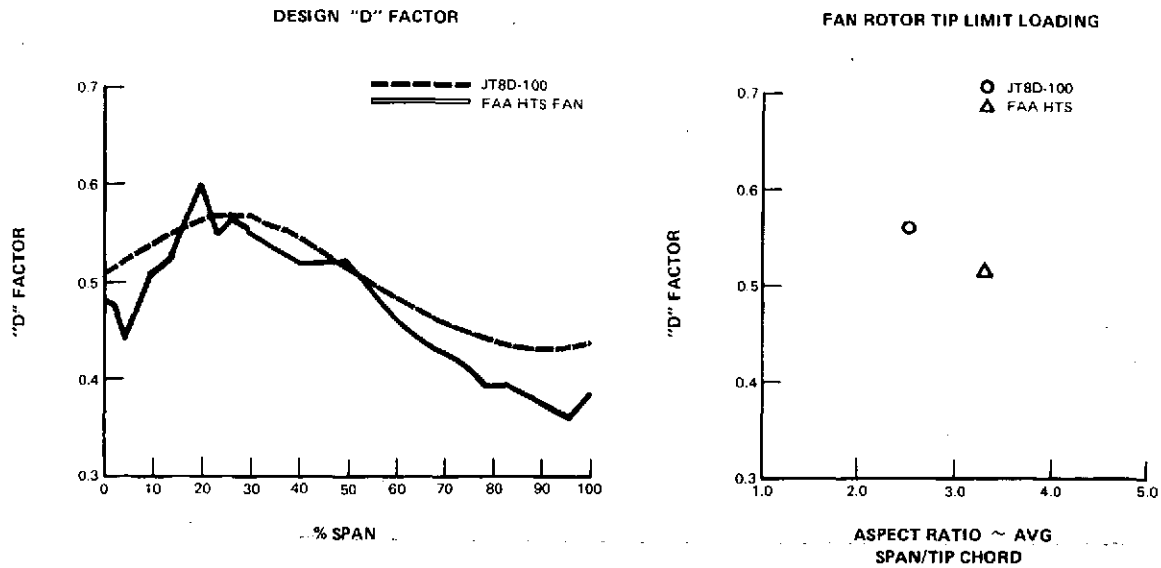


Figure 20 JT8D-100 Fan Rotor "D" Factor and Tip Loading

TABLE VI-A

JT8D-100 ROTOR 1 (FAN)
AERODYNAMIC AND GEOMETRIC SUMMARY ON CONICAL SURFACES
34 MULTIPLE-CIRCULAR-ARC AIRFOILS

Percent Total Flow	Hub 0.0	3.0	9.0	15.0	21.0	27.0	Splitting Streamline 33.0	43.3	53.6	63.9	74.2	84.6	94.9	Tip 100.0
Fan Rotor Inlet														
Diameter-m	0.4856	0.5290	0.6023	0.6648	0.7209	0.7726	0.8209	0.8980	0.9691	1.0357	1.0991	1.1604	1.2202	1.2497
V-m/s	200.77	207.62	216.25	219.73	220.36	219.59	218.50	218.27	216.83	213.70	208.79	202.26	195.56	193.31
V_m-m/s	195.10	203.32	214.13	218.96	220.13	219.51	218.49	218.23	216.60	213.14	207.78	200.68	193.32	190.71
V_θ-m/s	−54.90	−46.86	−32.330	−19.20	−10.34	−6.16	−2.22	4.12	9.96	15.37	20.39	25.02	29.22	31.17
β-deg	−13.65	−11.69	−8.04	−4.84	−2.62	−1.58	−0.57	1.07	2.63	4.13	5.63	7.16	8.69	9.39
β′-deg	50.52	50.7	51.62	51.75	52.92	54.47	55.88	57.78	59.52	61.26	63.03	64.85	66.59	67.3
V′-m/s	306.85	321.01	340.85	353.64	365.07	377.73	389.46	409.25	427.07	443.21	458.07	472.38	486.51	494.20
V'_θ-m/s	−236.82	−248.41	−265.19	−277.70	−291.24	−307.40	−322.41	−346.22	−368.07	−368.07	−408.24	−427.42	−446.46	−455.92
U-m/s	189.44	206.36	234.94	259.26	281.21	301.37	320.22	350.30	378.01	403.99	428.73	452.64	475.99	487.48
M	0.611	0.634	0.663	0.674	0.676	0.674	0.670	0.669	0.665	0.654	0.638	0.616	0.594	0.587
M′	0.934	0.980	1.044	1.085	1.121	1.159	1.194	1.255	1.309	1.357	1.399	1.439	1.479	1.501
Fan Rotor Exit														
Diameter-m	0.5512	0.5798	0.6325	0.6820	0.7299	0.7761	0.8205	0.8919	0.9576	1.0190	1.0776	1.1355	1.1958	1.2294
V-m/s	308.94	290.93	267.92	253.47	242.55	233.63	228.17	227.48	227.99	228.72	227.29	223.22	215.93	206.07
V_m-m/s	212.95	210.19	199.30	186.62	176.19	169.24	164.57	165.82	166.22	165.93	162.96	153.87	136.63	117.21
V_θ-m/s	223.81	201.15	179.06	171.53	166.70	161.06	158.04	155.73	156.05	157.32	158.44	161.71	167.21	169.48
β-deg	46.42	43.74	41.94	42.59	43.41	43.58	43.84	43.2	43.19	43.46	44.19	46.42	50.75	55.33
β′-deg	−2.37	6.79	18.75	26.86	34.83	40.93	45.56	50.21	52.61	55.34	58.11	61.31	66.46	70.29
V′-m/s	213.13	211.68	210.47	209.19	212.08	220.71	230.96	253.83	273.72	291.96	308.46	320.56	328.98	331.54
V'_θ-m/s	8.809	−25.03	−67.67	−94.52	−118.04	−141.67	−162.04	−192.18	−217.47	−240.17	−261.91	−281.21	−299.27	−310.06
U-m/s	215.01	226.18	246.73	266.04	284.74	302.73	320.08	347.91	373.52	397.49	420.34	442.92	466.48	479.55
M	0.894	0.838	0.767	0.722	0.688	0.661	0.643	0.640	0.639	0.640	0.634	0.619	0.594	0.564
M′	0.616	0.610	0.603	0.596	0.602	0.624	0.651	0.714	0.767	0.817	0.860	0.889	0.905	0.907
P_{02}/P_{01}	1.74911	1.71432	1.68333	1.67634	1.67727	1.68120	1.68747	1.69781	1.71138	1.72498	1.72879	1.72128	1.70350	1.67441
$\bar{\omega}$	0.16902	0.13641	0.10156	0.09234	0.07947	0.07705	0.07998	0.08883	0.09912	0.10885	0.12169	0.15303	0.20458	0.24373
D	0.51425	0.52908	0.53810	0.55871	0.56932	0.55971	0.54677	0.51237	0.48529	0.46122	0.44106	0.43228	0.43412	0.43886
EFF-AD	0.85062	0.86781	0.89135	0.90269	0.90689	0.91282	0.90101	0.88738	0.87253	0.85756	0.83628	0.79052	0.72077	0.67053
Fan Geometry														
c-m	0.1059	0.1059	0.1063	0.1072	0.1084	0.1099	0.1115	0.1152	0.1201	0.1255	0.1309	0.1362	0.1412	0.1441
c_p-m	0.0302	0.0317	0.0360	0.0403	0.0446	0.0493	0.0536	0.0607	0.0675	0.0734	0.0794	0.0853	0.0655	0.0937
t/c	0.08700	0.08498	0.07897	0.07278	0.06668	0.06032	0.05150	0.04925	0.04617	0.04076	0.03390	0.02858	0.02345	0.02020
%c at Max. t	50.01096	50.28827	50.75844	51.16664	51.53568	51.87581	52.19383	52.69847	53.16339	53.59895	54.01305	54.41302	54.80473	54.99797
a/c	0.51112	0.50685	0.50331	0.51570	0.53378	0.56034	0.58715	0.57416	0.45510	0.46905	0.68506	0.73318	0.76017	0.76001
RLE-m	0.0006	0.00057	0.00048	0.00041	0.00038	0.00038	0.00038	0.00038	0.00038	0.00038	0.00038	0.00038	0.00038	0.00038
RTE-m	0.00055	0.00050	0.00044	0.00039	0.00036	0.00034	0.00032	0.00029	0.00028	0.00027	0.00027	0.00027	0.00027	0.00027
$\beta'_{l_{ss}}$-deg	52.51071	52.65497	53.1972	53.7534	54.2302	54.89381	55.5600	56.8517	58.0935	59.3683	60.6166	62.0151	63.5939	66.2214
$\beta'_{l_{ps}}$-deg	44.82831	45.11729	45.98997	46.9468	47.9394	49.2013	50.380	52.21875	53.81355	55.66385	56.9807	58.5686	61.67044	64.6330
ϕ-deg	59.2053	51.9108	38.4790	30.2723	23.0441	17.4477	13.1527	8.8723	6.2939	4.8513	3.1961	2.9898	2.7416	4.7110
ϕ_e-deg	57.15515	50.09895	37.11734	29.38626	22.53027	17.23366	13.15274	9.28687	7.10419	6.10397	4.94468	5.17477	5.03368	6.72578
ϕ_f-deg	13.5795	13.9032	12.4790	9.6913	6.8530	4.3062	2.4316	2.9470	4.5581	3.4584	−1.10864	−3.7696	−5.8036	−6.3143
ϕ_{ef}-deg	12.28294	12.8903	11.89912	9.27393	6.60997	4.20156	2.43164	3.17212	5.02148	4.19873	−0.0443	−2.3997	−4.32788	−5.000
ϵ	17.46538	13.97819	8.73466	5.16499	2.81042	1.12215	0.0	−2.14693	−4.23977	−6.4494	−8.71519	−10.60235	−10.97494	−9.46254
σ	2.2160	2.0713	1.8657	1.7233	1.6177	1.5361	1.4703	1.3924	1.3482	1.3209	1.3009	1.2839	1.2641	1.2576

TABLE VIB

JT8D-100 ROTOR 1 (FAN)
AERODYNAMIC AND GEOMETRIC SUMMARY ON CONICAL SURFACES
34 MULTIPLE-CIRCULAR-ARC AIRFOILS

Percent Total Flow	Hub 0.0	3.00	9.00	15.00	21.0	27.0	Splitting Streamline 33.0	43.3	53.6	63.9	74.2	84.6	94.9	Tip 100.00
Fan Rotor Inlet														
Diameter – in	19.120	20.827	23.712	26.174	28.382	30.417	32.319	35.355	38.152	40.774	43.271	45.684	48.041	49.200
V – ft/sec	658.68	681.17	709.49	720.89	722.96	720.45	716.87	716.10	711.37	701.11	685.00	663.58	641.60	634.21
V_m – ft/sec	640.08	667.05	702.51	718.36	722.21	720.18	716.83	715.97	710.63	699.29	681.70	658.41	634.24	625.70
V_θ – ft/sec	−180.11	−153.73	−106.07	−62.98	−33.93	−20.21	−7.27	13.52	32.69	50.44	66.90	82.08	95.88	102.28
β – deg	−13.65	−11.69	−8.04	−4.84	−2.62	−1.58	−0.57	1.07	2.63	4.13	5.63	7.16	8.69	9.39
β' – deg	50.52	50.7	51.62	51.75	52.92	54.47	55.88	57.78	59.52	61.26	63.03	64.85	66.59	67.3
V' - ft/sec	1006.66	1053.17	1118.26	1160.24	1197.75	1239.27	1277.77	1342.70	1401.16	1454.10	1502.87	1549.18	1596.17	1621.40
V'_θ - ft/sec	−776.96	−814.99	−870.04	−911.10	−955.52	−1008.53	−1057.76	−1135.88	−1207.59	−1274.91	−1339.36	−1402.30	−1464.75	−1495.81
U – ft/sec	621.53	677.03	770.79	850.58	922.61	988.75	1050.60	1149.29	1240.20	1325.43	1406.60	1485.03	1561.65	1599.33
M	0.611	0.634	0.663	0.674	0.676	0.674	0.670	0.669	0.665	0.654	0.638	0.616	0.594	0.587
M'	0.934	0.980	1.044	1.085	1.121	1.159	1.194	1.255	1.309	1.357	1.399	1.439	1.479	1.501
Fan Rotor Exit														
Diameter – in	21.700	22.828	24.902	26.851	28.738	30.554	32.305	35.114	37.699	40.117	42.424	44.703	47.080	48.400
V – ft/sec	1013.57	954.50	879.01	831.61	795.77	766.49	748.59	746.33	748.00	750.39	745.69	732.34	708.43	676.07
V_m – ft/sec	698.66	689.61	653.87	612.28	578.06	555.24	539.94	544.03	545.35	544.39	534.65	504.83	448.25	384.56
V_θ – ft/sec	734.29	659.93	587.47	562.75	546.90	528.41	518.50	510.92	511.96	516.14	519.80	530.53	548.58	556.05
β – deg	46.42	43.74	41.94	42.59	43.41	43.58	43.84	43.2	43.19	43.46	44.19	46.42	50.75	55.33
β' – deg	−2.37	6.79	18.75	26.86	34.83	40.93	45.56	50.21	52.61	55.34	58.11	61.31	66.46	70.29
V' – ft/sec	699.26	694.48	690.53	686.33	695.79	724.11	757.73	832.78	898.04	957.89	1012.02	1051.70	1079.33	1087.73
V'_θ – ft/sec	28.90	−82.12	−222.00	−310.09	−387.27	−464.80	−531.62	−630.52	−713.50	−787.95	−859.27	−922.61	−981.85	−1017.27
U – ft/sec	705.40	742.05	809.48	872.84	934.17	993.22	1050.13	1141.44	1225.46	1304.09	1379.07	1453.14	1530.43	1573.32
M	0.894	0.838	0.767	0.722	0.688	0.661	0.643	0.640	0.639	0.640	0.634	0.619	0.594	0.564
M'	0.616	0.610	0.603	0.596	0.602	0.624	0.651	0.714	0.767	0.817	0.860	0.889	0.905	0.907
P_{02}/P_{01}	1.74911	1.71432	1.68333	1.67634	1.67727	1.68120	1.68747	1.69781	1.71138	1.72498	1.72879	1.72128	1.70350	1.67441
$\overline{\omega}$	0.16902	0.13641	0.10156	0.09234	0.07947	0.07705	0.07998	0.08883	0.09912	0.10885	0.12169	0.15303	0.20458	0.24373
D	0.51425	0.52908	0.53810	0.55871	0.56932	0.55971	0.54677	0.51237	0.48529	0.46122	0.44106	0.43228	0.43412	0.43886
EFF-AD	0.85062	0.86781	0.89135	0.90269	0.90689	0.91282	0.90101	0.88738	0.87253	0.85756	0.83628	0.79052	0.72077	0.67053
Fan Geometry														
c – in	4.17	4.17094	4.18706	4.21968	4.26799	4.32653	4.39080	4.53428	4.72643	4.93905	5.15312	5.36387	5.55835	5.67500
c_f – in	1.19	1.24861	1.41928	1.58654	1.75539	1.93956	2.11112	2.39026	2.65737	2.89160	3.12601	3.35877	3.57698	3.69000
t/c	0.08700	0.08498	0.07897	0.07278	0.06668	0.06032	0.05150	0.04925	0.04617	0.04076	0.03390	0.02858	0.02345	0.02020
% c at Max. t	50.01096	50.28827	50.75844	51.16664	51.53568	51.87581	52.19383	52.69847	53.16339	53.59895	54.01305	54.41302	54.80473	54.99797
a/c	0.51112	0.50685	0.50331	0.51570	0.53378	0.56034	0.58715	0.57416	0.45510	0.46905	0.68506	0.73318	0.76017	0.76001
RLE – in	0.02450	0.02235	0.01872	0.01600	0.01507	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500	0.01500
RTE – in	0.02150	0.01953	0.01723	0.01524	0.01412	0.01326	0.01250	0.01158	0.01106	0.01058	0.01050	0.01050	0.01050	0.01050
$\beta'_{1\,ss}{}^*$ -deg	52.51071	52.65497	53.1972	53.7534	54.2302	54.8938	55.5600	56.8517	58.0935	59.3683	60.6166	62.0151	63.5939	66.2214
$\beta'_1{}^*$ – deg	44.82831	45.11729	45.98997	46.9468	47.9394	49.2013	50.380	52.21875	53.81355	55.66385	56.9807	58.5686	61.67044	64.6330
ϕ – deg	59.2059	51.9108	38.4790	30.2723	23.0441	17.4977	13.1527	8.8723	6.2939	4.8513	3.1961	2.9898	2.7416	4.7110
ϕ_e – deg	57.15515	50.09895	37.11734	29.38626	22.53027	17.23366	13.15274	9.28687	7.10419	6.10397	4.94468	5.17477	5.03368	6.72578
ϕ_f – deg	13.5796	13.9032	12.4790	9.6913	6.8530	4.3062	2.4316	2.9470	4.5581	3.4584	−1.10864	−3.7696	−5.8036	−6.3143
ϕ_{ef} – deg	12.28294	12.8903	11.89912	9.27393	6.60997	4.20156	2.43164	3.17212	5.02148	4.19873	−0.0443	−2.3997	−4.32788	−5.000
ϵ	17.46538	13.97819	8.73466	5.16499	2.81042	1.12215	0.0	−2.14693	−4.23977	−6.4494	−8.71519	−10.60235	−10.97494	−9.46254
σ	2.2160	2.0713	1.8657	1.7233	1.6177	1.5361	1.4703	1.3924	1.3482	1.3209	1.3009	1.2837	1.2641	1.2576

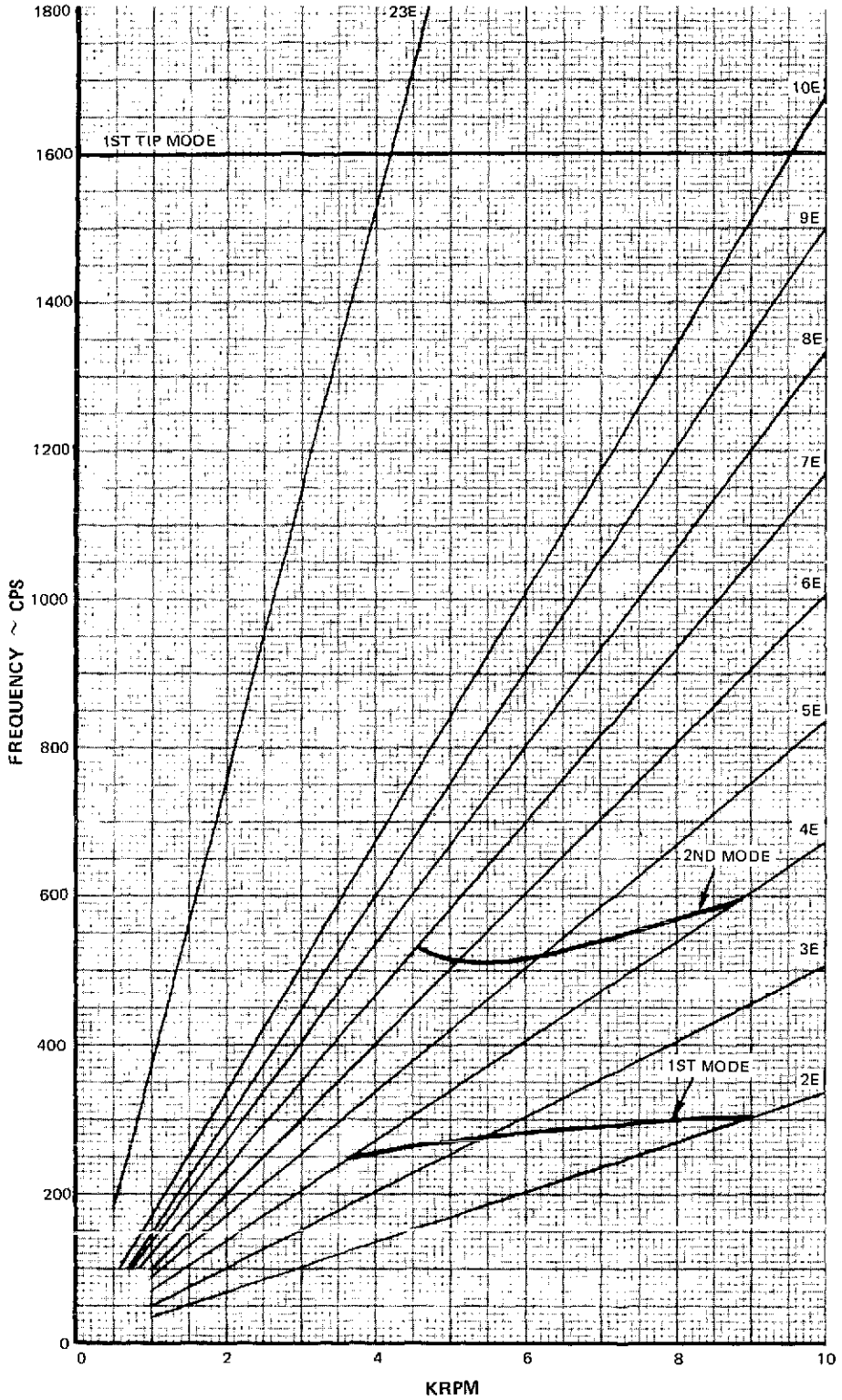


Figure 21 JT8D-100 Fan Cambell Diagram

Hardcoat is provided on the shroud contacting surfaces to minimize wear, and anti-gallant is applied over the hardcoat to facilitate assembly. An angle of 60° between the contacting surfaces and a tangential line was chosen to provide damping while still avoiding lock-up of the shrouds. When blades are assembled, the shrouds, which are formed by flat planes, will approximate a cone parallel to the air streamlines. The airfoil is mounted on a platform that forms the entire root flowpath at the fan disk location. The platform is made up of flat planes that intersect at the ridge line forming an approximation of the desired conical form. The blade is attached to the disk with a conventional dovetail, broached 16° off an axial plane to lie as nearly as possible beneath the airfoil root. The front of the attachment has a protruding tang that acts as a stop when the blade is assembled in the disk and prevents blade rearward movement. The blade lock is made of AMS 4928; it holds the blades in place during engine operation and provides flanges for attaching balance weights. Trim balance weights can be attached through a cut-out at the bottom of the inlet case fairing. The fan disk, PWA 1215 titanium alloy, has elliptical dovetail slots.

The stage 1.5 rotor (AMS 4928 titanium) is fastened to a flange on the front hub located just aft of the first disk rear pilot. An integral cone, extending forward from the bore of the stage 1.5 disk, is attached to the hub with short tiebolts. The stage 1.5 blade is a circular arc airfoil. The second-stage rotor (AMS 4928 titanium) is a conventional pancake type disk sandwiched directly into the basic rotor structure similar to the third-stage of the current JT8D. The stage 2 blade is a modified series 65 airfoil. The series 65 thickness distribution has been modified by incorporating a larger leading edge and trailing edge radius on a circular arc mean line. The two supercharging stages were used with the existing four-stage LPC to achieve the required performance. Pertinent information on the stage 1.5 and stage 2 airfoils is summarized in Table VII. Figures 22 and 23 are Cambell diagrams for the JT8D-100 stage 1.5 and stage 2 rotors, respectively. The primary aerodynamic considerations were to ensure sufficient choke margin to efficiently pass the required flow at the maximum cruise condition and to keep loading and incidence low enough so that the supercharging stages would not initiate surge before the existing four-stage LPC, thereby maintaining current LPC surge margin. Table VIII is a summary of critical supercharging-stage geometry and aerodynamics. Figure 24 shows minimum A/A* vs. % span at design and maximum cruise (the critical LPC choke point). Figure 25 shows D factor vs. incidence and % span at low speed surge (the most critical incidence and loading point) and includes a comparison with an advanced four-stage compressor.

These latter two figures demonstrate that the supercharging stages are designed up to both surge and choking limits. Figure 26 is a predicted supercharging map and shows the points used in the surge-choke analysis.

Both stage 1.5 and stage 2 blades have dovetail roots which fit into mating disk slots. Rearward blade movement is prevented by a tang on the front of the blade root. Forward blade movement from gas loading is restricted by a ring which is held in place by the rotor tiebolts (for stage 2) and by a separate bolt-circle (stage 1.5). The stage 1.5 blade platform configuration is similar to the fan blade in that adjacent platform edges form the complete inner flowpath whereas the stage 2 blade platform is sunk into the disk rim, similar to current JT8D low-pressure compressor stages. Stage 1.5 has been designed so that blades are accessible from the front of the engine. The bolted-on ring, which retains the blades, is independent of the disk mounting bolts and the blades, which are moment-weight classified, can be replaced without subsequent rotor rebalancing. The first interstage rotating knife edge seal is an integral extension of the stage 1.5 blade locking ring. The stage 1.5 seal is integral with the second-stage blade lock, as is the second seal with the third lock.

TABLE VII-A

JT8D-100 ROTOR 1.5
AERODYNAMIC AND GEOMETRIC SUMMARY
42 DOUBLE CIRCULAR ARC AIRFOILS

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-m	0.5578	0.5819	0.6276	0.6703	0.7109	0.7503	0.7899
V-m/s	220.19	212.03	211.33	207.97	203.23	196.32	185.11
V_m-m/s	215.18	208.58	206.93	201.23	195.24	187.77	172.43
V_θ-m/s	46.72	38.057	42.898	52.517	56.409	57.318	67.352
β-deg	12.25	10.34	11.71	14.63	16.12	16.98	21.34
β'-deg	38.45	42.17	44.30	46.07	48.53	51.43	54.39
V'-m/s	274.76	281.45	289.112	290.078	294.85	301.15	296.16
V'_θ-m/s	−170.86	−188.96	−201.91	−208.93	−220.95	−235.45	−240.79
U-m/s	217.58	227.02	244.81	261.45	277.36	292.77	308.14
M	0.613	0.592	0.592	0.583	0.569	0.548	0.514
M'	0.765	0.805	0.810	0.813	0.825	0.841	0.823
				Exit			
Diameter-m	0.5344	0.5616	0.5855	0.6513	0.6924	0.7318	0.7722
V-m/s	216.58	226.80	227.94	224.21	221.40	216.32	196.20
V_m-m/s	140.66	128.13	125.36	127.74	128.46	127.21	128.25
V_θ-m/s	164.68	187.14	190.37	184.26	180.43	174.96	148.49
β-deg	40.50	34.40	33.37	34.73	35.47	36.02	40.84
β'-deg	22.92	25.92	30.43	34.42	38.57	39.96	49.35
V'-m/s	178.09	208.06	220.78	223.38	229.27	235.90	227.95
V'_θ-m/s	−67.803	−90.937	−111.82	−126.28	−141.61	−158.22	−172.96
U-m/s	208.46	219.07	237.19	254.02	270.17	285.44	301.21
M	0.586	0.618	0.624	0.614	0.606	0.590	0.533
M'	0.481	0.597	0.604	0.612	0.493	0.643	0.619
P_{02}/P_{01}	1.1409	1.1929	1.200	1.1967	1.1997	1.2016	1.1778
$\bar{\omega}$	0.1686	0.0479	0.0281	0.0226	0.0247	0.0316	0.0419
D	0.4500	0.3555	0.3264	0.3164	0.3081	0.3021	0.3092
EFF-AD	0.7423	0.8166	0.8795	0.9008	0.9006	0.8836	0.8439
				Geometry			
Diameter-m	0.5461	0.5697	0.6048	0.6637	0.6988	0.7457	0.7811
c-m	0.06477	0.06561	0.06682	0.06894	0.07018	0.07186	0.07310
t/c	0.070	0.0680	0.0650	0.0601	0.0581	0.0531	0.050
RLE-m	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
RTE-m	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
β_1^*-deg	49.02	42.99	40.68	42.737	44.38	49.14	53.70
ϕ-deg	33.23	20.82	13.12	8.91	7.76	7.88	11.54
σ	1.586	1.540	1.477	1.389	1.342	1.288	1.251

TABLE VII-B

JT8D-100 ROTOR 1.5
AERODYNAMIC AND GEOMETRIC SUMMARY
42 DOUBLE CIRCULAR ARC AIRFOILS

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter - in	21.96	22.91	24.71	26.39	27.99	29.54	31.10
V - ft/sec	722.41	695.63	693.33	682.32	666.75	644.10	607.33
V_m - ft/sec	705.96	684.33	678.89	660.21	640.55	616.04	565.71
V_θ - ft/sec	153.28	124.86	140.74	172.30	185.07	188.05	220.97
β- deg.	12.25	10.34	11.71	14.63	16.12	16.98	21.34
β' - deg.	38.45	42.17	44.30	46.07	48.53	51.43	54.39
V' - ft/sec	901.45	923.38	948.53	951.70	967.35	988.04	971.66
V'_θ - ft/sec	−560.57	−619.94	−662.43	−685.45	−724.89	−772.48	−790.00
U - ft/sec	713.85	744.80	803.18	857.76	909.96	960.53	1010.96
M	0.613	0.592	0.592	0.583	0.569	0.548	0.514
M'	0.765	0.805	0.810	0.813	0.825	0.841	0.823
				Exit			
Diameter - in	21.04	22.11	23.05	25.64	27.26	28.81	30.40
V - ft/sec	710.55	744.09	747.83	735.59	726.37	709.72	643.71
V_m - ft/sec	461.49	420.38	411.29	419.10	421.47	417.36	420.76
V_θ - ft/sec	540.28	613.97	624.58	604.52	591.59	574.03	487.16
β - deg	40.50	34.40	33.37	34.73	35.47	36.02	40.84
β' - deg	22.92	25.92	30.43	34.42	38.57	39.96	49.35
V' - ft/sec	584.28	682.62	724.36	732.86	752.21	773.94	747.88
V'_θ - ft/sec	-222.45	-298.35	-366.87	-414.30	-464.59	-519.11	-567.45
U - ft/sec	683.94	718.72	778.17	833.40	886.40	936.47	988.21
M	0.586	0.618	0.624	0.614	0.606	0.590	0.533
M'	0.481	0.597	0.604	0.612	0.493	0.643	0.619
P_{02}/P_{01}	1.1409	1.1929	1.200	1.1969	1.1997	1.2016	1.1778
$\overline{\omega}$	0.1686	0.0479	0.0281	0.0226	0.0247	0.0316	0.0419
D	0.4500	0.3555	0.3264	0.3164	0.3081	0.3021	0.3092
EFF-AD	0.7423	0.8166	0.8795	0.9008	0.9006	0.8836	0.8439
				Geometry			
Diameter - in	21.500	22.43	23.81	26.13	27.51	29.36	30.750
c - in	2.550	2.583	2.631	2.714	2.763	2.829	2.878
t/c	0.070	0.0680	0.0650	0.0601	0.0581	0.0531	0.050
RLE - in	0.009	0.009	0.009	0.009	0.009	0.009	0.009
RTE - in	0.009	0.009	0.009	0.009	0.009	0.009	0.009
β'^*_1 - deg.	49.02	42.99	40.68	42.737	44.38	49.14	53.70
ϕ - deg.	33.23	20.82	13.12	8.91	7.76	7.88	11.54
σ	1.586	1.540	1.477	1.389	1.342	1.288	1.251

TABLE VII-C

JT8D-100 ROTOR 2
AERODYNAMIC AND GEOMETRIC SUMMARY
52 AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-m	0.5024	0.5319	0.5804	0.6238	0.6640	0.7026	0.7417
V-m/s	147.43	173.60	188.67	171.91	193.82	191.82	172.82
V_m-m/s	144.59	171.47	185.22	186.52	186.34	182.24	159.10
V_θ-m/s	28.801	26.926	35.869	45.205	53.325	59.854	67.467
β-deg	11.27	8.92	10.96	13.62	15.92	18.18	22.98
β'-deg	49.14	46.48	45.80	46.72	47.83	49.61	54.35
V'-m/s	221.03	249.03	265.70	272.08	277.56	281.23	273.00
V'_θ-m/s	−167.18	−180.57	−190.50	−198.08	−205.72	−214.19	−221.85
U-m/s	195.98	207.50	226.37	243.29	259.04	274.04	289.32
M	0.391	0.466	0.510	0.521	0.526	0.519	0.466
M'	0.587	0.668	0.719	0.738	0.753	0.762	0.736
				Exit			
Diameter-m	0.4928	0.5210	0.5669	0.6091	0.6490	0.6873	0.7264
V-m/s	196.11	215.10	218.69	216.92	216.63	215.98	203.41
V_m-m/s	132.95	125.21	118.29	118.88	122.82	129.25	138.178
V_θ-m/s	144.17	174.90	183.94	181.44	178.45	173.03	149.27
β-deg	42.69	35.62	32.75	33.23	34.54	36.76	72.79
β'-deg	22.35	24.03	29.21	33.20	36.14	38.75	44.21
V'-m/s	155.87	191.50	210.74	216.83	220.96	221.86	208.24
V'_θ-m/s	−59.27	−77.99	−102.85	−118.72	−130.31	−138.85	−145.19
U-m/s	192.22	203.20	221.14	237.60	253.14	268.11	283.37
M	0.513	0.567	0.582	0.578	0.577	0.574	0.538
M'	0.407	0.505	0.560	0.578	0.589	0.590	0.551
P_{02}/P_{01}	1.186	1.192	1.180	1.174	1.172	1.178	1.194
$\overline{\omega}$	0.0710	0.042	0.0194	0.0148	0.0200	0.0303	0.0302
D	0.4340	0.3515	0.3071	0.2950	0.2928	0.3026	0.3374
EFF-AD	0.7553	0.8255	0.8868	0.9071	0.9043	0.8851	0.8545
				Geometry			
Diameter-m	0.4976	0.5212	0.5682	0.6160	0.6513	0.6985	0.7341
c-m	0.05006	0.05060	0.05116	0.05237	0.05339	0.05443	0.05519
t/c	0.080	0.0760	0.0680	0.0620	0.0540	0.0441	0.040
RLE-m	0.00022	0.00022	0.00022	0.00022	0.00022	0.00022	0.00022
RTE-m	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
β_1^*-deg	47.91	45.07	44.27	44.66	46.24	51.34	54.02
ϕ-deg	37.51	27.29	17.91	14.50	12.31	14.20	18.98
σ	1.666	1.606	1.502	1.435	1.357	1.289	1.244

TABLE VII-D

JT8D-100 ROTOR 2
AERODYNAMIC AND GEOMETRIC SUMMARY
52 AIRFOILS WITH NASA 65 SERIES THICKNESS
DISTRIBUTION ON A CIRCULAR ARC MEAN LINE

	Hub						Tip
Percent Engine Flow	0.0	9.09	27.3	45.5	63.6	81.8	100.0
				Inlet			
Diameter-in	19.78	20.94	22.85	24.56	26.14	27.66	29.20
V - ft/sec	483.69	569.56	618.98	629.64	635.88	629.33	566.99
V_m - ft/sec	474.37	562.56	607.69	611.93	611.34	597.91	521.99
V_θ-ft/sec	94.49	88.34	117.68	148.31	174.95	196.37	221.35
β - deg.	11.27	8.92	10.96	13.62	15.92	18.18	22.98
β'-deg.	49.14	46.48	45.80	46.72	47.83	49.61	59.35
V' -ft/sec	725.17	817.04	871.73	892.64	910.64	922.66	895.68
V'_θ -ft/sec	-548.49	-592.42	-625.00	-649.88	-674.92	-702.71	-727.84
U -ft/sec	642.98	680.76	742.68	798.19	849.87	899.08	949.20
M	0.391	0.466	0.510	0.521	0.526	0.519	0.466
M'	0.587	0.668	0.719	0.738	0.753	0.762	0.736
				Exit			
Diameter-in	19.40	20.51	22.32	23.98	25.55	27.06	28.60
V -ft/sec	643.40	705.71	717.50	711.67	710.73	708.60	667.34
V_m -ft/sec	436.18	410.80	388.10	390.03	402.96	424.06	453.34
V_θ - ft/sec	472.99	573.82	603.47	595.28	585.46	567.70	489.73
β - deg.	42.69	35.62	32.75	33.23	34.54	36.76	72.79
β - deg.	22.35	24.03	29.21	33.20	36.14	38.75	44.21
V' -ft/sec	511.40	628.28	691.41	711.38	724.95	727.88	683.19
V'_θ -ft/sec	-194.45	-255.87	-337.44	-389.49	-427.54	-455.55	-476.36
U	630.63	666.67	725.54	779.52	830.50	879.61	929.69
M	0.513	0.567	0.582	0.578	0.577	0.574	0.538
M'	0.407	0.505	0.560	0.578	0.589	0.590	0.551
P_{02}/P_{01}	1.186	1.192	1.180	1.174	1.172	1.178	1.194
$\overline{\omega}$	0.0710	0.0420	0.0194	0.0148	0.0200	0.0303	0.0302
D	0.4340	0.3515	0.3071	0.2950	0.2928	0.3026	0.3374
EFF-AD	0.7553	0.8255	0.8868	0.9071	0.9043	0.8851	0.8545
				Geometry			
Diameter-in	19.590	20.52	22.38	24.25	25.64	27.50	28.900
c - in	1.971	1.992	2.014	2.062	2.102	2.143	2.173
t/c	0.080	0.0760	0.0680	0.0620	0.0540	0.0441	0.040
RLE - in	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086	0.0086
RTE - in	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100
B'^*_1 - deg.	47.91	45.07	44.27	44.66	46.24	51.34	54.02
ϕ - deg.	37.51	27.29	17.91	14.50	12.31	14.20	18.98
σ	1.666	1.606	1.502	1.435	1.357	1.289	1.244

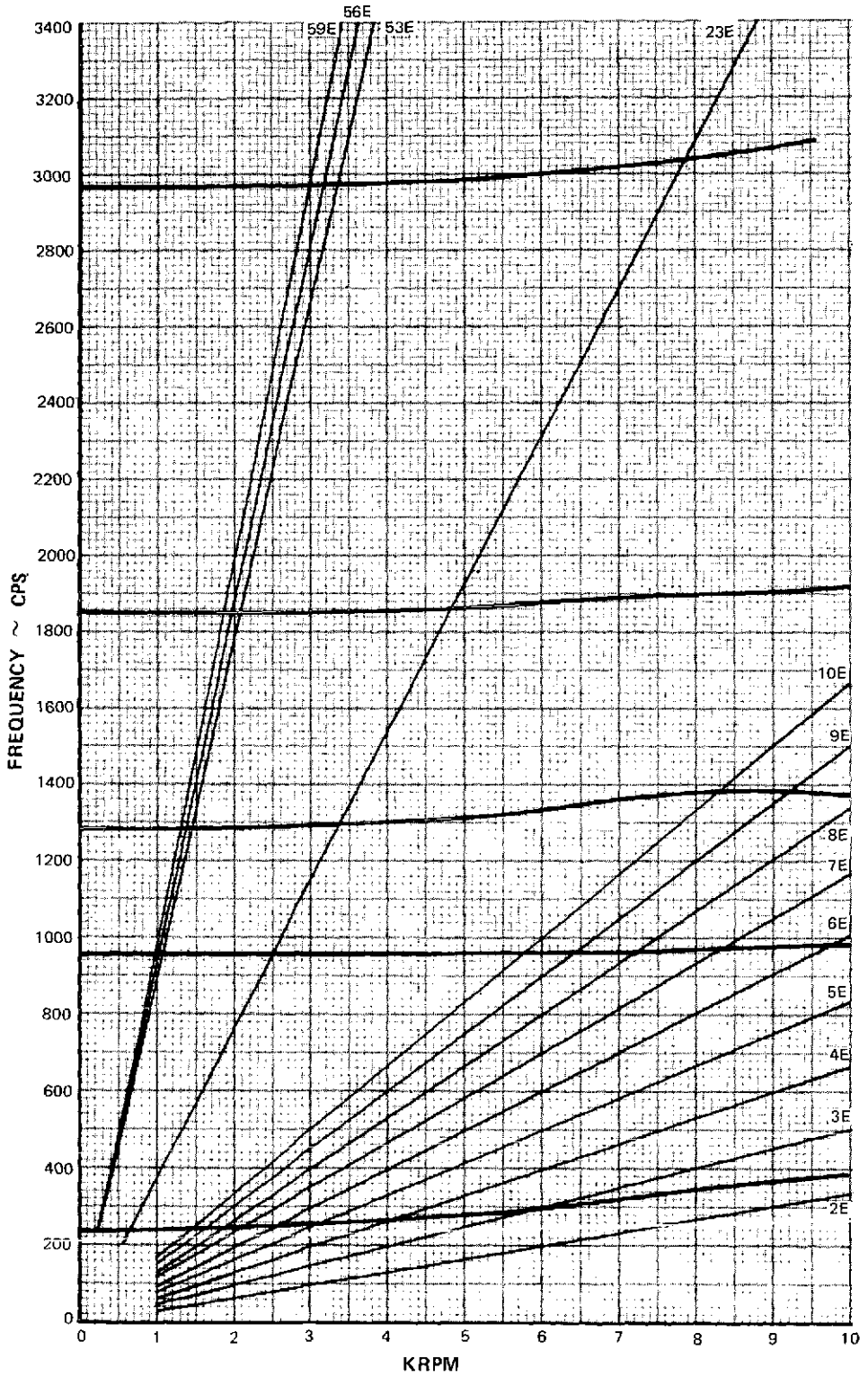


Figure 22 JT8D-100 Rotor 1.5 Cambell Diagram

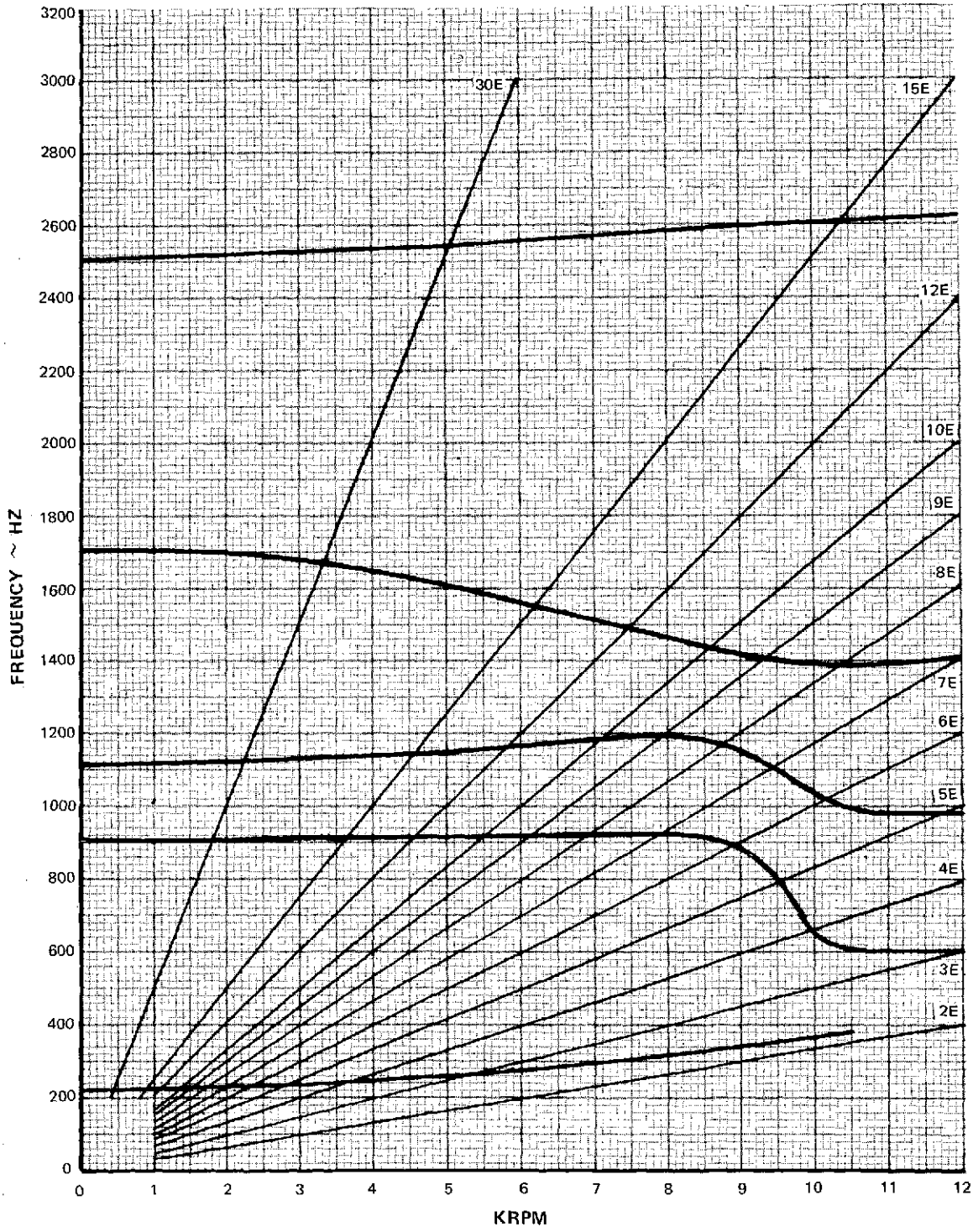


Figure 23 JT8D-100 Rotor 2 Cambell Diagram

TABLE VIII

JT8D-100 LOW PRESSURE COMPRESSOR SUPERCHARGING STAGES
GEOMETRY AND AERODYNAMICS

GEOMETRY AT MIDSPAN

Airfoil	S1	R 1.5	S 1.5	R 2	S2
Series	CA	CA	65/CA	65/CA	65/CA
Gap/Chord	0.632	0.72	0.679	0.707	0.647
Span/Chord	1.94	1.71	2.16	2.25	2.33
Max T/Chord	0.05	0.06	0.07	0.06	0.07

SPAN–AVERAGE AERODYNAMICS AT DESIGN POINT

Inlet Mach No.	0.778	0.814	0.607	0.721	0.567
"D" Factor	0.408	0.328	0.301	0.320	0.278
ΔP/q	0.429	0.361	0.298	0.344	0.251

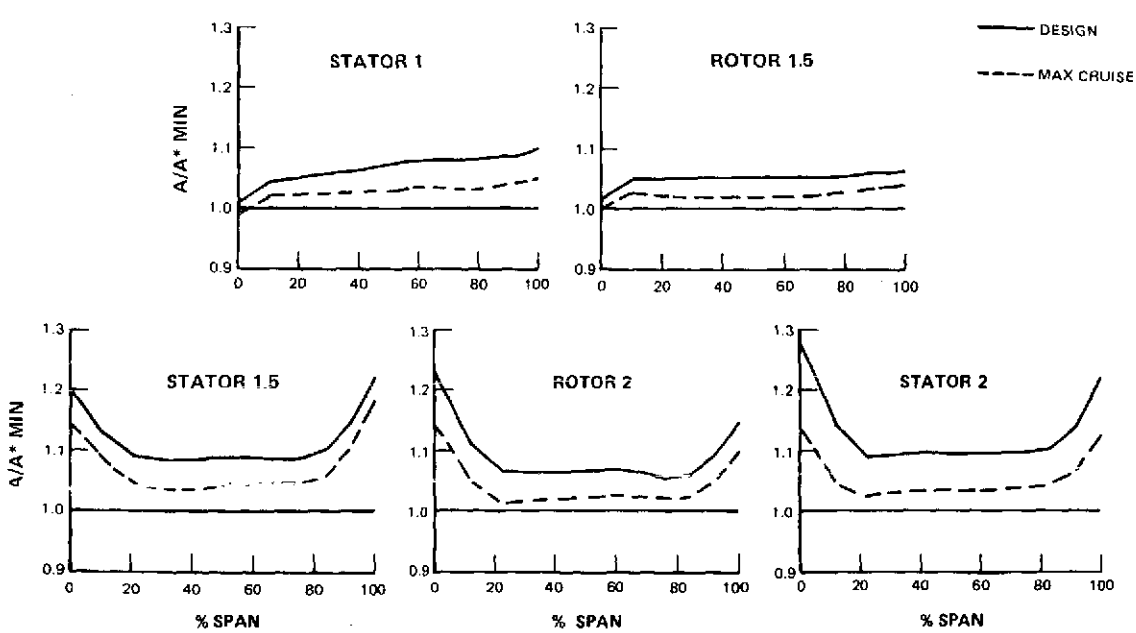


Figure 24 JT8D-100 Low Pressure Compressor Supercharging Stages - Choke Margin at Design Point and Max. Cruise

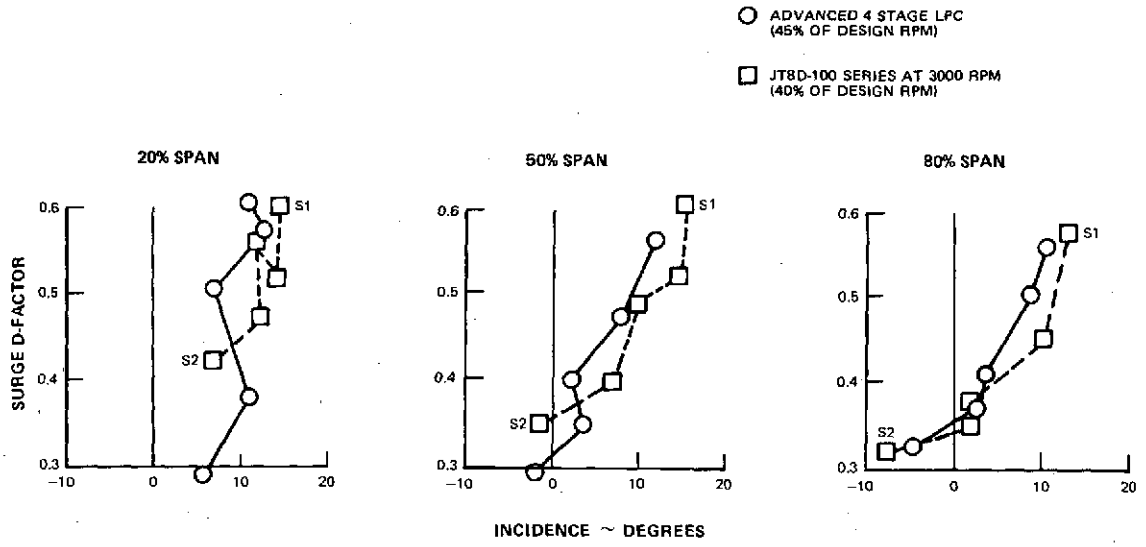


Figure 25 JT8D-100 Low Pressure Compressor Supercharging Stages "D" Factor at Low Speed

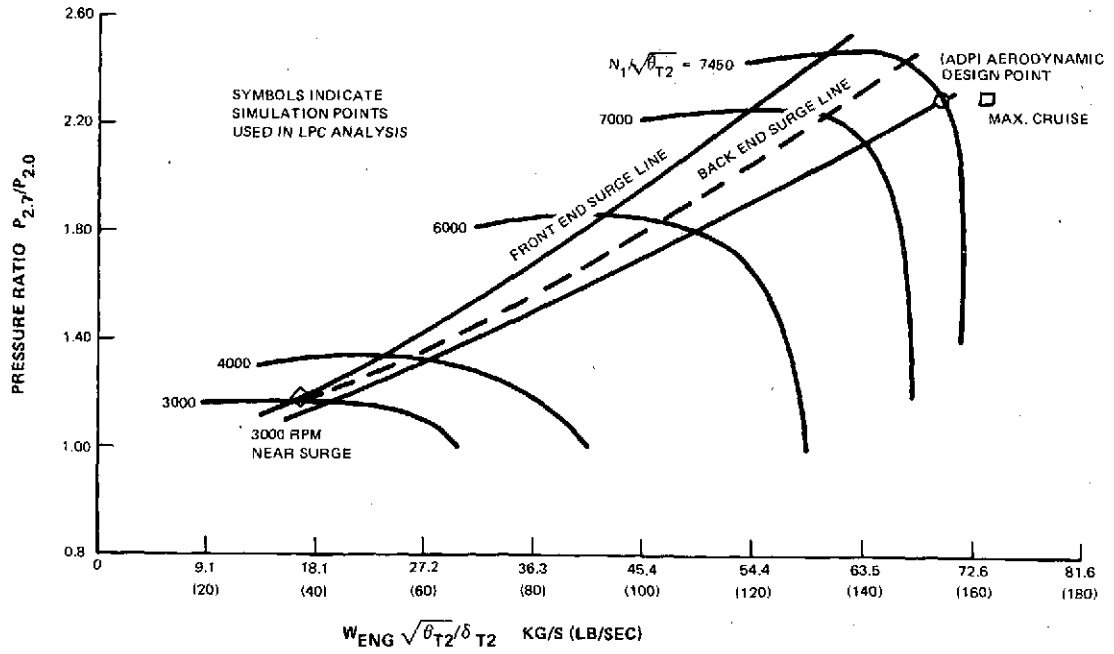


Figure 26 Predicted Map for JT8D-100 Low Pressure Compressor Supercharging Stages

As mentioned above, the third-stage rotor is sandwiched into the basic rotor structure. The fifth and sixth rotors are overhung aft of the fourth-stage hub. They are supported by cylindrical spacers. Twelve long tiebolts serve to simultaneously hold together the parts forming the basic rotor structure and the rear overhung stages. The third stage disk may be made by reoperating either of the present steel or titanium parts, but only the current steel fourth-stage hub-disk can be used. When a steel third-stage disk is utilized, a thicker flanged version of the blade lock-seal ring must be mated with it, rather than the currently used part. The fourth-to-fifth disk spacer, the AMS 5617 tiebolts, and all parts forward of the third-stage blade locking ring are peculiar to the JT8D-100 engines. Due to the wider spacing of stages required for acoustic treatment and the increased tiebolt loading requirements, a new second-to-third-stage spacer and a new fourth-to-fifth-stage spacer have been provided. A conventional AMS 4928 titanium spacer with sleeves at each tierod location was designed for these locations. The spacer is positioned radially at each end by snap diameters on the adjacent disks. Because of the assembly of sleeves into the spacer, an unbalance of the assembly is corrected by adding clip weights to the sleeves of the spacer assembly.

Low compressor discharge pressure is bled into the center of the rotor drum through holes in the rear hub and thence through holes at the forward end of the front hub for pressurization of the No. 1 bearing compartment labyrinth seals. The front hub is dynamically balanced in detail by removing material at two locations near the ends. The stage 1.5 disk and blade assembly is statically balanced by selective blade positioning. Subsequent correction for unbalance due to the addition of blade lock-seal attaching hardware may be made by attaching classified counterweights to the lock ring. The fourth-stage blade-hub sub-assembly is balanced by the addition of trapped plugs and/or blade position selection. The remaining four core blade disk sub-assemblies are statically balanced by blade position selection alone. The entire primary compressor assembly (fan rotor omitted) is dynamically balanced by adding classified weights in planes at the 1.5 and sixth stages. The independently balanced fan rotor assembly is then added without additional correction prior to engine final assembly. A final trim correction may be made, if needed, in a plane at the fan stage after the entire rotor system is checked for vibration at operating speeds.

2. High Pressure Compressor, Burner and Turbine

The seven-stage high-pressure compressor, the can-annular burner, and the air-cooled or uncooled single-stage high turbine of the various current JT8D models were retained. The three-stage low-pressure turbine has also been retained except the second stage flow area was reduced to achieve the desired engine match, the fourth-stage blade of the D-9, -11, -15 models was replaced to reduce the turbine rotor exit Mach number, and the fourth-stage vane area was increased to reduce the fourth-rotor airflow incidence angle. The present four exhaust case struts were recambered and four additional exhaust struts have been added to further reduce exit swirl to the level being experienced on the current JT8D engine models. An improved low-turbine shaft was required to maintain adequate strength at the increased torque. The maximum turbine temperature levels of the JT8D-100 derivative of a particular JT8D engine model are comparable to the levels for that particular current JT8D engine model.

Modification to the low-pressure turbine (LPT) and exhaust duct vane assembly were required to accommodate the re-fan engine cycle characteristics. The primary features that affect performance are: (1) the requirement to increase by-pass ratio without increasing the gas generator flow rate, turbine inlet temperature or pressure; and (2) the reduction in low-rotor speed imposed by noise considerations. Table IX shows a comparison of significant turbine cycle parameters for the JT8D-9 and JT8D-109 engines.

TABLE IX

COMPARISON OF JT8D-9, JT8D-109 TURBINE CYCLE PARAMETERS AT DESIGN POINT

Parameter	JT8D-9	JT8D-109
By-Pass Ratio	1.04	2.00
Engine Airflow	70.7 kg/s (156 lb/sec)	69.8 kg/s (154 lb/sec)
Turbine Inlet Temp., T_{t5}	1236°K (1766°F)	1236°K (1766°F)
Burner Pressure P_{t5}	147.56 N/cm^2 (214 psia)	144.8 N/cm^2 (210 psia)
N_2 - RPM	11,365	11,380
ΔH_{HPT}	251204 J/kg (108 BTU/lb)	248878 J/kg (107 BTU/lb)
T_{T6}	1010.93°K (1360°F)	1010.93°K (1360°F)
P_{T6}	60.75 N/cm^2 (88.1 psia)	60.07 N/cm^2 (87.12 psia)
N_1 - RPM	8045	7450
ΔH_{LPT}	244226 J/kg (105 BTU/lb)	279116 J/kg (120 BTU/lb)

The turbine work requirement is up by over 14% and the rotor speed is down 7.4% in the D-109 relative to the D-9. The increased work requirement, at constant turbine inlet temperature, results in an increase in low pressure turbine expansion ration of 22%. Table X shows a comparison of high- and low-pressure turbine design parameters for the D-9 and D-109 engines. The increase in turbine expansion ratio results in an increase in turbine exit flow parameter. The combined effects of increased exit flow parameter and reduced shaft speed result in increased Mach number and swirl levels entering the turbine exhaust case.

TABLE X

COMPARISON OF JT8D-9, JT8D-109 TURBINE DESIGN PARAMETERS

HIGH PRESSURE TURBINE

Parameter	JT8D-9	JT8D-109	% Change
Pressure Ratio	2.43	2.42	–0.4
Speed Parameter – $N/\sqrt{T_{t5}}$ $(RPM/\sqrt{^\circ R})^*$	240	241	+0.04
Flow Parameter – $W\sqrt{T_{t5}}/P_{t5}$ $\left(\frac{lbm/sec\sqrt{^\circ R}}{lb/in^2}\right)^*$	33.34	33.46	+0.36
Mean Velocity Ratio	0.480	0.485	+1.04
Rim Velocity Ratio	0.413	0.417	+0.97
LOW PRESSURE TURBINE			
Pressure Ratio	2.96	3.62	+22
Speed Parameter – $N/\sqrt{T_{t6}}$ $(RPM/\sqrt{^\circ R})^*$	189	175	– 7.4
Flow Parameter – $W\sqrt{T_{t6}}/P_{t6}$ $\left(\frac{lbm/sec\sqrt{^\circ R}}{lb/in^2}\right)^*$	75.82	75.69	–0.17
Mean Velocity Ratio	0.604	0.525	–13
Rim Velocity Ratio	0.456	0.380	–13
Exit Flow Parameter – $W\sqrt{T_{t7}}/P_{t7}$ $\left(\frac{lbm/sec\sqrt{^\circ R}}{lb/in^2}\right)^*$	201.2	239.9	+19.3

In order to minimize turbine and exhaust case performance penalties, resulting from the increased loading and Mach number levels, several modifications were made to the LPT and exhaust case. These changes were determined to be the maximum possible within the constraints of minimizing hardware changes from the JT8D-9 engine while maintaining an acceptable level of performance.

*This parameter is used as a non-dimensional factor and, thus, comparative S. I. levels are not provided.

a. Low Pressure Turbine Blade and Vanes

The fourth-stage vane and blade flow areas were increased to achieve a more favorable work distribution by unloading the last stage of the turbine and shifting work forward to the front stages. The reduced second-stage vane flow area was required to achieve the desired engine match with the new cycle. Finally the turbine exhaust case was redesigned to remove the swirl at the increased Mach number level leaving the LPT in the D-109. Table XI summarizes the flow area changes made to the D-9 LPT and the resulting incidence, Mach number and swirl levels of the D-109 fourth stage and exit guide vane with the incorporated changes.

TABLE XI

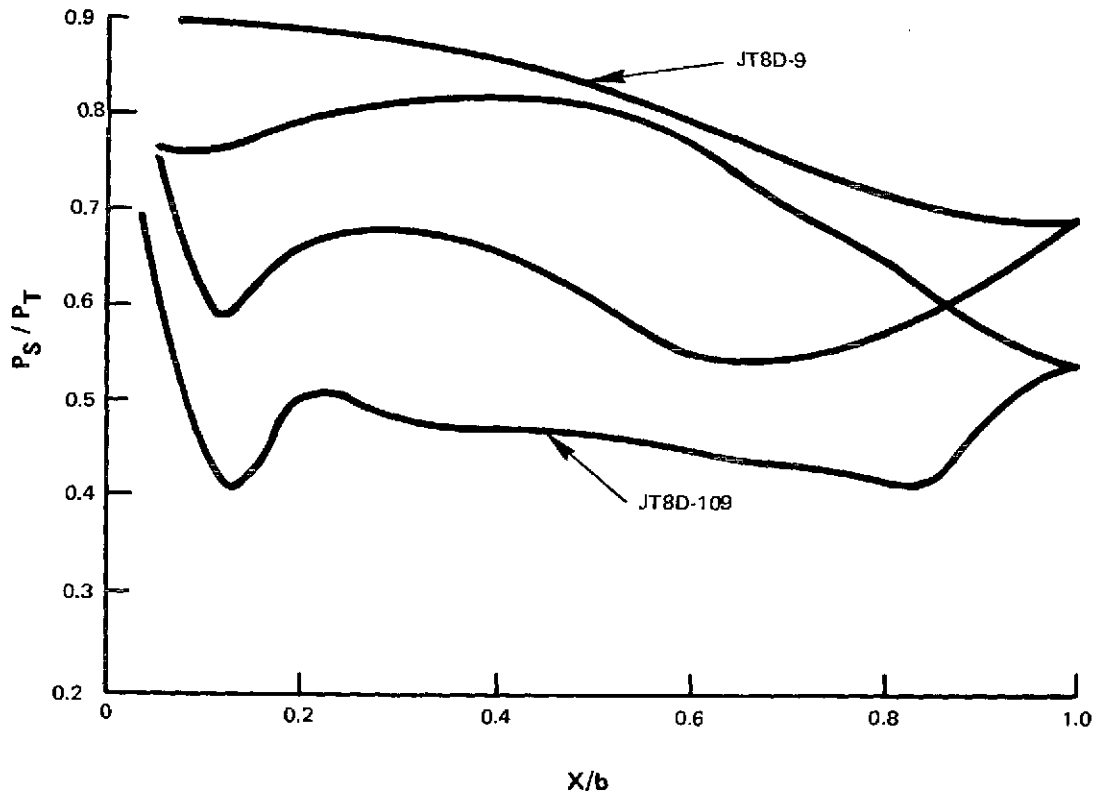
COMPARISON OF JT8D-9, JT8D-109 LOW-PRESSURE TURBINE STAGE PARAMETERS*

Parameter	JT8D-9			JT8D-109**		
2nd Vane Flow Area	1106.45 cm^2 (171.5 in^2)			1048.38 cm^2 (162.5 in^2)		
4th Vane Flow Area	2187.09 cm^2 (339 in^2)			2277.42 cm^2 (353 in^2)		
4th Blade Flow Area	2154.83 cm^2 (334 in^2)			2406.45 cm^2 (373 in^2)		
2nd Stage Work	90712 J/Kg (39 BTU/lb)			102343 J/kg (44 BTU/lb)		
3rd Stage Work	74431 J/kg (32 BTU/lb)			88387 J/kg (38 BTU/lb)		
4th Stage Work	79283 J/kg (34 BTU/lb)			88387 J/Kg (38 BTU/lb)		
% Span	0	50	100	0	50	100
4th Blade Incidence	+5.4°	- 5.4°	+3.6°	+4.2°	- 4.1°	+8.9°
4th Blade Inlet Rel. Mach No.	0.47	0.374	0.438	0.618	0.459	0.456
4th Blade Exit Rel. Mach No.	0.717	0.759	0.801	0.907	0.889	0.852
Exhaust Guide Vane Inlet Mach No.	0.500	0.450	0.470	0.732	0.619	0.567
Exhaust Guide Vane Gas Swirl Angle	39.4°	21.8°	3.8°	37.9°	25°	6.9°

*Comparison based on controlled vortex turbine analysis
**Increased Flow Area 4th Vanes and Blades

The impact on low-pressure turbine performance of the increased work and expansion ratio requirements of the D-100 cycle was minimized with the fourth-stage modifications. The fourth-stage blade flow area was increased 8% to re-distribute the work and reduce the rotor exit absolute Mach number and swirl to a level that would provide for acceptable exhaust case performance. (The increase in area will be accomplished by replacing the current D-9 blade with the D-1, D-7 blade which is of identical design restaggered 4° open). The flow area of the fourth-

stage vane was increased 5% to improve the flow conditions, i.e., Mach number and incidence, entering the fourth-stage blade, particularly at the root section. The increase in vane area will be accomplished by trimming back the trailing edges of the current D-9 vanes approximately 0.229 cm. (0.090 in.). Figure 27 shows the JT8D-109 fourth-stage blade root pressure distribution compared to the JT8D-9 fourth blade root pressure distribution. While the root loading and Mach number levels have increased over that of the D-9, the pressure distribution is acceptable. An integral boundary layer calculation using this pressure distribution indicates that suction surface separation will not occur. Blade pressure distributions become more favorable at the outer spanwise locations. Figure 28 presents the results of a pressure distribution calculation on the cut-back fourth-stage vane. Again, the vane pressure distributions are acceptable, and boundary layer analysis indicates no problem with separation.



	JT8D-9	JT8D-109
INLET RELATIVE MACH NO.	0.48	0.618
EXIT RELATIVE MACH NO.	0.717	0.907
INCIDENCE	+5.4°	+4.2°

Figure 27 JT8D-109 Low Pressure Turbine Fourth Blade Root Pressure Distribution

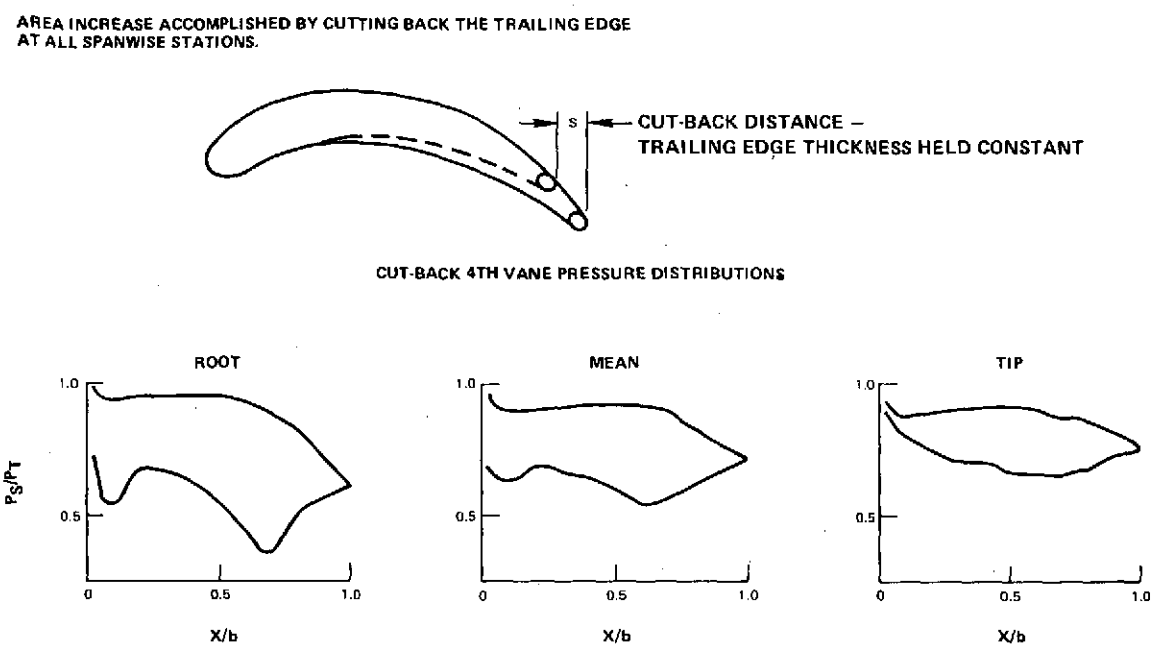


Figure 28 JT8D-109 Low Pressure Turbine Fourth Vane Modification to Increase Flow Area

Table XII summarizes the LPT cycle parameter changes from the JT8D-9 to the JT8D-109, along with the predicted performance of the D-109 cycle. The net low-pressure turbine efficiency in the D-109 will be 1.4% lower than the D-9 low-pressure turbine efficiency, resulting in a TSFC penalty of 1.3%.

TABLE XII

COMPARISON OF JT8D-9, JT8D-109 LOW-PRESSURE TURBINE PERFORMANCE PARAMETERS

Parameter	JT8D-9	JT8D-109	% Change
T_{t6}	1010.93° K (1360° F)	1010.93° K (1360° F)	0
P_{t6}/P_{t7}	2.96	3.62	+22
Work	244226 J/kg (105 BTU/lb)	279116 J/kg (120 BTU/lb)	+13
N_1 – RPM	8045	7450	−7.4
Efficiency	89.3%	87.9%	−1.4
Δ TSFC	–	–	+1.3

b. Turbine Exhaust Duct and Fairing

Revisions within the JT8D-100 turbine necessary to meet the requirement for increased power extraction from the low-pressure turbine resulted in an increase in turbine exit swirl and Mach number. To minimize residual swirl, an eight-strut cascade of recambered airfoils has been included in the conversion kit to replace the JT8D four-strut design, which featured a low-camber airfoil contour.

The turbine exit guide vane (EGV) assembly of the JT8D engine consists of four struts which house the No. 6 bearing support rods. These struts are in reality aerodynamic fairings which remove the swirl exiting from the low-pressure turbine. Table XIII summarizes the EGV aerodynamic parameters for the JT8D-9 and JT8D-109. The D-109 inlet gas angles are of the same order of magnitude as the D-9 but the Mach number levels are considerably higher. Analysis has shown that the D-9 EGV's would leave an unacceptable amount of residual swirl in the primary stream when operating at the refan engine conditions. The turbine exhaust case was redesigned, therefore, with the primary objective of limiting the primary stream residual swirl in the D-109 to the same level as in the D-9 engine.

TABLE XIII

COMPARISON OF JT8D-9, JT8D-109 TURBINE EXHAUST GUIDE VANE AERODYNAMIC PARAMETERS*

	JT8D-9			JT8D-109		
Parameters	Root	Mean	Tip	Root	Mean	Tip
Inlet Mach No.	0.500	0.450	0.470	0.732	0.619	0.567
Inlet Gas Angle	50.6°	68.2°	86.2°	52.1°	65°	83.1°
Incidence	+31.4°	+13.8°	-4.2°	+15.82°	-3.5°	-0.35°
Gas Turning Angle	25.7°	15.8°	3.8°	19.9°	16.0°	6.9°
Residual Swirl	13.7°	6°	0°	18.0°	9.0°	0.0°

* Comparison based on controlled vortex turbine analysis.

Certain mechanical restraints had to be met in the design of the D-100 EGV's. Figure 29 summarizes these restraints. The airfoil minimum thickness was established by the requirement to house the bearing support rods. The airfoil chord was established by turbine blade vibratory considerations and the location of the turbine case flange. The airfoil chord angle was restricted in range by the requirement for a strut to house both a bearing support rod and an oil line. Optimization studies were conducted to define the number of struts required and the thickness distribution.

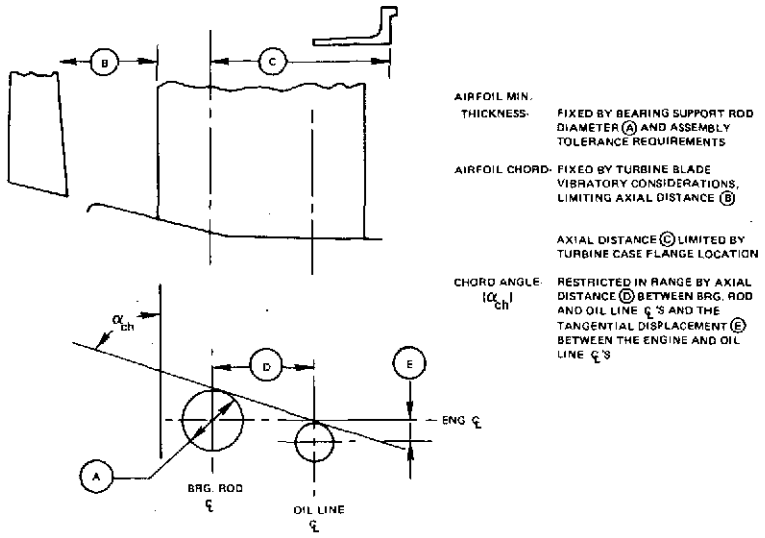


Figure 29 JT8D-100 Turbine Exhaust Guide Vane Mechanical Constraints

Figure 30 shows a comparison of the effects of various strut configurations and their effects on EGV choke margin. It was concluded that an eight-strut configuration with alternating thick and thin struts was desirable. The configuration selected consists of eight series 65/ circular arc struts, four thick (0.18 thickness/chord) and four thin (0.07 thickness/chord). Tables XIV, XV and XVI summarize the geometry of the selected EGV designs.

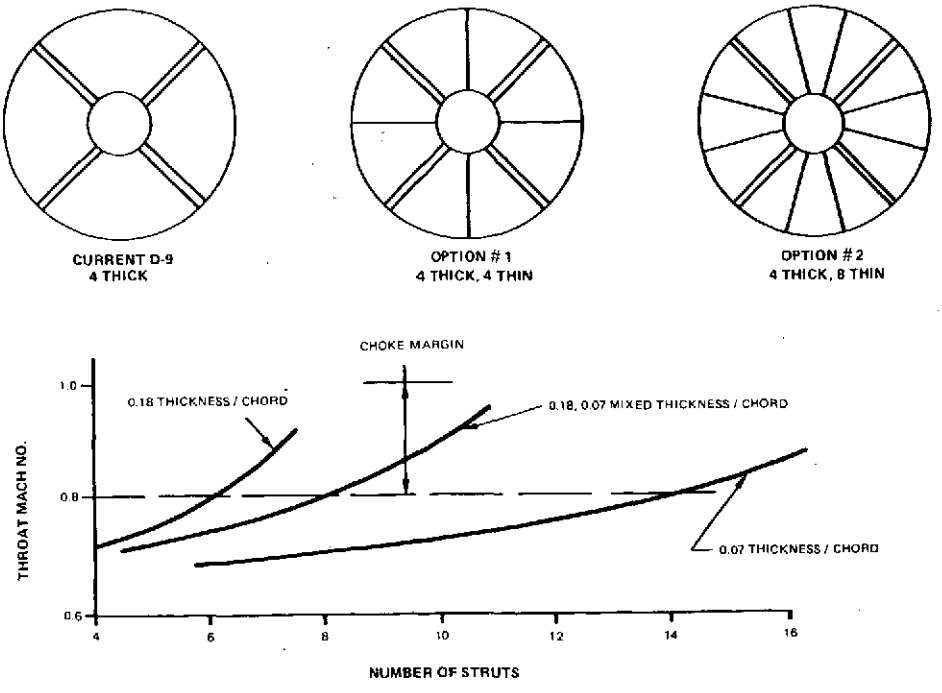


Figure 30 JT8D-109 Turbine Exhaust Guide Vane Choke Margin

TABLE XIV

JT8D-100 TURBINE EXHAUST GUIDE VANE CONFIGURATION DEFINITION

Type Airfoil	Series 65/Circular Arc
Total Number of Airfoils	8
Configuration	Alternating Thick and Thin EGV

4 EGV Thickness/Chord = 0.18 to House Bearing Support Rods and Oil Line

4 EGV Thickness/Chord = 0.07 to Impose Cascade Flow Conditions

TABLE XV

JT8D-109 TURBINE EXHAUST GUIDE VANE CASCADE SELECTION
DESIGN POINT AERODYNAMIC INPUT

% Span	0	15	25	50	71.5	100
M_1	0.732	0.694	0.671	0.619	0.583	0.567
M_2	0.513	0.518	0.516	0.523	0.552	0.630
α_1	52.1°	55.8°	58.4°	65°	71.2°	83.1°
α_2	72°	74.7°	76.5°	81°	84.9°	90°
Gas Turning Angle	19.9°	18.90	18.1°	16°	13.7°	6.9°
Residual Swirl	18°	15.3°	13.5°	9°	5.1°	0°

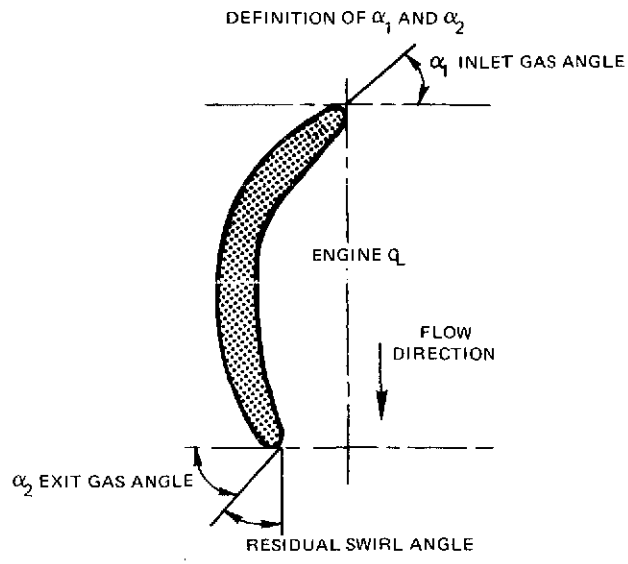
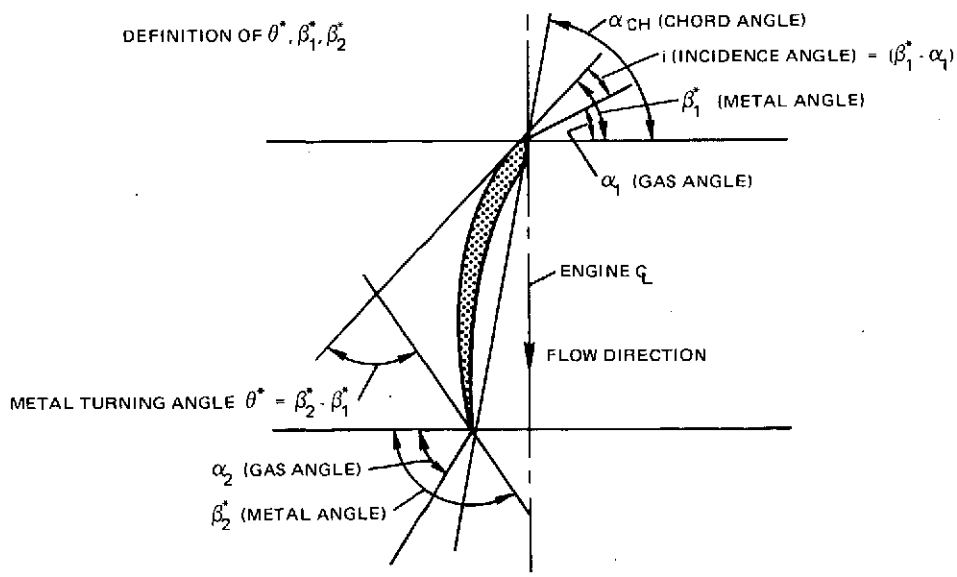


TABLE XVI

JT8D-109 TURBINE EXHAUST GUIDE VANE CASCADE GEOMETRY

Airfoil Type	Series 65 Circular Arc					
No. of Airfoils	8 Total (4 Thick and 4 Thin)					
Defining Radius-cm	16.12	19.43	21.77	27.47	32.32	38.81
(in)	(6.348)	(7.675)	(8.570)	(10.814)	(12.72)	(15.28)
% Span	0	15	25	50	71.5	100
θ^*	7.65°	9.91°	15.04°	30.6°	25.45°	11.4°
β_1^*	67.92°	67.84°	66.43°	61.5°	69.18°	82.75°
β_2^*	75.57°	77.75°	81.47°	92.09°	94.63°	94.15°
α_{ch}	71.75°	72.80°	73.95°	76.8°	81.9°	88.45°
Thickness/Chord-Thick	0.18	0.18	0.18	0.19	0.19	0.19
Thickness/Chord-Thin	0.07	0.07	0.07	0.07	0.07	0.07
Pitch/Chord	0.654	0.8	0.899	1.153	1.381	1.686
Chord-cm	19.35	19.16	19.03	18.69	18.39	17.98
(in)	(7.62)	(7.545)	(7.493)	(7.36)	(7.24)	(7.08)
Incidence Angle	+15.82°	+12.04°	+8.03°	-3.5°	-2.02°	-0.35°



The selected strut configuration results in an average residual primary stream swirl of 9° which approximates the D-9 residual swirl value. Diffusion factors, defined and summarized in Table XVII, are within P&WA experience. The selection of alternating thick/thin EGV's results in non-uniform flow channel geometry. That is, the channels on either side of a strut are different as depicted in Figure 24. Resultant mean section pressure distributions for each channel are also shown in Figure 24. The channels are essentially similar in performance.

TABLE XVII

JT8D-109 TURBINE EXHAUST GUIDE VANE DIFFUSION FACTORS

	Root	Mean	Tip
Diffusion Factor	0.413	0.312	0

$$\text{Diffusion Factor} = 1 - C_2/C_1 + \frac{\Delta C_u}{2C_1}\tau/b$$

C_1 Inlet Velocity Absolute
C_2 Exit Velocity Absolute
ΔC_u Tangential Velocity change
τ/b Gap/Chord

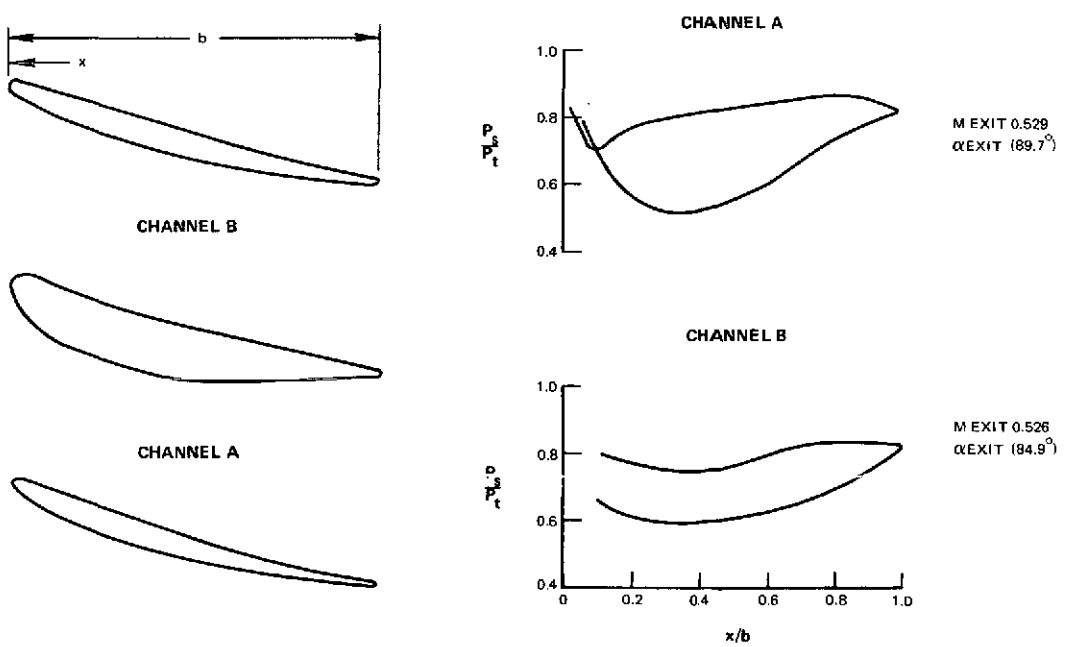


Figure 31 JT8D-109 Turbine Exhaust Guide Vane Channel Performance and Pressure Distributions

Table XVIII shows a comparison of exit Mach number and exit absolute gas angle at several spanwise locations for the two channels. Exit Mach numbers for the two channels show close agreement, while the computed exit angles vary by approximately 5° from channel A to channel B. This is considered to be satisfactory. An estimate of EGV total pressure loss was made, based on the P&WA cascade selection code and experience gained from other P&WA engines. The expected pressure loss ($\Delta P_o/P_o$) for the JT8D-109 EGV is 2.9% compared to 1.2% for the JT8D-9.

TABLE XVIII

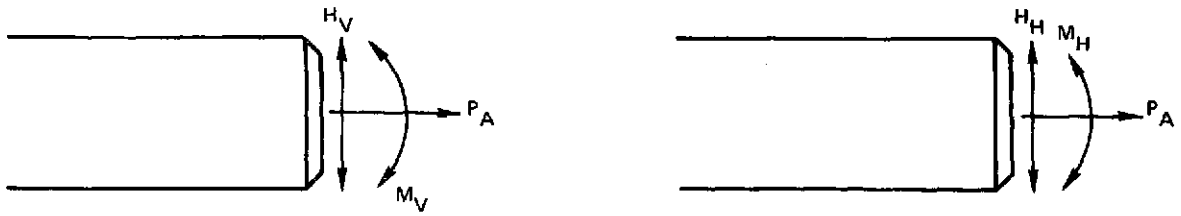
JT8D-109 TURBINE EXHAUST GUIDE VANE
SUMMARY OF CASCADE PRESSURE DISTRIBUTION ANALYSIS

% Span	0	25	50	75	100
Channel			M – Exit		
A	0.489	0.505	0.529	0.599	0.669
B	0.496	0.561	0.526	0.593	0.661
			α – Exit		
A	85.6°	86.2°	89.7°	91.1°	93.1°
B	79.7°	88.9°	84.9°	86.7°	88.6°

The addition of the thin struts required a method of tip restraint which is provided by a pin and bushing configuration similar to existing thick-strut hardware. An integral pin is added to the fan exhaust strut clevis to provide this support. Also, a pin clearance hole, necessary in the turbine exhaust case, can be added by reoperation.

Due to a combination of strut aerodynamic requirements and the necessity of maintaining the present location of the No. 6 bearing support rods and oil tube boss in the turbine exhaust case, relocation and recontouring of the oil tube was required. Parts affected by the tube relocation include the No. 6 bearing scavenge pump housing, No. 6 bearing housing, No. 6 bearing heatshield, and the turbine exhaust case boss (resizing and reorientation of hole). In addition, a special adapter washer was required to mate the new oil tube assembly sleeve with the existing case boss.

A flange is provided for mounting the airframe supplied tailcone assembly. The allowable limit shear load, axial load and overhung moment for this flange are defined in Figure 32.



M_V = 169.48 M-N (1500 IN-LBS)

M_H = 94.91 M-N (840 IN-LBS)

H_V = 1601.36 N (360 LBS)

H_H = 889.64 N (200 LBS)

P_A = 9964.01 N (2240 LBS)

M_V – MOMENT IN A VERTICAL PLANE WHICH CONTAINS THE $\mathcal{C}_L$

M_H – MOMENT IN A HORIZONTAL PLANE WHICH CONTAINS THE $\mathcal{C}_L$

H_V – VERTICAL SHEAR LOAD

H_H – HORIZONTAL SHEAR LOAD

P_A – AXIAL LOAD

Figure 32 JT8D-100 Allowable Limit Loads for Tailcone Mounting Flange

c. Low Pressure Turbine Shaft

The JT8D-100 LPT shaft is made of the same material (AMS 6304) and requires the same dual heat treatment as the present JT8D-15 shaft. Due to increased torque requirements (approximately 12%) for the JT8D-100, it is necessary to guarantee mechanical properties by specifying that an integral test specimen be taken from each shaft forging to ensure a minimum tensile yield strength in the cold section. The shaft geometry is identical with the JT8D-15 except for a radial thickness increase on the rear flange front snap diameter (second turbine disk snap).

3. Fan and Primary Engine Cases

Increased diameter fan cases were incorporated into the JT8D-100 for compatibility with the increased diameter fan rotor. The current JT8D core engine cases were retained except in those instances where the core and fan cases are an integral assembly or where the fan flow path requirement necessitated the redesign of the core engine case. The tubing and manifold assemblies that cross the fan duct have been redesigned in conjunction with the increased diameter fan. The fairings used to aerodynamically enclose this plumbing have also been redesigned. Acoustic treatment has been provided on the inner walls of the fan cases and the outer walls of the engine core cases to reduce fan radiated noise.

a. Intermediate Case

The intermediate case assembly depicted in Figure 33 includes the No. 2 and No. 3 bearing compartments, towershaft drive provisions, the sixth-stage compressor vanes, high-pressure compressor case, forward engine mounts, and the support points for ground handling.

It was a design requirement that the intermediate case for the JT8D-100 conversion kit be made by reoperating the inner portion of current JT8D intermediate case to retain the existing No. 2 and No. 3 bearing compartments, the sixth-stage vanes, the integral portion of the No. 2 and No. 3 bearing oil pressure lines, and the existing upper towershaft drive system. The reoperated inner case incorporates attached radial flanges for bolting on a new outer case. The joints and bolts contain sealing provisions to ensure that the breather annulus is not subjected to high- or low-pressure compressor air leaking in, or breather air leaking out into the rear compressor case and then into the cabin bleed system.

The integral boss, which accepts the ferrule and O-ring of the No. 2 and No. 3 bearing oil pressure line, has been retained as part of the reoperated inner case. The bore which accepts the ferrule was enlarged, a bushing installed, and the bushing inner diameter finished, relative to features on the reoperated case, to ensure adequate alignment of the No. 2 and No. 3 bearing oil pressure tube. The fittings at the outer end of the oil pressure line are the same as used on the current engine. The housing forming the seal between the gearbox and intermediate case is the same configuration as is used on the current engine.

An axial flange was provided on the aft end of the outer case inner ring to accept the existing rear compressor case. This case is riveted on as in the current engine. A short case with a radial flange on the forward end and an axial flange on the aft end is riveted to a mating axial flange on the outer assembly after the outer and inner case assemblies have been bolted together. This short case provides attachment between the front compressor case stack-up and the intermediate case. When the aforementioned parts are welded together, a matched set is formed. The forward flange of the riveted-on case must be machined after assembly, relative to features on the assembled inner and outer intermediate case, in order to properly locate the front compressor. This is the only finishing required at assembly.

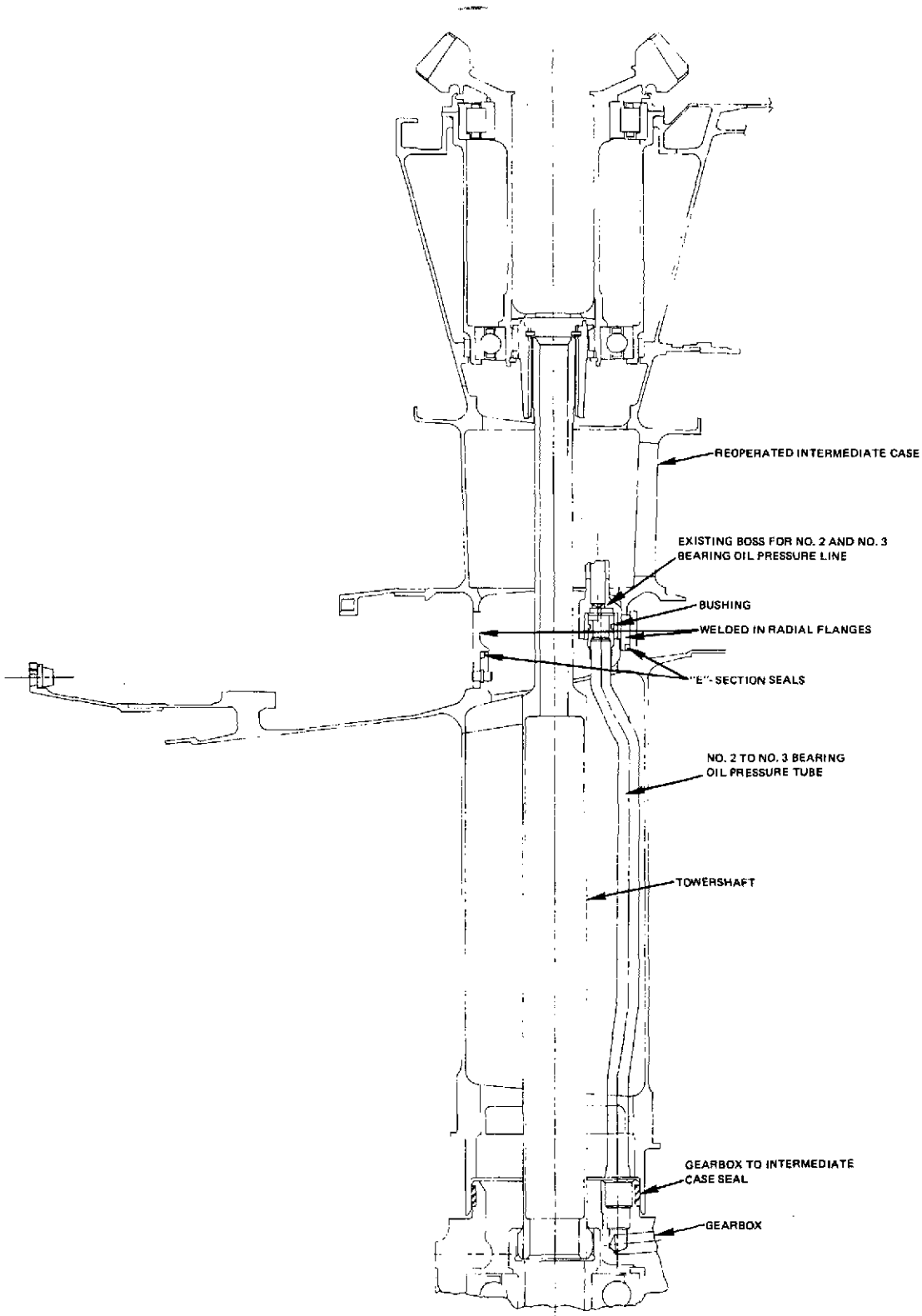


Figure 33 JT8D-100 Intermediate Case - Towershaft Cross Section

The strut positioning as depicted on Figure 34 was configured in such a manner that each strut is radially in-line with the thrust mount points, the ground handling points, and the towershaft and gearbox mounting points. The six thrust carrying struts are faired out axially at the ID as depicted on Figure 34, while the remaining six struts are of current engine thickness.

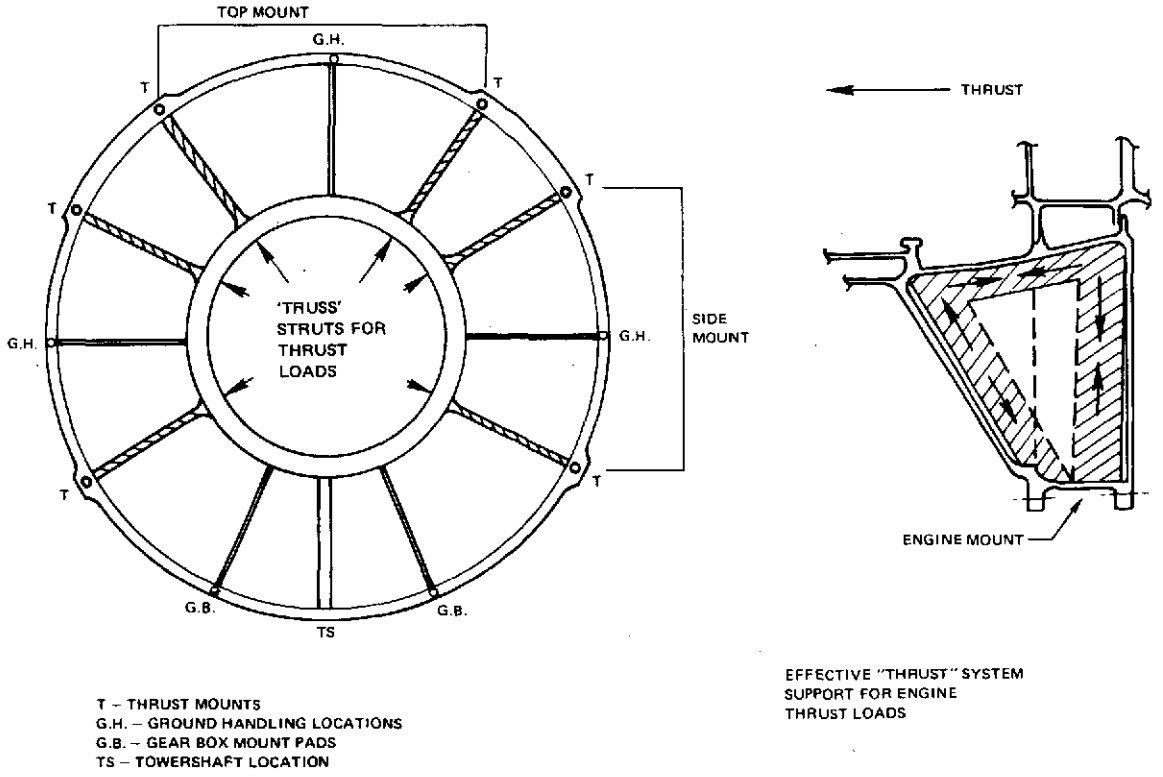


Figure 34 JT8D-100 Intermediate Case - Loading Schematic

The intermediate case mount flange contains a series of holes for attaching the engine to the airplane structure through suitable bolts and linkages. The location of these mount points is shown in Figure 48 JT8D-100 Installation, provided in Section III C-1 of this document. The flight allowable limit loads for the front mount are shown in Figure 35.

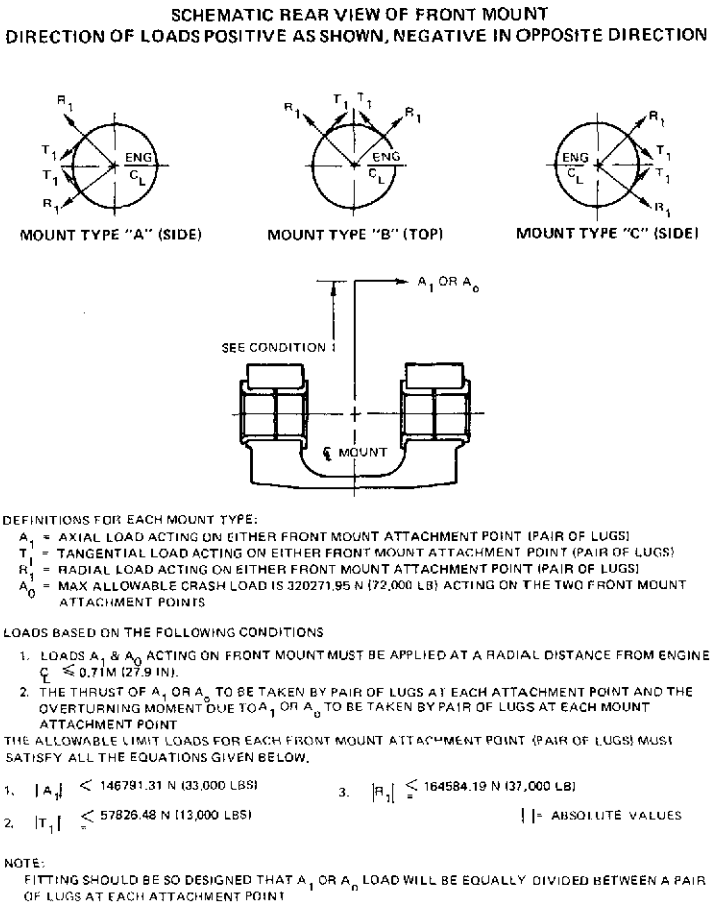


Figure 35 JT8D-100 Flight Allowable Limit Loads – Front Mount

b. Compressor and Diffuser Fan Ducts

The compressor and diffuser fan ducts were redesigned in conjunction with the increased diameter fan section. The material for both ducts is AMS 4135, the same as the current JT8D compressor duct. The current JT8D diffuser duct is an AMS 4125 casting. Aluminum acoustic treatment is bonded directly to the duct. The compressor and diffuser fan duct configuration is shown in Figure 36.

The airbleed ports for the low-pressure compressor (6th stage), intermediate pressure (8th stage) and high pressure compressor (13th stage) are located on these ducts. These bleed pads were spaced radially outward at the same axial locations relative to the front and rear mounts. The allowable limit loads for the airbleed pads are shown in Figure 37.

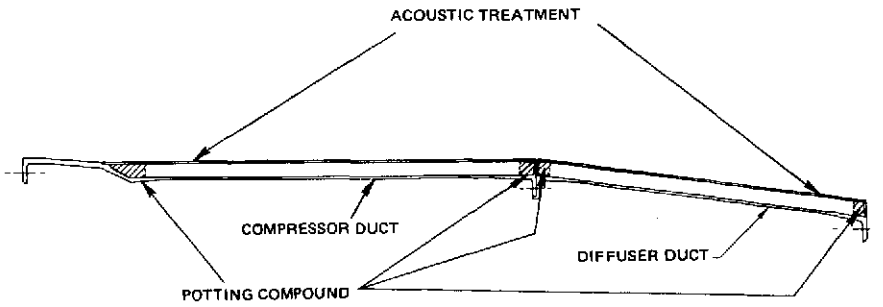


Figure 36 JT8D-100 Compressor and Diffuser Fan Ducts

T M–N (IN-LB) TORSION IN PLANE OF PAD M M–N (IN-LB) MOMENT ANY PLANE PERP TO PLANE OF PAD V N(LB) SHEAR ANY DIRECTION IN PLANE OF PAD P N(LB) RADIAL LOAD		
HIGH PRESS. PORT	0.94P + 6.2M + 0.16V ≤ 31,000 (4.2P + 0.7M + 0.7V ≤ 31,000)	T_{MAX} = 56 M-N (500 IN-LB)
8TH STAGE PORT	3.10P + 42.5M + 1.08V ≤ 31,000 (13.8P + 4.8M + 4.8V ≤ 31,000)	T_{MAX} = 34 M-N (300 IN-LB)
LOW PRESS. PORT	4.86P + 45.1M + 0.56V ≤ 31,000 (21.6P + 5.1M + 2.5V ≤ 31,000)	T_{MAX} = 34 M-N (300 IN-LB)
FAN PORT	$1 \geq [1.17P + 28.6M + 0.4V] \times 10^{-4}$ $(1 \geq [5.2P + 3.23M + 1.8V] \times 10^{-4})$	T_{MAX} = 225 M-N (2000 IN-LB)

SPRING RATES			
BLEED PORT	CIRCUMFERENTIAL J M – N (IN-LB/RAD)	RADIAL K N/M (LB/IN)	LONGITUDINAL L M – N (IN-LB/RAD)
HIGH	±46,550 ±(412,000)	±55,690,000 ±(318,000)	±64,970 ±(575,000)
8TH	±21,810 ±(193,000)	±48,160,000 ±(275,000)	±25,870 ±(229,000)
LOW	±29,040 ±(257,000)	±60,419,000 ±(345,000)	±69,490 ±(615,000)

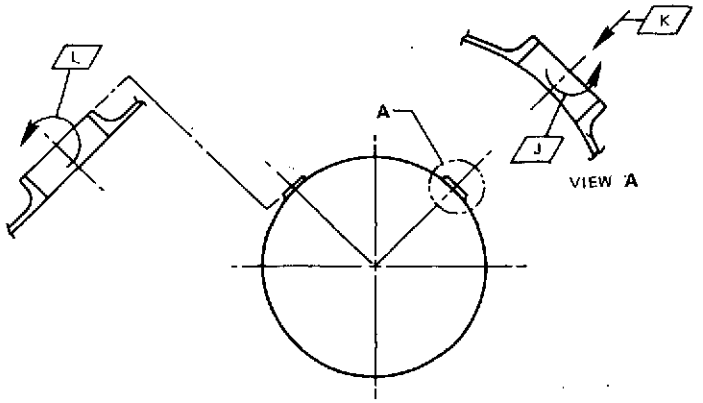


Figure 37 JT8D-100 Allowable Loads for Airbleed Pads

c. Combustion Chamber and Turbine Fan Duct

The combustion chamber and turbine fan duct, shown in Figure 38, was designed as a cylinder with a split along the horizontal centerline. Axial flanges were provided, with 33 bolts on each side. The split concept was carried over from the current JT8D for maintainability requirements. A dummy flange was provided on the lower duct half, approximately 35.5 cm. (14 in.) aft of the front flange, for plumbing and accessory mounting. Aluminum acoustic treatment is bonded directly to the duct assembly.

The fan bleed ports are located on this duct assembly. These ports have been spaced radially outward at the same axial location relative to the front and rear mounts. The allowable limit loads for these pads are shown in Figure 30.

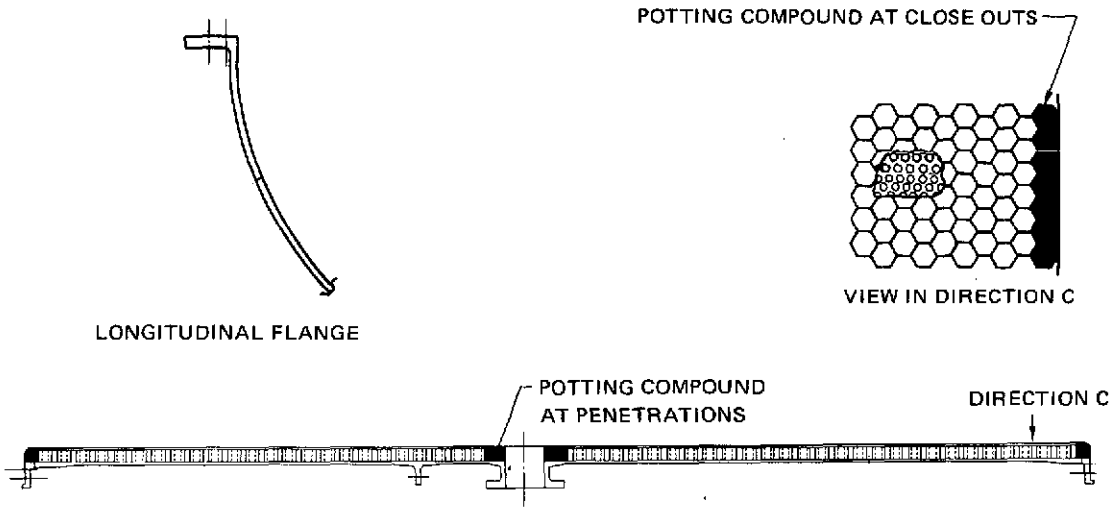


Figure 38 JT8D-100 Combustion Chamber and Turbine Fan Duct

d. Turbine Case Acoustic Fairing

The turbine case acoustic fairing, shown in Figure 39, forms a smooth flow path around the turbine case. Due to its proximity to the turbine case, the resultant temperature level required welded stainless steel, AMS 5520, construction rather than the bonded aluminum construction used elsewhere in the JT8D-100. The 0.95 cm (0.375 in.) square honeycomb cell, which differs from the 0.95 cm. (0.375 in.) hexagonal cell used elsewhere, was dictated by the structural requirements (size) and manufacturing process (shape). The different honeycomb cell shapes are acoustically equivalent. The fairing is made in two halves for assembly reasons, and is bolted to engine brackets at its front circumference. The longitudinal splits are bolted together. The aft cylindrical end of the fairing has a sliding fit on the engine brackets to allow for axial thermals. The aft end is hardfaced to prevent wear.

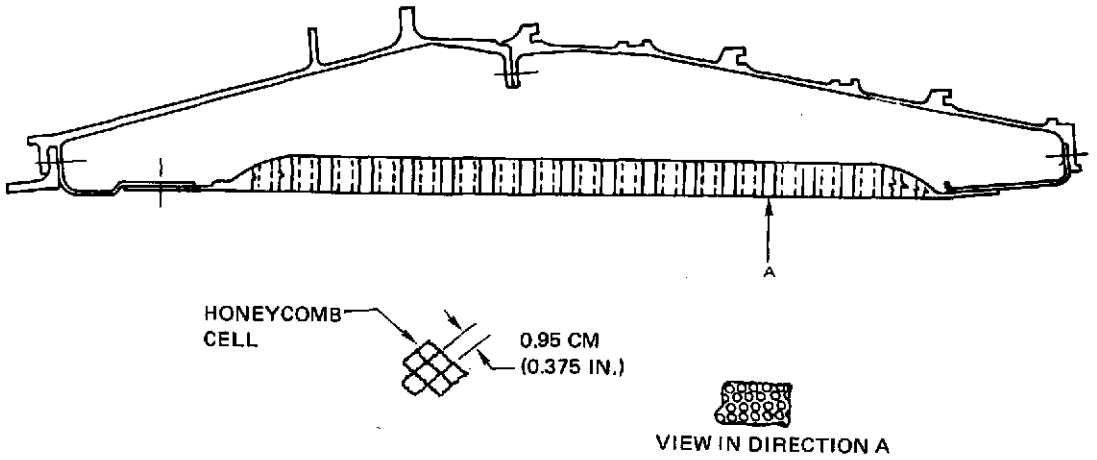


Figure 39 JT8D-100 Turbine Case Acoustic Fairing

e. Turbine Exhaust Case

The JT8D-100 turbine exhaust case is similar to the current JT8D case except that a rear flange has been provided for airframe attachment of a splitter or mixer between the primary and fan exhaust streams. The turbine exhaust case is reoperable from the current configuration. A new fan exhaust inner diameter flow path fairing has also been provided to obtain a smooth transition with the airframe splitter design. This configuration is shown in Figure 40.

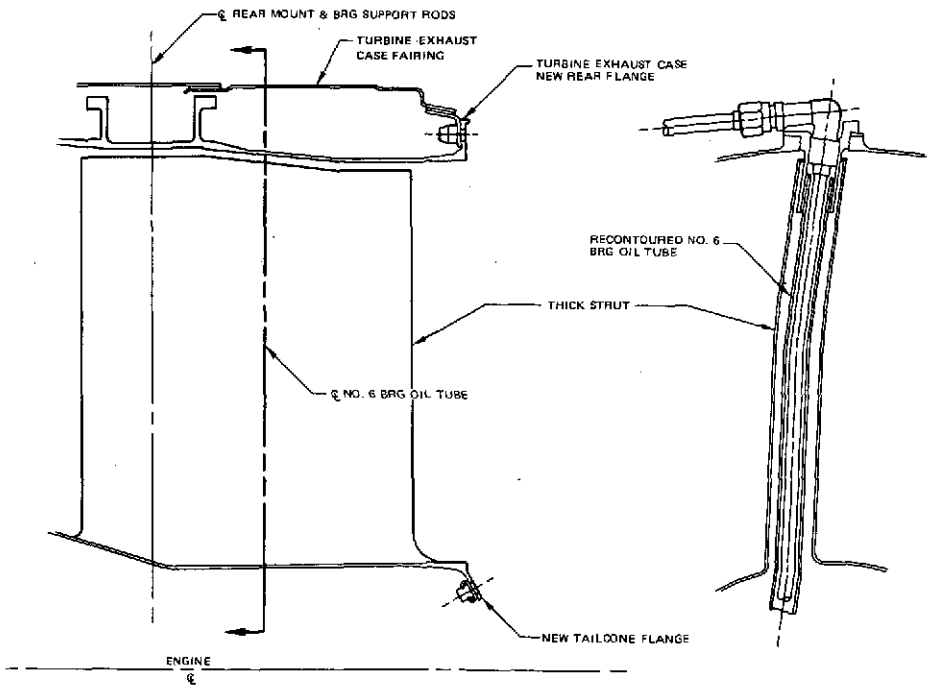


Figure 40 JT8D-100 Turbine Exhaust Case and Duct and Fairing Assembly

The allowable limit shear load, axial load, and overhung moment for the primary exhaust case flange is shown in Figure 41.

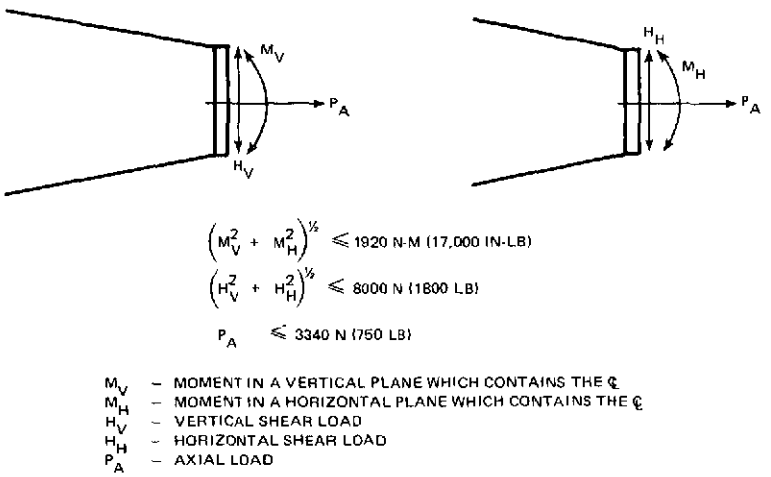


Figure 41 JT8D-100 Allowable Limit Loads for Primary Exhaust Case Flange

f. Fan Exhaust Duct

The JT8D-100 fan exhaust duct is connected to the primary exhaust case by the means of quasi-tangential torque rods, as shown in Figure 42, in the same manner as the current JT8D engines.

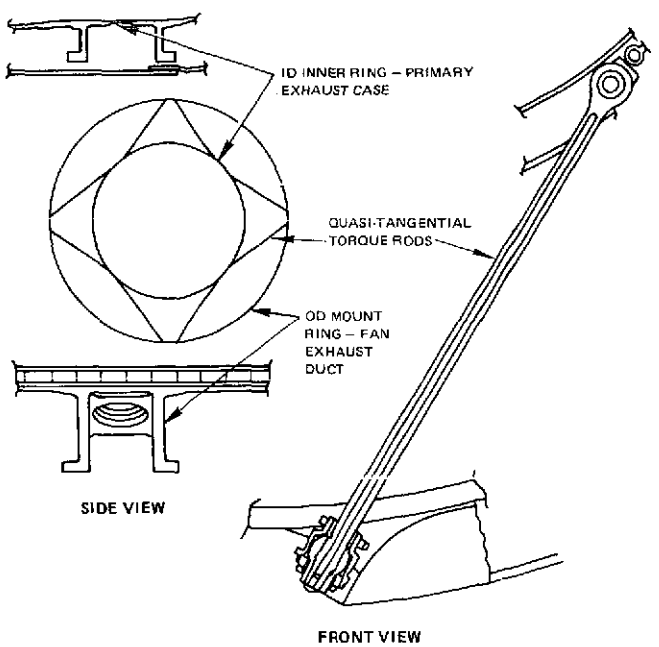
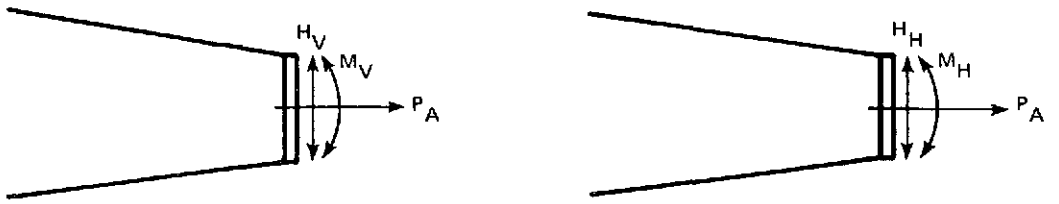


Figure 42 JT8D-100 Turbine Exhaust Duct and Mount Ring

In the design of the D-100 fan exhaust duct, the axial position of the principal features was unchanged. The effects of changes in the design of the tailpipe attaching flange did, however, shorten the overall exhaust duct relative to the current engine. The conical section of the duct, on which the tailpipe flange is mounted, was eliminated to allow greater flexibility in exhaust system design. As a result, the flange is positioned on the rear edge of a cylindrical duct. The allowable limit shear load, axial load and overhung moment for this airframe attachment location are defined in Figure 43.

The acoustic treatment is mounted on the inside of the fan exhaust duct, forming the outer boundary of the flowpath. It is made in four 90° segments, attached by radial bolts through the duct. Construction is similar to the other non-structural acoustic panels except for the outer (non-perforated) skin, which is made up of two layers of glass fabric rather than aluminum sheet.

Basically, all features were moved radially outward on the JT8D-100 fan exhaust case to accommodate the larger diameter fan flowpath. The P_{t7} probe and oil line remain in the same axial and angular location on the outside of the case. The rear mounts and ground handling points are shown in Figure 48. JT8D-100 Installation, provided in Section III C-1 of this document. The flight allowable limit loads for the rear mount are shown in Figure 44.



M_V = 36607.08 M-N (324,000 IN-LBS)
M_H = 16721.75 M-N (148,000 IN-LBS)
H_V = 21351.46 N (4,800 LBS)
H_H = 5782.69 N (1,300 LBS)
P_A = 204618.12 N (46,000 LBS)

} THESE ALLOWABLE LOADS MAY BE COMBINED IN ANY MANNER

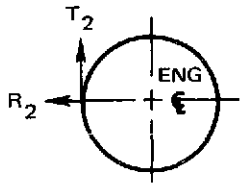
THE MAXIMUM PERMISSIBLE AXIAL BOLT HOLE LOAD IS 6220 N (1400 LBS)

M_V -- MOMENT IN A VERTICAL PLANE WHICH CONTAINS THE ℄
M_H – MOMENT IN A HORIZONTAL PLANE WHICH CONTAINS THE ℄
H_V – VERTICAL SHEAR LOAD
H_H – HORIZONTAL SHEAR LOAD
P_A -- AXIAL LOAD

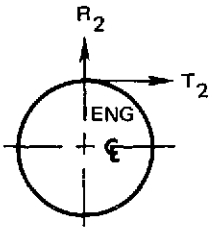
THRUST REVERSER AXIAL LOADS ARE ASSUMED TO BE UNIFORMLY DISTRIBUTED AROUND THE FAN EXHAUST CASE FLANGE CIRCUMFERENCE.

Figure 43 JT8D-100 Allowable Limit Loads for Fan Exhaust Case Attachment

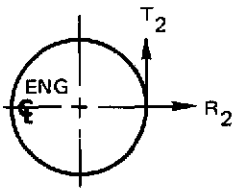
SCHEMATIC REAR VIEW OF REAR MOUNT
DIRECTION OF LOADS POSITIVE AS SHOWN, NEGATIVE IN OPPOSITE DIRECTION



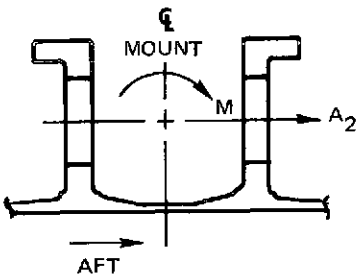
MOUNT TYPE "A" (SIDE)



MOUNT TYPE "B" (TOP)



MOUNT TYPE "C" (SIDE)



DEFINITIONS FOR EACH MOUNT TYPE:

A_2 = AXIAL LOAD ACTING ON REAR MOUNT ATTACHMENT POINT APPLIED AT ℄ OF MOUNT HOLE

M = OVERTURNING MOMENT ACTING ON REAR MOUNT ATTACHMENT POINT

T_2 = TANGENTIAL LOAD ACTING ON REAR MOUNT ATTACHMENT POINT (BOTH FLANGES)

R_2 = RADIAL LOAD ACTING ON REAR MOUNT ATTACHMENT POINT (BOTH FLANGES)

THE ALLOWABLE LIMIT LOADS FOR THE REAR MOUNT ATTACHMENT POINT MUST SATISFY ALL THE EQUATIONS GIVEN BELOW.

$$|A_2| \leqslant 4448.22 \text{ N } (1{,}000 \text{ LBS})$$

$$|M| \leqslant 451.94 \text{ M-N } (4{,}000 \text{ IN-LBS}) \qquad || = \text{ABSOLUTE VALUES}$$

$$|T_2| \leqslant 80067.96 \text{ N } (18{,}000 \text{ LBS})$$

$$-75{,}620 \text{ N } (-17{,}000 \text{ LB}) \leqslant R_2 \leqslant 97860.84 \text{ N } (22{,}000 \text{ LB})$$

Figure 44 JT8D-100 Flight Allowable Limit Loads for Rear Mount

4. Bearing and Support Structure, Towershaft, Accessories, External Tubing

The JT8D-100 No. 1 bearing and bearing support structure have been redesigned for compatibility with the increased rotor length and larger diameter fan. All other bearings and their support structure remain unchanged. The towershaft was increased in length in conjunction with the increased diameter fan. The high rotor accessory gearbox, oil tank, oil pumps and oil system filters are the same as current JT8D engine models. The JT8D fuel control, fuel pump, fuel-oil cooler, fuel filters, bleed control and pressurizing valve were retained. The ignition system and the anti-icing and fuel de-icing valves from the current JT8D engine have also been retained. The external tubing is to be designed during Phase II.

a. No. 1 Bearing Compartment

The JT8D-100 No. 1 bearing is a larger cross section bearing with an increased bore diameter as compared to the current JT8D No. 1 bearing. The increased size was necessary to accommodate the larger diameter hub required to maintain critical speed margin and by the requirement to have blade loss capability equal to the current JT8D No. 1 bearing. The increased bore diameter resulted in a bearing DN (Diameter Speed) level at which bearing preload is not required to preclude skid. The calculated skid potential of the JT8D-100 No. 1 bearing is less than the current JT8D bearing at equivalent "G" loads. The JT8D-100 No. 1 bearing fatigue life is comparable to the current JT8D No. 1 bearing (30,000 hours). The fit between the JT8D-100 No. 1 bearing and hub has been selected to prevent race spinning.

The No. 1 bearing journal on the rotor front hub was increased in diameter from 95 mm to 120 mm. Except for the size difference, the new bearing design, including the oil damper feature, is the same as the current JT8D engine. To obtain the required lubrication, a new oil jet was added to direct the flow between the bearing case OD and the outer race ID. The current JT8D engine scavenge pump has sufficient capacity and has been retained. An increased length scavenge pump housing is required to extract oil from the bottom of the compartment cavities.

The labyrinth seal occupies the same axial space as on current JT8D engines, but has one extra knife-edge to compensate for the extra leakage expected from the larger seal diameter. The seal steps were increased in height from 0.0254 to 0.127 cm (0.010 to 0.050 inches) to improve efficiency. The nose-up attitude angle possible before oil enters the labyrinth seal has been increased to 28° from 22°.

The No. 1 bearing compartment design configuration is depicted in Figure 45.

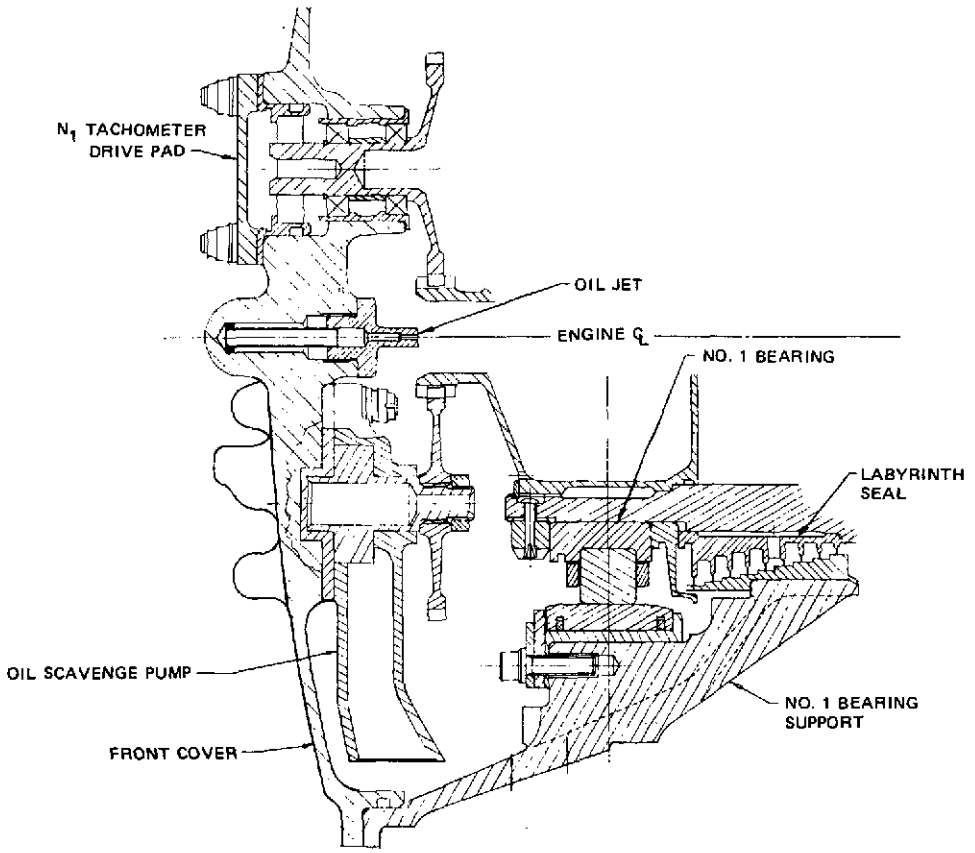


Figure 45 JT8D-100 No. 1 Bearing Compartment – Cross Section

b. Towershaft

The externally mounted accessory gearbox is driven by a towershaft which is connected via splined ends to the gearbox and the upper towershaft drive system, housed in the intermediate case. The design configuration is depicted in Figure 33.

The increased fan duct diameter for the JT8D-100 series engine necessitated a lengthening (approximately 40% increased length) of the JT8D towershaft. The towershaft serves the dual function of transmitting torque from the starter to the high compressor shaft while the engine is being started and extracting engine power during operation to drive fuel and oil system components and the airframe electrical generation equipment.

The towershaft is designed to preclude shear and torsional buckling failure during engine starting and vibration failure during engine operation. The towershaft connects two engine regions capable of relative deflections; the high rotor shaft and the externally mounted accessory gearbox. Therefore, the configuration has loose splines at both ends to allow for misalignment without introducing high bending loads. The towershaft stiff bearing critical speed mode shape is illustrated in Figure 46.

The material chosen was AMS 6487, selected for its high yield strength and stiffness, good machinability and its suitability for adding spline treatment for acceptable wear characteristics.

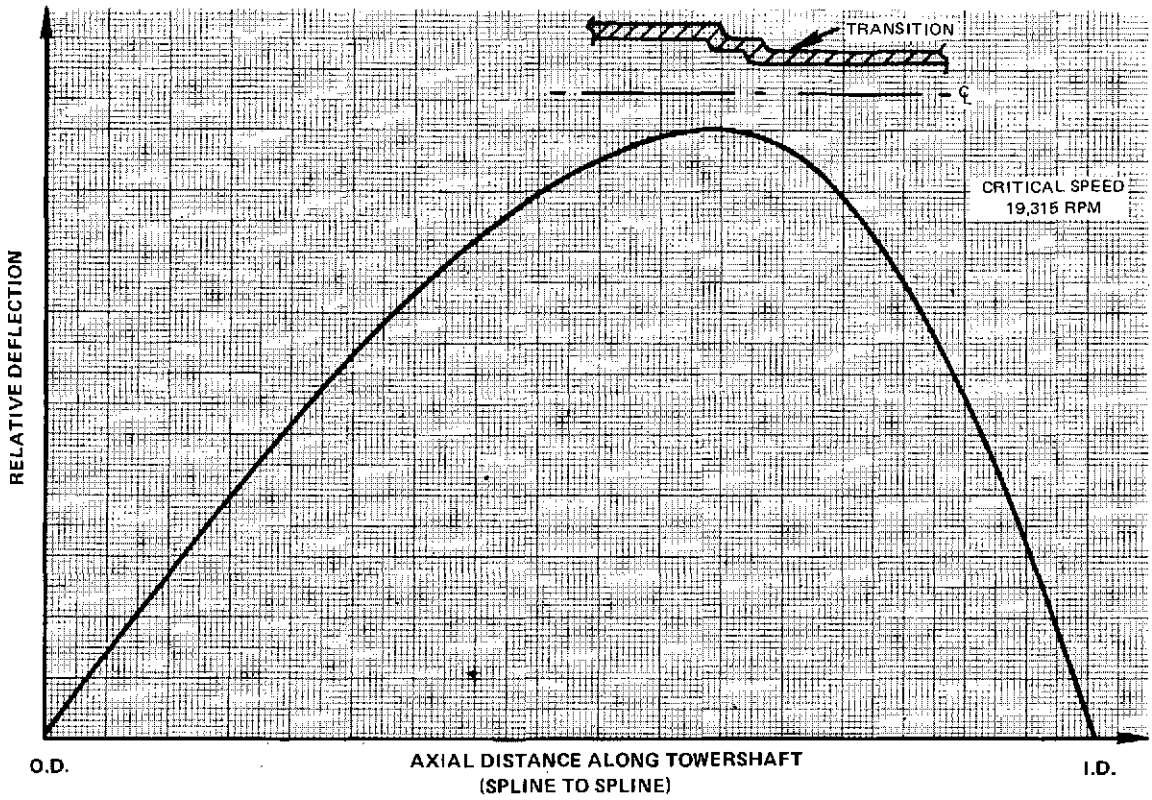


Figure 46 JT8D-100 Towershaft Relative Deflection at Critical Speed

C. ENGINE INSTALLATION DIMENSIONS AND WEIGHT

1. Installation Dimensions

Figures 47 and 48 show the pertinent installation differences between the JT8D and JT8D-100 engines and the engine installation envelope for the JT8D-100 engine, respectively.

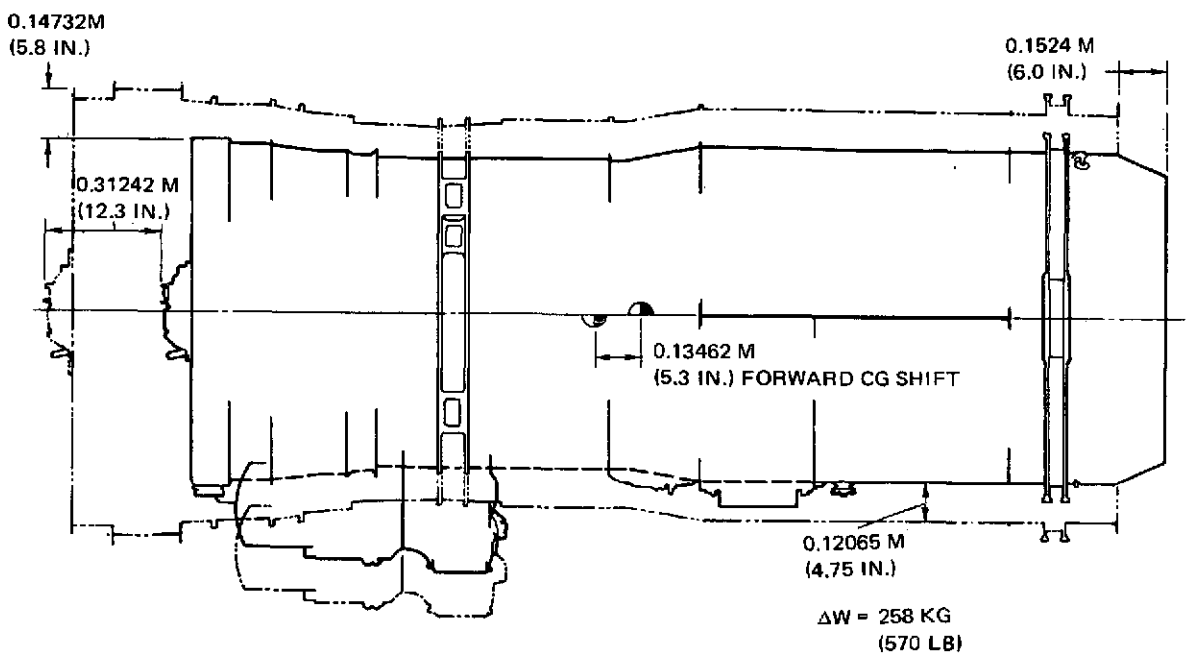


Figure 47 Comparison of JT8D-JT8D-100 Installation Characteristics

2. Engine Weight

a. Basic Engine Weight

It is estimated that the dry weight of the JT8D-109 engine, including the following items of standard and additional equipment, will not exceed 1738 kg (3832 lb). The estimated maximum differential weight is +258 kg (570 lb).

STANDARD EQUIPMENT

Fuel Control System Inlcuding Fuel Pump and Thrust and Speed Control Unit
Starting and Continuous Engine Ignition Systems Requiring External Power Source
Engine Anti-Icing System
Exhaust Thermocouple Probes and Exhaust Pressure Probes
AND Type Accessory Drives for Each of the Following:

Low Pressure Rotor – Tachometer
High Pressure Rotor – Tachometer, Starter, Generator, Fluid Power Pump

ADDITIONAL EQUIPMENT

Fuel Heater
Fuel-Oil Cooler
Oil Tank Assembly
Special Air Valves (Inlet Guide Vane Thermal Anti-Icing and Fuel Heater) in lieu of Standard Air Valves

The dry weight of the JT8D-109 engine does not include the following items of standard and additional equipment.

STANDARD EQUIPMENT

	Engine Dry Weight Change
Brackets for Attachment of Aircraft Equipment Wood Shipping Box	+4.54 kg (10 lb)

ADDITIONAL EQUIPMENT

	Engine Dry Weight Change
175 Micron Main Oil Filter (in lieu of Standard 40 Micron Main Oil Filter)	+ .454 kg (1 lb)
15 Micron Main Oil Filter (in lieu of Standard 40 Micron Main Oil Filter)	– ..454 kg (1 lb)

Alternate A.C. Ignition System*	+	.908 kg (2 lb)
Provisions for the Incorporation of Chip Detectors in the Lubrication System	+	.454 kg (1 lb)

*Replaces ignition systems shown under standard equipment.

The weight of fluids remaining in the engine after operation and drainage, while the engine is in the normal altitude is estimated to be 4.54 kg (10 lb).

b. Engine Center of Gravity

Horizontal – 45 cm (17.8 in) aft of front mount (intermediate case) centerline

Vertical – 5.3 cm (2.1 in) below engine centerline

c. Polar Moments

The estimated effective mass polar moments of inertia of the low and high pressure rotor assemblies about their axes are as follows:

Low rotor	17.08 kg m^2	(12.6 slug ft^2)
High rotor	7.46 kg m^2	(5.5 slug ft^2)

The estimated effective mass polar moment of inertia at the starter pad is 20.9 kg m^2 (15.45 slug ft^2)

d. Moments of Inertia

The following values represent the estimated moments of inertia of the engine in pitch, yaw and roll. These values are about axes through the engine center of gravity.

Pitch	1538.85 kg m^2	(1135 slug ft^2)
Yaw	1593.09 kg m^2	(1175 slug ft^2)
Roll	276.59 kg m^2	(204 slug ft^2)

D. PERFORMANCE RATINGS AND CHARACTERISTICS, OPERATING LIMITS, AND STATIC NOISE LEVELS

1. Engine Performance Ratings

a. Estimated Sea-Level Static Standard-Day Performance

The JT8D-109 ratings are attainable on the test stand at ICAO Standard atmosphere conditions with fuel specified by PWA 522, using a P&WA hardwall bellmouth inlet, a reference jet nozzle and with no compressor airbleed or load on accessory drives. Thrust levels quoted are minimum values.

	Jet Thrust		Est. Nominal TSFC	
JT8D-109 Ratings	N	(lb)	kg/hr/N	(lb/hr/lb)
Takeoff	73850	(16600)	0.0507	(0.497)
Maximum Continuous	65388.8	(14700)	0.0495	(0.485)
Maximum Climb	65388.8	(14700)	0.0495	(0.485)
Maximum Cruise	58716.5	(13200)	0.0486	(0.477)

Takeoff Rating is the maximum thrust to be certified for takeoff operation and is available at and below 302°K (84°F) ambient temperature.

Maximum Continous Rating is the maximum thrust to be certified for continous operation. It is primarily intended for emergency use at the discretion of the pilot.

Maximum Climb Rating is the maximum thrust approved for normal climb operation.

Maximum Cruise Rating is the maximum thrust approved for normal cruise operation.

These ratings are based on engines with standard equipment included in the engine weight. The data presented herein and in Appendix A are for a JT8D-9 retrofit version of the JT8D-100 (JT8D-109); however, other model conversions would have similar incremental performance changes.

The dynamic simulator analytical studies required to evaluate the effect of the cycle change on transient stability margin and the idle thrust, acceleration time and rotor speed relationships have not been completed. Preliminary results of these studies have been supplied to the airframe manufacturers. These results show that the idle thrust required for aborted landing go-around acceleration is too high for satisfactory ground handling characteristics. Introduction of a flight idle-ground idle concept may be necessary.

b. Estimated Performance Characteristics (JT8D-109)

- Engine Parameters at Takeoff (Sea level static, standard day)

(a)	Fan tip speed	488 m/s	(1600 ft/sec)
(b)	Fan discharge jet velocity	300 m/s	(985 ft/sec)
(c)	Fan pressure ratio with exit guide vane loss	1.67	

(d)	Bypass ratio	2.00	
(e)	Low pressure rotor core spool speed, rpm	7450	
(f)	Overall pressure ratio	15.8	
(g)	Turbine inlet temperature 288°K (59°F) day	1236.5°K	(1766°F)
	302°K (84°F) day	1290.9°K	(1864°F)
(h)	Core discharge jet velocity	440 m/s	(1445 ft/sec)
(i)	Mixed jet velocity	347 m/s	(1140 ft/sec)

- Engine Cycle at Maximum Cruise 9144 m (30,000 ft.) altitude, 0.8 Mach No.

(a)	Corrected fan tip speed	507 m/s	(1660 ft/sec)
(b)	Bypass ratio	2.02	
(c)	Fan pressure ratio	1.67	
(d)	Turbine inlet temperature	1144.26°K	(1600°F)

- Takeoff and cruise resultant thrust in newtons (lbs), and resultant thrust specific consumption (TSFC) in kg/hr/N (lb/hr/lb thrust).

	Takeoff Std. Day Sea Level Static		Max Cruise Std. Day at 9144m (30,000 ft), 0.8 Mn	
	Thrust	TSFC	Thrust	TSFC
Engine as delivered (treated fan duct)	73850N (16600 lb)	0.0507 kg/hr/N (0.497 lb/hr/lb)	20995.6N (4720 lb)	0.0787 kg/hr/N (0.772 lb/hr/lb)

- Figures 49 through 52 provide plots of bare engine TSFC versus thrust at sea level static, 9144m (30,000 ft), 0.8 Mn; 9144m (30,000 ft), 0.84 Mn; and 10668m, (35,000 ft), 0.8 Mn conditions. Figure 53 shows estimated sea level thrust lapse rate.

- Estimates of Relative Exhaust Velocities

At sea-level static, standard day

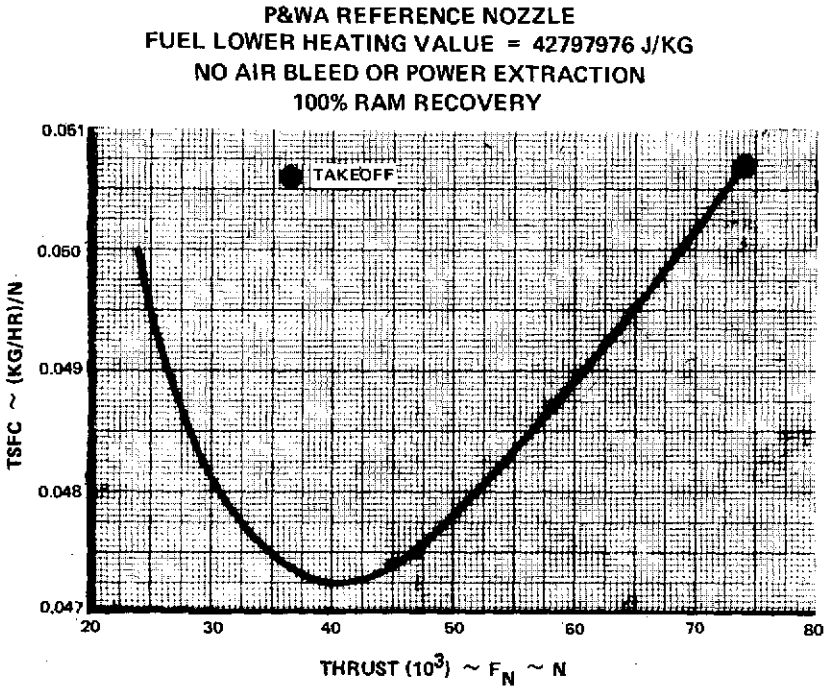
Mn	$V_{primary}$	V_{fan}
0	440 m/s (1445 ft/sec)	300 m/s (985 ft/sec)

At sea-level 302°K (84°F) T_{am}

Mn	$V_{primary}$ m/s	$V_{primary}$ (ft/sec)	V_{fan} m/s	V_{fan} (ft/sec)
0	452.63	(1485)	306.32	(1010)
0.1	419.14	(1375)	274.32	(900)
0.2	390.14	(1280)	243.84	(800)
0.3	365.76	(1200)	216.41	(715)
0.4	342.90	(1125)	192.02	(635)

- Estimated Performance Characteristics with In-Service Engines

The performance increments for in-service conversions would have incremental performance changes similar to new engines.



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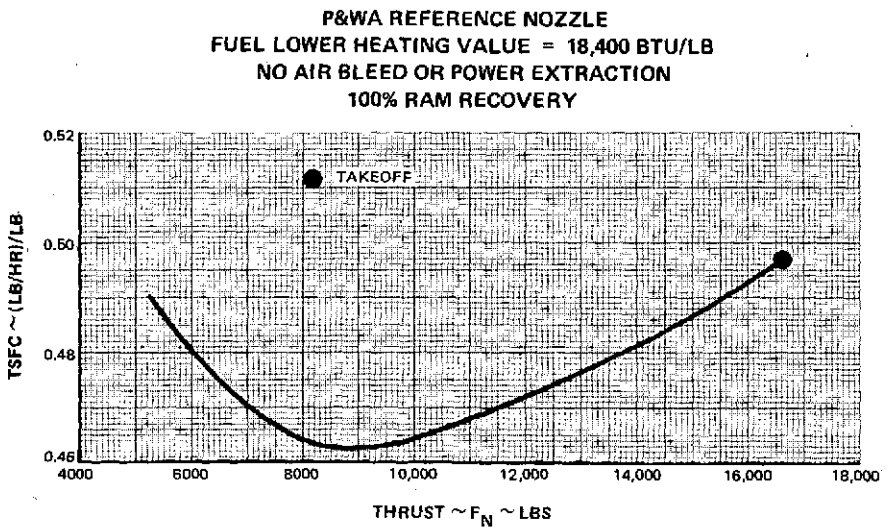
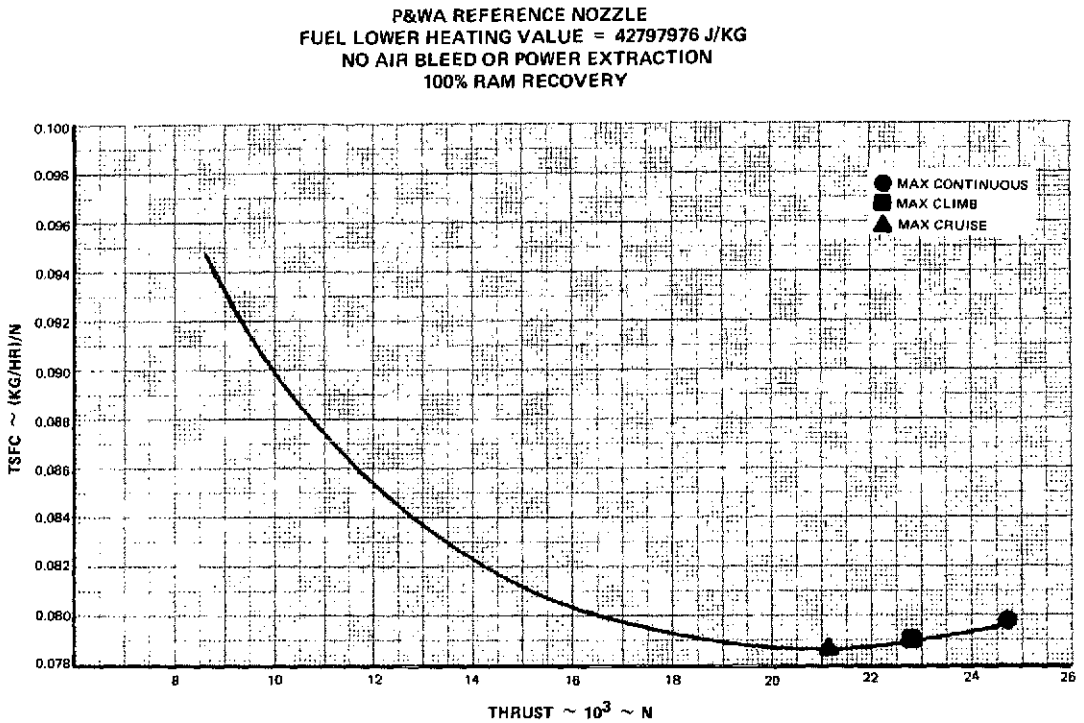


English Units

Figure 49 JT8D-109 Estimated Performance - Sea Level Static



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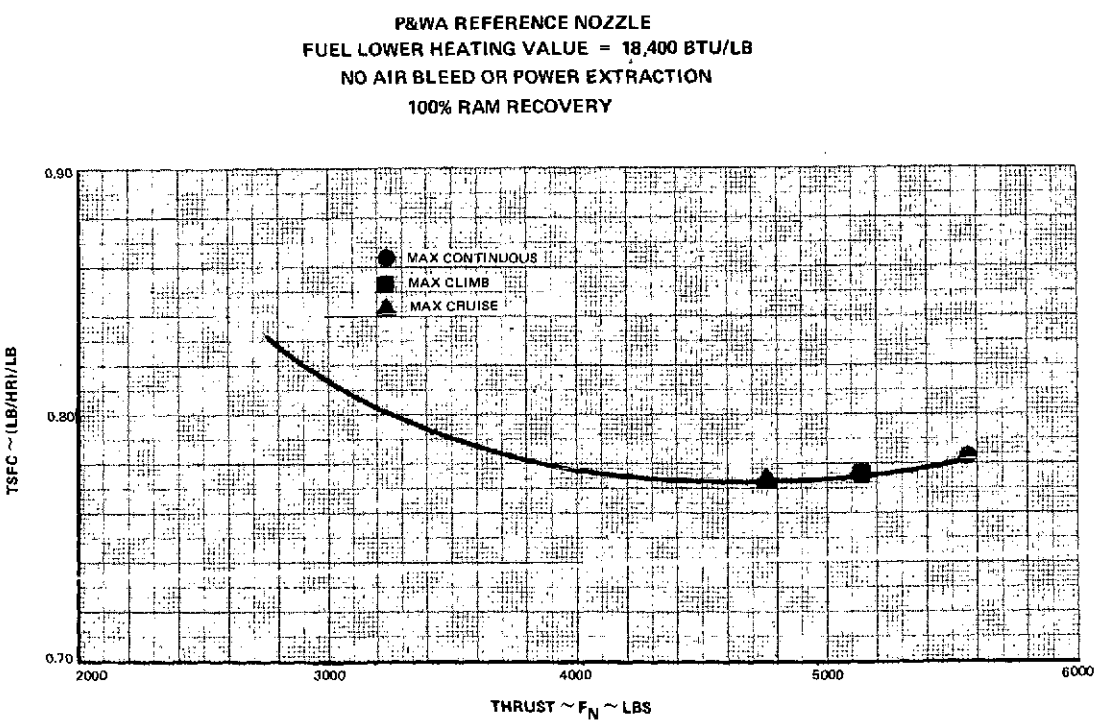
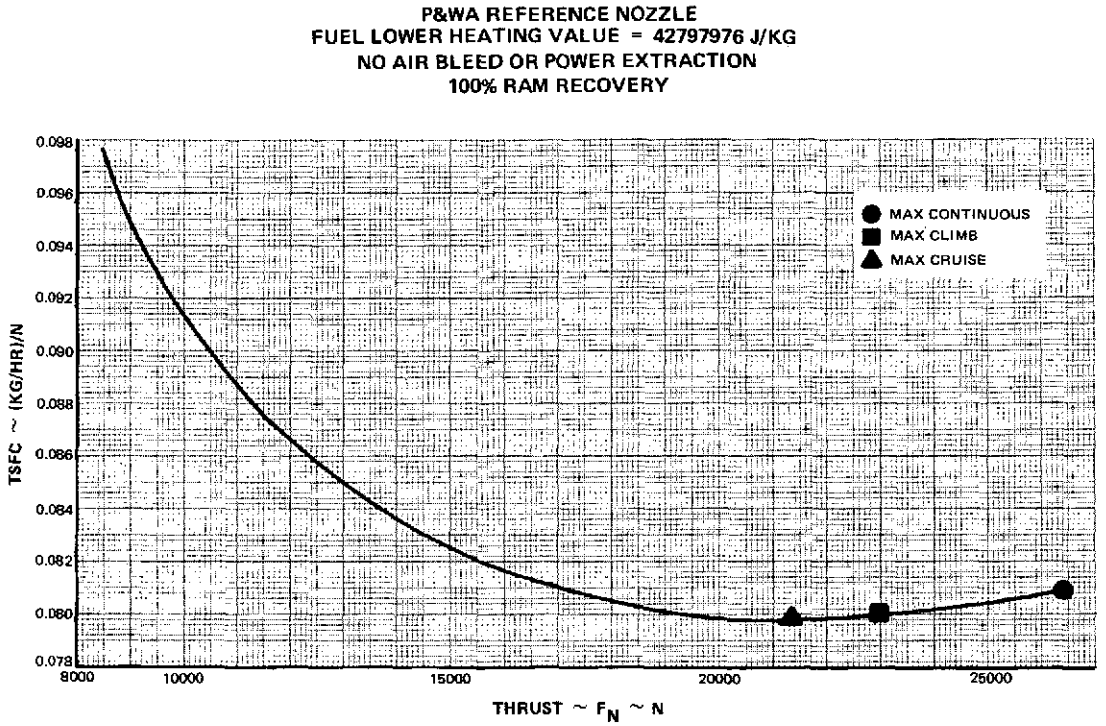


English Units

Figure 50 JT8D-109 Estimated Performance 9144 m (30,000 ft) Mach No. 0.80



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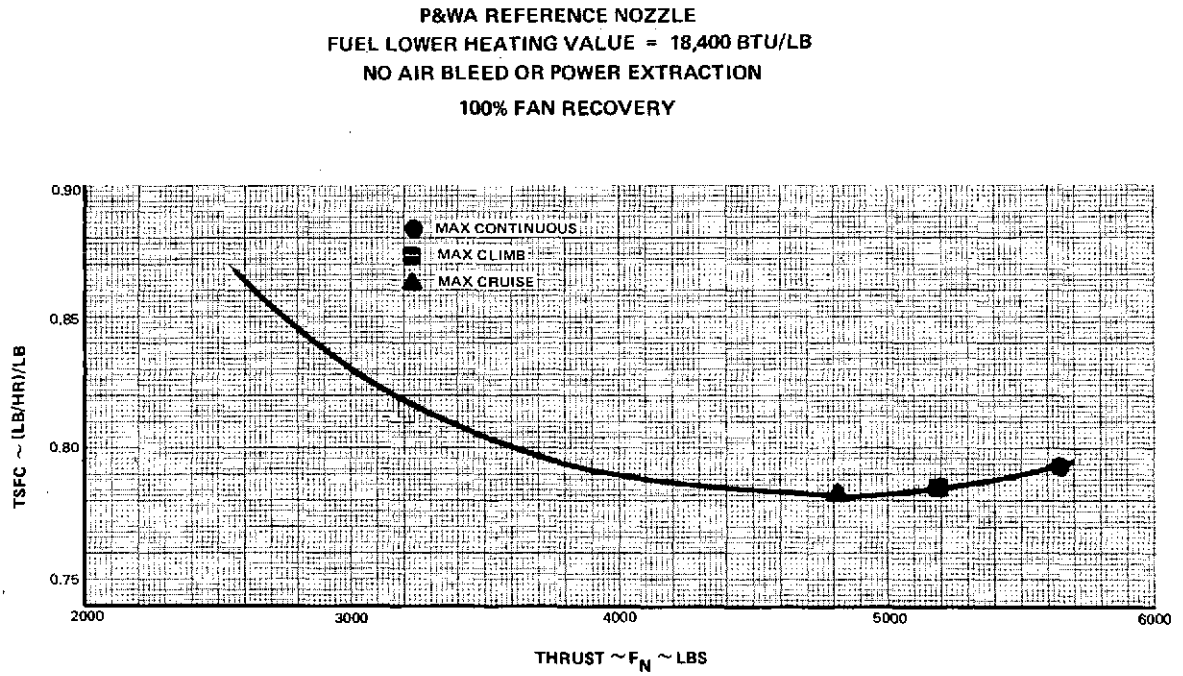
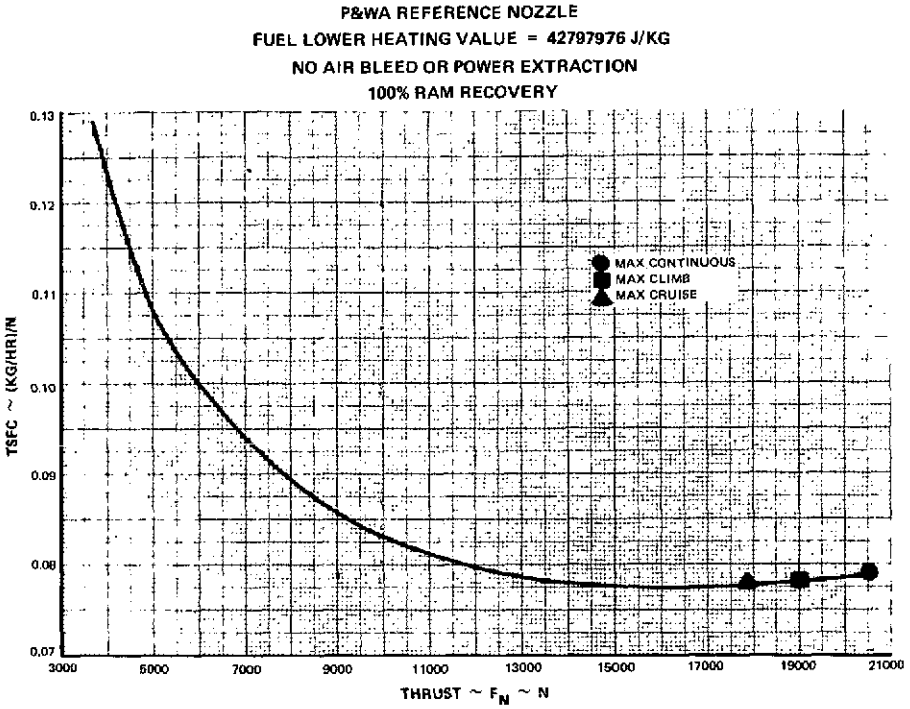
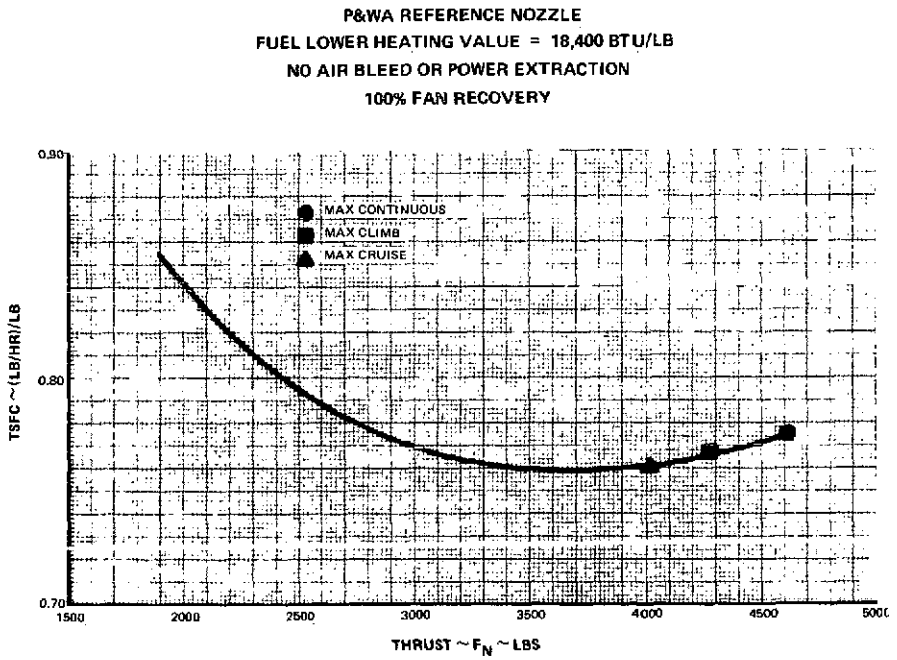


English Units

Figure 51 JT8D-109 Estimated Performance 9144 m (30,000 ft) Mach No. 0.84

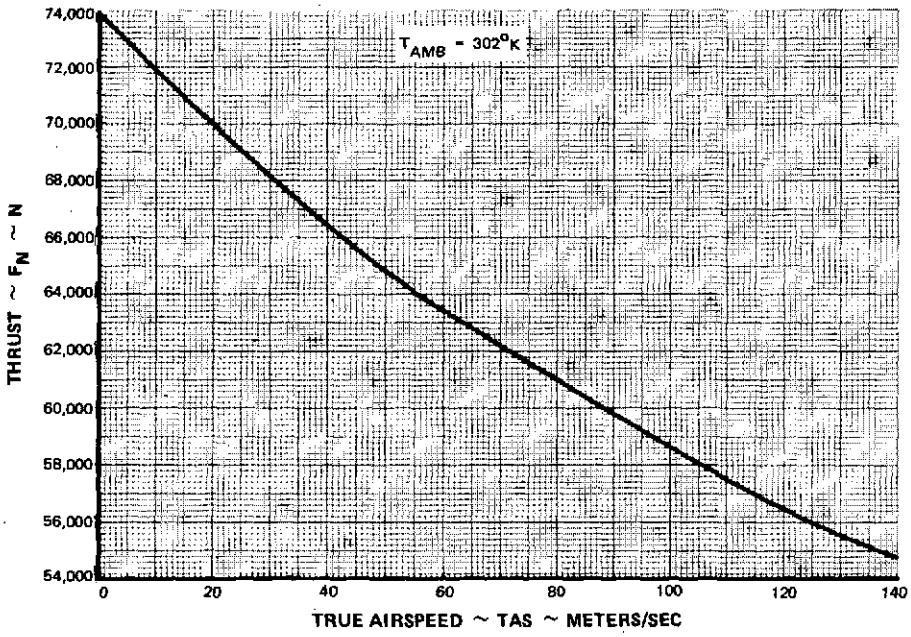


SI Units

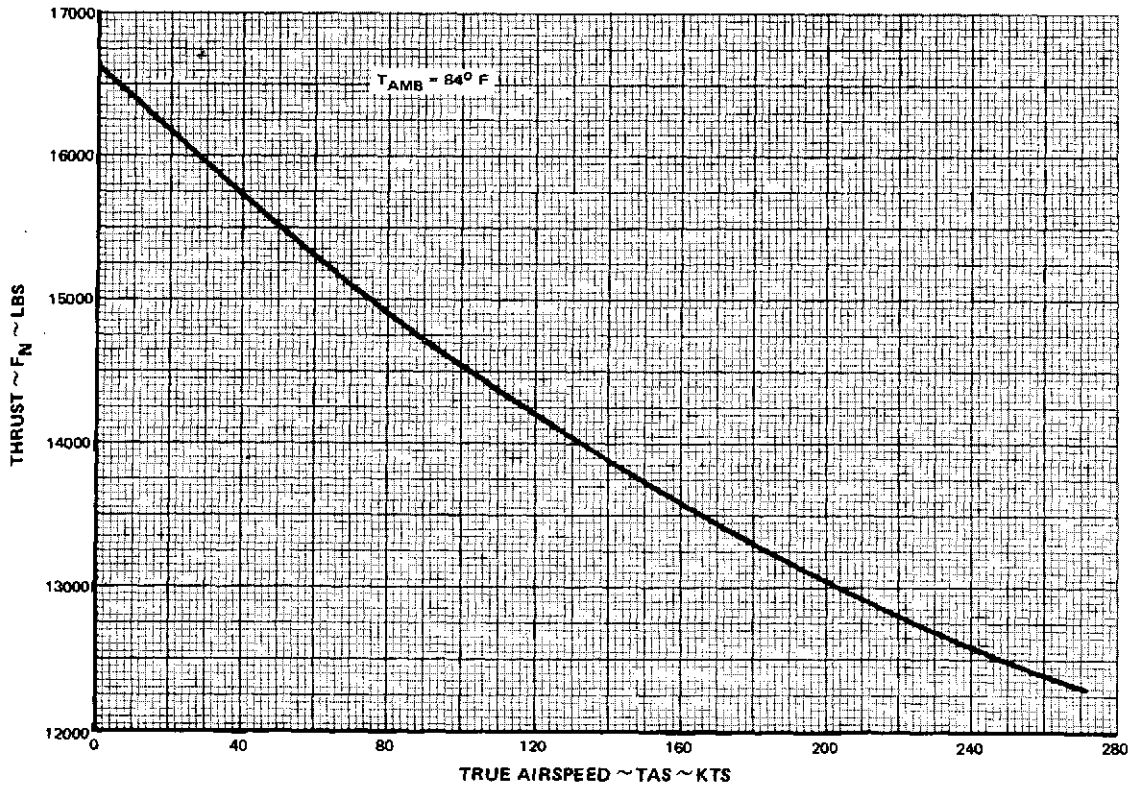


English Units

Figure 52 JT8D-109 Estimated Performance 10,668 m (35,000 ft) Mach No. 0.80



SI Units



English Units

Figure 53 JT8D-109 Estimated Thrust Lapse Rate - Sea Level Take Off

2. Operating Limits

a. Engine Rotor Speed

For all JT8D-100 engine models, the maximum low rotor (N_1) and high rotor (N_2) speed limits are 8000 rpm and 12,250 rpm, respectively.

b. Exhaust Gas Temperature

The JT8D-100 derivative of a particular JT8D engine model uses turbine inlet temperatures comparable to current operating levels for that particular model.

Rating	JT8D-109 Exhaust Gas Temperature Limit (Estimated)*	
	°K	°F
Takeoff	833.2	(1040)
Maximum Continuous	793.2	(968)
Maximum Climb	793.2	(968)
Maximum Cruise	763.2	(914)
Idle (bleed)	753.2	(896)
(no bleed)	693.2	(788)
Starting below288°K(59°F)Tam	693.2	(788)
above 288°K(59°F)Tam	833.2	(1040)

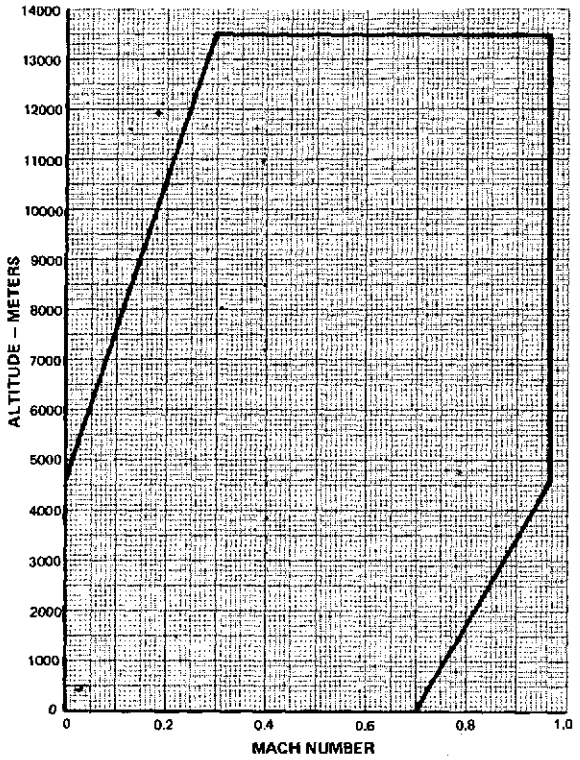
*Actual limits can only be established after engine test. However, since the basic cycle chosen requires the extraction of additional low turbine work at the current engine turbine inlet temperature levels, the exhaust temperature limit will be below current levels of the particular model being converted.

c. Oil Pressure and Temperature

The oil pressure limit is 27.6 - 37.9 N/cm^2 (40-55 lb/in^2) at all conditions. The steady state maximum allowable oil in temperature is 394.3°K (250°F) for the JT8D-109 engine model.

d. Operating Envelope

The engine and engine systems provided therewith will function satisfactorily within the current operating envelopes for JT8D powered Boeing 727 and 737 and McDonnell-Douglas DC-9 aircraft. This operating envelope is shown in Figure 54.



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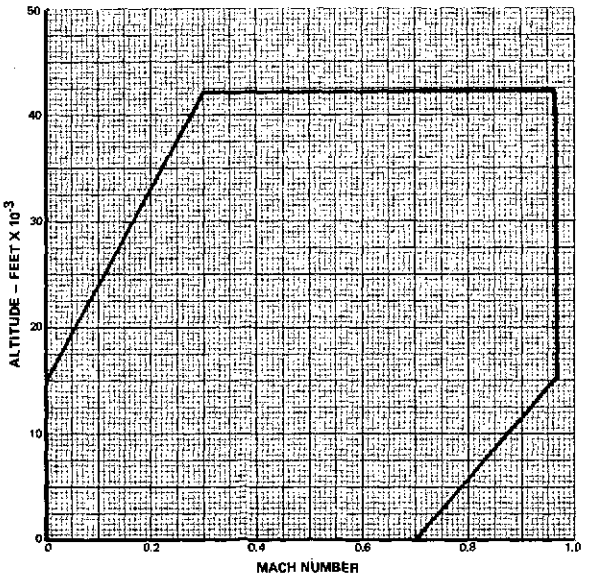

English Units

Figure 54 JT8D-109 Estimated Engine Operating Envelope

3. Estimated Static Noise Levels

Predicted sea level static noise levels for a JT8D-109 engine fitted with hardwall flight inlet, fan case and fan ducts are presented in Table XX, Appendix B. The estimates were made of 304.8 m (1000 ft) sideline for the takeoff condition and 112.8 m (370 ft) sideline for three approach settings (one for each aircraft).

Estimated sea level static noise levels for the as shipped acoustically treated fan duct engine fitted with a hardwall flight inlet are presented in Table XXI, Appendix B. The as shipped configuration includes acoustic treatment between the inlet guide vane and the fan rotor and in the fan duct. These estimates were made at the 304.8 m (1000 ft) and 112.8 m (370 ft) sideline points, as well as at 60.8 m (200 ft) sideline, for a sea level static part power operating line. The SLS part power line consisted of a take-off point, four intermediate points, and an approach power point. Table XIX shows the part power engine performances.

TABLE XIX

JT8D-109 ESTIMATED PART-POWER PERFORMANCE
Standard-Day Temperature+10°K (18°F)

				Intermediate Points				727-200
			Take-Off	No. 1	No. 2	No. 3	No. 4	Approach
Corrected N_1	–	RPM	7444	7142	6629	6353	6066	5564
F_{nt}	–	N	73778	67150	56421	50918	45585	36942
	–	(lb)	(16586)	(15096)	(12684)	(11447)	(10248)	(8305)
F_{ne}	–	N	31151	27597	21996	19300	16716	12833
	–	(lb)	(7003)	(6204)	(4945)	(4339)	(3758)	(2885)
W_{ae}	–	kg/s	68.58	64.73	57.33	53.43	49.62	43.54
	–	(lb/sec)	(151.2)	(142.7)	(126.4)	(117.8)	(109.4)	(96.0)
F_{nd}	–	N	42627	39553	34425	31618	28869	24109
	–	(lb)	(9583)	(8892)	(7739)	(7108)	(6490)	(5420)
W_{ad}	–	kg/s	139.5	135.0	127.0	122.0	117.5	108.9
	–	(lb/sec)	(307.5)	(297.6)	(280)	(269)	(259)	(240)
$P_{t2.5}/P_{t2}$			1.672	1.615	1.523	1.474	1.426	1.345
A_{je}	–	m^2	0.321	0.321	0.321	0.321	0.321	0.321
	–	(ft^2)	(3.45)	(3.45)	(3.45)	(3.45)	(3.45)	(3.45)
A_{jd}	–	m^2	0.426	0.426	0.426	0.426	0.426	0.426
	–	(ft^2)	(4.59)	(4.59)	(4.59)	(4.59)	(4.59)	(4.59)

The static noise predictions do not account for installation differences among the 727, 737 and DC-9 aircraft. The data base for static JT8D-109 noise predictions was obtained from static noise tests of a JT9D uninstalled engine fitted with a hardwall flight contoured inlet and hardwall ducts. The JT9D data were corrected for differences between JT9D and JT8D-109 engine geometry and cycle performance. The following assumptions were used in generating the sea level static estimated noise levels:

1. Jet noise level estimates were made using a procedure based on the SAE method in accordance with the procedures of ARP 876.

2. Jet noise directivity was approximated using factors that are constant for each frequency.

3. Primary flowstream jet noise was predicted using a (jet velocity)^5 relationship below 304.8 m/s (1000 ft/sec), and includes both externally generated jet noise and low frequency core noise. The fan stream jet noise was assumed to follow a (jet velocity)^8 relationship below 304.8 m/s (1000 ft/sec), which is typical of externally generated jet noise.

4. Fan noise levels were based on JT9D engine data scaled for size, spacing, and fan pressure ratio. Adjustments were made for the presence of inlet guide vanes using 0.57 scale rig data obtained with stub inlet vanes forward of a single stage test fan.

5. Low frequency fan broadband noise was estimated to "roll off" at a slope of 1 dB per 1/3 octave band.

6. High frequency core engine noise estimates were based upon static tests of a JT8D-9, tested both with and without tailpipe treatment. These estimates did not account for effects on this type of noise due to changes in turbine loading between the JT8D-9 and JT8D-109 cycles.

The high frequency core engine noise matrices show the peak level as a function of low turbine rotor speed, spectral distribution, and directivity. This noise component is not included in the total noise matrices.

IV. CONCLUDING REMARKS

Phase I of this program has determined that it is feasible to obtain a cycle and design a retro-fit configuration that will significantly reduce the noise level of the current JT8D engines while maintaining overall engine performance and durability. The design configuration has been released and the performance and noise goals have been established.

The development and demonstration tests to be conducted during Phase II of this program will evaluate whether these established noise,performance and durability goals have been achieved.

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
TAKE OFF RATING

TAMB = 288 DEG K

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	73851	0.0507	3744	73851	7450	7450	11239	11239	212	2.00
609	0.00	68601	0.0507	3477	73774	7447	7447	11237	11237	211	2.00
1219	0.00	63726	0.0507	3230	73774	7447	7447	11237	11237	211	2.00
1828	0.00	59136	0.0507	2998	73774	7447	7447	11237	11237	211	2.00
2438	0.00	54817	0.0507	2779	73774	7447	7447	11237	11237	211	2.00
3047	0.00	50757	0.0507	2573	73774	7447	7447	11237	11237	211	2.00
3657	0.00	46944	0.0507	2379	73774	7447	7447	11237	11237	211	2.00
4267	0.00	43378	0.0508	2183	73180	7424	7424	11236	11236	211	2.01
0	0.10	67289	0.0458	3734	67289	7450	7443	11240	11229	211	2.00
609	0.10	62571	0.0458	3490	67290	7450	7443	11240	11229	211	2.00
1219	0.10	58125	0.0458	3242	67290	7450	7443	11240	11229	211	2.00
1828	0.10	53938	0.0458	3008	67290	7450	7443	11240	11229	211	2.00
2438	0.10	49990	0.0458	2789	67290	7450	7443	11240	11229	211	2.00
3047	0.10	46296	0.0458	2582	67290	7450	7443	11240	11229	211	2.00
3657	0.10	42818	0.0458	2388	67290	7450	7443	11240	11229	211	2.00
4267	0.10	39255	0.0459	2193	66779	7430	7422	11239	11227	211	2.01
0	0.20	62082	0.0611	3794	62082	7456	7427	11248	11203	211	2.01
609	0.20	57729	0.0611	3528	62082	7456	7427	11248	11203	211	2.01
1219	0.20	53626	0.0611	3277	62082	7456	7427	11248	11203	211	2.01
1828	0.20	49763	0.0611	3041	62082	7456	7427	11248	11203	211	2.01
2438	0.20	46129	0.0611	2819	62082	7456	7427	11248	11203	211	2.01
3047	0.20	42713	0.0611	2610	62082	7456	7427	11248	11203	211	2.01
3657	0.20	39504	0.0611	2414	62082	7456	7427	11248	11203	211	2.01
4267	0.20	36502	0.0612	2221	61756	7443	7413	11247	11202	211	2.02
0	0.30	57932	0.0666	3858	57932	7459	7393	11260	11160	211	2.02
609	0.30	53870	0.0666	3587	57932	7459	7393	11260	11160	211	2.02
1219	0.30	50042	0.0666	3332	57932	7459	7393	11260	11160	211	2.02
1828	0.30	46437	0.0666	3092	57932	7459	7393	11260	11160	211	2.02
2438	0.30	43045	0.0666	2866	57932	7459	7393	11260	11160	211	2.02
3047	0.30	39857	0.0666	2654	57932	7459	7393	11260	11160	211	2.02
3657	0.30	36864	0.0666	2455	57932	7459	7393	11260	11160	211	2.02
4267	0.30	34037	0.0666	2267	57903	7459	7393	11260	11160	211	2.02
0	0.40	54670	0.0721	3943	54670	7455	7338	11275	11098	210	2.05
609	0.40	50836	0.0721	3666	54669	7455	7338	11275	11098	210	2.05
1219	0.40	47223	0.0721	3406	54669	7455	7338	11275	11098	210	2.05
1828	0.40	43821	0.0721	3160	54669	7455	7338	11275	11098	210	2.05
2438	0.40	40621	0.0721	2930	54669	7455	7338	11275	11098	210	2.05
3047	0.40	37613	0.0721	2713	54669	7455	7338	11275	11098	210	2.05
3657	0.40	34787	0.0721	2509	54669	7455	7338	11275	11098	210	2.05
4267	0.40	32136	0.0721	2318	54669	7455	7338	11275	11098	210	2.05

SI UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
TAKE OFF RATING
TAMB = 288 DEG K

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PUP2	TOT2	P7P2	T7T2	P8MP2
0	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.66	1.61
609	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.65	1.60
1219	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.65	1.60
1828	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.65	1.60
2438	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.65	1.60
3047	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.65	1.60
3657	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.65	1.60
4267	0.00	4.16	1.58	7.43	1.81	15.63	2.39	1.62	1.20	1.64	2.66	1.60
0	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
609	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
1219	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
1828	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
2438	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
3047	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
3657	0.10	4.20	1.58	7.49	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
4267	0.10	4.16	1.58	7.43	1.81	15.61	2.39	1.62	1.20	1.64	2.65	1.60
0	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
609	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
1219	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
1828	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
2438	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
3047	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
3657	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
4267	0.20	4.17	1.58	7.43	1.81	15.56	2.39	1.61	1.20	1.63	2.63	1.58
0	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
609	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
1219	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
1828	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
2438	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
3047	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
3657	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
4267	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.59	1.19	1.61	2.60	1.57
0	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
609	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
1219	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
1828	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
2438	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
3047	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
3657	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
4267	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = -40 DEG F

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	RPD
0	0.00	16600	0.407	8755	16600	7450	7450	11236	11236	467	2.00
2000	0.00	15422	0.407	7867	15585	7447	7447	11237	11237	467	2.00
4000	0.00	14326	0.407	7122	15585	7447	7447	11237	11237	467	2.00
6000	0.00	13294	0.407	6609	15585	7447	7447	11237	11237	467	2.00
8000	0.00	12327	0.407	6126	15585	7447	7447	11237	11237	467	2.00
10000	0.00	11410	0.407	5677	15585	7447	7447	11237	11237	467	2.00
12000	0.00	10553	0.407	5247	15585	7447	7447	11237	11237	467	2.00
14000	0.00	9670	0.408	4814	15451	7424	7424	11236	11236	465	2.01
0	0.10	15127	0.547	8278	15127	7450	7443	11240	11229	467	2.00
2000	0.10	14066	0.547	7696	15127	7450	7443	11240	11229	467	2.00
4000	0.10	13067	0.547	7140	15127	7450	7443	11240	11229	467	2.00
6000	0.10	12125	0.547	6634	15127	7450	7443	11240	11229	467	2.00
8000	0.10	11240	0.547	6149	15127	7450	7443	11240	11229	467	2.00
10000	0.10	10407	0.547	5694	15127	7450	7443	11240	11229	467	2.00
12000	0.10	9628	0.547	5268	15127	7450	7443	11240	11229	467	2.00
14000	0.10	8824	0.548	4838	15012	7430	7432	11235	11224	465	2.01
0	0.20	13956	0.590	8235	13956	7455	7437	11248	11203	466	2.01
2000	0.20	12978	0.590	7778	13956	7456	7437	11248	11203	466	2.01
4000	0.20	12058	0.590	7226	13956	7456	7437	11248	11203	466	2.01
6000	0.20	11197	0.590	6705	13956	7456	7437	11248	11203	466	2.01
8000	0.20	10390	0.590	6315	13956	7456	7437	11248	11203	466	2.01
10000	0.20	9602	0.590	5755	13956	7456	7437	11248	11203	466	2.01
12000	0.20	8881	0.590	5323	13956	7456	7437	11248	11203	466	2.01
14000	0.20	8141	0.590	4907	13884	7434	7419	11247	11203	465	2.02
0	0.30	13024	0.653	8506	13024	7450	7434	11240	11160	465	2.02
2000	0.30	12110	0.653	7909	13024	7450	7434	11240	11160	465	2.02
4000	0.30	11240	0.653	7347	13024	7450	7434	11240	11160	465	2.02
6000	0.30	10430	0.653	6815	13024	7450	7434	11240	11160	465	2.02
8000	0.30	9677	0.653	6320	13024	7450	7434	11240	11160	465	2.02
10000	0.30	8960	0.653	5852	13024	7450	7434	11240	11160	465	2.02
12000	0.30	8287	0.653	5412	13024	7450	7434	11240	11160	465	2.02
14000	0.30	7651	0.653	4998	13017	7450	7434	11240	11160	465	2.02
0	0.40	12290	0.707	8697	12290	7455	7438	11275	11098	463	2.05
2000	0.40	11428	0.707	8083	12290	7455	7438	11275	11098	463	2.05
4000	0.40	10615	0.707	7509	12290	7455	7438	11275	11098	463	2.05
6000	0.40	9851	0.707	6968	12290	7455	7438	11275	11098	463	2.05
8000	0.40	9132	0.707	6459	12290	7455	7438	11275	11098	463	2.05
10000	0.40	8455	0.707	5981	12290	7455	7438	11275	11098	463	2.05
12000	0.40	7820	0.707	5531	12290	7455	7438	11275	11098	463	2.05
14000	0.40	7224	0.707	5110	12290	7455	7438	11275	11098	463	2.05

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE -100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = -65 DEG F

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PNP2	TNT2	P7P2	T7T2	PBMP2
0	0.00	4.20	1.58	4.20	1.58	15.76	2.40	1.63	1.20	1.65	2.65	1.61
2000	0.00	4.20	1.58	7.80	1.81	15.78	2.40	1.63	1.20	1.65	2.65	1.60
4000	0.00	4.20	1.58	7.80	1.81	15.78	2.40	1.63	1.20	1.65	2.65	1.60
6000	0.00	4.20	1.58	7.80	1.81	15.75	2.40	1.63	1.20	1.65	2.65	1.60
8000	0.00	4.20	1.58	7.80	1.81	15.75	2.40	1.63	1.20	1.65	2.65	1.60
10000	0.00	4.20	1.58	7.80	1.81	15.75	2.40	1.63	1.20	1.65	2.65	1.60
12000	0.00	4.20	1.58	7.80	1.81	15.75	2.40	1.63	1.20	1.65	2.65	1.60
14000	0.00	4.18	1.58	7.43	1.81	15.63	2.39	1.62	1.20	1.64	2.64	1.60
0	0.10	4.20	1.58	7.80	1.81	15.74	2.39	1.62	1.20	1.65	2.65	1.60
2000	0.10	4.20	1.58	7.80	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
4000	0.10	4.20	1.58	7.80	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
6000	0.10	4.20	1.58	7.80	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
8000	0.10	4.20	1.58	7.80	1.81	15.74	2.39	1.62	1.20	1.65	2.65	1.60
10000	0.10	4.20	1.58	7.80	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
12000	0.10	4.20	1.58	7.80	1.81	15.73	2.39	1.62	1.20	1.65	2.65	1.60
14000	0.10	4.18	1.58	7.43	1.81	15.61	2.39	1.62	1.20	1.64	2.65	1.60
0	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
2000	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
4000	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
6000	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
8000	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
10000	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
12000	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
14000	0.20	4.17	1.58	7.43	1.81	15.56	2.39	1.61	1.20	1.63	2.63	1.59
0	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
2000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
4000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
6000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
8000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
10000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
12000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
14000	0.30	4.18	1.58	7.41	1.81	15.46	2.38	1.60	1.19	1.61	2.60	1.57
0	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
2000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
4000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
6000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
8000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
10000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
12000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
14000	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
TAKE OFF RATING
TAMB = 302 DEG K

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	73797	0.0523	3856	73797	7618	7441	11488	11221	211	2.00
609	0.00	68822	0.0523	3586	73797	7618	7441	11488	11221	211	2.00
1219	0.00	63746	0.0523	3331	73797	7618	7441	11488	11221	211	2.00
1828	0.00	59154	0.0523	3091	73797	7618	7441	11488	11221	211	2.00
2438	0.00	54834	0.0523	2865	73797	7618	7441	11488	11221	211	2.00
3047	0.00	50775	0.0523	2653	73797	7618	7441	11488	11221	211	2.00
3657	0.00	46751	0.0523	2445	73470	7605	7428	11487	11220	211	2.01
4267	0.00	42600	0.0524	2233	72469	7567	7391	11484	11217	209	2.03
0	0.10	67313	0.0575	3871	67313	7619	7434	11490	11212	211	2.00
609	0.10	62693	0.0575	3599	67313	7619	7434	11490	11212	211	2.00
1219	0.10	58145	0.0575	3343	67313	7619	7434	11490	11212	211	2.00
1828	0.10	53957	0.0575	3103	67313	7619	7434	11490	11212	211	2.00
2438	0.10	50016	0.0575	2876	67313	7619	7434	11490	11212	211	2.00
3047	0.10	46312	0.0575	2663	67313	7619	7434	11490	11212	211	2.00
3657	0.10	42675	0.0575	2455	67065	7610	7426	11490	11211	211	2.01
4267	0.10	38863	0.0577	2243	66112	7573	7390	11487	11209	209	2.03
0	0.20	62122	0.0630	3912	62122	7627	7420	11498	11186	211	2.01
609	0.20	57766	0.0630	3638	62122	7627	7420	11498	11186	211	2.01
1219	0.20	53661	0.0630	3379	62122	7627	7420	11498	11186	211	2.01
1828	0.20	49796	0.0630	3136	62122	7627	7420	11498	11186	211	2.01
2438	0.20	46159	0.0630	2907	62122	7627	7420	11498	11186	211	2.01
3047	0.20	42740	0.0630	2692	62122	7627	7420	11498	11186	211	2.01
3657	0.20	39477	0.0630	2487	62040	7624	7417	11498	11186	211	2.01
4267	0.20	35924	0.0632	2271	61113	7586	7380	11495	11183	209	2.03
0	0.30	57970	0.0686	3978	57970	7633	7389	11510	11143	211	2.02
609	0.30	53905	0.0686	3699	57969	7633	7389	11510	11143	211	2.02
1219	0.30	50074	0.0686	3436	57969	7633	7389	11510	11143	211	2.02
1828	0.30	46467	0.0686	3189	57969	7633	7389	11510	11143	211	2.02
2438	0.30	43073	0.0686	2956	57969	7633	7389	11510	11143	211	2.02
3047	0.30	39883	0.0686	2737	57969	7633	7389	11510	11143	211	2.02
3657	0.30	36887	0.0686	2531	57969	7633	7389	11510	11143	211	2.02
4267	0.30	33655	0.0689	2317	57253	7601	7358	11508	11140	209	2.04
0	0.40	54687	0.0743	4064	54687	7622	7329	11525	11081	210	2.05
609	0.40	50852	0.0743	3779	54686	7622	7329	11525	11081	210	2.05
1219	0.40	47238	0.0743	3510	54686	7622	7329	11525	11081	210	2.05
1828	0.40	43835	0.0743	3257	54686	7622	7329	11525	11081	210	2.05
2438	0.40	40634	0.0743	3019	54686	7622	7329	11525	11081	210	2.05
3047	0.40	37624	0.0743	2796	54686	7622	7329	11525	11081	210	2.05
3657	0.40	34798	0.0743	2586	54686	7622	7329	11525	11081	210	2.05
4267	0.40	31937	0.0746	2378	54330	7609	7316	11524	11080	209	2.06

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = 302 DEG K

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
0	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
609	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
1219	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
1828	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
2438	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
3047	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
3657	0.00	4.17	1.58	7.46	1.81	15.65	2.39	1.62	1.20	1.65	2.66	1.60
4267	0.00	4.11	1.57	7.35	1.80	15.45	2.38	1.62	1.20	1.64	2.66	1.59
0	0.10	4.20	1.58	7.46	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
609	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
1219	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
1828	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
2438	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
3047	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
3657	0.10	4.18	1.58	7.46	1.81	15.64	2.38	1.62	1.20	1.64	2.65	1.60
4267	0.10	4.11	1.57	7.35	1.80	15.44	2.38	1.61	1.20	1.63	2.65	1.59
0	0.20	4.20	1.58	7.46	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
609	0.20	4.20	1.58	7.46	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
1219	0.20	4.20	1.58	7.46	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
1828	0.20	4.20	1.58	7.46	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
2438	0.20	4.20	1.58	7.46	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
3047	0.20	4.20	1.58	7.46	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
3657	0.20	4.19	1.58	7.45	1.81	15.59	2.38	1.61	1.20	1.63	2.63	1.59
4267	0.20	4.12	1.57	7.34	1.80	15.38	2.37	1.60	1.19	1.62	2.64	1.58
0	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
609	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
1219	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
1828	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
2438	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
3047	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
3657	0.30	4.19	1.58	7.46	1.80	15.44	2.37	1.59	1.19	1.61	2.61	1.57
4267	0.30	4.13	1.57	7.31	1.80	15.27	2.36	1.59	1.19	1.60	2.61	1.56
0	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
609	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
1219	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
1828	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
2438	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
3047	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
3657	0.40	4.15	1.57	7.29	1.79	15.16	2.36	1.57	1.19	1.58	2.57	1.54
4267	0.40	4.12	1.57	7.25	1.79	15.08	2.35	1.57	1.19	1.57	2.57	1.54

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-100 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE - ION PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = 84 DEG F

ALT	MN	FNOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	16600	0.813	8503	16600	7618	7441	11488	11221	466	2.00
2000	0.00	14427	0.813	7907	16600	7618	7441	11488	11221	466	2.00
4000	0.00	14330	0.813	7345	16600	7618	7441	11488	11221	466	2.00
6000	0.00	13308	0.813	6815	16600	7618	7441	11488	11221	466	2.00
8000	0.00	12327	0.813	6318	16600	7618	7441	11488	11221	466	2.00
10000	0.00	11418	0.813	5850	16600	7618	7441	11488	11221	466	2.00
12000	0.00	10610	0.813	5409	16616	7605	7438	11487	11220	466	2.01
14000	0.00	9876	0.814	4994	16591	7567	7381	11484	11217	463	2.03
0	0.10	15139	0.564	8534	15139	7410	7434	11400	11213	466	2.00
2000	0.10	14071	0.564	7936	15139	7410	7434	11400	11213	466	2.00
4000	0.10	13071	0.564	7372	15139	7410	7434	11400	11213	466	2.00
6000	0.10	12130	0.564	6841	15139	7410	7434	11400	11213	466	2.00
8000	0.10	11244	0.564	6341	15139	7410	7434	11400	11213	466	2.00
10000	0.10	10411	0.564	5871	15139	7410	7434	11400	11213	466	2.00
12000	0.10	9653	0.564	5447	15076	7410	7434	11400	11211	465	2.01
14000	0.10	8938	0.565	4045	14863	7373	7380	11387	11200	462	2.03
0	0.20	13965	0.618	8628	13965	7627	7430	11408	11186	466	2.01
2000	0.20	12985	0.618	8021	13965	7627	7430	11408	11186	466	2.01
4000	0.20	12063	0.618	7451	13965	7627	7430	11408	11186	466	2.01
6000	0.20	11194	0.618	6914	13965	7627	7430	11408	11186	466	2.01
8000	0.20	10377	0.618	6409	13965	7627	7430	11408	11186	466	2.01
10000	0.20	9608	0.618	5935	13965	7627	7430	11408	11186	466	2.01
12000	0.20	8874	0.618	5483	13947	7624	7417	11408	11185	466	2.01
14000	0.20	8176	0.620	5058	13778	7586	7360	11405	11183	462	2.03
0	0.30	13033	0.673	8771	13033	7633	7380	11510	11147	465	2.02
2000	0.30	12118	0.673	8156	13033	7633	7380	11510	11147	465	2.02
4000	0.30	11257	0.673	7577	13033	7633	7380	11510	11147	465	2.02
6000	0.30	10446	0.673	7031	13033	7633	7380	11510	11147	465	2.02
8000	0.30	9683	0.673	6517	13033	7633	7380	11510	11147	465	2.02
10000	0.30	8966	0.673	6033	13033	7633	7380	11510	11147	465	2.02
12000	0.30	8292	0.673	5581	13032	7633	7380	11510	11147	465	2.02
14000	0.30	7656	0.675	5168	12871	7601	7338	11508	11140	462	2.04
0	0.40	12304	0.729	8969	12304	7622	7330	11525	11081	463	2.05
2000	0.40	11432	0.729	8331	12304	7622	7330	11525	11081	463	2.05
4000	0.40	10610	0.729	7730	12304	7622	7330	11525	11081	463	2.05
6000	0.40	9834	0.729	7161	12304	7622	7330	11525	11081	463	2.05
8000	0.40	9104	0.729	5627	12304	7622	7330	11525	11081	463	2.05
10000	0.40	8418	0.729	6134	12304	7622	7330	11525	11081	463	2.05
12000	0.40	7774	0.729	5671	12304	7622	7330	11525	11081	463	2.05
14000	0.40	7170	0.730	5238	12213	7609	7318	11524	11080	462	2.05

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = 84 DEG F

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	POP2	TDT2	P7P2	T7T2	PAMP2
0	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
2000	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
4000	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
6000	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
8000	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
10000	0.00	4.20	1.58	7.49	1.81	15.73	2.39	1.63	1.20	1.65	2.66	1.61
12000	0.00	4.17	1.58	7.46	1.81	15.66	2.39	1.62	1.20	1.65	2.65	1.60
14000	0.00	4.11	1.57	7.35	1.80	15.45	2.38	1.62	1.20	1.64	2.66	1.60
0	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
2000	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
4000	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
6000	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
8000	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
10000	0.10	4.20	1.58	7.48	1.81	15.70	2.39	1.62	1.20	1.65	2.65	1.60
12000	0.10	4.18	1.58	7.46	1.81	15.64	2.38	1.62	1.20	1.64	2.65	1.60
14000	0.10	4.11	1.57	7.35	1.80	15.44	2.38	1.61	1.20	1.63	2.65	1.60
0	0.20	4.20	1.58	7.48	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
2000	0.20	4.20	1.58	7.48	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
4000	0.20	4.20	1.58	7.48	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
6000	0.20	4.20	1.58	7.48	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
8000	0.20	4.20	1.58	7.48	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
10000	0.20	4.20	1.58	7.48	1.81	15.61	2.38	1.61	1.20	1.63	2.63	1.59
12000	0.20	4.19	1.58	7.47	1.81	15.59	2.38	1.61	1.20	1.63	2.63	1.59
14000	0.20	4.12	1.57	7.34	1.80	15.38	2.37	1.60	1.19	1.62	2.64	1.59
0	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
2000	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
4000	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
6000	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
8000	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
10000	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
12000	0.30	4.19	1.58	7.48	1.80	15.44	2.37	1.60	1.19	1.61	2.61	1.57
14000	0.30	4.13	1.57	7.31	1.80	15.27	2.36	1.60	1.19	1.60	2.61	1.56
0	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
2000	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
4000	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
6000	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
8000	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
10000	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
12000	0.40	4.18	1.57	7.20	1.79	15.16	2.35	1.57	1.19	1.58	2.57	1.54
14000	0.40	4.12	1.57	7.05	1.79	15.04	2.35	1.57	1.19	1.57	2.57	1.54

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = 322 DEG K

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	62271	0.0527	3281	62271	7301	6906	11519	10896	196	2.14
609	0.00	57905	0.0527	3051	62271	7301	6906	11519	10896	196	2.14
1219	0.00	53790	0.0527	2834	62271	7301	6906	11519	10896	196	2.14
1828	0.00	49915	0.0527	2630	62271	7301	6906	11519	10896	196	2.14
2438	0.00	46270	0.0527	2438	62271	7301	6906	11519	10896	196	2.14
3047	0.00	42631	0.0528	2248	61964	7288	6893	11518	10895	196	2.14
3657	0.00	38863	0.0529	2056	61075	7248	6856	11515	10892	194	2.16
4267	0.00	35427	0.0531	1880	60267	7212	6822	11506	10883	193	2.18
0	0.10	56257	0.0585	3292	56257	7303	6902	11522	10888	196	2.14
609	0.10	52313	0.0585	3061	56258	7303	6902	11522	10888	196	2.14
1219	0.10	48595	0.0585	2843	56258	7303	6902	11522	10888	196	2.14
1828	0.10	45095	0.0585	2638	56258	7303	6902	11522	10888	196	2.14
2438	0.10	41801	0.0585	2446	56258	7303	6902	11522	10888	196	2.14
3047	0.10	38527	0.0586	2257	55998	7290	6889	11521	10887	196	2.15
3657	0.10	35083	0.0588	2064	55150	7250	6851	11518	10884	195	2.17
4267	0.10	31967	0.0590	1886	54381	7214	6817	11509	10876	193	2.19
0	0.20	51350	0.0647	3320	51350	7300	6878	11529	10862	197	2.17
609	0.20	47750	0.0647	3087	51350	7300	6878	11529	10862	197	2.17
1219	0.20	44356	0.0647	2868	51350	7300	6878	11529	10862	197	2.17
1828	0.20	41161	0.0647	2661	51350	7300	6878	11529	10862	197	2.17
2438	0.20	38155	0.0647	2467	51350	7300	6878	11529	10862	197	2.17
3047	0.20	35265	0.0647	2281	51258	7296	6874	11528	10861	196	2.17
3657	0.20	32094	0.0650	2086	50437	7256	6836	11525	10858	195	2.19
4267	0.20	29206	0.0653	1907	49685	7221	6804	11519	10852	194	2.20
0	0.30	39920	0.0718	2865	39920	6895	6464	11290	10585	186	2.33
609	0.30	37120	0.0718	2664	39920	6895	6464	11290	10585	186	2.33
1219	0.30	34483	0.0718	2475	39920	6895	6464	11290	10585	186	2.33
1828	0.30	31999	0.0718	2297	39920	6895	6464	11290	10585	186	2.33
2438	0.30	29662	0.0718	2129	39920	6895	6464	11290	10585	186	2.33
3047	0.30	27465	0.0718	1971	39920	6895	6464	11290	10585	186	2.33
3657	0.30	25092	0.0721	1809	39433	6867	6438	11285	10580	185	2.34
4267	0.30	22857	0.0725	1656	38883	6836	6408	11282	10577	183	2.36
0	0.40	44128	0.0780	3440	44128	7312	6808	11557	10761	197	2.23
609	0.40	41034	0.0780	3199	44128	7312	6808	11557	10761	197	2.23
1219	0.40	38118	0.0780	2972	44128	7312	6808	11557	10761	197	2.23
1828	0.40	35372	0.0780	2758	44128	7312	6808	11557	10761	197	2.23
2438	0.40	32789	0.0780	2556	44128	7312	6808	11557	10761	197	2.23
3047	0.40	30360	0.0780	2367	44128	7312	6808	11557	10761	197	2.23
3657	0.40	27896	0.0782	2180	43840	7299	6796	11556	10760	196	2.24
4267	0.40	25360	0.0786	1993	43124	7264	6764	11554	10758	195	2.26

SI UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-10a TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
TAKE OFF RATING
TAMB = 322 DEG K

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
0	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
609	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
1219	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
1828	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
2438	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
3047	0.00	3.64	1.50	6.46	1.72	13.49	2.26	1.53	1.17	1.52	2.53	1.50
3657	0.00	3.58	1.50	6.36	1.71	13.30	2.25	1.52	1.17	1.51	2.53	1.49
4267	0.00	3.53	1.49	6.27	1.71	13.13	2.25	1.51	1.17	1.50	2.54	1.48
0	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.52	1.50
609	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.52	1.50
1219	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.52	1.50
1828	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.52	1.50
2438	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.52	1.50
3047	0.10	3.64	1.50	6.45	1.72	13.46	2.26	1.53	1.17	1.51	2.52	1.50
3657	0.10	3.58	1.50	6.35	1.71	13.28	2.25	1.52	1.17	1.50	2.53	1.49
4267	0.10	3.53	1.49	6.26	1.71	13.11	2.25	1.51	1.17	1.49	2.53	1.48
0	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
609	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
1219	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
1828	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
2438	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
3047	0.20	3.64	1.50	6.42	1.71	13.38	2.25	1.52	1.17	1.50	2.51	1.48
3657	0.20	3.57	1.49	6.32	1.71	13.20	2.25	1.51	1.17	1.49	2.51	1.48
4267	0.20	3.52	1.49	6.24	1.71	13.03	2.24	1.50	1.17	1.48	2.52	1.47
0	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
609	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
1219	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
1828	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
2438	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
3047	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
3657	0.30	3.22	1.44	5.61	1.65	11.61	2.16	1.43	1.15	1.38	2.40	1.39
4267	0.30	3.17	1.44	5.55	1.64	11.48	2.15	1.42	1.14	1.37	2.41	1.38
0	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
609	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
1219	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
1828	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
2438	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
3047	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
3657	0.40	3.58	1.49	6.26	1.70	12.94	2.22	1.47	1.16	1.44	2.45	1.43
4267	0.40	3.53	1.49	6.17	1.70	12.78	2.22	1.46	1.16	1.43	2.45	1.43

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE -100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = 120 DEG F

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	13999	0.517	7234	13999	7301	6906	11510	10805	433	2.14
2000	0.00	13017	0.517	6727	13999	7301	6906	11510	10805	433	2.14
4000	0.00	12092	0.517	6248	13999	7301	6906	11510	10805	433	2.14
6000	0.00	11221	0.517	5798	13999	7301	6906	11510	10805	433	2.14
8000	0.00	10401	0.517	5375	13999	7301	6906	11510	10805	433	2.14
10000	0.00	9633	0.517	4978	13999	7301	6906	11510	10805	433	2.14
12000	0.00	8915	0.519	4607	13999	7301	6906	11510	10805	433	2.14
14000	0.00	7964	0.520	4145	13999	7301	6906	11510	10805	433	2.14
0	0.10	12847	0.574	7358	12847	7301	6906	11510	10805	433	2.14
2000	0.10	11960	0.574	6780	12847	7301	6906	11510	10805	433	2.14
4000	0.10	10924	0.574	6269	12847	7301	6906	11510	10805	433	2.14
6000	0.10	10137	0.574	5817	12847	7301	6906	11510	10805	433	2.14
8000	0.10	9387	0.574	5385	12847	7301	6906	11510	10805	433	2.14
10000	0.10	8661	0.575	4976	12808	7300	6906	11501	10804	433	2.15
12000	0.10	7980	0.577	4590	12808	7300	6906	11518	10804	433	2.17
14000	0.10	7186	0.579	4160	12825	7314	6917	11509	10816	434	2.19
0	0.20	11944	0.634	7569	11844	7300	6878	11510	10805	433	2.17
2000	0.20	10944	0.634	6934	11844	7300	6878	11510	10805	433	2.17
4000	0.20	9971	0.634	6321	11844	7300	6878	11510	10805	433	2.17
6000	0.20	9053	0.634	5857	11844	7300	6878	11510	10805	433	2.17
8000	0.20	8177	0.634	5430	11844	7300	6878	11510	10805	433	2.17
10000	0.20	7338	0.634	5020	11844	7300	6878	11510	10805	433	2.17
12000	0.20	7215	0.657	4740	11844	7300	6878	11510	10805	433	2.18
14000	0.20	6585	0.661	4350	11844	7300	6878	11510	10805	433	2.20
0	0.30	8974	0.704	6317	8974	6800	6454	11500	10805	410	2.33
2000	0.30	8348	0.704	5874	8974	6800	6454	11500	10805	410	2.33
4000	0.30	7752	0.704	5457	8974	6800	6454	11500	10805	410	2.33
6000	0.30	7184	0.704	5064	8974	6800	6454	11500	10805	410	2.33
8000	0.30	6650	0.708	4708	8974	6800	6454	11500	10805	410	2.33
10000	0.30	6174	0.714	4405	8974	6800	6454	11500	10805	410	2.33
12000	0.30	5641	0.717	4082	8985	6807	6463	11505	10810	407	2.32
14000	0.30	4938	0.711	3652	8941	6775	6429	11502	10807	405	2.35
0	0.40	8020	0.765	7585	8020	7312	6808	11557	10761	434	2.23
2000	0.40	8234	0.765	7054	8020	7312	6808	11557	10761	434	2.23
4000	0.40	8560	0.765	6552	8020	7312	6808	11557	10761	434	2.23
6000	0.40	7982	0.765	6080	8020	7312	6808	11557	10761	434	2.23
8000	0.40	7371	0.765	5636	8020	7312	6808	11557	10761	434	2.23
10000	0.40	6825	0.765	5219	8020	7312	6808	11557	10761	434	2.23
12000	0.40	6271	0.765	4805	8055	7350	6706	11564	10760	433	2.24
14000	0.40	5608	0.771	4324	8064	7354	6744	11564	10768	430	2.25

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

TAKE OFF RATING

TAMB = 120 DEG F

ALT	MN	W3W2	T3T2	P3/P2	T4/T2	P4P2	T4T2	FOR2	TOT2	P7P2	T7T2	P8MP2
0	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
2000	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
4000	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
6000	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
8000	0.00	3.67	1.50	6.49	1.72	13.56	2.26	1.53	1.17	1.52	2.53	1.50
10000	0.00	3.64	1.50	6.46	1.72	13.49	2.26	1.53	1.17	1.52	2.53	1.50
12000	0.00	3.58	1.50	6.38	1.71	13.30	2.26	1.52	1.17	1.51	2.53	1.49
14000	0.00	3.53	1.49	6.27	1.71	13.13	2.25	1.51	1.17	1.50	2.54	1.48
0	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.53	1.50
2000	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.53	1.50
4000	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.53	1.50
6000	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.53	1.50
8000	0.10	3.66	1.50	6.48	1.72	13.52	2.26	1.53	1.17	1.52	2.53	1.50
10000	0.10	3.64	1.50	6.45	1.72	13.46	2.26	1.53	1.17	1.51	2.53	1.50
12000	0.10	3.58	1.50	6.38	1.71	13.28	2.25	1.52	1.17	1.50	2.53	1.49
14000	0.10	3.53	1.49	6.28	1.71	13.11	2.25	1.51	1.17	1.49	2.53	1.48
0	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
2000	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
4000	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
6000	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
8000	0.20	3.65	1.50	6.43	1.71	13.41	2.25	1.52	1.17	1.50	2.51	1.48
10000	0.20	3.64	1.50	6.42	1.71	13.38	2.25	1.52	1.17	1.50	2.51	1.48
12000	0.20	3.57	1.49	6.32	1.71	13.20	2.25	1.51	1.17	1.49	2.51	1.48
14000	0.20	3.52	1.49	6.24	1.71	13.07	2.24	1.50	1.17	1.48	2.52	1.47
0	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
2000	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
4000	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
6000	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
8000	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
10000	0.30	3.25	1.45	5.67	1.65	11.72	2.16	1.43	1.15	1.39	2.40	1.39
12000	0.30	3.22	1.44	5.61	1.65	11.61	2.16	1.43	1.15	1.38	2.40	1.39
14000	0.30	3.17	1.44	5.55	1.64	11.48	2.15	1.42	1.14	1.37	2.41	1.39
0	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
2000	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
4000	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
6000	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
8000	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
10000	0.40	3.60	1.49	6.29	1.70	13.00	2.23	1.47	1.16	1.44	2.45	1.44
12000	0.40	3.58	1.49	6.26	1.70	12.94	2.22	1.47	1.16	1.44	2.45	1.43
14000	0.40	3.53	1.49	6.17	1.70	12.78	2.22	1.46	1.16	1.43	2.45	1.43

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CRUISE RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
6095	0.65	27516	0.0772	2124	59817	7287	7535	10834	11202	215	2.01
6095	0.70	27326	0.0792	2163	59403	7253	7453	10844	11144	213	2.03
6095	0.75	27195	0.0808	2199	59119	7207	7357	10854	11080	211	2.06
6095	0.80	27027	0.0827	2236	58754	7163	7262	10863	11014	209	2.09
6095	0.85	26860	0.0845	2272	58390	7115	7161	10873	10943	207	2.13
7619	0.65	24129	0.0756	1825	64935	7358	7764	10794	11340	218	2.00
7619	0.70	24286	0.0771	1873	65357	7345	7703	10806	11332	217	2.00
7619	0.75	24463	0.0787	1924	65834	7328	7634	10818	11271	216	2.00
7619	0.80	24654	0.0801	1976	66346	7301	7554	10832	11208	215	2.01
7619	0.85	24651	0.0818	2017	66340	7251	7448	10842	11137	213	2.03
9143	0.65	20474	0.0746	1526	68825	7372	7946	10759	11596	220	2.03
9143	0.70	20677	0.0760	1571	69506	7366	7891	10767	11534	220	2.02
9143	0.75	20926	0.0774	1619	70344	7357	7829	10779	11471	219	2.02
9143	0.80	21199	0.0788	1669	71263	7344	7761	10793	11406	218	2.02
9143	0.85	21479	0.0802	1721	72203	7325	7685	10807	11338	217	2.01
10667	0.65	17088	0.0737	1259	72461	7344	8092	10735	11830	222	2.07
10667	0.70	17302	0.0750	1298	73369	7351	8050	10739	11761	221	2.06
10667	0.75	17559	0.0763	1340	74460	7357	8004	10746	11692	221	2.05
10667	0.80	17875	0.0776	1386	75801	7356	7948	10755	11621	220	2.05
10667	0.85	16186	0.0789	1434	77117	7349	7883	10765	11548	219	2.04
12191	0.65	13276	0.0742	984	71729	7277	8059	10734	11887	220	2.10
12191	0.70	13440	0.0755	1014	72620	7285	8018	10757	11817	220	2.09
12191	0.75	13647	0.0767	1046	73738	7291	7972	10739	11742	219	2.09
12191	0.80	13886	0.0779	1082	75028	7290	7916	10751	11674	218	2.08
12191	0.85	14132	0.0792	1118	76359	7282	7850	10759	11598	218	2.08

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CRUISE RATING

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
6095	0.65	4.33	1.60	7.62	1.83	15.85	2.41	1.58	1.19	1.60	2.59	1.55
6095	0.70	4.28	1.59	7.49	1.82	15.54	2.39	1.56	1.19	1.57	2.56	1.53
6095	0.75	4.19	1.58	7.33	1.80	15.17	2.37	1.54	1.18	1.55	2.53	1.51
6095	0.80	4.11	1.57	7.15	1.79	14.77	2.35	1.52	1.18	1.52	2.50	1.49
6095	0.85	4.01	1.55	6.96	1.77	14.34	2.32	1.50	1.17	1.48	2.47	1.46
7619	0.65	4.39	1.62	7.85	1.87	16.48	2.47	1.62	1.20	1.66	2.69	1.60
7619	0.70	4.39	1.62	7.80	1.86	16.32	2.45	1.61	1.20	1.64	2.66	1.59
7619	0.75	4.38	1.61	7.74	1.85	16.13	2.43	1.60	1.20	1.62	2.63	1.57
7619	0.80	4.35	1.60	7.65	1.83	15.90	2.41	1.58	1.19	1.60	2.59	1.56
7619	0.85	4.28	1.59	7.49	1.82	15.52	2.39	1.56	1.19	1.57	2.56	1.53
9143	0.65	4.33	1.64	7.89	1.89	16.79	2.53	1.66	1.21	1.69	2.81	1.64
9143	0.70	4.34	1.64	7.86	1.89	16.67	2.51	1.65	1.21	1.68	2.78	1.62
9143	0.75	4.35	1.63	7.83	1.88	16.53	2.49	1.63	1.21	1.66	2.74	1.61
9143	0.80	4.35	1.62	7.78	1.87	16.37	2.47	1.62	1.20	1.65	2.70	1.60
9143	0.85	4.34	1.62	7.73	1.86	16.18	2.45	1.60	1.20	1.63	2.66	1.58
10667	0.65	4.24	1.66	7.89	1.92	17.03	2.58	1.69	1.23	1.72	2.94	1.67
10667	0.70	4.25	1.65	7.87	1.91	16.93	2.57	1.68	1.22	1.71	2.90	1.66
10667	0.75	4.27	1.65	7.85	1.90	16.82	2.55	1.67	1.22	1.70	2.86	1.64
10667	0.80	4.29	1.64	7.83	1.90	16.70	2.53	1.66	1.21	1.69	2.83	1.63
10667	0.85	4.30	1.64	7.80	1.89	16.56	2.51	1.64	1.21	1.67	2.78	1.62
12191	0.65	4.15	1.66	7.77	1.93	16.82	2.60	1.68	1.22	1.71	2.97	1.66
12191	0.70	4.16	1.65	7.75	1.92	16.71	2.58	1.67	1.22	1.70	2.93	1.65
12191	0.75	4.17	1.65	7.72	1.91	16.59	2.56	1.66	1.22	1.69	2.90	1.63
12191	0.80	4.18	1.64	7.70	1.90	16.47	2.54	1.65	1.21	1.67	2.86	1.62
12191	0.85	4.19	1.63	7.66	1.89	16.33	2.52	1.64	1.21	1.66	2.82	1.61

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CRUISE RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WATP	BOO
20000	0.65	6185	0.767	4684	13447	7287	7535	10834	11202	474	2.01
20000	0.70	6143	0.776	4768	13554	7257	7457	10846	11144	471	2.03
20000	0.75	6113	0.783	4849	13590	7307	7357	10864	11080	467	2.06
20000	0.80	6075	0.811	4929	13508	7157	7353	10869	11014	463	2.09
20000	0.85	6038	0.830	5010	13126	7115	7161	10873	10943	457	2.13
25000	0.65	5624	0.762	4024	14609	7358	7764	10758	11360	482	2.00
25000	0.70	5589	0.767	4130	14583	7345	7703	10806	11332	480	2.00
25000	0.75	5560	0.772	4243	14600	7338	7634	10818	11271	478	2.00
25000	0.80	5542	0.786	4356	14615	7301	7584	10832	11208	476	2.01
25000	0.85	5541	0.803	4447	14614	7281	7448	10842	11147	470	2.03
30000	0.65	4602	0.731	3365	15472	7372	7946	10759	11506	486	2.03
30000	0.70	4648	0.738	3464	15635	7366	7861	10767	11434	485	2.02
30000	0.75	4704	0.750	3570	15814	7357	7828	10779	11471	483	2.02
30000	0.80	4765	0.772	3680	14030	7344	7741	10764	11402	481	2.02
30000	0.85	4828	0.786	3795	16231	7325	7685	10807	11338	478	2.01
35000	0.65	3841	0.739	2775	14460	7344	8002	10736	11840	490	2.07
35000	0.70	3880	0.736	2862	16604	7351	8050	10746	11761	488	2.06
35000	0.75	3947	0.740	2955	16730	7357	8004	10746	11693	487	2.06
35000	0.80	4018	0.761	3056	17040	7356	7948	10755	11631	486	2.05
35000	0.85	4088	0.774	3163	17336	7349	7883	10765	11548	484	2.04
40000	0.65	2984	0.727	2170	16125	7277	8059	10734	11887	486	2.10
40000	0.70	3021	0.740	2236	16325	7285	8018	10737	11817	485	2.09
40000	0.75	3068	0.752	2307	16577	7291	7972	10739	11762	484	2.09
40000	0.80	3121	0.764	2385	16867	7290	7916	10751	11674	482	2.08
40000	0.85	3177	0.776	2466	17166	7282	7850	10759	11598	480	2.08

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CRUISE RATING

	ALT	MN	P3P2	T3T2	P3.2P2	T4.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MB2
	20000	0.65	4.33	1.60	7.62	1.81	15.85	2.41	1.58	1.19	1.60	2.50	1.58
	20000	0.70	4.28	1.59	7.48	1.82	15.56	2.38	1.56	1.19	1.57	2.56	1.54
	20000	0.75	4.19	1.58	7.33	1.80	15.17	2.37	1.54	1.18	1.55	2.53	1.51
	20000	0.80	4.11	1.57	7.19	1.79	14.77	2.35	1.52	1.18	1.52	2.50	1.49
	20000	0.85	4.01	1.55	6.98	1.77	14.34	2.32	1.50	1.17	1.48	2.47	1.46
	25000	0.65	4.39	1.62	7.65	1.87	16.48	2.47	1.62	1.20	1.66	2.60	1.60
	25000	0.70	4.39	1.62	7.60	1.86	16.32	2.45	1.61	1.20	1.64	2.65	1.59
	25000	0.75	4.38	1.61	7.74	1.85	16.13	2.43	1.60	1.20	1.62	2.63	1.57
	25000	0.80	4.34	1.60	7.65	1.83	15.90	2.41	1.58	1.19	1.60	2.59	1.56
	25000	0.85	4.28	1.59	7.49	1.82	15.62	2.39	1.56	1.19	1.57	2.56	1.53
	30000	0.65	4.39	1.64	7.89	1.89	16.70	2.53	1.66	1.21	1.69	2.81	1.64
	30000	0.70	4.34	1.64	7.86	1.89	16.67	2.51	1.65	1.21	1.68	2.78	1.62
	30000	0.75	4.34	1.63	7.83	1.88	16.53	2.49	1.63	1.21	1.66	2.74	1.61
	30000	0.80	4.34	1.62	7.78	1.87	16.37	2.47	1.62	1.20	1.65	2.70	1.60
	30000	0.85	4.14	1.62	7.73	1.86	16.18	2.45	1.60	1.20	1.63	2.66	1.58
	35000	0.65	4.24	1.66	7.80	1.92	17.03	2.58	1.69	1.24	1.72	2.94	1.67
	35000	0.70	4.25	1.65	7.87	1.91	16.93	2.57	1.68	1.22	1.71	2.90	1.66
	35000	0.75	4.27	1.65	7.85	1.90	16.82	2.55	1.67	1.22	1.70	2.86	1.64
	35000	0.80	4.29	1.64	7.83	1.90	16.70	2.53	1.66	1.21	1.69	2.83	1.63
	35000	0.85	4.30	1.64	7.80	1.89	16.56	2.51	1.64	1.21	1.67	2.78	1.62
12	40000	0.65	4.15	1.66	7.77	1.93	16.83	2.60	1.68	1.22	1.71	2.97	1.66
11	40000	0.70	4.16	1.66	7.75	1.92	16.71	2.58	1.67	1.22	1.70	2.93	1.65
10	40000	0.75	4.17	1.65	7.72	1.91	16.59	2.56	1.66	1.22	1.69	2.90	1.63
9	40000	0.80	4.18	1.64	7.70	1.90	16.47	2.54	1.65	1.21	1.67	2.86	1.62
8	40000	0.85	4.19	1.64	7.66	1.89	16.33	2.52	1.64	1.21	1.66	2.82	1.61
7													
6						ENGLISH UNITS							
5													
4													

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION
STANDARD DAY + 10DEG K TAMB
MAXIMUM CRUISE RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
6095	0.65	24394	0.0797	1944	53030	7142	7241	10860	11010	209	2.10
6095	0.70	24077	0.0819	1971	52341	7105	7159	10870	10952	207	2.13
6095	0.75	23805	0.0841	2001	51751	7069	7075	10880	10890	205	2.16
6095	0.80	23555	0.0862	2029	51209	7025	6983	10887	10823	203	2.20
6095	0.85	23280	0.0884	2058	50609	6974	6883	10896	10753	201	2.25
7619	0.65	21612	0.0780	1684	58159	7227	7471	10831	11197	213	2.05
7619	0.70	21584	0.0797	1720	58086	7204	7401	10842	11139	212	2.06
7619	0.75	21600	0.0814	1757	58127	7176	7324	10852	11077	210	2.08
7619	0.80	21606	0.0830	1794	58143	7144	7242	10863	11011	209	2.10
7619	0.85	21610	0.0847	1831	58154	7109	7154	10873	10941	207	2.13
9143	0.65	18621	0.0766	1425	62595	7280	7680	10794	11388	216	2.04
9143	0.70	18712	0.0781	1461	62903	7260	7612	10804	11328	215	2.05
9143	0.75	18822	0.0797	1500	63272	7242	7544	10817	11268	213	2.05
9143	0.80	18941	0.0812	1538	63673	7215	7464	10830	11203	212	2.06
9143	0.85	19058	0.0827	1576	64065	7182	7376	10842	11134	211	2.08
10667	0.65	15729	0.0753	1184	66698	7297	7863	10759	11594	218	2.07
10667	0.70	15880	0.0767	1218	67341	7291	7809	10768	11532	217	2.06
10667	0.75	16049	0.0782	1254	68058	7283	7749	10778	11467	216	2.06
10667	0.80	16242	0.0796	1292	68874	7266	7678	10791	11402	215	2.06
10667	0.85	16433	0.0810	1331	69686	7245	7599	10804	11333	214	2.06
12191	0.65	12214	0.0759	927	65995	7228	7826	10755	11645	216	2.10
12191	0.70	12318	0.0773	952	66558	7220	7769	10769	11578	216	2.10
12191	0.75	12446	0.0787	980	67250	7214	7712	10772	11515	215	2.09
12191	0.80	12596	0.0801	1008	68055	7201	7645	10783	11448	214	2.09
12191	0.85	12746	0.0815	1038	68869	7181	7569	10795	11378	212	2.10

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 10DEG K TAMB

MAXIMUM CRUISE RATING

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
6095	0.65	4.08	1.56	7.11	1.78	14.70	2.34	1.52	1.18	1.52	2.50	1.49
6095	0.70	4.00	1.55	6.96	1.77	14.35	2.32	1.50	1.17	1.49	2.47	1.47
6095	0.75	3.92	1.54	6.79	1.76	13.98	2.30	1.48	1.17	1.46	2.45	1.45
6095	0.80	3.82	1.53	6.61	1.74	13.57	2.27	1.46	1.16	1.43	2.42	1.42
6095	0.85	3.72	1.51	6.41	1.72	13.15	2.25	1.44	1.16	1.40	2.39	1.40
7619	0.65	4.22	1.59	7.45	1.82	15.51	2.40	1.56	1.19	1.58	2.59	1.54
7619	0.70	4.18	1.58	7.35	1.81	15.26	2.39	1.55	1.18	1.56	2.56	1.52
7619	0.75	4.13	1.57	7.23	1.80	14.98	2.37	1.53	1.18	1.53	2.53	1.50
7619	0.80	4.07	1.56	7.10	1.79	14.66	2.34	1.52	1.18	1.51	2.50	1.48
7619	0.85	4.00	1.55	6.94	1.77	14.30	2.32	1.50	1.17	1.48	2.47	1.46
9143	0.65	4.25	1.62	7.61	1.86	16.03	2.46	1.60	1.20	1.62	2.70	1.58
9143	0.70	4.23	1.61	7.55	1.85	15.84	2.44	1.59	1.20	1.61	2.67	1.56
9143	0.75	4.22	1.60	7.48	1.84	15.64	2.43	1.57	1.19	1.59	2.63	1.55
9143	0.80	4.19	1.59	7.39	1.83	15.40	2.41	1.56	1.19	1.57	2.60	1.53
9143	0.85	4.13	1.58	7.26	1.81	15.09	2.38	1.54	1.18	1.54	2.56	1.51
10667	0.65	4.21	1.63	7.69	1.89	16.39	2.52	1.64	1.21	1.66	2.81	1.61
10667	0.70	4.22	1.63	7.66	1.88	16.27	2.50	1.63	1.21	1.65	2.78	1.60
10667	0.75	4.22	1.62	7.62	1.87	16.12	2.48	1.61	1.20	1.63	2.74	1.59
10667	0.80	4.21	1.62	7.56	1.86	15.94	2.47	1.60	1.20	1.62	2.71	1.57
10667	0.85	4.20	1.61	7.49	1.85	15.73	2.44	1.58	1.20	1.60	2.67	1.56
12191	0.65	4.12	1.64	7.56	1.89	16.18	2.53	1.63	1.21	1.65	2.84	1.61
12191	0.70	4.12	1.63	7.52	1.88	16.04	2.51	1.62	1.21	1.64	2.81	1.59
12191	0.75	4.12	1.62	7.46	1.87	15.89	2.49	1.61	1.20	1.62	2.77	1.58
12191	0.80	4.11	1.62	7.42	1.86	15.71	2.47	1.59	1.20	1.60	2.74	1.56
12191	0.85	4.09	1.61	7.35	1.85	15.50	2.45	1.58	1.19	1.58	2.70	1.55

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D 100 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 18F TAMB

MAXIMUM CRUISE RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
20000	0.65	5484	0.789	4325	11021	7142	7241	10840	11010	461	2.10
20000	0.70	5419	0.803	4349	11284	7105	7189	10870	10052	457	2.13
20000	0.75	5351	0.834	4461	11494	7049	7075	10880	10860	453	2.15
20000	0.80	5295	0.845	4475	11811	7025	6983	10887	10823	449	2.20
20000	0.85	5243	0.847	4538	11977	6974	6883	10896	10761	444	2.25
25000	0.65	4898	0.764	3714	13074	7227	7471	10831	11107	469	2.05
25000	0.70	4852	0.782	3794	13458	7204	7401	10862	11136	467	2.08
25000	0.75	4805	0.798	3874	13867	7176	7324	10852	11077	464	2.08
25000	0.80	4887	0.814	3958	14071	7144	7242	10869	11011	461	2.10
25000	0.85	4858	0.841	4035	14374	7106	7154	10879	10941	457	2.13
30000	0.65	4188	0.761	3182	14972	7280	7480	10704	11388	476	2.04
30000	0.70	4206	0.785	3293	14141	7260	7412	10808	11350	474	2.05
30000	0.75	4231	0.792	3307	14324	7242	7344	10819	11268	471	2.05
30000	0.80	4258	0.797	3392	14918	7215	7264	10830	11203	468	2.06
30000	0.85	4284	0.811	3474	14402	7182	7176	10842	11114	465	2.08
35000	0.65	3516	0.730	2611	14604	7287	7464	10760	11604	481	2.07
35000	0.70	3570	0.753	2686	15130	7261	7400	10768	11532	479	2.08
35000	0.75	3608	0.767	2765	15500	7242	7340	10778	11457	477	2.08
35000	0.80	3651	0.780	2848	15884	7225	7278	10781	11403	475	2.08
35000	0.85	3694	0.794	2935	16265	7202	7208	10804	11334	472	2.08
40000	0.65	2745	0.744	2043	14834	7228	7435	10758	11468	478	2.10
40000	0.70	2780	0.768	2100	16063	7220	7360	10758	11578	476	2.10
40000	0.75	2798	0.772	2160	15114	7218	7312	10772	11515	474	2.08
40000	0.80	2831	0.789	2224	15300	7201	7245	10784	11448	472	2.08
40000	0.84	2855	0.799	2280	15482	7191	7200	10795	11378	470	2.10

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + TAF TAMB

MAXIMUM CRUISE RATING

ALT	MN	FF/P2	T4/T2	P3/P2	T3/T2	P4/P2	T4/T2	P5/P2	T5/T2	W2/P2	T2/T2	PAMB/P2
20000	0.65	4.08	1.56	7.11	1.78	14.70	2.34	1.52	1.18	1.52	2.50	1.49
20000	0.70	4.00	1.55	6.96	1.77	14.35	2.32	1.50	1.17	1.49	2.47	1.47
20000	0.75	3.92	1.54	6.79	1.76	13.98	2.30	1.48	1.17	1.46	2.45	1.45
20000	0.80	3.82	1.53	6.61	1.74	13.57	2.27	1.46	1.16	1.43	2.42	1.42
20000	0.85	3.72	1.51	6.41	1.72	13.15	2.25	1.44	1.15	1.40	2.38	1.40
25000	0.65	4.22	1.59	7.45	1.82	15.51	2.40	1.56	1.19	1.58	2.60	1.54
25000	0.70	4.18	1.58	7.35	1.81	15.26	2.39	1.55	1.18	1.56	2.56	1.52
25000	0.75	4.13	1.57	7.23	1.80	14.98	2.37	1.53	1.18	1.53	2.53	1.50
25000	0.80	4.07	1.56	7.10	1.79	14.66	2.34	1.52	1.18	1.51	2.50	1.48
25000	0.85	4.00	1.55	6.94	1.77	14.30	2.32	1.50	1.17	1.48	2.47	1.45
30000	0.65	4.25	1.62	7.61	1.86	16.03	2.46	1.60	1.20	1.62	2.70	1.58
30000	0.70	4.23	1.61	7.55	1.85	15.84	2.44	1.59	1.20	1.61	2.67	1.56
30000	0.75	4.22	1.60	7.48	1.84	15.64	2.43	1.57	1.19	1.59	2.64	1.55
30000	0.80	4.19	1.59	7.39	1.83	15.40	2.41	1.56	1.19	1.57	2.60	1.53
30000	0.85	4.13	1.58	7.26	1.81	15.09	2.38	1.54	1.18	1.54	2.56	1.51
35000	0.65	4.21	1.63	7.69	1.88	16.30	2.52	1.64	1.21	1.66	2.81	1.61
35000	0.70	4.22	1.63	7.66	1.88	16.27	2.50	1.63	1.21	1.65	2.78	1.60
35000	0.75	4.22	1.62	7.62	1.87	16.12	2.48	1.61	1.20	1.63	2.74	1.59
35000	0.80	4.21	1.62	7.56	1.86	15.94	2.47	1.60	1.20	1.62	2.71	1.57
35000	0.85	4.20	1.61	7.49	1.85	15.73	2.44	1.58	1.20	1.60	2.67	1.56
40000	0.65	4.12	1.64	7.56	1.89	16.18	2.53	1.63	1.21	1.65	2.84	1.61
40000	0.70	4.12	1.63	7.52	1.88	16.04	2.51	1.62	1.21	1.64	2.81	1.59
40000	0.75	4.12	1.62	7.48	1.87	15.89	2.49	1.61	1.20	1.62	2.77	1.58
40000	0.80	4.11	1.62	7.42	1.86	15.71	2.47	1.59	1.20	1.60	2.74	1.56
40000	0.85	4.09	1.61	7.35	1.86	15.50	2.45	1.58	1.19	1.58	2.70	1.55

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CLIMB RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	NTC2	N2	N2C2	WAT2	BPR
0	0.20	54261	0.0603	3273	54261	7067	7039	11024	10980	201	2.12
0	0.40	46841	0.0723	3384	46841	7061	6951	11045	10872	201	2.18
0	0.60	41634	0.0851	3543	41634	6998	6759	11079	10700	197	2.29
0	0.80	37840	0.0885	3727	37840	6865	6464	11120	10470	191	2.45
1523	0.20	50028	0.0656	2980	60114	7248	7344	11005	11154	209	2.03
1523	0.40	43797	0.0705	3088	52627	7231	7243	11030	11049	208	2.08
1523	0.60	39643	0.0818	3241	47635	7165	7043	11063	10874	204	2.17
1523	0.80	36664	0.0928	3403	44055	6992	6699	11098	10633	197	2.34
3047	0.20	45063	0.0589	2654	65498	7368	7605	10977	11330	215	1.99
3047	0.40	40012	0.0692	2769	58157	7367	7515	11004	11225	214	2.00
3047	0.60	36954	0.0792	2925	53712	7294	7300	11040	11050	210	2.07
3047	0.80	35157	0.0882	3099	51100	7146	6972	11077	10807	203	2.21
4571	0.20	39515	0.0585	2318	70148	7488	7876	10947	11513	220	1.97
4571	0.40	35696	0.0681	2432	63207	7493	7788	10972	11405	219	1.98
4571	0.60	33832	0.0770	2606	59908	7433	7580	11012	11231	215	2.00
4571	0.80	32921	0.0848	2790	58294	7279	7237	11053	10989	209	2.10
6095	0.20	33684	0.0584	1968	73224	7497	8040	10923	11715	223	2.00
6095	0.40	30960	0.0674	2085	67303	7546	7998	10938	11593	222	1.99
6095	0.60	30135	0.0753	2268	65511	7533	7834	10974	11413	220	1.98
6095	0.80	30223	0.0821	2482	65702	7418	7520	11025	11178	214	2.01
7619	0.20	28208	0.0583	1644	75911	7459	8164	10905	11936	224	2.04
7619	0.40	25994	0.0671	1743	69953	7510	8124	10914	11806	224	2.03
7619	0.60	25746	0.0744	1914	69286	7546	8009	10937	11608	222	2.00
7619	0.80	26935	0.0801	2156	72484	7526	7787	10986	11366	219	1.98
9143	0.20	23363	0.0582	1359	78537	7426	8302	10903	12189	225	2.08
9143	0.40	21668	0.0666	1444	72838	7472	8256	10903	12046	225	2.07
9143	0.60	21594	0.0736	1589	72591	7511	8143	10913	11831	223	2.05
9143	0.80	22794	0.0790	1801	76623	7533	7961	10945	11567	221	2.01
10667	0.20	19112	0.0583	1114	81044	7380	8435	10924	12486	226	2.12
10667	0.40	17862	0.0663	1184	75744	7417	8379	10909	12323	226	2.11
10667	0.60	17935	0.0728	1305	76059	7465	8274	10903	12084	225	2.08
10667	0.80	19020	0.0781	1485	80655	7499	8103	10916	11795	222	2.05
12191	0.20	14887	0.0589	876	80434	7310	8397	10944	12571	225	2.14
12191	0.40	13896	0.0668	928	75082	7345	8338	10918	12394	224	2.13
12191	0.60	13933	0.0733	1020	75282	7394	8236	10907	12149	223	2.11
12191	0.80	14775	0.0784	1158	79831	7435	8073	10915	11852	221	2.09

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CLIMB RATING

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
0	0.20	3.81	1.53	6.74	1.75	14.07	2.30	1.54	1.18	1.85	2.53	1.51
0	0.40	3.75	1.52	6.56	1.73	13.60	2.27	1.50	1.17	1.48	2.47	1.46
0	0.60	3.58	1.49	6.16	1.70	12.70	2.22	1.43	1.15	1.39	2.39	1.39
0	0.80	3.30	1.45	5.63	1.65	11.45	2.14	1.36	1.14	1.28	2.26	1.30
1523	0.20	4.13	1.57	7.32	1.80	15.31	2.36	1.59	1.19	1.61	2.60	1.57
1523	0.40	4.06	1.56	7.13	1.78	14.81	2.34	1.55	1.18	1.55	2.54	1.52
1523	0.60	3.88	1.53	6.75	1.73	13.87	2.29	1.49	1.17	1.46	2.45	1.45
1523	0.80	3.53	1.48	6.06	1.69	12.40	2.20	1.41	1.15	1.35	2.35	1.36
3047	0.20	4.31	1.60	7.72	1.84	16.25	2.44	1.64	1.20	1.67	2.69	1.62
3047	0.40	4.29	1.59	7.60	1.83	15.87	2.41	1.60	1.20	1.62	2.62	1.58
3047	0.60	4.14	1.57	7.23	1.79	14.97	2.35	1.54	1.18	1.54	2.53	1.51
3047	0.80	3.81	1.52	6.59	1.74	13.53	2.27	1.46	1.16	1.43	2.42	1.42
4571	0.20	4.42	1.63	8.01	1.88	17.00	2.50	1.69	1.22	1.73	2.78	1.67
4571	0.40	4.43	1.62	7.93	1.86	16.70	2.47	1.65	1.21	1.69	2.71	1.63
4571	0.60	4.36	1.60	7.69	1.84	16.02	2.42	1.59	1.19	1.62	2.61	1.57
4571	0.80	4.08	1.56	7.11	1.78	14.66	2.33	1.52	1.18	1.51	2.50	1.48
6095	0.20	4.37	1.64	8.07	1.90	17.34	2.55	1.72	1.23	1.76	2.89	1.70
6095	0.40	4.44	1.64	8.09	1.89	17.20	2.52	1.69	1.22	1.73	2.82	1.67
6095	0.60	4.46	1.63	7.96	1.87	16.78	2.48	1.64	1.21	1.68	2.71	1.62
6095	0.80	4.33	1.60	7.66	1.83	15.75	2.40	1.57	1.19	1.59	2.58	1.55
7619	0.20	4.27	1.65	8.06	1.93	17.52	2.60	1.75	1.24	1.79	3.01	1.73
7619	0.40	4.34	1.66	8.07	1.92	17.38	2.56	1.72	1.23	1.76	2.94	1.70
7619	0.60	4.41	1.65	8.04	1.90	17.11	2.53	1.68	1.22	1.72	2.82	1.66
7619	0.80	4.46	1.63	7.93	1.86	16.63	2.46	1.63	1.20	1.66	2.68	1.61
9143	0.20	4.19	1.66	8.07	1.96	17.74	2.67	1.76	1.25	1.82	3.14	1.75
9143	0.40	4.25	1.66	8.06	1.95	17.59	2.64	1.73	1.24	1.79	3.07	1.72
9143	0.60	4.31	1.66	8.03	1.93	17.31	2.59	1.71	1.23	1.75	2.96	1.69
9143	0.80	4.39	1.64	7.96	1.89	16.70	2.52	1.66	1.21	1.70	2.80	1.64
10667	0.20	4.13	1.71	8.10	2.00	18.00	2.74	1.80	1.26	1.85	3.26	1.78
10667	0.40	4.17	1.70	8.07	1.99	17.83	2.71	1.78	1.25	1.82	3.21	1.75
10667	0.60	4.22	1.68	8.03	1.96	17.54	2.67	1.74	1.24	1.78	3.08	1.72
10667	0.80	4.29	1.66	7.96	1.92	17.13	2.58	1.69	1.23	1.73	2.93	1.67
12191	0.20	4.06	1.71	8.00	2.01	17.84	2.76	1.79	1.25	1.84	3.32	1.77
12191	0.40	4.09	1.70	7.96	1.99	17.64	2.72	1.77	1.25	1.81	3.24	1.74
12191	0.60	4.13	1.68	7.91	1.96	17.33	2.66	1.73	1.24	1.77	3.12	1.71
12191	0.80	4.19	1.66	7.82	1.92	16.90	2.59	1.69	1.23	1.72	2.96	1.66

SI UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
STANDARD DAY TAMB
MAXIMUM CLIMB RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.20	12198	0.502	7216	12198	7067	7039	11024	10980	444	2.12
0	0.40	10530	0.709	7462	10530	7051	6951	11045	10872	443	2.18
0	0.60	8389	0.835	7011	8350	6908	6750	11070	10700	435	2.29
0	0.80	8508	0.966	8218	8506	6965	6454	11120	10470	421	2.45
5000	0.20	11248	0.584	6570	13614	7246	7344	11005	11164	462	2.09
5000	0.40	9846	0.691	6808	11431	7231	7243	11030	11040	459	2.08
5000	0.60	8912	0.802	7146	10308	7165	7043	11063	10874	451	2.17
5000	0.80	8242	0.910	7504	9004	6992	6606	11098	10633	435	2.34
10000	0.20	10130	0.578	5852	14724	7358	7605	10977	11440	475	1.86
10000	0.40	8995	0.670	6104	13074	7367	7515	11004	11225	472	2.00
10000	0.60	8107	0.776	6450	13075	7294	7300	11040	11050	464	2.07
10000	0.80	7503	0.885	6832	11497	7146	6972	11077	10807	448	2.21
15000	0.20	8908	0.574	5111	15770	7488	7876	10947	11513	486	1.87
15000	0.40	8024	0.668	5362	14200	7404	7748	10972	11405	484	1.98
15000	0.60	7405	0.768	5684	13467	7434	7580	11012	11291	476	2.00
15000	0.80	7000	0.871	6103	13105	7370	7247	11054	10988	461	2.10
20000	0.20	7772	0.574	4339	16461	7497	8040	10923	11716	492	2.00
20000	0.60	6775	0.738	5002	14729	7533	7874	10974	11413	486	1.98
20000	0.80	6704	0.806	5403	14770	7418	7590	11025	11178	473	2.01
25000	0.20	6941	0.572	3968	17068	7480	8164	10906	11934	498	2.04
25000	0.40	6843	0.668	4564	16726	7510	8124	10914	11808	498	2.03
25000	0.60	6788	0.758	5221	15678	7486	8000	10933	11600	490	2.00
25000	0.80	6698	0.798	5454	15308	7426	7787	10985	11365	484	1.98
30000	0.20	6282	0.571	3587	17655	7436	8302	10803	12180	507	2.08
30000	0.40	6571	0.664	4323	16978	7473	8264	10803	12042	506	2.07
30000	0.60	6454	0.732	4805	16410	7411	8143	10813	11831	493	2.05
30000	0.80	6124	0.775	4871	15928	7299	7861	10948	11567	488	2.01
35000	0.20	4206	0.572	2858	19510	7380	8435	10654	13484	500	2.12
35000	0.40	4415	0.650	2613	17928	7417	8370	10906	12333	490	2.11
35000	0.60	4432	0.714	3478	17907	7465	8394	10903	12064	496	2.08
35000	0.80	4276	0.765	4275	18132	7400	8103	10916	11705	491	2.05
40000	0.20	3346	0.577	1932	18993	7410	8367	10644	13871	497	2.14
40000	0.40	3124	0.656	2048	18078	7345	8338	10918	12964	486	2.13
40000	0.60	3142	0.718	2250	18024	7384	8334	10907	12140	493	2.11
40000	0.80	3121	0.760	2654	17845	7435	8077	10918	11852	488	2.08

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE · 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CLIMB RATING

ALT	MN	P3P2	T3T2	P3*2P2	T3*2T2	P4P2	T4T2	P0P2	T0T2	P7P2	T7T2	P8MP2
0	0.20	3.81	1.53	6.74	1.75	14.87	2.30	1.54	1.18	1.53	2.53	1.51
0	0.40	3.75	1.52	6.56	1.73	13.60	2.27	1.50	1.17	1.48	2.47	1.46
0	0.60	3.58	1.49	6.18	1.70	12.70	2.22	1.43	1.15	1.39	2.39	1.39
0	0.80	3.30	1.45	5.63	1.65	11.45	2.14	1.36	1.14	1.28	2.28	1.30
5000	0.20	4.13	1.57	7.32	1.80	15.31	2.38	1.59	1.19	1.61	2.60	1.57
5000	0.40	4.06	1.56	7.13	1.78	14.81	2.34	1.55	1.18	1.55	2.54	1.52
5000	0.60	3.88	1.53	6.73	1.75	13.87	2.29	1.49	1.17	1.46	2.45	1.45
5000	0.80	3.53	1.48	6.06	1.69	12.40	2.20	1.41	1.15	1.35	2.35	1.36
10000	0.20	4.31	1.60	7.72	1.84	16.25	2.44	1.64	1.20	1.67	2.69	1.62
10000	0.40	4.29	1.59	7.66	1.83	15.87	2.41	1.60	1.20	1.62	2.62	1.58
10000	0.60	4.14	1.57	7.23	1.79	14.97	2.35	1.54	1.18	1.54	2.53	1.51
10000	0.80	3.81	1.52	6.59	1.74	13.53	2.27	1.46	1.16	1.43	2.42	1.42
15000	0.20	4.42	1.63	8.01	1.88	17.00	2.50	1.69	1.22	1.73	2.78	1.67
15000	0.40	4.43	1.62	7.93	1.85	16.70	2.47	1.65	1.21	1.69	2.71	1.63
15000	0.60	4.36	1.60	7.69	1.84	16.02	2.42	1.59	1.19	1.62	2.61	1.57
15000	0.80	4.08	1.56	7.11	1.78	14.66	2.33	1.52	1.18	1.51	2.50	1.48
20000	0.20	4.37	1.64	8.07	1.90	17.34	2.55	1.72	1.23	1.76	2.89	1.70
20000	0.60	4.46	1.63	7.98	1.87	16.78	2.48	1.64	1.21	1.68	2.71	1.62
20000	0.80	4.33	1.60	7.80	1.83	15.78	2.40	1.57	1.19	1.59	2.58	1.55
25000	0.20	4.27	1.66	8.06	1.93	17.52	2.60	1.75	1.24	1.79	3.01	1.73
25000	0.40	4.34	1.66	8.07	1.92	17.38	2.58	1.72	1.23	1.76	2.94	1.70
25000	0.60	4.41	1.65	8.04	1.90	17.11	2.53	1.68	1.22	1.72	2.82	1.66
25000	0.80	4.46	1.63	7.93	1.86	16.63	2.46	1.63	1.20	1.66	2.68	1.61
30000	0.20	4.19	1.68	8.07	1.96	17.74	2.67	1.78	1.25	1.82	3.14	1.75
30000	0.40	4.25	1.68	8.06	1.95	17.59	2.64	1.75	1.24	1.79	3.07	1.72
30000	0.60	4.31	1.66	8.03	1.93	17.31	2.59	1.71	1.23	1.75	2.95	1.69
30000	0.80	4.39	1.64	7.96	1.89	16.90	2.52	1.66	1.21	1.70	2.80	1.64
35000	0.20	4.13	1.71	8.10	2.00	18.00	2.74	1.80	1.26	1.85	3.28	1.78
35000	0.40	4.17	1.70	8.07	1.99	17.83	2.71	1.78	1.25	1.82	3.21	1.75
35000	0.60	4.22	1.68	8.03	1.96	17.54	2.65	1.74	1.24	1.78	3.08	1.72
35000	0.80	4.29	1.66	7.96	1.92	17.13	2.58	1.69	1.23	1.73	2.93	1.67
40000	0.20	4.06	1.71	8.00	2.01	17.84	2.76	1.79	1.25	1.84	3.32	1.77
40000	0.40	4.09	1.70	7.96	1.99	17.64	2.72	1.77	1.25	1.81	3.24	1.74
40000	0.60	4.13	1.68	7.91	1.96	17.33	2.66	1.73	1.24	1.77	3.12	1.71
40000	0.80	4.19	1.66	7.82	1.92	16.90	2.59	1.69	1.23	1.72	2.96	1.66

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
STANDARD DAY + 10DEG K TAMB
MAXIMUM CLIMB RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.20	48389	0.0616	2978	48389	6888	6744	11027	10798	193	2.20
0	0.40	41312	0.0747	3084	41312	6896	6673	11057	10700	193	2.28
0	0.60	36247	0.0891	3228	36247	6852	6506	11096	10535	191	2.41
0	0.80	32195	0.1056	3399	32195	6737	6236	11131	10303	185	2.56
1523	0.20	45040	0.0603	2717	44120	7058	7029	11018	10972	201	2.12
1523	0.40	38951	0.0723	2815	44804	7061	6950	11046	10871	201	2.18
1523	0.60	34599	0.0851	2945	41575	6996	6756	11078	10698	197	2.29
1523	0.80	31448	0.0985	3099	37788	6864	6461	11121	10469	191	2.45
3047	0.20	41317	0.0596	2461	60054	7241	7338	11005	11153	209	2.03
3047	0.40	36167	0.0706	2550	52568	7228	7240	11029	11047	208	2.08
3047	0.60	32729	0.0818	2676	47571	7162	7038	11063	10872	204	2.17
3047	0.80	30262	0.0928	2809	43986	6987	6694	11098	10632	197	2.34
4571	0.20	36962	0.0589	2177	65450	7372	7608	10978	11329	215	1.99
4571	0.40	32824	0.0692	2272	58123	7367	7514	11006	11225	214	2.00
4571	0.60	30301	0.0792	2400	53656	7294	7299	11040	11048	210	2.07
4571	0.80	28820	0.0882	2541	51033	7144	6969	11077	10806	203	2.21
6095	0.20	31599	0.0588	1857	69692	7422	7804	10945	11510	218	2.00
6095	0.40	28645	0.0684	1958	62271	7446	7738	10971	11402	218	2.00
6095	0.60	27531	0.0771	2121	59850	7433	7580	11013	11230	215	2.00
6095	0.80	26781	0.0848	2271	58218	7277	7233	11054	10988	209	2.10
7619	0.20	26541	0.0587	1557	71426	7432	7969	10921	11711	220	2.04
7619	0.40	24250	0.0679	1647	65259	7469	7915	10938	11591	220	2.03
7619	0.60	23084	0.0760	1797	63656	7466	7763	10973	11410	218	2.01
7619	0.80	24162	0.0824	1991	65023	7396	7497	11025	11175	214	2.03
9143	0.20	22021	0.0586	1289	74027	7394	8091	10907	11936	222	2.07
9143	0.40	20258	0.0675	1366	68098	7448	8055	10915	11805	221	2.06
9143	0.60	19986	0.0750	1499	67191	7478	7936	10938	11607	220	2.04
9143	0.80	20774	0.0810	1662	69834	7441	7698	10983	11362	216	2.03
10667	0.20	18097	0.0586	1060	76741	7340	8204	10908	12193	223	2.11
10667	0.40	16730	0.0672	1123	70942	7397	8171	10907	12048	222	2.10
10667	0.60	16637	0.0742	1234	70548	7444	8069	10916	11831	221	2.08
10667	0.80	17528	0.0797	1396	74329	7458	7880	10944	11564	219	2.06
12191	0.20	14102	0.0592	835	76197	7278	8174	10917	12260	222	2.13
12191	0.40	13028	0.0678	882	70394	7335	8141	10910	12109	221	2.12
12191	0.60	12932	0.0747	966	69874	7381	8038	10915	11887	220	2.11
12191	0.80	13606	0.0801	1089	73513	7388	7843	10940	11614	217	2.09

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 10DEG K TAMB

MAXIMUM CLIMB RATING

ALT	MN	P3P2	T3T2	P3:2P2	T3.2T2	P4P2	T4T2	P0P2	T0T2	P7P2	T7T2	P8MP2
0	0.20	3.51	1.48	6.18	1.70	12.87	2.23	1.49	1.16	1.46	2.47	1.46
0	0.40	3.46	1.48	6.04	1.69	12.47	2.21	1.45	1.15	1.41	2.41	1.41
0	0.60	3.32	1.46	5.72	1.66	11.69	2.16	1.39	1.14	1.32	2.32	1.34
0	0.80	3.09	1.42	5.23	1.61	10.57	2.09	1.31	1.12	1.21	2.22	1.25
1523	0.20	3.80	1.52	6.72	1.75	14.03	2.30	1.54	1.18	1.53	2.53	1.51
1523	0.40	3.74	1.52	6.56	1.73	13.59	2.27	1.50	1.17	1.47	2.47	1.46
1523	0.60	3.57	1.49	6.16	1.70	12.69	2.22	1.43	1.15	1.39	2.39	1.39
1523	0.80	3.30	1.45	5.62	1.65	11.44	2.14	1.36	1.14	1.28	2.28	1.30
3047	0.20	4.12	1.57	7.31	1.80	15.29	2.37	1.59	1.19	1.61	2.60	1.57
3047	0.40	4.05	1.56	7.12	1.78	14.80	2.34	1.55	1.18	1.55	2.54	1.52
3047	0.60	3.87	1.53	6.72	1.75	13.85	2.29	1.49	1.17	1.46	2.45	1.45
3047	0.80	3.62	1.48	6.05	1.69	12.38	2.20	1.41	1.15	1.35	2.35	1.36
4571	0.20	4.31	1.60	7.72	1.84	16.26	2.44	1.64	1.20	1.67	2.68	1.62
4571	0.40	4.29	1.59	7.60	1.83	15.87	2.41	1.60	1.20	1.62	2.62	1.58
4571	0.60	4.13	1.57	7.23	1.79	14.96	2.35	1.54	1.18	1.54	2.53	1.51
4571	0.80	3.81	1.52	6.58	1.74	13.51	2.26	1.46	1.16	1.43	2.42	1.42
6095	0.20	4.31	1.62	7.64	1.87	16.07	2.43	1.67	1.21	1.71	2.76	1.65
6095	0.40	4.36	1.62	7.82	1.86	16.46	2.46	1.64	1.21	1.67	2.72	1.62
6095	0.60	4.36	1.60	7.69	1.84	16.01	2.42	1.59	1.19	1.62	2.61	1.57
6095	0.80	4.08	1.56	7.10	1.78	14.65	2.33	1.52	1.17	1.51	2.50	1.48
7619	0.20	4.23	1.64	7.87	1.90	16.93	2.54	1.70	1.22	1.74	2.89	1.68
7619	0.40	4.31	1.64	7.97	1.89	16.77	2.52	1.67	1.22	1.70	2.82	1.65
7619	0.60	4.35	1.62	7.79	1.86	16.40	2.47	1.63	1.20	1.66	2.72	1.60
7619	0.80	4.29	1.60	7.54	1.83	15.86	2.40	1.57	1.19	1.58	2.58	1.54
9143	0.20	4.17	1.65	7.86	1.92	17.15	2.60	1.73	1.23	1.77	3.02	1.71
9143	0.40	4.22	1.65	7.87	1.91	16.99	2.57	1.70	1.23	1.73	2.94	1.68
9143	0.60	4.29	1.64	7.83	1.89	16.69	2.52	1.66	1.21	1.69	2.83	1.64
9143	0.80	4.31	1.62	7.69	1.86	16.15	2.46	1.61	1.20	1.63	2.69	1.58
10667	0.20	4.10	1.67	7.87	1.96	17.39	2.66	1.76	1.24	1.80	3.15	1.74
10667	0.40	4.13	1.67	7.92	1.95	17.22	2.63	1.73	1.24	1.76	3.07	1.70
10667	0.60	4.20	1.66	7.89	1.92	16.93	2.58	1.69	1.23	1.72	2.95	1.66
10667	0.80	4.26	1.64	7.75	1.89	16.49	2.51	1.64	1.21	1.67	2.80	1.62
12191	0.20	4.02	1.68	7.80	1.98	17.24	2.67	1.75	1.24	1.79	3.16	1.73
12191	0.40	4.07	1.67	7.76	1.96	17.07	2.65	1.72	1.24	1.75	3.10	1.70
12191	0.60	4.12	1.65	7.73	1.92	16.74	2.59	1.68	1.22	1.71	2.98	1.66
12191	0.80	4.16	1.64	7.62	1.89	16.26	2.52	1.64	1.21	1.66	2.84	1.61

SI UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED NO POWER EXTRACTION
STANDARD DAY + 18F TAMB
MAXIMUM CLIMB RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	EPR
0	0.20	10878	0.604	6567	10878	6888	6744	11027	10708	425	2.20
0	0.40	9287	0.732	6799	10287	6806	6673	11057	10700	426	2.28
0	0.60	8148	0.874	7119	9148	6852	6506	11096	10535	422	2.41
0	0.80	9237	1.076	7499	9237	6737	6236	11131	10303	409	2.56
5000	0.20	10128	0.602	6091	10128	7058	7020	11018	10672	444	2.12
5000	0.40	8756	0.700	6206	10522	7061	6950	11046	10871	443	2.18
5000	0.60	7778	0.838	6494	9348	6906	6756	11078	10608	435	2.29
5000	0.80	7060	0.986	6832	8606	6864	6461	11121	10446	421	2.45
10000	0.20	9258	0.594	5425	19600	7241	7238	11005	11164	461	2.04
10000	0.40	8130	0.692	5623	11817	7228	7240	11028	11047	460	2.08
10000	0.60	7357	0.823	5901	10604	7162	7098	11064	10872	451	2.17
10000	0.80	6803	0.971	6134	10088	6987	6804	11008	10642	434	2.34
15000	0.20	8303	0.578	4801	14713	7372	7608	11078	11328	478	1.98
15000	0.40	7378	0.673	4968	13056	7367	7614	11085	11325	472	2.00
15000	0.60	6812	0.797	5201	12062	7294	7505	11040	11048	464	2.07
15000	0.80	6370	0.935	5503	11472	7144	6969	11077	10805	448	2.21
20000	0.20	7103	0.578	4064	15442	7422	7804	11095	11510	492	2.00
20000	0.40	6439	0.671	4318	13900	7446	7778	11071	11402	481	2.00
20000	0.60	6138	0.788	4677	12984	7474	7680	11014	11230	476	2.00
20000	0.80	6028	0.918	5004	12888	7377	7333	11054	10888	461	2.10
25000	0.20	5986	0.578	3433	16087	7472	7960	11021	11711	495	2.04
25000	0.40	5882	0.665	3632	14674	7485	7912	11037	11630	486	2.03
25000	0.60	5917	0.765	3981	14210	7455	7761	11074	11410	481	2.01
25000	0.80	6041	0.898	4390	13817	7308	7407	11025	11175	472	2.03
30000	0.20	4960	0.574	2843	15641	7364	8001	11007	11636	490	2.07
30000	0.40	4954	0.652	3013	15308	7488	8055	11015	11805	488	2.06
30000	0.60	4983	0.746	3306	15105	7478	7996	11038	11607	485	2.04
30000	0.80	5070	0.864	3700	15009	7441	7858	11083	11382	478	2.03
35000	0.20	4068	0.594	2377	17252	7340	8204	11008	12103	492	2.11
35000	0.40	3761	0.680	2477	15048	7367	8171	11047	12048	491	2.10
35000	0.60	3740	0.798	2721	15050	7444	8060	11016	11831	488	2.08
35000	0.80	3940	0.981	3079	14900	7458	7880	11044	11564	483	2.05
40000	0.20	3170	0.581	1841	17129	7378	8174	11017	12260	490	2.13
40000	0.40	2920	0.665	1945	15825	7335	8141	11010	12150	488	2.12
40000	0.60	2907	0.791	2130	15708	7391	8038	11018	11887	485	2.11
40000	0.80	3068	0.985	2481	15526	7388	7843	11040	11614	479	2.09

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 18F TAMB

MAXIMUM CLIMB RATING

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	PAMB2
0	0.20	3.51	1.48	5.18	1.70	12.87	2.21	1.49	1.16	1.46	2.47	1.46
0	0.40	3.48	1.48	5.04	1.69	12.47	2.21	1.45	1.15	1.41	2.41	1.41
0	0.60	3.32	1.46	4.72	1.66	11.69	2.16	1.39	1.14	1.32	2.32	1.34
0	0.80	3.09	1.42	5.23	1.61	10.57	2.09	1.31	1.12	1.21	2.22	1.25
5000	0.20	3.80	1.52	5.72	1.75	14.03	2.30	1.54	1.18	1.53	2.53	1.51
5000	0.40	3.74	1.52	5.56	1.73	13.58	2.27	1.50	1.17	1.47	2.47	1.46
5000	0.60	3.57	1.49	6.18	1.70	12.60	2.22	1.43	1.15	1.36	2.30	1.39
5000	0.80	3.30	1.45	5.62	1.65	11.44	2.14	1.36	1.14	1.28	2.28	1.30
10000	0.20	4.12	1.57	7.31	1.80	15.20	2.37	1.59	1.19	1.61	2.60	1.57
10000	0.40	4.04	1.56	7.12	1.78	14.80	2.34	1.55	1.18	1.55	2.54	1.52
10000	0.60	3.87	1.53	6.72	1.75	13.85	2.29	1.49	1.17	1.46	2.45	1.45
10000	0.80	3.62	1.48	6.05	1.68	12.38	2.20	1.41	1.15	1.35	2.36	1.36
15000	0.20	4.31	1.60	7.72	1.84	16.26	2.44	1.64	1.20	1.67	2.68	1.62
15000	0.40	4.29	1.59	7.60	1.83	15.87	2.41	1.60	1.20	1.62	2.62	1.58
15000	0.60	4.13	1.57	7.23	1.79	14.96	2.35	1.54	1.18	1.54	2.53	1.51
15000	0.80	3.81	1.52	6.58	1.74	13.51	2.27	1.45	1.16	1.43	2.42	1.42
20000	0.20	4.31	1.62	7.84	1.87	16.67	2.49	1.67	1.21	1.71	2.78	1.65
20000	0.40	4.38	1.62	7.82	1.86	16.48	2.46	1.64	1.21	1.67	2.72	1.62
20000	0.60	4.36	1.60	7.69	1.84	16.01	2.42	1.59	1.19	1.62	2.61	1.57
20000	0.80	4.08	1.56	7.10	1.78	14.65	2.33	1.52	1.17	1.51	2.50	1.48
25000	0.20	4.29	1.64	7.87	1.90	16.93	2.54	1.70	1.22	1.74	2.80	1.68
25000	0.40	4.31	1.63	7.87	1.89	16.77	2.52	1.67	1.22	1.70	2.82	1.65
25000	0.60	4.35	1.62	7.79	1.86	16.40	2.47	1.63	1.20	1.66	2.72	1.60
25000	0.80	4.29	1.60	7.54	1.83	15.86	2.40	1.57	1.19	1.58	2.58	1.54
30000	0.20	4.17	1.58	7.88	1.82	17.15	2.50	1.73	1.23	1.77	2.82	1.71
30000	0.40	4.22	1.58	7.87	1.81	16.90	2.47	1.70	1.23	1.74	2.84	1.68
30000	0.60	4.20	1.54	7.82	1.80	16.50	2.42	1.65	1.21	1.69	2.84	1.64
30000	0.80	4.11	1.52	7.60	1.75	16.15	2.48	1.61	1.20	1.63	2.60	1.58
35000	0.20	4.10	1.57	7.80	1.84	17.30	2.46	1.76	1.24	1.80	2.15	1.74
35000	0.40	4.15	1.57	7.89	1.85	17.23	2.63	1.73	1.24	1.76	3.07	1.70
35000	0.60	4.20	1.55	7.84	1.82	16.93	2.58	1.69	1.23	1.72	2.95	1.66
35000	0.80	4.26	1.54	7.75	1.80	16.49	2.51	1.64	1.21	1.67	2.80	1.62
40000	0.20	4.02	1.58	7.80	1.86	17.24	2.67	1.75	1.24	1.70	3.18	1.73
40000	0.40	4.07	1.57	7.78	1.85	17.07	2.68	1.72	1.24	1.75	3.10	1.70
40000	0.60	4.12	1.56	7.73	1.82	16.74	2.60	1.68	1.22	1.71	2.98	1.66
40000	0.80	4.18	1.54	7.62	1.80	16.25	2.52	1.64	1.21	1.66	2.84	1.61

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.20	54180	0.0603	3268	54180	7062	7034	11019	10975	201	2.12
0	0.40	46852	0.0723	3385	46852	7062	6952	11045	10872	201	2.18
0	0.60	41678	0.0851	3545	41678	7002	6763	11081	10702	197	2.29
0	0.80	37850	0.0985	3727	37850	6864	6463	11121	10471	191	2.45
1523	0.20	55866	0.0605	3381	67129	7583	7687	11220	11373	217	1.98
1523	0.40	49880	0.0708	3533	59936	7573	7586	11248	11265	215	1.99
1523	0.60	46418	0.0808	3751	55776	7512	7383	11288	11095	212	2.04
1523	0.80	44458	0.0895	3980	53422	7353	7046	11325	10851	205	2.18
3047	0.20	49126	0.0602	2956	71404	7685	7932	11190	11549	221	1.97
3047	0.40	44437	0.0699	3105	64588	7659	7844	11215	11440	220	1.98
3047	0.60	42332	0.0788	3337	61528	7635	7642	11251	11261	217	1.99
3047	0.80	41555	0.0864	3592	60399	7484	7302	11301	11027	210	2.08
4571	0.20	42535	0.0599	2546	75319	7706	8105	11164	11742	224	1.98
4571	0.40	38811	0.0691	2683	68724	7738	8043	11181	11622	223	1.98
4571	0.60	37750	0.0771	2912	66845	7725	7879	11218	11440	221	1.98
4571	0.80	38088	0.0840	3198	67443	7618	7574	11272	11207	215	2.00
6095	0.20	35999	0.0598	2151	78258	7697	8255	11148	11956	226	2.01
6095	0.40	33341	0.0685	2284	72479	7743	8208	11157	11826	226	2.00
6095	0.60	32929	0.0759	2499	71583	7765	8075	11182	11629	224	1.98
6095	0.80	33940	0.0821	2765	73781	7714	7821	11230	11385	220	1.98
7619	0.20	29910	0.0598	1789	80493	7670	8395	11145	12198	227	2.06
7619	0.40	27885	0.0682	1901	75042	7700	8330	11145	12056	227	2.04
7619	0.60	27903	0.0751	2095	75091	7741	8216	11157	11842	226	2.02
7619	0.80	29533	0.0806	2381	79477	7767	8037	11190	11578	223	1.98
9143	0.20	24686	0.0597	1474	82985	7624	8523	11162	12479	228	2.09
9143	0.40	23144	0.0678	1570	77801	7660	8463	11149	12318	228	2.08
9143	0.60	23287	0.0744	1733	78280	7695	8342	11145	12082	227	2.06
9143	0.80	24737	0.0798	1974	83156	7727	8166	11162	11796	224	2.02
10667	0.20	20172	0.0598	1206	85639	7557	8638	11208	12811	229	2.13
10667	0.40	18999	0.0676	1283	80564	7597	8582	11181	12630	228	2.12
10667	0.60	19231	0.0738	1418	81551	7643	8472	11151	12360	227	2.10
10667	0.80	20510	0.0790	1620	86974	7682	8301	11138	12034	226	2.07
12191	0.20	15701	0.0603	946	84832	7476	8588	11223	12892	227	2.15
12191	0.40	14779	0.0680	1004	79854	7516	8532	11199	12713	227	2.14
12191	0.60	14946	0.0741	1107	80753	7562	8423	11162	12433	226	2.13
12191	0.80	15950	0.0791	1262	86178	7608	8261	11150	12108	224	2.10

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
0	0.20	3.80	1.52	6.73	1.75	14.04	2.30	1.54	1.18	1.53	2.53	1.61
0	0.40	3.75	1.52	6.56	1.73	13.60	2.27	1.50	1.17	1.48	2.47	1.46
0	0.60	3.58	1.49	6.19	1.70	12.72	2.22	1.43	1.15	1.39	2.39	1.39
0	0.80	3.30	1.45	5.63	1.65	11.45	2.14	1.36	1.14	1.28	2.28	1.30
1523	0.20	4.35	1.61	7.82	1.85	16.50	2.45	1.66	1.21	1.69	2.72	1.64
1523	0.40	4.34	1.60	7.70	1.83	16.12	2.42	1.62	1.20	1.65	2.65	1.60
1523	0.60	4.21	1.58	7.38	1.80	15.30	2.37	1.56	1.18	1.57	2.56	1.53
1523	0.80	3.89	1.53	6.74	1.75	13.85	2.28	1.48	1.17	1.46	2.44	1.44
3047	0.20	4.43	1.63	8.06	1.88	17.15	2.50	1.70	1.22	1.74	2.81	1.68
3047	0.40	4.44	1.63	7.99	1.87	16.85	2.48	1.66	1.21	1.70	2.74	1.64
3047	0.60	4.40	1.61	7.77	1.84	16.21	2.42	1.61	1.20	1.64	2.64	1.59
3047	0.80	4.15	1.57	7.23	1.79	14.94	2.34	1.53	1.18	1.53	2.52	1.50
4571	0.20	4.44	1.65	8.21	1.91	17.64	2.56	1.74	1.23	1.79	2.92	1.72
4571	0.40	4.47	1.65	8.16	1.90	17.39	2.53	1.70	1.22	1.75	2.84	1.69
4571	0.60	4.48	1.63	8.03	1.87	16.90	2.48	1.65	1.21	1.70	2.74	1.64
4571	0.80	4.37	1.60	7.68	1.83	15.97	2.41	1.59	1.19	1.61	2.61	1.56
6095	0.20	4.38	1.67	8.25	1.94	17.93	2.61	1.77	1.24	1.82	3.03	1.75
6095	0.40	4.45	1.67	8.26	1.93	17.79	2.59	1.74	1.23	1.79	2.96	1.72
6095	0.60	4.49	1.65	8.19	1.90	17.43	2.54	1.70	1.22	1.75	2.84	1.68
6095	0.80	4.47	1.63	7.97	1.87	16.73	2.46	1.64	1.21	1.68	2.71	1.62
7619	0.20	4.29	1.69	8.24	1.97	18.10	2.67	1.79	1.25	1.84	3.16	1.77
7619	0.40	4.34	1.68	8.22	1.96	17.94	2.64	1.77	1.24	1.82	3.08	1.75
7619	0.60	4.41	1.67	8.20	1.93	17.68	2.59	1.73	1.23	1.78	2.96	1.71
7619	0.80	4.50	1.65	8.16	1.90	17.31	2.52	1.69	1.22	1.73	2.82	1.67
9143	0.20	4.21	1.71	8.23	2.01	18.30	2.74	1.82	1.26	1.87	3.30	1.80
9143	0.40	4.25	1.70	8.22	1.99	18.13	2.71	1.80	1.25	1.84	3.22	1.77
9143	0.60	4.31	1.69	8.18	1.96	17.86	2.65	1.76	1.24	1.81	3.09	1.74
9143	0.80	4.39	1.66	8.13	1.92	17.48	2.58	1.72	1.23	1.76	2.94	1.69
10667	0.20	4.14	1.74	8.25	2.05	18.54	2.82	1.85	1.27	1.90	3.45	1.82
10667	0.40	4.17	1.73	8.23	2.03	18.36	2.78	1.82	1.26	1.87	3.36	1.80
10667	0.60	4.22	1.71	8.18	2.00	18.07	2.72	1.79	1.25	1.84	3.24	1.77
10667	0.80	4.29	1.68	8.11	1.96	17.67	2.64	1.75	1.24	1.79	3.07	1.72
12191	0.20	4.07	1.74	8.15	2.06	18.36	2.83	1.84	1.27	1.89	3.48	1.81
12191	0.40	4.09	1.73	8.12	2.03	18.17	2.79	1.82	1.26	1.86	3.40	1.79
12191	0.60	4.13	1.71	8.06	2.00	17.86	2.73	1.78	1.25	1.82	3.27	1.76
12191	0.80	4.18	1.68	7.97	1.96	17.44	2.65	1.74	1.24	1.78	3.11	1.71

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	NIC2	N2	N2C2	WAT2	BPR
0	0.20	12180	0.502	7206	12180	7062	7038	11018	10875	444	2.12
0	0.40	10832	0.700	7463	10832	7052	6952	11045	10872	443	2.18
0	0.60	9360	0.824	7816	9360	7002	6763	11081	10702	436	2.29
0	0.80	8409	0.906	8217	8409	6964	6653	11121	10471	421	2.45
5000	0.20	12359	0.504	7455	12401	7583	7587	11238	11379	478	1.98
5000	0.40	11213	0.606	7781	13474	7573	7586	11248	11368	478	1.96
5000	0.60	10435	0.703	8270	13530	7512	7383	11288	11065	467	2.04
5000	0.80	9904	0.828	8775	13506	7452	7046	11338	10861	452	2.18
10000	0.20	11044	0.520	6518	14265	7685	7692	11100	11540	480	1.97
10000	0.40	10085	0.628	6946	14530	7680	7644	11218	11440	486	1.98
10000	0.60	9516	0.733	7358	14932	7636	7642	11261	11361	478	1.96
10000	0.80	9141	0.848	7819	15278	7604	7392	11301	11027	464	2.08
15000	0.20	9562	0.537	5614	16032	7706	8105	11164	11742	495	1.98
15000	0.40	8725	0.678	5916	15443	7738	8047	11181	11622	493	1.98
15000	0.60	8486	0.787	6420	16027	7725	7870	11218	11440	487	1.98
15000	0.80	8562	0.934	7052	16161	7618	7577	11272	11207	475	2.00
20000	0.20	8003	0.586	6743	17503	7867	8265	11148	11884	500	2.01
20000	0.40	7405	0.672	5035	16304	7743	8208	11157	11836	499	2.00
20000	0.60	7402	0.744	5510	16092	7765	8075	11183	11620	494	1.98
20000	0.80	7630	0.905	6161	15886	7714	7821	11230	11385	485	1.98
25000	0.20	6724	0.587	3944	18008	7670	8305	11148	12108	502	2.06
25000	0.40	6268	0.669	4191	16870	7700	8330	11145	12056	501	2.04
25000	0.60	6273	0.747	4620	16881	7747	8216	11157	11842	498	2.02
25000	0.80	6639	0.781	5250	17867	7787	8037	11190	11578	493	1.98
30000	0.20	5540	0.586	3251	18655	7624	8523	11162	12470	504	2.09
30000	0.40	5203	0.668	3481	17800	7660	8463	11149	12318	503	2.08
30000	0.60	5235	0.730	3821	17608	7696	8342	11145	12082	500	2.06
30000	0.80	5561	0.783	4353	18404	7727	8166	11162	11705	496	2.02
35000	0.20	4534	0.586	2658	19530	7557	8698	11208	12811	506	2.13
35000	0.40	4271	0.669	2859	18111	7607	8582	11181	12630	504	2.12
35000	0.60	4324	0.733	3171	18344	7643	8472	11161	12360	502	2.10
35000	0.80	4611	0.778	3587	19052	7682	8301	11178	12054	498	2.07
40000	0.20	3520	0.581	2085	19971	7476	8888	11223	12802	502	2.18
40000	0.40	3322	0.667	2214	17061	7516	8693	11180	12714	501	2.14
40000	0.60	3360	0.737	2461	19154	7563	8623	11183	12459	498	2.13
40000	0.80	3585	0.776	2783	19877	7608	8361	11160	12108	494	2.10

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED NO POWER EXTRACTION

STANDARD DAY TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	P3P2	T3T2	P5.2P2	T5.2T2	P4P2	T4T2	P0P2	T0T2	P7P2	T7T2	P8MP2
0	0.20	3.80	1.52	6.73	1.75	14.04	2.30	1.54	1.18	1.53	2.53	1.51
0	0.40	3.78	1.52	6.56	1.73	13.80	2.27	1.50	1.17	1.48	2.47	1.46
0	0.60	3.68	1.49	6.19	1.70	12.72	2.22	1.43	1.15	1.39	2.39	1.39
0	0.80	3.30	1.45	5.63	1.69	11.45	2.14	1.36	1.14	1.28	2.28	1.30
5000	0.20	4.35	1.61	7.22	1.85	16.50	2.45	1.65	1.21	1.69	2.72	1.64
5000	0.40	4.34	1.60	7.20	1.83	16.12	2.42	1.62	1.20	1.65	2.65	1.60
5000	0.60	4.21	1.58	7.18	1.80	15.30	2.37	1.56	1.18	1.57	2.56	1.53
5000	0.80	3.80	1.53	6.74	1.75	13.85	2.28	1.48	1.17	1.46	2.44	1.44
10000	0.20	4.43	1.63	8.06	1.88	17.15	2.50	1.70	1.22	1.74	2.81	1.68
10000	0.40	4.44	1.63	7.99	1.87	16.85	2.48	1.66	1.21	1.70	2.74	1.64
10000	0.60	4.40	1.61	7.77	1.84	16.21	2.43	1.61	1.20	1.64	2.64	1.59
10000	0.80	4.15	1.57	7.23	1.79	14.84	2.34	1.53	1.18	1.53	2.52	1.50
15000	0.20	4.44	1.65	8.21	1.91	17.54	2.56	1.74	1.23	1.78	2.89	1.72
15000	0.40	4.47	1.65	8.16	1.90	17.40	2.53	1.70	1.22	1.75	2.84	1.68
15000	0.60	4.48	1.63	8.07	1.87	16.90	2.48	1.65	1.21	1.70	2.74	1.64
15000	0.80	4.37	1.60	7.68	1.83	15.97	2.41	1.58	1.19	1.61	2.61	1.56
20000	0.20	4.38	1.67	8.28	1.94	17.93	2.61	1.77	1.24	1.82	3.03	1.75
20000	0.40	4.45	1.67	8.26	1.93	17.79	2.58	1.74	1.23	1.79	2.96	1.72
20000	0.60	4.49	1.66	8.19	1.90	17.43	2.54	1.70	1.22	1.75	2.84	1.68
20000	0.80	4.47	1.63	7.97	1.87	16.73	2.46	1.64	1.21	1.68	2.71	1.62
25000	0.20	4.20	1.60	8.24	1.97	18.10	2.67	1.79	1.25	1.84	3.15	1.77
25000	0.40	4.34	1.68	8.22	1.95	17.94	2.64	1.77	1.24	1.82	3.08	1.75
25000	0.60	4.41	1.67	8.20	1.93	17.68	2.59	1.74	1.23	1.78	2.98	1.71
25000	0.80	4.50	1.65	8.15	1.90	17.41	2.52	1.69	1.22	1.74	2.82	1.67
30000	0.20	4.21	1.71	8.24	2.01	18.40	2.74	1.82	1.26	1.87	3.30	1.80
30000	0.40	4.25	1.70	8.22	1.99	18.13	2.71	1.80	1.25	1.84	3.22	1.77
30000	0.60	4.31	1.69	8.18	1.96	17.85	2.65	1.76	1.24	1.81	3.08	1.74
30000	0.80	4.39	1.66	8.13	1.92	17.48	2.58	1.72	1.23	1.76	2.94	1.69
35000	0.20	4.14	1.74	8.25	2.05	18.54	2.82	1.85	1.27	1.90	3.45	1.82
35000	0.40	4.17	1.73	8.23	2.03	18.36	2.78	1.82	1.26	1.87	3.36	1.80
35000	0.60	4.23	1.71	8.18	2.00	18.07	2.72	1.78	1.25	1.84	3.24	1.77
35000	0.80	4.29	1.68	8.11	1.96	17.67	2.64	1.75	1.24	1.79	3.07	1.72
40000	0.20	4.07	1.74	8.15	2.05	18.36	2.83	1.84	1.27	1.88	3.48	1.81
40000	0.40	4.09	1.73	8.12	2.03	18.17	2.79	1.82	1.26	1.86	3.40	1.79
40000	0.60	4.13	1.71	8.06	2.00	17.86	2.73	1.78	1.25	1.82	3.27	1.76
40000	0.80	4.18	1.68	7.97	1.95	17.44	2.65	1.74	1.24	1.78	3.11	1.71

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 10DEG K TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.20	48427	0.0615	2980	48427	6889	6746	11027	10797	193	2.20
0	0.40	41325	0.0746	3084	41325	6897	6674	11058	10701	193	2.28
0	0.60	36242	0.0891	3227	36242	6849	6603	11095	10534	191	2.41
0	0.80	32185	0.1056	3399	32185	6736	6235	11131	10304	186	2.56
1523	0.20	51688	0.0611	3160	62109	7459	7428	11250	11204	211	2.01
1523	0.40	45496	0.0722	3283	54668	7457	7339	11277	11099	210	2.04
1523	0.60	41449	0.0832	3447	49805	7377	7183	11311	10923	206	2.14
1523	0.80	38737	0.0938	3631	46547	7211	6789	11346	10681	199	2.29
3047	0.20	46157	0.0605	2794	67088	7583	7684	11221	11372	217	1.98
3047	0.40	41194	0.0708	2918	59874	7573	7585	11247	11265	215	1.99
3047	0.60	38332	0.0808	3098	55715	7511	7381	11288	11093	212	2.05
3047	0.80	36712	0.0896	3287	53160	7353	7044	11325	10849	205	2.18
4571	0.20	40303	0.0602	2425	71365	7683	7928	11190	11547	221	1.97
4571	0.40	36451	0.0699	2547	64545	7689	7842	11215	11438	220	1.98
4571	0.60	34751	0.0788	2738	61534	7635	7640	11257	11265	217	1.99
4571	0.80	34068	0.0865	2945	60325	7482	7299	11301	11025	210	2.08
6095	0.40	31203	0.0694	2164	67833	7706	8008	11181	11619	222	2.00
6095	0.60	30726	0.0772	2370	66795	7725	7877	11219	11440	221	1.98
6095	0.80	30994	0.0840	2603	67377	7617	7572	11273	11205	215	2.00
7619	0.20	28352	0.0600	1702	76298	7619	8170	11149	11955	224	2.05
7619	0.40	26168	0.0690	1805	70420	7669	8128	11158	11824	223	2.04
7619	0.60	25941	0.0765	1983	69810	7708	8014	11181	11626	222	2.01
7619	0.80	27168	0.0823	2235	73112	7693	7798	11231	11384	219	1.99
9143	0.20	23420	0.0600	1404	78730	7582	8297	11150	12202	225	2.09
9143	0.40	21754	0.0686	1491	73127	7631	8253	11148	12057	225	2.08
9143	0.60	21700	0.0757	1643	72946	7672	8142	11158	11840	223	2.05
9143	0.80	22908	0.0813	1861	77008	7696	7962	11191	11577	221	2.02
10667	0.20	19130	0.0601	1149	81120	7535	8422	11174	12489	226	2.12
10667	0.40	17891	0.0683	1221	75866	7572	8364	11156	12324	225	2.11
10667	0.60	17965	0.0749	1346	76179	7621	8260	11150	12085	224	2.09
10667	0.80	19060	0.0804	1532	80823	7662	8096	11163	11795	222	2.06
12191	0.20	14906	0.0606	903	80541	7464	8382	11189	12566	225	2.15
12191	0.40	13925	0.0688	957	75236	7501	8326	11165	12392	224	2.14
12191	0.60	13965	0.0753	1052	75455	7551	8223	11153	12146	223	2.12
12191	0.80	14807	0.0806	1194	80005	7592	8059	11161	11849	221	2.09

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 10DEG K TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
0	0.20	3.51	1.48	6.19	1.70	12.87	2.23	1.49	1.16	1.47	2.47	1.46
0	0.40	3.46	1.48	6.04	1.69	12.48	2.21	1.46	1.15	1.41	2.41	1.41
0	0.60	3.32	1.46	5.71	1.66	11.68	2.16	1.39	1.14	1.32	2.32	1.34
0	0.80	3.09	1.42	5.23	1.61	10.57	2.09	1.31	1.12	1.21	2.22	1.25
1523	0.20	4.20	1.58	7.47	1.81	15.64	2.39	1.61	1.20	1.63	2.63	1.59
1523	0.40	4.15	1.57	7.31	1.80	15.20	2.36	1.57	1.19	1.58	2.57	1.54
1523	0.60	3.96	1.54	6.89	1.76	14.22	2.30	1.51	1.17	1.49	2.48	1.47
1523	0.80	3.62	1.50	6.24	1.70	12.76	2.22	1.43	1.15	1.38	2.37	1.38
3047	0.20	4.35	1.61	7.82	1.85	16.49	2.45	1.66	1.21	1.69	2.72	1.64
3047	0.40	4.33	1.60	7.70	1.83	16.10	2.42	1.62	1.20	1.65	2.65	1.60
3047	0.60	4.21	1.58	7.38	1.80	15.29	2.36	1.56	1.18	1.57	2.56	1.53
3047	0.80	3.89	1.53	6.73	1.75	13.84	2.28	1.48	1.17	1.45	2.44	1.44
4571	0.20	4.43	1.63	8.06	1.88	17.14	2.50	1.70	1.22	1.74	2.81	1.68
4571	0.40	4.44	1.63	7.99	1.87	16.85	2.47	1.66	1.21	1.70	2.74	1.64
4571	0.60	4.39	1.61	7.77	1.84	16.21	2.42	1.61	1.20	1.64	2.64	1.59
4571	0.80	4.14	1.57	7.22	1.79	14.93	2.34	1.53	1.18	1.53	2.52	1.50
6095	0.40	4.41	1.64	8.06	1.90	17.19	2.53	1.69	1.22	1.74	2.85	1.68
6095	0.60	4.47	1.63	8.02	1.87	16.89	2.48	1.65	1.21	1.70	2.74	1.63
6095	0.80	4.37	1.60	7.68	1.83	15.97	2.41	1.59	1.19	1.61	2.61	1.56
7619	0.20	4.25	1.66	8.04	1.93	17.50	2.60	1.75	1.24	1.80	3.04	1.73
7619	0.40	4.31	1.66	8.04	1.92	17.36	2.58	1.72	1.23	1.76	2.96	1.70
7619	0.60	4.38	1.65	8.01	1.90	17.08	2.53	1.68	1.22	1.72	2.85	1.66
7619	0.80	4.43	1.63	7.91	1.86	16.61	2.46	1.63	1.21	1.67	2.71	1.61
9143	0.20	4.18	1.68	8.04	1.96	17.71	2.67	1.78	1.25	1.82	3.16	1.75
9143	0.40	4.23	1.68	8.03	1.95	17.55	2.64	1.75	1.24	1.79	3.08	1.73
9143	0.60	4.29	1.66	8.00	1.92	17.27	2.58	1.71	1.23	1.75	2.97	1.69
9143	0.80	4.36	1.64	7.93	1.89	16.85	2.51	1.67	1.22	1.70	2.82	1.64
10667	0.20	4.12	1.71	8.07	2.00	17.96	2.74	1.80	1.26	1.85	3.30	1.78
10667	0.40	4.15	1.70	8.04	1.98	17.78	2.70	1.78	1.25	1.82	3.22	1.75
10667	0.60	4.20	1.68	8.00	1.96	17.48	2.65	1.74	1.24	1.78	3.10	1.72
10667	0.80	4.26	1.66	7.92	1.92	17.07	2.57	1.70	1.23	1.73	2.94	1.67
12191	0.20	4.05	1.71	7.97	2.01	17.79	2.75	1.80	1.26	1.84	3.33	1.77
12191	0.40	4.07	1.70	7.94	1.99	17.60	2.71	1.77	1.25	1.81	3.25	1.74
12191	0.60	4.12	1.68	7.88	1.96	17.29	2.66	1.73	1.24	1.77	3.13	1.71
12191	0.80	4.17	1.66	7.79	1.92	16.85	2.58	1.69	1.23	1.72	2.97	1.66

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 18F TAMB

MAXIMUM CONTINUOUS RATING

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.20	10887	0.603	6570	10887	6880	6746	11027	10797	425	2.20
0	0.40	9290	0.732	6799	9290	6897	6674	11058	10701	426	2.28
0	0.60	8147	0.873	7116	8147	6849	6603	11006	10534	422	2.41
0	0.80	7235	1.036	7496	7235	6739	6239	11131	10304	409	2.56
5000	0.20	11620	0.600	6967	13962	7450	7428	11250	11204	466	2.01
5000	0.40	10227	0.708	7239	12286	7457	7339	11277	11065	464	2.04
5000	0.60	9318	0.816	7601	11196	7377	7123	11311	10823	455	2.14
5000	0.80	8708	0.919	8006	10454	7211	6780	11346	10491	436	2.26
10000	0.20	10376	0.584	6060	15082	7583	7584	11221	11472	478	1.98
10000	0.40	9260	0.695	6434	13460	7573	7585	11247	11265	476	1.99
10000	0.60	8617	0.793	6831	12525	7511	7381	11288	11059	467	2.05
10000	0.80	8253	0.878	7248	11895	7353	7044	11335	10840	452	2.18
15000	0.20	9960	0.580	5787	16743	7683	7688	11190	11647	488	1.97
15000	0.40	8794	0.688	6057	14610	7640	7642	11215	11438	486	1.98
15000	0.60	7812	0.773	6036	13833	7635	7640	11257	11265	478	1.99
15000	0.80	7658	0.848	6494	13561	7482	7299	11301	11025	464	2.08
20000	0.40	7014	0.680	4772	15348	7706	8008	11181	11618	491	2.00
20000	0.60	6907	0.757	5226	15016	7725	7877	11219	11440	487	1.98
20000	0.80	6967	0.824	5740	15147	7617	7572	11274	11208	475	2.00
25000	0.20	6373	0.589	3753	17152	7619	8170	11140	11955	494	2.05
25000	0.40	5882	0.677	3980	15831	7659	8128	11158	11824	493	2.04
25000	0.60	5831	0.750	4372	15694	7708	8014	11181	11626	490	2.01
25000	0.80	6107	0.807	4927	16436	7603	7708	11231	11384	484	1.99
30000	0.20	5265	0.588	3098	17699	7582	8297	11150	12202	497	2.09
30000	0.40	4890	0.673	3289	16439	7631	8253	11148	12057	496	2.08
30000	0.60	4878	0.743	3622	16399	7672	8142	11158	11840	493	2.05
30000	0.80	5150	0.797	4105	17312	7696	7962	11191	11577	487	2.02
35000	0.20	4300	0.589	2534	18236	7535	8422	11174	12489	499	2.12
35000	0.40	4022	0.670	2693	17055	7572	8364	11156	12324	498	2.11
35000	0.60	4030	0.735	2968	17125	7621	8260	11150	12085	495	2.09
35000	0.80	4284	0.788	3377	18169	7662	8096	11163	11795	490	2.06
40000	0.20	3361	0.594	1991	18106	7464	8382	11189	12566	496	2.15
40000	0.40	3139	0.674	2111	16913	7501	8326	11165	12392	495	2.14
40000	0.60	3139	0.739	2319	16963	7551	8223	11153	12146	492	2.12
40000	0.80	3328	0.791	2632	17985	7592	8059	11162	11849	487	2.09

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY + 18F TAMB

MAXIMUM CONTINUOUS RATING

	ALT	MN	P3P2	T3T2	P3*2P2	T4.2T2	P4P2	T4T2	P0P2	T0T2	P7P2	T7T2	P8MP2
	0	0.20	3.51	1.48	6.19	1.70	12.87	2.23	1.49	1.16	1.47	2.47	1.46
	0	0.40	3.46	1.48	6.04	1.69	12.48	2.21	1.45	1.15	1.41	2.41	1.41
	0	0.60	3.32	1.46	5.71	1.66	11.68	2.16	1.39	1.14	1.32	2.32	1.34
	0	0.80	3.09	1.42	5.23	1.61	10.57	2.09	1.31	1.12	1.21	2.22	1.25
	5000	0.20	4.20	1.68	7.47	1.81	15.64	2.49	1.61	1.20	1.63	2.63	1.59
	5000	0.40	4.15	1.67	7.31	1.80	15.20	2.46	1.57	1.18	1.58	2.57	1.54
	5000	0.60	3.96	1.64	6.80	1.76	14.02	2.40	1.51	1.17	1.49	2.48	1.47
	5000	0.80	3.62	1.60	6.24	1.70	12.76	2.22	1.43	1.15	1.38	2.37	1.38
	10000	0.20	4.34	1.81	7.82	1.85	16.40	2.69	1.66	1.21	1.69	2.72	1.64
	10000	0.40	4.33	1.80	7.78	1.84	16.10	2.62	1.62	1.20	1.65	2.65	1.60
	10000	0.60	4.21	1.78	7.38	1.80	15.29	2.38	1.56	1.18	1.57	2.56	1.53
	10000	0.80	3.99	1.73	6.73	1.73	13.84	2.28	1.48	1.17	1.45	2.44	1.44
	15000	0.20	4.47	1.83	8.06	1.88	17.14	2.80	1.70	1.22	1.74	2.81	1.68
	15000	0.40	4.44	1.83	7.99	1.87	16.85	2.47	1.66	1.21	1.70	2.74	1.64
	15000	0.60	4.30	1.81	7.77	1.84	16.21	2.42	1.61	1.20	1.64	2.64	1.59
	15000	0.80	4.14	1.77	7.22	1.79	14.93	2.34	1.53	1.18	1.53	2.52	1.50
	20000	0.40	4.41	1.84	8.06	1.90	17.19	2.83	1.69	1.22	1.74	2.85	1.68
	20000	0.60	4.27	1.83	8.02	1.87	16.89	2.48	1.65	1.21	1.70	2.74	1.63
	20000	0.80	4.37	1.80	7.68	1.84	15.97	2.41	1.58	1.19	1.61	2.61	1.56
12	25000	0.20	4.25	1.86	8.04	1.93	17.50	2.80	1.75	1.24	1.80	3.04	1.73
11	25000	0.40	4.31	1.86	8.04	1.92	17.36	2.58	1.72	1.23	1.76	2.96	1.70
10	25000	0.60	4.28	1.85	8.01	1.90	17.08	2.53	1.68	1.22	1.72	2.85	1.66
9	25000	0.80	4.49	1.84	7.91	1.86	16.61	2.46	1.63	1.21	1.67	2.71	1.61
A	30000	0.20	4.18	1.68	8.04	1.96	17.71	2.67	1.78	1.25	1.82	3.16	1.75
	30000	0.40	4.23	1.68	8.03	1.95	17.55	2.64	1.75	1.24	1.79	3.08	1.73
	30000	0.60	4.29	1.66	8.00	1.92	17.27	2.58	1.71	1.23	1.75	2.97	1.69
	30000	0.80	4.36	1.64	7.93	1.89	16.85	2.51	1.67	1.22	1.70	2.82	1.64
	35000	0.20	4.12	1.71	8.07	2.00	17.96	2.74	1.80	1.26	1.85	3.30	1.78
	35000	0.40	4.15	1.70	8.04	1.98	17.78	2.70	1.78	1.25	1.82	3.22	1.75
	35000	0.60	4.20	1.68	8.00	1.96	17.48	2.65	1.74	1.24	1.78	3.10	1.72
	35000	0.80	4.26	1.66	7.92	1.92	17.07	2.57	1.70	1.23	1.73	2.94	1.67
	40000	0.20	4.05	1.71	7.97	2.01	17.79	2.75	1.80	1.26	1.84	3.33	1.77
	40000	0.40	4.07	1.70	7.94	1.99	17.60	2.71	1.77	1.25	1.81	3.25	1.74
	40000	0.60	4.12	1.68	7.88	1.96	17.29	2.66	1.73	1.24	1.77	3.13	1.71
	40000	0.80	4.17	1.66	7.79	1.92	16.85	2.58	1.69	1.23	1.72	2.97	1.66

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	73848	0.0807	3744	73848	7450	7450	11239	11239	212	2.00
0	0.00	65388	0.0494	3232	65388	7065	7065	11010	11010	201	2.09
0	0.00	58776	0.0486	2858	58776	6751	6751	10830	10830	192	2.18
0	0.00	53204	0.0481	2560	53204	6483	6483	10664	10664	183	2.26
0	0.00	48703	0.0477	2321	48703	6233	6233	10517	10517	175	2.33
0	0.00	44255	0.0473	2095	44255	5977	5977	10357	10357	167	2.40
0	0.00	39916	0.0472	1885	39816	5721	5721	10184	10184	159	2.47
0	0.00	35726	0.0473	1690	35726	5465	5465	9991	9991	151	2.55
0	0.00	31397	0.0479	1502	31397	5178	5178	9777	9777	142	2.64
0	0.00	27254	0.0488	1329	27254	4878	4878	9556	9556	133	2.71
0	0.00	23488	0.0500	1173	23488	4577	4577	9305	9305	124	2.78
0	0.20	62191	0.0611	3802	62191	7462	7432	11251	11206	211	2.01
0	0.20	54187	0.0603	3269	54197	7063	7035	11019	10975	201	2.12
0	0.20	48061	0.0602	2894	48061	6758	6731	10840	10797	192	2.21
0	0.20	44203	0.0603	2663	44203	6558	6532	10716	10673	186	2.27
0	0.20	40031	0.0603	2415	40031	6311	6286	10571	10529	179	2.35
0	0.20	36054	0.0605	2183	36054	6057	6033	10417	10376	171	2.43
0	0.20	32175	0.0610	1964	32175	5800	5777	10246	10206	163	2.50
0	0.20	28526	0.0618	1762	28526	5545	5523	10059	10019	155	2.59
0	0.20	24800	0.0634	1571	24800	5271	5250	9855	9816	147	2.69
0	0.20	21171	0.0658	1392	21171	4978	4959	9640	9601	139	2.79
0	0.40	54714	0.0722	3949	54714	7459	7343	11278	11101	210	2.04
0	0.40	46839	0.0722	3384	46839	7061	6950	11043	10871	201	2.18
0	0.40	40969	0.0731	2996	40969	6767	6661	10873	10703	193	2.28
0	0.40	36618	0.0739	2707	36618	6516	6414	10721	10553	186	2.39
0	0.40	32606	0.0753	2456	32606	6286	6188	10576	10411	180	2.47
0	0.40	28844	0.0769	2218	28844	6044	5950	10427	10264	173	2.56
0	0.40	25313	0.0786	1990	25313	5778	5687	10253	10093	166	2.67
0	0.40	22150	0.0806	1784	22150	5530	5444	10068	9911	159	2.77
0	0.40	19080	0.0834	1591	19080	5272	5189	9868	9713	152	2.90
0	0.60	49861	0.0832	4146	49861	7378	7126	11311	10924	206	2.14
0	0.60	41668	0.0851	3544	41668	7000	6761	11081	10702	197	2.29
0	0.60	35898	0.0874	3136	35898	6722	6493	10907	10534	191	2.41
0	0.60	32980	0.0890	2936	32980	6581	6357	10810	10440	187	2.47
0	0.60	28935	0.0920	2661	28836	6363	6146	10668	10304	182	2.57
0	0.60	24984	0.0959	2395	24984	6112	5904	10515	10156	176	2.70
0	0.60	21366	0.1010	2158	21366	5888	5687	10359	10005	170	2.80
0	0.80	46804	0.0937	4368	46604	7214	6793	11346	10683	199	2.29
0	0.80	37838	0.0885	3726	37838	6864	6462	11121	10471	191	2.45
0	0.80	31820	0.1038	3303	31820	6613	6226	10943	10303	185	2.57
0	0.80	27571	0.1088	2998	27571	6408	6033	10804	10172	181	2.68
0	0.80	23539	0.1150	2707	23539	6200	5838	10656	10033	176	2.79

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
0	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.66	1.61
0	0.00	3.83	1.53	6.79	1.75	14.21	2.31	1.56	1.18	1.55	2.56	1.53
0	0.00	3.50	1.48	6.20	1.70	12.94	2.24	1.50	1.17	1.48	2.49	1.47
0	0.00	3.25	1.45	5.72	1.66	11.90	2.19	1.45	1.15	1.42	2.44	1.42
0	0.00	3.02	1.41	5.30	1.62	11.00	2.13	1.41	1.14	1.37	2.40	1.38
0	0.00	2.81	1.38	4.90	1.58	10.13	2.08	1.38	1.13	1.33	2.36	1.34
0	0.00	2.61	1.35	4.53	1.55	9.31	2.03	1.34	1.12	1.29	2.32	1.30
0	0.00	2.43	1.32	4.17	1.51	8.52	1.98	1.30	1.11	1.25	2.29	1.27
0	0.00	2.24	1.29	3.80	1.47	7.70	1.92	1.27	1.10	1.21	2.26	1.24
0	0.00	2.06	1.26	3.45	1.43	6.93	1.86	1.23	1.09	1.18	2.23	1.20
0	0.00	1.90	1.23	3.14	1.39	6.23	1.80	1.20	1.08	1.15	2.21	1.17
0	0.20	4.20	1.58	7.48	1.81	15.67	2.39	1.61	1.20	1.63	2.63	1.59
0	0.20	3.80	1.52	6.73	1.75	14.05	2.30	1.54	1.18	1.53	2.53	1.51
0	0.20	3.49	1.48	6.16	1.70	12.82	2.24	1.49	1.16	1.46	2.47	1.45
0	0.20	3.30	1.46	5.80	1.67	12.04	2.19	1.45	1.15	1.41	2.43	1.42
0	0.20	3.07	1.42	5.38	1.63	11.14	2.14	1.41	1.14	1.37	2.39	1.37
0	0.20	2.86	1.39	4.98	1.59	10.28	2.09	1.37	1.13	1.32	2.35	1.34
0	0.20	2.66	1.36	4.60	1.55	9.45	2.04	1.34	1.12	1.28	2.31	1.30
0	0.20	2.48	1.33	4.24	1.52	8.66	1.99	1.30	1.11	1.24	2.27	1.26
0	0.20	2.29	1.30	3.88	1.48	7.86	1.93	1.27	1.10	1.20	2.24	1.23
0	0.20	2.11	1.27	3.53	1.44	7.10	1.87	1.23	1.09	1.17	2.21	1.20
0	0.40	4.16	1.57	7.32	1.80	15.21	2.36	1.57	1.19	1.58	2.57	1.54
0	0.40	3.74	1.52	6.56	1.73	13.59	2.27	1.50	1.17	1.48	2.47	1.46
0	0.40	3.45	1.47	6.01	1.69	12.43	2.21	1.45	1.16	1.40	2.41	1.40
0	0.40	3.21	1.44	5.58	1.65	11.49	2.16	1.41	1.14	1.35	2.36	1.36
0	0.40	3.01	1.41	5.20	1.61	10.67	2.11	1.37	1.13	1.30	2.32	1.32
0	0.40	2.80	1.38	4.82	1.58	9.87	2.06	1.33	1.12	1.25	2.27	1.28
0	0.40	2.60	1.35	4.44	1.54	9.05	2.01	1.29	1.11	1.21	2.24	1.25
0	0.40	2.43	1.32	4.11	1.51	8.31	1.96	1.26	1.10	1.17	2.20	1.21
0	0.40	2.26	1.30	3.78	1.47	7.58	1.91	1.23	1.09	1.14	2.16	1.18
0	0.60	3.96	1.54	6.90	1.76	14.23	2.30	1.51	1.17	1.49	2.46	1.47
0	0.60	3.58	1.49	6.19	1.70	12.71	2.22	1.44	1.15	1.39	2.39	1.39
0	0.60	3.31	1.45	5.69	1.66	11.64	2.15	1.38	1.14	1.31	2.32	1.33
0	0.60	3.18	1.44	5.45	1.64	11.12	2.13	1.36	1.13	1.28	2.28	1.30
0	0.60	2.99	1.41	5.10	1.60	10.35	2.09	1.32	1.12	1.23	2.24	1.26
0	0.60	2.79	1.38	4.72	1.57	9.55	2.04	1.28	1.11	1.18	2.19	1.23
0	0.60	2.62	1.35	4.40	1.54	8.86	1.99	1.25	1.10	1.14	2.15	1.19
0	0.80	3.63	1.50	6.24	1.70	12.78	2.22	1.43	1.15	1.38	2.37	1.38
0	0.80	3.30	1.45	5.62	1.65	11.44	2.14	1.35	1.14	1.28	2.28	1.30
0	0.80	3.08	1.42	5.21	1.61	10.54	2.09	1.30	1.12	1.21	2.21	1.25
0	0.80	2.91	1.40	4.89	1.58	9.85	2.05	1.27	1.11	1.16	2.16	1.21
0	0.80	2.75	1.37	4.59	1.56	9.18	2.01	1.23	1.10	1.11	2.12	1.17

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE -100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
0	0.00	16600	0.447	8255	16600	7450	7450	11239	11239	487	2.00
0	0.00	14699	0.485	7126	14699	7065	7065	11010	11010	444	2.09
0	0.00	13213	0.477	6302	13213	6751	6751	10830	10830	424	2.18
0	0.00	11960	0.472	5644	11960	6483	6483	10664	10664	404	2.26
0	0.00	10949	0.467	5117	10949	6233	6233	10517	10517	387	2.33
0	0.00	9948	0.464	4619	9948	5977	5977	10357	10357	369	2.40
0	0.00	8973	0.463	4156	8973	5721	5721	10184	10184	351	2.47
0	0.00	8031	0.464	3727	8031	5465	5465	9991	9991	334	2.55
0	0.00	7058	0.469	3312	7058	5178	5178	9777	9777	314	2.64
0	0.00	6126	0.479	2931	6126	4878	4878	9556	9556	293	2.71
0	0.00	5280	0.490	2587	5280	4577	4577	9305	9305	273	2.78
0	0.20	13981	0.600	8382	13981	7462	7432	11251	11206	467	2.01
0	0.20	12184	0.592	7208	12184	7063	7035	11019	10975	444	2.12
0	0.20	10804	0.581	6381	10804	6758	6731	10840	10797	424	2.21
0	0.20	9937	0.581	5872	9937	6558	6532	10718	10673	411	2.27
0	0.20	8999	0.592	5326	8999	6311	6286	10571	10529	395	2.35
0	0.20	8105	0.594	4812	8105	6057	6033	10417	10376	378	2.43
0	0.20	7233	0.599	4330	7233	5800	5777	10245	10206	360	2.50
0	0.20	6412	0.606	3886	6412	5545	5523	10059	10019	343	2.59
0	0.20	5575	0.621	3463	5575	5271	5250	9855	9816	325	2.69
0	0.20	4759	0.645	3070	4759	4978	4959	9640	9601	306	2.79
0	0.40	12300	0.708	8707	12300	7459	7343	11278	11101	464	2.04
0	0.40	10529	0.709	7460	10529	7081	6950	11043	10871	443	2.18
0	0.40	9210	0.717	6606	9210	6767	6661	10873	10703	426	2.28
0	0.40	8232	0.725	5969	8232	6516	6414	10721	10553	411	2.39
0	0.40	7330	0.739	5414	7330	6286	6188	10576	10411	397	2.47
0	0.40	6484	0.754	4891	6484	6044	5950	10427	10264	382	2.56
0	0.40	5690	0.771	4387	5690	5778	5687	10253	10093	366	2.67
0	0.40	4979	0.790	3934	4979	5530	5444	10068	9911	351	2.77
0	0.40	4289	0.818	3509	4289	5272	5189	9868	9713	336	2.90
0	0.60	11209	0.816	9141	11209	7378	7126	11311	10924	455	2.14
0	0.60	9367	0.834	7814	9367	7000	6761	11081	10702	436	2.29
0	0.60	8070	0.857	6914	8070	6722	6493	10907	10534	422	2.41
0	0.60	7414	0.873	6473	7414	6581	6357	10810	10440	413	2.47
0	0.60	6504	0.902	5867	6504	6369	6146	10668	10304	402	2.57
0	0.60	5616	0.940	5281	5616	6118	5904	10515	10156	389	2.70
0	0.60	4803	0.991	4758	4803	5888	5687	10359	10005	376	2.80
0	0.80	10477	0.919	9631	10477	7214	6793	11346	10683	439	2.29
0	0.80	8506	0.966	8216	8506	6864	6462	11121	10471	421	2.45
0	0.80	7153	1.018	7282	7153	6613	6226	10943	10303	408	2.57
0	0.80	6198	1.067	6611	6198	6408	6033	10804	10172	399	2.68
0	0.80	5291	1.128	5969	5291	6200	5838	10656	10033	388	2.79

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	POP2	TDT2	P7P2	T7T2	P8MP2
0	0.00	4.20	1.58	7.50	1.81	15.76	2.40	1.63	1.20	1.65	2.66	1.61
0	0.00	3.83	1.53	6.79	1.75	14.21	2.31	1.56	1.18	1.55	2.66	1.53
0	0.00	3.50	1.48	6.20	1.70	12.94	2.24	1.50	1.17	1.48	2.49	1.47
0	0.00	3.25	1.45	5.72	1.66	11.90	2.19	1.45	1.15	1.42	2.44	1.42
0	0.00	3.02	1.41	5.30	1.62	11.00	2.13	1.41	1.14	1.37	2.40	1.38
0	0.00	2.81	1.38	4.90	1.58	10.13	2.08	1.38	1.13	1.33	2.36	1.34
0	0.00	2.61	1.35	4.53	1.55	9.31	2.03	1.34	1.12	1.29	2.32	1.30
0	0.00	2.43	1.32	4.17	1.51	8.52	1.98	1.30	1.11	1.25	2.29	1.27
0	0.00	2.24	1.29	3.80	1.47	7.70	1.92	1.27	1.10	1.21	2.26	1.24
0	0.00	2.06	1.26	3.45	1.43	6.93	1.86	1.23	1.09	1.18	2.23	1.20
0	0.00	1.90	1.23	3.14	1.39	6.23	1.80	1.20	1.08	1.15	2.21	1.17
0	0.20	4.20	1.58	7.48	1.81	15.67	2.39	1.61	1.20	1.63	2.63	1.59
0	0.20	3.80	1.52	6.73	1.75	14.05	2.30	1.54	1.18	1.53	2.53	1.51
0	0.20	3.49	1.48	6.16	1.70	12.82	2.24	1.49	1.16	1.46	2.47	1.45
0	0.20	3.30	1.46	5.80	1.67	12.04	2.19	1.45	1.15	1.41	2.43	1.42
0	0.20	3.07	1.42	5.38	1.63	11.14	2.14	1.41	1.14	1.37	2.39	1.37
0	0.20	2.86	1.39	4.98	1.59	10.28	2.09	1.37	1.13	1.32	2.35	1.34
0	0.20	2.66	1.36	4.60	1.55	9.45	2.04	1.34	1.12	1.28	2.31	1.30
0	0.20	2.48	1.33	4.24	1.52	8.66	1.99	1.30	1.11	1.24	2.27	1.26
0	0.20	2.29	1.30	3.88	1.48	7.86	1.93	1.27	1.10	1.20	2.24	1.23
0	0.20	2.11	1.27	3.53	1.44	7.10	1.87	1.23	1.09	1.17	2.21	1.20
0	0.40	4.16	1.57	7.32	1.80	15.21	2.36	1.57	1.19	1.58	2.57	1.54
0	0.40	3.74	1.52	6.56	1.73	13.59	2.27	1.50	1.17	1.48	2.47	1.46
0	0.40	3.45	1.47	6.01	1.69	12.43	2.21	1.45	1.15	1.40	2.41	1.40
0	0.40	3.21	1.44	5.58	1.65	11.49	2.16	1.41	1.14	1.35	2.36	1.36
0	0.40	3.01	1.41	5.20	1.61	10.67	2.11	1.37	1.13	1.30	2.32	1.32
0	0.40	2.80	1.38	4.82	1.58	9.87	2.06	1.33	1.12	1.25	2.27	1.28
0	0.40	2.60	1.35	4.44	1.54	9.05	2.01	1.29	1.11	1.21	2.24	1.25
0	0.40	2.43	1.32	4.11	1.51	8.31	1.96	1.26	1.10	1.17	2.20	1.21
0	0.40	2.26	1.30	3.78	1.47	7.58	1.91	1.23	1.09	1.14	2.16	1.18
0	0.60	3.96	1.54	6.90	1.76	14.23	2.30	1.51	1.17	1.49	2.48	1.47
0	0.60	3.58	1.49	6.19	1.70	12.71	2.22	1.44	1.15	1.39	2.39	1.39
0	0.60	3.31	1.45	5.69	1.66	11.64	2.16	1.38	1.14	1.31	2.32	1.33
0	0.60	3.18	1.44	5.45	1.64	11.12	2.13	1.36	1.13	1.28	2.28	1.30
0	0.60	2.99	1.41	5.10	1.60	10.35	2.09	1.32	1.12	1.23	2.24	1.26
0	0.60	2.79	1.38	4.72	1.57	9.55	2.04	1.28	1.11	1.18	2.19	1.23
0	0.60	2.62	1.35	4.40	1.54	8.86	1.99	1.25	1.10	1.14	2.15	1.19
0	0.80	3.63	1.50	6.24	1.70	12.78	2.22	1.43	1.15	1.38	2.37	1.38
0	0.80	3.30	1.45	5.62	1.65	11.44	2.14	1.35	1.14	1.28	2.28	1.30
0	0.80	3.08	1.42	5.21	1.61	10.54	2.09	1.30	1.12	1.21	2.21	1.25
0	0.80	2.91	1.40	4.89	1.58	9.85	2.05	1.27	1.11	1.16	2.16	1.21
0	0.80	2.75	1.37	4.59	1.56	9.18	2.01	1.23	1.10	1.11	2.12	1.17

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE - 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
1523	0.00	65749	0.0506	3329	79084	7584	7718	11211	11409	217	1.97
1523	0.00	59653	0.0492	2937	71680	7236	7364	10993	11187	209	2.02
1523	0.00	54161	0.0483	2616	64580	6930	7053	10824	11015	201	2.10
1523	0.00	52162	0.0480	2504	62678	6817	6937	10762	10952	198	2.13
1523	0.00	48269	0.0475	2293	58001	6602	6718	10631	10818	191	2.20
1523	0.00	44453	0.0471	2093	53415	6385	6497	10499	10684	184	2.25
1523	0.00	40701	0.0467	1898	48906	6139	6247	10353	10535	176	2.32
1523	0.00	36988	0.0463	1714	44445	5884	5988	10193	10373	168	2.39
1523	0.00	33386	0.0462	1543	40117	5635	5734	10022	10199	160	2.47
1523	0.00	29912	0.0463	1385	35943	5384	5479	9833	10007	152	2.55
1523	0.00	26337	0.0468	1232	31647	5106	5196	9626	9796	143	2.63
1523	0.00	22881	0.0477	1092	27494	4813	4898	9414	9580	133	2.71
1523	0.00	19715	0.0490	966	23690	4516	4594	9165	9326	124	2.78
1523	0.20	55867	0.0605	3381	67130	7583	7686	11221	11373	217	1.98
1523	0.20	50020	0.0596	2979	60105	7243	7341	11005	11154	209	2.03
1523	0.20	44888	0.0590	2649	53938	6930	7025	10832	10980	201	2.12
1523	0.20	40470	0.0589	2384	48629	6673	6764	10684	10829	193	2.20
1523	0.20	36906	0.0590	2176	44346	6455	6542	10550	10693	186	2.27
1523	0.20	33446	0.0591	1975	40190	6213	6298	10404	10545	179	2.35
1523	0.20	30147	0.0593	1786	36226	5964	6045	10255	10394	172	2.42
1523	0.20	26921	0.0597	1607	32349	5713	5790	10084	10221	164	2.50
1523	0.20	23889	0.0605	1444	28705	5463	5537	9902	10036	156	2.59
1523	0.20	20812	0.0619	1288	25008	5197	5267	9703	9835	148	2.69
1523	0.20	17782	0.0643	1143	21367	4911	4977	9493	9622	139	2.78
1523	0.40	49900	0.0708	3533	59681	7571	7584	11247	11267	215	1.99
1523	0.40	43789	0.0705	3087	52618	7232	7245	11029	11049	208	2.08
1523	0.40	38786	0.0707	2743	46606	6933	6946	10858	10877	201	2.19
1523	0.40	34019	0.0716	2435	40877	6646	6660	10693	10711	193	2.29
1523	0.40	30576	0.0724	2213	36741	6415	6426	10556	10575	187	2.38
1523	0.40	27262	0.0737	2008	32758	6190	6201	10411	10429	180	2.47
1523	0.40	24131	0.0752	1815	28996	5951	5961	10263	10281	173	2.56
1523	0.40	21189	0.0769	1629	25461	5692	5701	10092	10109	166	2.67
1523	0.40	18570	0.0788	1462	22314	5450	5459	9911	9929	159	2.77
1523	0.40	16036	0.0815	1306	19269	5200	5209	9719	9735	153	2.89
1523	0.60	46418	0.0808	3751	55776	7512	7383	11288	11095	212	2.04
1523	0.60	39633	0.0818	3240	47623	7163	7040	11063	10873	204	2.17
1523	0.60	34470	0.0833	2872	41420	6873	6756	10892	10705	197	2.29
1523	0.60	31018	0.0849	2634	37272	6677	6563	10774	10590	193	2.38
1523	0.60	27548	0.0871	2399	33102	6480	6369	10640	10458	188	2.47
1523	0.60	24195	0.0900	2176	29072	6266	6159	10501	10321	182	2.57
1523	0.60	20910	0.0938	1960	25125	6020	5917	10350	10172	176	2.69
1523	0.60	17808	0.0988	1767	21495	5798	5699	10195	10020	171	2.79
1523	0.80	44459	0.0895	3980	53422	7353	7045	11325	10851	205	2.18
1523	0.80	36657	0.0928	3402	44048	6989	6696	11098	10633	197	2.34
1523	0.80	31279	0.0966	3020	37685	6740	6458	10931	10473	191	2.45
1523	0.80	26723	0.1013	2707	32111	6516	6244	10774	10323	185	2.56
1523	0.80	23061	0.1063	2451	27710	6310	6046	10634	10189	181	2.67
1523	0.80	19706	0.1124	2214	23679	6106	5850	10488	10049	176	2.78

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

1976 MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

ALT	MN	P3P2	T3T2	P3•2P2	T3•2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
1523	0.00	4.36	1.61	7.86	1.85	16.61	2.46	1.67	1.21	1.71	2.74	1.65
1523	0.00	4.13	1.57	7.35	1.80	15.42	2.38	1.61	1.19	1.63	2.62	1.58
1523	0.00	3.80	1.53	6.76	1.75	14.16	2.31	1.55	1.18	1.55	2.55	1.53
1523	0.00	3.68	1.51	6.54	1.73	13.69	2.29	1.53	1.17	1.52	2.53	1.50
1523	0.00	3.47	1.48	6.14	1.70	12.81	2.24	1.49	1.16	1.47	2.48	1.46
1523	0.00	3.26	1.45	5.74	1.66	11.96	2.19	1.45	1.15	1.42	2.44	1.42
1523	0.00	3.03	1.42	5.32	1.62	11.06	2.14	1.42	1.14	1.38	2.40	1.38
1523	0.00	2.81	1.38	4.92	1.59	10.18	2.09	1.38	1.13	1.33	2.36	1.34
1523	0.00	2.62	1.36	4.54	1.55	9.35	2.04	1.34	1.12	1.29	2.32	1.31
1523	0.00	2.44	1.33	4.19	1.51	8.56	1.98	1.30	1.11	1.25	2.29	1.27
1523	0.00	2.25	1.29	3.82	1.47	7.75	1.93	1.27	1.10	1.21	2.26	1.24
1523	0.00	2.07	1.26	3.48	1.44	6.99	1.87	1.23	1.09	1.18	2.23	1.20
1523	0.00	1.91	1.23	3.15	1.40	6.27	1.81	1.20	1.08	1.15	2.21	1.18
1523	0.20	4.35	1.61	7.82	1.85	16.50	2.45	1.66	1.21	1.69	2.72	1.64
1523	0.20	4.12	1.57	7.31	1.80	15.30	2.37	1.59	1.19	1.61	2.60	1.57
1523	0.20	3.79	1.52	6.71	1.75	14.01	2.31	1.54	1.18	1.53	2.53	1.51
1523	0.20	3.52	1.49	6.22	1.70	12.95	2.25	1.49	1.16	1.47	2.47	1.46
1523	0.20	3.31	1.46	5.81	1.67	12.08	2.20	1.45	1.15	1.42	2.43	1.42
1523	0.20	3.08	1.42	5.40	1.63	11.19	2.15	1.41	1.14	1.37	2.39	1.38
1523	0.20	2.86	1.39	5.00	1.59	10.33	2.10	1.38	1.13	1.32	2.35	1.34
1523	0.20	2.67	1.36	4.62	1.56	9.49	2.04	1.34	1.12	1.28	2.31	1.30
1523	0.20	2.48	1.33	4.26	1.52	8.70	1.99	1.30	1.11	1.24	2.27	1.27
1523	0.20	2.30	1.30	3.90	1.48	7.91	1.94	1.27	1.10	1.20	2.24	1.23
1523	0.20	2.12	1.27	3.56	1.45	7.15	1.88	1.23	1.09	1.17	2.21	1.20
1523	0.40	4.33	1.60	7.70	1.83	16.12	2.42	1.62	1.20	1.65	2.65	1.60
1523	0.40	4.06	1.56	7.13	1.78	14.81	2.34	1.55	1.18	1.58	2.54	1.54
1523	0.40	3.74	1.51	6.55	1.73	13.57	2.28	1.50	1.17	1.47	2.47	1.46
1523	0.40	3.44	1.47	6.01	1.69	12.43	2.22	1.44	1.15	1.40	2.40	1.40
1523	0.40	3.22	1.44	5.59	1.65	11.54	2.17	1.41	1.14	1.35	2.36	1.36
1523	0.40	3.01	1.41	5.22	1.61	10.72	2.12	1.37	1.13	1.30	2.32	1.32
1523	0.40	2.81	1.38	4.84	1.58	9.92	2.07	1.33	1.12	1.26	2.27	1.29
1523	0.40	2.61	1.35	4.46	1.54	9.10	2.02	1.29	1.11	1.21	2.24	1.25
1523	0.40	2.44	1.33	4.13	1.51	8.36	1.97	1.26	1.10	1.18	2.20	1.22
1523	0.40	2.27	1.30	3.81	1.47	7.64	1.91	1.23	1.09	1.14	2.16	1.18
1523	0.60	4.21	1.58	7.38	1.80	15.30	2.37	1.56	1.18	1.57	2.56	1.53
1523	0.60	3.87	1.53	6.73	1.75	13.86	2.29	1.49	1.17	1.46	2.45	1.45
1523	0.60	3.57	1.49	6.18	1.70	12.69	2.22	1.43	1.15	1.38	2.38	1.39
1523	0.60	3.37	1.46	5.82	1.67	11.92	2.18	1.40	1.14	1.33	2.33	1.35
1523	0.60	3.19	1.44	5.47	1.64	11.17	2.14	1.36	1.13	1.28	2.28	1.31
1523	0.60	3.00	1.41	5.12	1.61	10.40	2.09	1.32	1.12	1.23	2.24	1.27
1523	0.60	2.80	1.38	4.74	1.57	9.60	2.04	1.28	1.11	1.18	2.19	1.23
1523	0.60	2.63	1.36	4.42	1.54	8.90	2.00	1.25	1.10	1.14	2.15	1.19
1523	0.80	3.89	1.53	6.74	1.75	13.85	2.28	1.48	1.17	1.46	2.44	1.44
1523	0.80	3.53	1.48	6.06	1.69	12.39	2.20	1.41	1.15	1.35	2.35	1.36
1523	0.80	3.29	1.45	5.62	1.65	11.43	2.15	1.35	1.13	1.28	2.28	1.30
1523	0.80	3.09	1.42	5.24	1.62	10.66	2.10	1.31	1.12	1.21	2.22	1.25
1523	0.80	2.92	1.40	4.91	1.59	9.89	2.06	1.27	1.12	1.16	2.16	1.21
1523	0.80	2.76	1.38	4.61	1.56	9.23	2.02	1.24	1.11	1.11	2.12	1.17

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-100 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
5000	0.00	14781	0.497	7341	17761	7584	7718	11211	11409	480	1.97
5000	0.00	13410	0.483	6477	16114	7236	7364	10993	11187	462	2.02
5000	0.00	12175	0.474	5768	14630	6930	7053	10824	11015	443	2.10
5000	0.00	11726	0.471	5520	14090	6817	6937	10762	10952	436	2.13
5000	0.00	10851	0.466	5055	13039	6602	6718	10631	10818	421	2.20
5000	0.00	9993	0.462	4615	12008	6385	6497	10499	10684	406	2.25
5000	0.00	9160	0.457	4186	10994	6139	6247	10353	10535	388	2.32
5000	0.00	8315	0.456	3779	9991	5884	5988	10193	10373	370	2.39
5000	0.00	7505	0.453	3402	9018	5635	5734	10022	10199	352	2.47
5000	0.00	6724	0.454	3053	8080	5384	5479	9833	10007	335	2.55
5000	0.00	5920	0.459	2717	7114	5106	5196	9626	9796	316	2.63
5000	0.00	5143	0.468	2408	6180	4813	4898	9414	9580	295	2.71
5000	0.00	4432	0.480	2128	5325	4515	4594	9165	9328	274	2.78
5000	0.20	12559	0.594	7455	15091	7583	7686	11221	11373	479	1.98
5000	0.20	11245	0.584	6568	13512	7243	7341	11005	11154	462	2.03
5000	0.20	10091	0.579	5840	12125	6930	7025	10832	10980	444	2.12
5000	0.20	9098	0.578	5257	10932	6673	6764	10684	10829	427	2.20
5000	0.20	8296	0.578	4798	9969	6455	6542	10550	10693	412	2.27
5000	0.20	7519	0.579	4354	9035	6213	6298	10404	10546	396	2.35
5000	0.20	6777	0.581	3938	8143	5964	6045	10255	10394	379	2.42
5000	0.20	6052	0.586	3545	7272	5713	5790	10084	10221	361	2.50
5000	0.20	5370	0.593	3184	6453	5463	5537	9902	10036	344	2.59
5000	0.20	4678	0.607	2840	5622	5197	5267	9703	9835	327	2.69
5000	0.20	3997	0.630	2519	4803	4911	4977	9493	9622	308	2.78
5000	0.40	11218	0.694	7789	13479	7571	7584	11247	11267	475	1.99
5000	0.40	9844	0.692	6807	11829	7232	7245	11029	11049	459	2.08
5000	0.40	8719	0.694	6049	10477	6933	6946	10858	10877	443	2.19
5000	0.40	7647	0.702	5370	9189	6648	6660	10693	10711	426	2.29
5000	0.40	6873	0.710	4879	8259	6415	6426	10556	10575	412	2.38
5000	0.40	6128	0.723	4428	7384	6190	6201	10411	10429	398	2.47
5000	0.40	5424	0.738	4002	6518	5951	5961	10263	10281	383	2.56
5000	0.40	4783	0.754	3592	5723	5692	5701	10092	10109	367	2.67
5000	0.40	4174	0.772	3224	5018	5450	5459	9911	9929	352	2.77
5000	0.40	3605	0.799	2879	4331	5200	5209	9719	9735	337	2.89
5000	0.60	10435	0.793	8269	13539	7512	7383	11288	11095	467	2.04
5000	0.60	8909	0.802	7144	10706	7163	7040	11063	10873	451	2.17
5000	0.60	7749	0.817	6333	9311	6873	6756	10892	10705	435	2.29
5000	0.60	6973	0.833	5807	8379	6677	6563	10774	10590	426	2.38
5000	0.60	6193	0.854	5290	7441	6480	6369	10640	10458	414	2.47
5000	0.60	5439	0.882	4798	6535	6266	6159	10501	10321	402	2.57
5000	0.60	4700	0.920	4322	5640	6020	5917	10350	10172	390	2.69
5000	0.60	4021	0.969	3895	4832	5798	5699	10195	10020	377	2.79
5000	0.80	9994	0.878	8774	12009	7353	7045	11325	10851	452	2.18
5000	0.80	8240	0.910	7501	9902	6989	6696	11098	10633	434	2.34
5000	0.80	7031	0.947	6659	8449	6740	6458	10931	10473	421	2.45
5000	0.80	6007	0.994	5968	7218	6516	6244	10774	10323	409	2.56
5000	0.80	5184	1.043	5404	6229	6310	6046	10634	10189	400	2.67
5000	0.80	4430	1.102	4882	5323	6106	5850	10488	10049	389	2.78

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-100 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	POP2	TDT2	P7P2	T7T2	P8MP2
5000	0.00	4.36	1.61	7.86	1.85	16.81	2.46	1.67	1.21	1.71	2.74	1.65
5000	0.00	4.13	1.57	7.35	1.80	15.42	2.38	1.61	1.19	1.63	2.62	1.58
5000	0.00	3.80	1.53	6.76	1.75	14.16	2.31	1.55	1.18	1.55	2.55	1.53
5000	0.00	3.68	1.51	6.54	1.73	13.69	2.29	1.53	1.17	1.52	2.53	1.50
5000	0.00	3.47	1.48	6.14	1.70	12.81	2.24	1.49	1.16	1.47	2.48	1.48
5000	0.00	3.26	1.45	5.74	1.66	11.96	2.19	1.45	1.15	1.42	2.44	1.42
5000	0.00	3.03	1.42	5.32	1.62	11.06	2.14	1.42	1.14	1.38	2.40	1.38
5000	0.00	2.81	1.38	4.92	1.59	10.18	2.09	1.38	1.13	1.33	2.36	1.34
5000	0.00	2.62	1.36	4.54	1.55	9.35	2.04	1.34	1.12	1.29	2.32	1.31
5000	0.00	2.44	1.33	4.19	1.51	8.56	1.98	1.30	1.11	1.25	2.29	1.27
5000	0.00	2.25	1.29	3.82	1.47	7.75	1.93	1.27	1.10	1.21	2.26	1.24
5000	0.00	2.07	1.26	3.48	1.44	6.99	1.87	1.23	1.09	1.18	2.23	1.20
5000	0.00	1.91	1.23	3.15	1.40	6.27	1.81	1.20	1.08	1.15	2.21	1.18
5000	0.20	4.35	1.61	7.82	1.85	16.50	2.45	1.66	1.21	1.69	2.72	1.64
5000	0.20	4.12	1.57	7.31	1.80	15.30	2.37	1.59	1.19	1.61	2.60	1.57
5000	0.20	3.79	1.52	6.71	1.75	14.01	2.31	1.54	1.18	1.53	2.53	1.51
5000	0.20	3.52	1.49	6.22	1.70	12.95	2.25	1.49	1.16	1.47	2.47	1.46
5000	0.20	3.31	1.46	5.81	1.67	12.08	2.20	1.45	1.15	1.42	2.43	1.42
5000	0.20	3.08	1.42	5.40	1.63	11.19	2.15	1.41	1.14	1.37	2.39	1.38
5000	0.20	2.86	1.39	5.00	1.59	10.33	2.10	1.38	1.13	1.32	2.35	1.34
5000	0.20	2.67	1.36	4.62	1.56	9.49	2.04	1.34	1.12	1.28	2.31	1.30
5000	0.20	2.48	1.33	4.26	1.52	8.70	1.99	1.30	1.11	1.24	2.27	1.27
5000	0.20	2.30	1.30	3.90	1.48	7.91	1.94	1.27	1.10	1.20	2.24	1.23
5000	0.20	2.12	1.27	3.56	1.45	7.15	1.88	1.23	1.09	1.17	2.21	1.20
5000	0.40	4.33	1.60	7.70	1.83	16.12	2.42	1.62	1.20	1.65	2.65	1.60
5000	0.40	4.06	1.56	7.13	1.78	14.81	2.34	1.55	1.18	1.55	2.54	1.52
5000	0.40	3.74	1.51	6.55	1.73	13.57	2.28	1.50	1.17	1.47	2.47	1.46
5000	0.40	3.44	1.47	6.01	1.69	12.43	2.22	1.44	1.15	1.40	2.40	1.40
5000	0.40	3.22	1.44	5.59	1.65	11.54	2.17	1.41	1.14	1.35	2.36	1.36
5000	0.40	3.01	1.41	5.22	1.61	10.72	2.12	1.37	1.13	1.30	2.32	1.32
5000	0.40	2.81	1.38	4.84	1.58	9.92	2.07	1.33	1.12	1.26	2.27	1.29
5000	0.40	2.61	1.35	4.46	1.54	9.10	2.02	1.29	1.11	1.21	2.24	1.25
5000	0.40	2.44	1.33	4.13	1.51	8.36	1.97	1.26	1.10	1.18	2.20	1.22
5000	0.40	2.27	1.30	3.81	1.47	7.64	1.91	1.23	1.09	1.14	2.16	1.18
5000	0.60	4.21	1.58	7.38	1.80	15.30	2.37	1.56	1.18	1.57	2.56	1.53
5000	0.60	3.87	1.53	6.73	1.75	13.86	2.29	1.49	1.17	1.46	2.45	1.45
5000	0.60	3.57	1.49	6.18	1.70	12.69	2.22	1.43	1.15	1.38	2.38	1.39
5000	0.60	3.37	1.46	5.82	1.67	11.92	2.18	1.40	1.14	1.33	2.33	1.35
5000	0.60	3.19	1.44	5.47	1.64	11.17	2.14	1.36	1.13	1.28	2.28	1.31
5000	0.60	3.00	1.41	5.12	1.61	10.40	2.09	1.32	1.12	1.23	2.24	1.27
5000	0.60	2.80	1.38	4.74	1.57	9.60	2.04	1.28	1.11	1.18	2.19	1.23
5000	0.60	2.63	1.36	4.42	1.54	8.90	2.00	1.25	1.10	1.14	2.16	1.19
5000	0.80	3.89	1.53	6.74	1.75	13.85	2.28	1.48	1.17	1.46	2.44	1.44
5000	0.80	3.53	1.48	6.06	1.69	12.39	2.20	1.41	1.15	1.35	2.35	1.36
5000	0.80	3.29	1.45	5.62	1.65	11.43	2.15	1.35	1.13	1.28	2.28	1.30
5000	0.80	3.09	1.42	5.24	1.62	10.60	2.10	1.31	1.12	1.21	2.22	1.25
5000	0.80	2.92	1.40	4.91	1.59	9.89	2.06	1.27	1.12	1.16	2.16	1.21
5000	0.80	2.76	1.38	4.61	1.56	9.24	2.02	1.24	1.11	1.11	2.12	1.17

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
3047	0.00	57387	0.0506	2906	83411	7674	7952	11180	11586	222	1.97
3047	0.00	53214	0.0491	2614	77346	7368	7635	10968	11366	215	1.98
3047	0.00	49297	0.0481	2373	71653	7108	7365	10809	11201	209	2.02
3047	0.00	46478	0.0476	2210	67554	6926	7178	10705	11093	204	2.06
3047	0.00	43244	0.0469	2029	62854	6708	6951	10588	10972	198	2.13
3047	0.00	40085	0.0465	1862	58233	6497	6733	10462	10841	191	2.19
3047	0.00	36891	0.0461	1699	53621	6282	6510	10327	10702	184	2.25
3047	0.00	33797	0.0456	1542	49123	6041	6260	10182	10551	176	2.32
3047	0.00	30734	0.0453	1393	44671	5791	6001	10025	10389	168	2.39
3047	0.00	27770	0.0452	1255	40364	5550	5751	9857	10215	160	2.46
3047	0.00	24913	0.0453	1128	36210	5305	5497	9678	10029	152	2.54
3047	0.00	21954	0.0458	1005	31910	5032	5215	9475	9818	143	2.63
3047	0.00	19049	0.0468	892	27687	4739	4910	9256	9591	134	2.71
3047	0.00	16448	0.0481	790	23907	4452	4614	9021	9348	125	2.78
3047	0.20	49132	0.0602	2956	71413	7684	7931	11190	11549	221	1.97
3047	0.20	45053	0.0589	2654	65484	7371	7607	10976	11329	215	1.99
3047	0.20	41327	0.0582	2406	60068	7118	7347	10818	11165	209	2.03
3047	0.20	38622	0.0580	2256	57590	7001	7226	10749	11094	206	2.06
3047	0.20	36547	0.0577	2107	53120	6769	6987	10632	10973	200	2.14
3047	0.20	33574	0.0576	1934	48798	6564	6775	10511	10848	194	2.20
3047	0.20	30625	0.0577	1766	44512	6350	6554	10378	10711	187	2.26
3047	0.20	27790	0.0577	1604	40392	6116	6313	10234	10563	180	2.34
3047	0.20	25052	0.0579	1451	36412	5869	6056	10087	10411	172	2.42
3047	0.20	22376	0.0584	1307	32524	5621	5802	9919	10238	164	2.50
3047	0.20	19897	0.0591	1176	28920	5381	5554	9744	10057	156	2.58
3047	0.20	17355	0.0605	1050	25225	5121	5285	9550	9856	149	2.68
3047	0.20	14837	0.0629	933	21565	4840	4995	9342	9642	140	2.78
3047	0.20	12530	0.0661	827	18212	4551	4697	9110	9402	131	2.87
3047	0.40	44438	0.0699	3105	64590	7689	7844	11215	11440	220	1.98
3047	0.40	40013	0.0692	2768	58158	7366	7514	11004	11225	214	2.00
3047	0.40	36170	0.0690	2494	52573	7105	7248	10842	11060	208	2.08
3047	0.40	34164	0.0689	2354	49657	6957	7097	10759	10975	205	2.13
3047	0.40	31197	0.0694	2163	45345	6758	6894	10642	10856	199	2.20
3047	0.40	28244	0.0700	1977	41052	6543	6674	10522	10733	193	2.28
3047	0.40	25398	0.0707	1796	36915	6312	6438	10382	10590	187	2.38
3047	0.40	22661	0.0720	1631	32937	6092	6215	10238	10444	181	2.46
3047	0.40	20073	0.0735	1476	29176	5861	5978	10095	10297	174	2.55
3047	0.40	17635	0.0752	1326	25632	5606	5719	9927	10127	167	2.66
3047	0.40	15471	0.0770	1191	22487	5369	5476	9753	9949	160	2.76
3047	0.40	13374	0.0796	1064	19439	5123	5225	9563	9755	153	2.88
3047	0.60	42376	0.0787	3336	61593	7633	7840	11257	11267	217	1.99
3047	0.60	36956	0.0792	2926	53715	7295	7301	11040	11049	210	2.07
3047	0.60	32730	0.0800	2617	47572	7036	7044	10875	10884	204	2.17
3047	0.60	28776	0.0814	2342	41826	6776	6782	10741	10730	198	2.28
3047	0.60	25710	0.0831	2136	37370	6568	6573	10598	10607	193	2.38
3047	0.60	22871	0.0852	1947	33243	6375	6380	10467	10476	188	2.46
3047	0.60	20100	0.0880	1768	29215	6167	6173	10329	10338	183	2.56
3047	0.60	17398	0.0916	1593	25288	5927	5932	10179	10188	177	2.68
3047	0.60	14907	0.0964	1437	21668	5710	5715	10029	10038	171	2.78
3047	0.80	41555	0.0864	3592	60399	7484	7302	11301	11027	210	2.08
3047	0.80	35157	0.0881	3098	51100	7144	6970	11077	10808	203	2.21
3047	0.80	30263	0.0908	2748	43987	6868	6701	10908	10643	197	2.33
3047	0.80	28816	0.0919	2647	41883	6789	6624	10857	10593	195	2.37
3047	0.80	25456	0.0949	2416	37000	6604	6444	10733	10472	190	2.46
3047	0.80	22174	0.0991	2197	32229	6411	6255	10599	10341	186	2.55
3047	0.80	19167	0.1039	1990	27858	6209	6058	10460	10206	181	2.66
3047	0.80	16395	0.1098	1799	23830	6009	5863	10316	10065	177	2.77

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

	ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
	3047	0.00	4.42	1.63	8.08	1.88	17.23	2.51	1.71	1.22	1.76	2.83	1.70
	3047	0.00	4.31	1.60	7.76	1.84	16.37	2.44	1.66	1.21	1.69	2.71	1.64
	3047	0.00	4.12	1.57	7.36	1.81	15.44	2.39	1.61	1.19	1.63	2.62	1.58
	3047	0.00	3.94	1.55	7.01	1.77	14.68	2.35	1.57	1.19	1.58	2.57	1.55
	3047	0.00	3.69	1.51	6.56	1.74	13.74	2.30	1.54	1.17	1.52	2.53	1.51
	3047	0.00	3.48	1.48	6.16	1.70	12.88	2.25	1.50	1.16	1.47	2.48	1.46
	3047	0.00	3.26	1.45	5.76	1.67	12.00	2.20	1.46	1.15	1.42	2.44	1.42
	3047	0.00	3.04	1.42	5.34	1.63	11.11	2.15	1.42	1.14	1.38	2.40	1.38
	3047	0.00	2.82	1.39	4.94	1.59	10.23	2.09	1.38	1.13	1.33	2.36	1.34
	3047	0.00	2.63	1.36	4.57	1.55	9.41	2.04	1.34	1.12	1.29	2.32	1.31
	3047	0.00	2.45	1.33	4.21	1.52	8.62	1.99	1.31	1.11	1.25	2.29	1.27
	3047	0.00	2.26	1.30	3.85	1.48	7.81	1.93	1.27	1.10	1.22	2.26	1.24
	3047	0.00	2.08	1.26	3.49	1.44	7.02	1.87	1.23	1.09	1.18	2.23	1.21
	3047	0.00	1.92	1.24	3.17	1.40	6.31	1.81	1.20	1.08	1.15	2.21	1.18
	3047	0.20	4.43	1.63	8.06	1.88	17.15	2.50	1.70	1.22	1.74	2.81	1.68
	3047	0.20	4.31	1.60	7.72	1.84	16.25	2.44	1.64	1.20	1.67	2.69	1.62
	3047	0.20	4.12	1.57	7.32	1.80	15.32	2.38	1.59	1.19	1.61	2.60	1.57
	3047	0.20	4.00	1.55	7.10	1.78	14.83	2.35	1.57	1.19	1.58	2.57	1.54
	3047	0.20	3.74	1.52	6.63	1.74	13.86	2.30	1.53	1.17	1.52	2.52	1.50
	3047	0.20	3.53	1.49	6.23	1.71	13.00	2.25	1.49	1.16	1.47	2.47	1.46
	3047	0.20	3.31	1.46	5.83	1.67	12.13	2.21	1.45	1.15	1.42	2.43	1.42
	3047	0.20	3.09	1.43	5.42	1.63	11.25	2.15	1.41	1.14	1.37	2.38	1.38
	3047	0.20	2.87	1.39	5.02	1.60	10.38	2.10	1.38	1.13	1.32	2.35	1.34
	3047	0.20	2.67	1.36	4.63	1.56	9.53	2.05	1.34	1.12	1.28	2.31	1.30
	3047	0.20	2.50	1.34	4.29	1.52	8.76	2.00	1.30	1.11	1.24	2.27	1.27
12	3047	0.20	2.31	1.30	3.93	1.49	7.97	1.94	1.27	1.10	1.21	2.24	1.23
11	3047	0.20	2.13	1.27	3.58	1.45	7.19	1.89	1.23	1.09	1.17	2.21	1.20
10	3047	0.20	1.96	1.24	3.25	1.41	6.47	1.85	1.20	1.08	1.14	2.19	1.17
9													
	3047	0.40	4.45	1.63	7.99	1.87	16.85	2.48	1.66	1.21	1.70	2.74	1.64
	3047	0.40	4.29	1.59	7.60	1.83	15.87	2.41	1.60	1.20	1.63	2.62	1.58
	3047	0.40	4.06	1.56	7.14	1.79	14.83	2.35	1.55	1.18	1.55	2.54	1.52
	3047	0.40	3.90	1.54	6.84	1.76	14.21	2.32	1.52	1.17	1.51	2.50	1.49
	3047	0.40	3.68	1.51	6.45	1.73	13.36	2.27	1.49	1.16	1.46	2.45	1.45
	3047	0.40	3.45	1.48	6.04	1.69	12.49	2.22	1.45	1.15	1.40	2.40	1.41
	3047	0.40	3.22	1.44	5.62	1.65	11.59	2.17	1.41	1.14	1.35	2.36	1.37
	3047	0.40	3.02	1.42	5.24	1.62	10.77	2.12	1.37	1.13	1.30	2.32	1.33
	3047	0.40	2.82	1.39	4.87	1.58	9.97	2.07	1.33	1.12	1.26	2.27	1.29
	3047	0.40	2.62	1.36	4.49	1.55	9.16	2.02	1.30	1.11	1.22	2.24	1.25
	3047	0.40	2.45	1.33	4.15	1.51	8.41	1.97	1.26	1.10	1.18	2.20	1.22
	3047	0.40	2.28	1.30	3.83	1.48	7.68	1.92	1.23	1.09	1.14	2.16	1.19
	3047	0.60	4.39	1.61	7.77	1.84	16.21	2.42	1.61	1.20	1.64	2.64	1.59
	3047	0.60	4.14	1.57	7.23	1.79	14.97	2.35	1.54	1.18	1.54	2.53	1.51
	3047	0.60	3.88	1.53	6.73	1.75	13.88	2.29	1.49	1.17	1.46	2.45	1.45
	3047	0.60	3.59	1.49	6.22	1.71	12.80	2.23	1.44	1.15	1.39	2.38	1.39
	3047	0.60	3.38	1.47	5.83	1.67	11.97	2.19	1.40	1.14	1.33	2.33	1.35
	3047	0.60	3.20	1.44	5.49	1.64	11.21	2.15	1.36	1.13	1.28	2.28	1.31
	3047	0.60	3.01	1.41	5.14	1.61	10.45	2.10	1.32	1.12	1.23	2.23	1.27
	3047	0.60	2.81	1.38	4.76	1.57	9.65	2.05	1.29	1.11	1.18	2.19	1.23
	3047	0.60	2.64	1.36	4.44	1.54	8.95	2.01	1.25	1.10	1.14	2.15	1.19
	3047	0.80	4.15	1.57	7.23	1.79	14.94	2.34	1.53	1.18	1.53	2.52	1.50
	3047	0.80	3.81	1.52	6.58	1.74	13.52	2.27	1.46	1.16	1.43	2.42	1.42
	3047	0.80	3.53	1.48	6.07	1.69	12.41	2.21	1.41	1.15	1.35	2.35	1.36
	3047	0.80	3.45	1.47	5.92	1.68	12.10	2.19	1.39	1.14	1.32	2.32	1.34
	3047	0.80	3.28	1.45	5.59	1.65	11.37	2.15	1.35	1.13	1.27	2.27	1.30
	3047	0.80	3.10	1.43	5.26	1.62	10.65	2.11	1.31	1.13	1.21	2.22	1.25
	3047	0.80	2.93	1.40	4.93	1.59	9.94	2.06	1.27	1.12	1.16	2.16	1.21
	3047	0.80	2.77	1.38	4.63	1.56	9.27	2.02	1.24	1.11	1.12	2.12	1.17

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
10000	0.00	12901	0.487	6407	18751	7674	7952	11180	11586	489	1.97
10000	0.00	11963	0.482	5764	17388	7368	7635	10965	11366	476	1.98
10000	0.00	11082	0.472	5232	16108	7108	7365	10809	11201	462	2.02
10000	0.00	10448	0.466	4872	15186	6926	7178	10705	11093	451	2.06
10000	0.00	9721	0.460	4475	14130	6708	6951	10588	10972	437	2.13
10000	0.00	9006	0.456	4105	13091	6497	6733	10462	10841	423	2.19
10000	0.00	8293	0.452	3746	12054	6282	6510	10327	10702	407	2.25
10000	0.00	7597	0.448	3400	11043	6041	6260	10182	10551	390	2.32
10000	0.00	6900	0.445	3071	10042	5791	6001	10025	10389	371	2.39
10000	0.00	6243	0.443	2768	9074	5550	5751	9857	10215	354	2.46
10000	0.00	5600	0.444	2487	8140	5305	5497	9678	10029	336	2.54
10000	0.00	4935	0.449	2216	7173	5032	5215	9475	9818	317	2.63
10000	0.00	4282	0.459	1967	6224	4739	4910	9256	9591	296	2.71
10000	0.00	3697	0.472	1743	5374	4452	4614	9021	9348	276	2.78
10000	0.20	11045	0.540	6510	16054	7684	7931	11190	11549	488	1.97
10000	0.20	10128	0.578	5851	14721	7371	7607	10976	11329	476	1.99
10000	0.20	9290	0.571	5306	13503	7118	7347	10818	11165	462	2.03
10000	0.20	8907	0.568	5063	12946	7001	7226	10749	11094	455	2.06
10000	0.20	8216	0.566	4646	11942	6769	6987	10632	10973	442	2.14
10000	0.20	7547	0.565	4264	10970	6564	6775	10511	10848	428	2.20
10000	0.20	6884	0.566	3893	10006	6350	6554	10378	10711	413	2.26
10000	0.20	6247	0.566	3537	9080	6116	6313	10234	10563	397	2.34
10000	0.20	5631	0.568	3200	8185	5869	6058	10087	10411	380	2.42
10000	0.20	5030	0.573	2881	7311	5621	5802	9919	10238	362	2.50
10000	0.20	4473	0.580	2592	6501	5381	5554	9744	10057	346	2.58
10000	0.20	3901	0.593	2315	6670	5121	5285	9550	9856	328	2.68
10000	0.20	3335	0.617	2058	4848	4840	4995	9342	9642	309	2.78
10000	0.20	2816	0.648	1825	4094	4551	4697	9110	9402	290	2.87
10000	0.40	9990	0.685	6846	14520	7689	7844	11215	11440	486	1.98
10000	0.40	8995	0.679	6104	13074	7366	7514	11004	11225	472	2.00
10000	0.40	8131	0.676	5499	11818	7105	7248	10842	11060	460	2.08
10000	0.40	7680	0.676	5190	11163	6957	7097	10759	10975	452	2.13
10000	0.40	7013	0.680	4770	10194	6758	6894	10642	10856	440	2.20
10000	0.40	6349	0.687	4359	9229	6543	6674	10522	10733	427	2.28
10000	0.40	5709	0.694	3961	8298	6312	6438	10382	10590	413	2.38
10000	0.40	5094	0.706	3597	7404	6092	6215	10238	10444	399	2.46
10000	0.40	4512	0.721	3254	6559	5861	5978	10095	10297	384	2.55
10000	0.40	3964	0.737	2923	5762	5606	5719	9927	10127	368	2.66
10000	0.40	3478	0.755	2626	5055	5369	5476	9753	9949	353	2.76
10000	0.40	3006	0.780	2346	4370	5123	5225	9563	9755	338	2.88
10000	0.60	9526	0.772	7356	13846	7633	7640	11257	11267	478	1.99
10000	0.60	8308	0.776	6451	12075	7295	7301	11040	11049	464	2.07
10000	0.60	7358	0.784	5771	10694	7038	7044	10875	10884	451	2.17
10000	0.60	6469	0.798	5164	9402	6776	6782	10721	10730	437	2.28
10000	0.60	5780	0.815	4709	8401	6568	6573	10598	10607	426	2.38
10000	0.60	5141	0.835	4294	7473	6375	6380	10467	10476	415	2.46
10000	0.60	4518	0.863	3897	6567	6167	6173	10329	10338	403	2.58
10000	0.60	3911	0.898	3513	5685	5927	5932	10179	10188	391	2.68
10000	0.60	3351	0.946	3169	4871	5710	5715	10029	10038	378	2.78
10000	0.80	9342	0.848	7919	13578	7484	7302	11301	11027	464	2.08
10000	0.80	7903	0.864	6831	11487	7144	6970	11077	10808	448	2.21
10000	0.80	6803	0.891	6059	9885	6868	6701	10908	10543	435	2.33
10000	0.80	6478	0.901	5836	9419	6789	6624	10857	10593	430	2.37
10000	0.80	5722	0.931	5326	8318	6604	6444	10733	10472	420	2.45
10000	0.80	4985	0.972	4844	7245	6411	6255	10599	10341	410	2.55
10000	0.80	4308	1.019	4389	6262	6209	6058	10460	10206	400	2.66
10000	0.80	3685	1.078	3967	5387	6009	5863	10316	10065	390	2.77

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3*2P2	T3*2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
10000	0.00	4.42	1.63	8.08	1.88	17.23	2.91	1.71	1.22	1.76	2.83	1.70
10000	0.00	4.31	1.60	7.76	1.84	16.37	2.44	1.66	1.21	1.69	2.71	1.64
10000	0.00	4.12	1.57	7.36	1.81	15.44	2.39	1.61	1.19	1.63	2.62	1.58
10000	0.00	3.94	1.55	7.01	1.77	14.68	2.35	1.57	1.19	1.58	2.57	1.55
10000	0.00	3.69	1.51	6.56	1.74	13.74	2.30	1.54	1.17	1.52	2.53	1.51
10000	0.00	3.48	1.48	6.16	1.70	12.88	2.25	1.50	1.16	1.47	2.48	1.48
10000	0.00	3.26	1.45	5.76	1.67	12.00	2.20	1.46	1.15	1.42	2.44	1.42
10000	0.00	3.04	1.42	5.34	1.63	11.11	2.15	1.42	1.14	1.38	2.40	1.38
10000	0.00	2.82	1.39	4.94	1.59	10.23	2.09	1.38	1.13	1.33	2.36	1.34
10000	0.00	2.63	1.36	4.57	1.55	9.41	2.04	1.34	1.12	1.29	2.32	1.31
10000	0.00	2.45	1.33	4.21	1.52	8.62	1.99	1.31	1.11	1.25	2.29	1.27
10000	0.00	2.26	1.30	3.85	1.48	7.81	1.93	1.27	1.10	1.22	2.26	1.24
10000	0.00	2.08	1.26	3.49	1.44	7.02	1.87	1.23	1.09	1.18	2.23	1.21
10000	0.00	1.92	1.24	3.17	1.40	6.31	1.81	1.20	1.08	1.15	2.21	1.18
10000	0.20	4.43	1.63	8.06	1.88	17.15	2.90	1.70	1.22	1.74	2.81	1.68
10000	0.20	4.31	1.60	7.72	1.84	16.25	2.44	1.64	1.20	1.67	2.69	1.62
10000	0.20	4.12	1.57	7.32	1.80	15.32	2.38	1.59	1.19	1.61	2.60	1.57
10000	0.20	4.00	1.55	7.10	1.78	14.83	2.35	1.57	1.19	1.58	2.57	1.54
10000	0.20	3.74	1.52	6.63	1.74	13.86	2.30	1.53	1.17	1.52	2.52	1.50
10000	0.20	3.53	1.49	6.23	1.71	13.00	2.25	1.49	1.16	1.47	2.47	1.46
10000	0.20	3.31	1.46	5.83	1.67	12.13	2.21	1.45	1.15	1.42	2.43	1.42
10000	0.20	3.09	1.43	5.42	1.63	11.25	2.15	1.41	1.14	1.37	2.39	1.38
10000	0.20	2.87	1.39	5.02	1.60	10.38	2.10	1.38	1.13	1.32	2.35	1.34
10000	0.20	2.67	1.36	4.63	1.56	9.53	2.05	1.34	1.12	1.28	2.31	1.30
10000	0.20	2.50	1.34	4.29	1.52	8.76	2.00	1.30	1.11	1.24	2.27	1.27
10000	0.20	2.31	1.30	3.93	1.49	7.97	1.94	1.27	1.10	1.21	2.24	1.23
10000	0.20	2.13	1.27	3.58	1.45	7.19	1.89	1.23	1.09	1.17	2.21	1.20
10000	0.20	1.96	1.24	3.25	1.41	6.47	1.83	1.20	1.08	1.14	2.19	1.17
10000	0.40	4.45	1.63	7.99	1.87	16.85	2.48	1.66	1.21	1.70	2.74	1.64
10000	0.40	4.29	1.59	7.60	1.83	15.87	2.41	1.60	1.20	1.63	2.62	1.58
10000	0.40	4.06	1.56	7.14	1.79	14.83	2.35	1.55	1.18	1.55	2.54	1.52
10000	0.40	3.90	1.54	6.84	1.76	14.21	2.32	1.52	1.17	1.51	2.50	1.49
10000	0.40	3.68	1.51	6.45	1.73	13.36	2.27	1.49	1.16	1.46	2.45	1.45
10000	0.40	3.45	1.48	6.04	1.69	12.49	2.22	1.45	1.15	1.40	2.40	1.41
10000	0.40	3.22	1.44	5.62	1.65	11.59	2.17	1.41	1.14	1.35	2.36	1.37
10000	0.40	3.02	1.42	5.24	1.62	10.77	2.12	1.37	1.13	1.30	2.32	1.33
10000	0.40	2.82	1.39	4.87	1.58	9.97	2.07	1.33	1.12	1.26	2.27	1.29
10000	0.40	2.62	1.36	4.49	1.55	9.15	2.02	1.30	1.11	1.22	2.24	1.25
10000	0.40	2.45	1.33	4.15	1.51	8.41	1.97	1.26	1.10	1.18	2.20	1.22
10000	0.40	2.28	1.30	3.83	1.48	7.68	1.92	1.23	1.09	1.14	2.16	1.19
10000	0.60	4.39	1.61	7.77	1.84	16.21	2.42	1.61	1.20	1.64	2.64	1.59
10000	0.60	4.14	1.57	7.23	1.79	14.97	2.35	1.54	1.18	1.54	2.53	1.51
10000	0.60	3.88	1.53	6.73	1.75	13.88	2.29	1.49	1.17	1.46	2.45	1.45
10000	0.60	3.59	1.49	6.22	1.71	12.80	2.23	1.44	1.15	1.39	2.38	1.39
10000	0.60	3.38	1.47	5.83	1.67	11.97	2.19	1.40	1.14	1.33	2.33	1.35
10000	0.60	3.20	1.44	5.49	1.64	11.21	2.15	1.36	1.13	1.28	2.28	1.31
10000	0.60	3.01	1.41	5.14	1.61	10.45	2.10	1.32	1.12	1.23	2.23	1.27
10000	0.60	2.81	1.38	4.76	1.57	9.65	2.05	1.29	1.11	1.18	2.19	1.23
10000	0.60	2.64	1.36	4.44	1.54	8.95	2.01	1.25	1.10	1.14	2.15	1.19
10000	0.80	4.15	1.57	7.23	1.79	14.94	2.34	1.53	1.18	1.53	2.52	1.50
10000	0.80	3.81	1.52	6.58	1.74	13.52	2.27	1.46	1.16	1.43	2.42	1.42
10000	0.80	3.53	1.48	6.07	1.69	12.41	2.21	1.41	1.15	1.35	2.35	1.36
10000	0.80	3.45	1.47	5.92	1.68	12.10	2.19	1.39	1.14	1.32	2.32	1.34
10000	0.80	3.28	1.45	5.59	1.65	11.37	2.15	1.35	1.13	1.27	2.27	1.30
10000	0.80	3.10	1.43	5.26	1.62	10.65	2.11	1.31	1.13	1.21	2.22	1.25
10000	0.80	2.93	1.40	4.93	1.59	9.94	2.06	1.27	1.12	1.16	2.18	1.21
10000	0.80	2.77	1.38	4.63	1.56	9.27	2.02	1.24	1.11	1.12	2.12	1.17

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR	
4571	0.00	49313	0.0507	2501	87320	7700	8131	11159	11783	225	1.98	
4571	0.00	46374	0.0492	2279	82115	7480	7898	10939	11551	221	1.97	
4571	0.00	43763	0.0480	2102	77492	7246	7651	10783	11386	216	1.98	
4571	0.00	40718	0.0471	1917	72100	7000	7391	10634	11229	210	2.01	
4571	0.00	38274	0.0465	1779	67773	6812	7193	10526	11114	205	2.06	
4571	0.00	35631	0.0459	1634	63092	6595	6964	10409	10991	198	2.13	
4571	0.00	33019	0.0454	1499	58468	6389	6746	10284	10859	192	2.19	
4571	0.00	30422	0.0450	1370	53870	6179	6525	10151	10718	185	2.25	
4571	0.00	27882	0.0446	1244	49372	5944	6276	10008	10567	177	2.32	
4571	0.00	25377	0.0443	1125	44936	5700	6019	9857	10408	169	2.39	
4571	0.00	22947	0.0443	1015	40633	5464	5770	9695	10237	161	2.45	
4571	0.00	20575	0.0444	914	36434	5219	5511	9515	10047	153	2.53	
4571	0.00	18177	0.0450	817	32186	4959	5237	9314	9834	144	2.62	
4571	0.00	15781	0.0460	726	27944	4672	4934	9108	9618	135	2.70	
4571	0.00	13638	0.0474	646	24150	4389	4635	8874	9370	125	2.77	
4571	0.20	42533	0.0599	2546	75315	7706	8104	11165	11743	224	1.98	
4571	0.20	39610	0.0585	2318	70138	7489	7876	10946	11513	220	1.97	
4571	0.20	37061	0.0576	2134	65624	7249	7624	10791	11350	216	1.99	
4571	0.20	34825	0.0571	1988	61665	7062	7427	10676	11229	211	2.01	
4571	0.20	32603	0.0566	1846	57732	6881	7237	10570	11116	207	2.06	
4571	0.20	30136	0.0563	1697	53363	6659	7003	10453	10994	201	2.13	
4571	0.20	27671	0.0563	1558	48998	6453	6787	10333	10867	194	2.19	
4571	0.20	25255	0.0564	1423	44720	6245	6568	10202	10729	187	2.26	
4571	0.20	22933	0.0565	1294	40608	6017	6329	10060	10580	180	2.34	
4571	0.20	20692	0.0566	1171	36640	5777	6075	9915	10428	173	2.41	
4571	0.20	18519	0.0571	1057	32777	5537	5824	9754	10258	165	2.49	
4571	0.20	16449	0.0579	952	29127	5297	5571	9581	10077	157	2.57	
4571	0.20	14357	0.0594	852	25422	5041	5302	9385	9870	149	2.68	
4571	0.20	12280	0.0618	758	21745	4763	5010	9182	9657	140	2.77	
4571	0.20	10395	0.0649	674	18407	4486	4718	8960	9423	132	2.87	
4571	0.40	38618	0.0691	2683	68739	7738	8043	11181	11622	223	1.98	
4571	0.40	35692	0.0681	2432	63202	7492	7788	10970	11403	219	1.98	
4571	0.40	32922	0.0676	2226	58295	7244	7530	10817	11244	214	2.00	
4571	0.40	30429	0.0675	2052	53881	7045	7323	10693	11114	210	2.05	
4571	0.40	28138	0.0673	1894	49864	6841	7111	10579	10998	205	2.13	
4571	0.40	25706	0.0678	1742	45519	6645	6907	10463	10876	200	2.20	
4571	0.40	23292	0.0684	1593	41244	6436	6689	10344	10756	194	2.27	
4571	0.40	20960	0.0691	1448	37114	6209	6454	10205	10607	186	2.37	
4571	0.40	18721	0.0703	1316	33149	5995	6231	10066	10463	181	2.45	
4571	0.40	16588	0.0718	1191	29373	5766	5993	9922	10313	175	2.54	
4571	0.40	14571	0.0735	1071	25802	5517	5735	9761	10146	167	2.65	
4571	0.40	12790	0.0754	964	22648	5285	5493	9590	9968	161	2.75	
4571	0.40	11055	0.0781	863	19576	5043	5241	9400	9771	154	2.87	
4571	0.60	37749	0.0772	2912	66843	7726	7880	11217	11440	221	1.98	
4571	0.60	33827	0.0770	2606	59898	7434	7582	11012	11230	216	2.00	
4571	0.60	30426	0.0774	2354	53876	7174	7317	10851	11066	210	2.07	
4571	0.60	28738	0.0777	2233	50887	7052	7192	10774	10987	208	2.11	
4571	0.60	26267	0.0784	2060	46512	6872	7008	10669	10871	204	2.19	
4571	0.60	23712	0.0795	1885	41987	6662	6794	10541	10750	198	2.27	
4571	0.60	21220	0.0811	1721	37575	6461	6589	10421	10628	194	2.37	
4571	0.60	18868	0.0832	1570	33411	6269	6394	10289	10493	188	2.45	
4571	0.60	16613	0.0859	1426	29417	6068	6188	10153	10355	183	2.55	
4571	0.60	14388	0.0894	1286	25478	5834	5950	10007	10205	177	2.67	
4571	0.60	12340	0.0941	1161	21851	5620	5732	9862	10058	171	2.77	
4571	0.80	38090	0.0840	3199	67448	7619	7575	11272	11207	215	2.00	
4571	0.80	32918	0.0848	2790	58289	7280	7238	11052	10988	209	2.10	
4571	0.80	4.09	1.56	7.11	1.78	14.66	2.33	1.52	1.18	1.51	2.50	1.48
4571	0.80	28960	0.0861	2493	51280	7024	6984	10888	10825	203	2.20	
4571	0.80	26675	0.0875	2333	47235	6879	6839	10794	10731	200	2.27	
4571	0.80	23726	0.0898	2130	42013	6676	6638	10672	10611	195	2.36	
4571	0.80	20975	0.0927	1944	37141	6492	6454	10552	10491	191	2.45	
4571	0.80	18287	0.0968	1770	32381	6304	6268	10419	10359	186	2.54	
4571	0.80	15824	0.1014	1605	28020	6107	6072	10282	10222	182	2.65	
4571	0.80	13559	0.1071	1451	24009	5911	5876	10140	10081	177	2.76	

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3•2P2	T3•2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
4571	0.00	4.43	1.65	8.23	1.91	17.73	2.57	1.79	1.24	1.80	2.94	1.73
4571	0.00	4.41	1.63	8.03	1.88	17.09	2.50	1.70	1.22	1.74	2.80	1.68
4571	0.00	4.32	1.60	7.77	1.85	16.42	2.45	1.66	1.21	1.69	2.71	1.64
4571	0.00	4.14	1.58	7.40	1.81	15.54	2.40	1.61	1.20	1.63	2.63	1.59
4571	0.00	3.95	1.55	7.03	1.78	14.74	2.36	1.58	1.19	1.58	2.57	1.55
4571	0.00	3.70	1.51	6.59	1.74	13.80	2.30	1.54	1.18	1.53	2.53	1.51
4571	0.00	3.48	1.48	6.16	1.70	12.93	2.26	1.50	1.16	1.47	2.48	1.47
4571	0.00	3.28	1.45	5.79	1.67	12.06	2.21	1.46	1.15	1.43	2.44	1.43
4571	0.00	3.05	1.42	5.37	1.63	11.19	2.15	1.42	1.14	1.38	2.40	1.39
4571	0.00	2.83	1.39	4.96	1.59	10.29	2.10	1.38	1.13	1.34	2.36	1.35
4571	0.00	2.64	1.36	4.59	1.56	9.47	2.05	1.34	1.12	1.29	2.32	1.31
4571	0.00	2.46	1.33	4.23	1.52	8.67	1.99	1.31	1.11	1.26	2.29	1.28
4571	0.00	2.28	1.30	3.91	1.49	7.98	1.94	1.27	1.10	1.22	2.26	1.24
4571	0.00	2.09	1.27	3.61	1.44	7.08	1.86	1.24	1.09	1.18	2.23	1.21
4571	0.00	1.93	1.24	3.17	1.40	6.36	1.82	1.21	1.08	1.16	2.21	1.18
4571	0.20	4.43	1.65	8.21	1.91	17.64	2.56	1.74	1.23	1.79	2.92	1.72
4571	0.20	4.42	1.63	8.01	1.88	17.00	2.50	1.69	1.22	1.73	2.76	1.67
4571	0.20	4.32	1.60	7.74	1.84	16.31	2.44	1.64	1.20	1.67	2.69	1.62
4571	0.20	4.19	1.58	7.46	1.82	15.64	2.40	1.61	1.20	1.63	2.62	1.58
4571	0.20	4.01	1.56	7.11	1.77	14.87	2.36	1.57	1.19	1.58	2.57	1.55
4571	0.20	3.75	1.52	6.66	1.73	13.93	2.31	1.53	1.17	1.52	2.52	1.50
4571	0.20	3.53	1.49	6.29	1.71	13.06	2.26	1.50	1.16	1.47	2.47	1.46
4571	0.20	3.32	1.46	5.88	1.68	12.19	2.21	1.46	1.15	1.42	2.43	1.42
4571	0.20	3.10	1.43	5.45	1.64	11.31	2.16	1.42	1.14	1.37	2.39	1.38
4571	0.20	2.88	1.40	5.04	1.60	10.44	2.11	1.38	1.13	1.33	2.35	1.34
4571	0.20	2.69	1.37	4.66	1.58	9.60	2.06	1.34	1.12	1.28	2.31	1.30
4571	0.20	2.51	1.34	4.31	1.53	8.81	2.00	1.31	1.11	1.24	2.27	1.27
4571	0.20	2.32	1.31	3.99	1.49	8.01	1.95	1.27	1.10	1.21	2.24	1.24
4571	0.20	2.14	1.28	3.69	1.45	7.23	1.89	1.24	1.09	1.17	2.21	1.21
4571	0.20	1.97	1.25	3.27	1.41	6.52	1.83	1.20	1.08	1.14	2.19	1.17
4571	0.40	4.47	1.65	8.16	1.90	17.39	2.53	1.70	1.22	1.75	2.84	1.69
4571	0.40	4.43	1.62	7.93	1.86	16.69	2.47	1.65	1.21	1.69	2.71	1.63
4571	0.40	4.30	1.60	7.62	1.83	15.92	2.42	1.60	1.20	1.63	2.62	1.58
4571	0.40	4.13	1.57	7.27	1.80	15.19	2.37	1.56	1.18	1.57	2.56	1.53
4571	0.40	3.91	1.54	6.87	1.76	14.27	2.32	1.53	1.17	1.51	2.50	1.49
4571	0.40	3.69	1.51	6.47	1.73	13.42	2.28	1.49	1.16	1.46	2.45	1.45
4571	0.40	3.46	1.48	6.06	1.69	12.59	2.23	1.45	1.15	1.40	2.40	1.41
4571	0.40	3.24	1.45	5.64	1.66	11.65	2.18	1.41	1.14	1.35	2.36	1.37
4571	0.40	3.04	1.42	5.26	1.62	10.83	2.13	1.37	1.13	1.31	2.32	1.33
4571	0.40	2.83	1.39	4.87	1.58	10.00	2.08	1.33	1.12	1.26	2.27	1.29
4571	0.40	2.63	1.36	4.51	1.55	9.20	2.03	1.30	1.11	1.22	2.24	1.25
4571	0.40	2.46	1.33	4.18	1.51	8.48	1.98	1.27	1.10	1.18	2.20	1.22
4571	0.40	2.29	1.30	3.84	1.48	7.73	1.93	1.23	1.09	1.14	2.15	1.19
4571	0.60	4.48	1.63	8.03	1.87	16.90	2.48	1.66	1.21	1.70	2.74	1.64
4571	0.60	4.36	1.60	7.62	1.84	16.02	2.42	1.59	1.19	1.62	2.61	1.57
4571	0.60	4.15	1.57	7.26	1.80	15.05	2.36	1.54	1.18	1.54	2.53	1.51
4571	0.60	4.03	1.55	7.02	1.78	14.51	2.33	1.52	1.17	1.51	2.49	1.48
4571	0.60	3.83	1.53	6.68	1.75	13.72	2.27	1.48	1.16	1.46	2.43	1.44
4571	0.60	3.60	1.50	6.25	1.71	12.85	2.24	1.44	1.15	1.39	2.38	1.40
4571	0.60	3.39	1.47	5.86	1.68	12.03	2.20	1.40	1.14	1.33	2.33	1.35
4571	0.60	3.21	1.44	5.51	1.65	11.27	2.15	1.36	1.13	1.28	2.28	1.31
4571	0.60	3.02	1.42	5.16	1.61	10.51	2.11	1.32	1.12	1.23	2.25	1.27
4571	0.60	2.82	1.39	4.79	1.58	9.71	2.06	1.29	1.11	1.19	2.19	1.23
4571	0.60	2.65	1.36	4.47	1.55	9.01	2.01	1.25	1.10	1.14	2.15	1.20
4571	0.80	4.37	1.60	7.66	1.83	15.98	2.41	1.59	1.19	1.61	2.61	1.56
4571	0.80	3.82	1.53	6.61	1.74	13.58	2.28	1.46	1.16	1.43	2.46	1.42
4571	0.80	3.67	1.50	6.42	1.72	12.97	2.24	1.43	1.15	1.38	2.38	1.39
4571	0.80	3.46	1.48	5.94	1.68	12.15	2.20	1.39	1.14	1.33	2.32	1.34
4571	0.80	3.26	1.45	5.61	1.65	11.42	2.16	1.35	1.13	1.27	2.27	1.30
4571	0.80	3.11	1.43	5.28	1.62	10.70	2.11	1.31	1.13	1.22	2.22	1.25
4571	0.80	2.94	1.40	4.93	1.59	9.99	2.07	1.27	1.12	1.16	2.16	1.21
4571	0.80	2.75	1.38	4.60	1.56	9.32	2.03	1.24	1.11	1.12	2.12	1.18

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE - 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAM8

ALT	MN	FNIOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
15000	0.00	11086	0.497	5514	10430	7700	8131	11159	11783	496	1.98
15000	0.00	10425	0.482	5025	18460	7480	7898	10939	11551	487	1.97
15000	0.00	9838	0.471	4634	17420	7246	7651	10783	11386	477	1.98
15000	0.00	9153	0.462	4227	16208	7000	7391	10634	11229	464	2.01
15000	0.00	8604	0.456	3922	14236	6812	7193	10526	11114	452	2.06
15000	0.00	8018	0.450	3604	14183	6595	6964	10409	10991	438	2.13
15000	0.00	7423	0.445	3306	13144	6389	6746	10284	10859	424	2.19
15000	0.00	6839	0.442	3020	12110	6179	6525	10151	10718	408	2.25
15000	0.00	6268	0.438	2743	11099	5944	6276	10008	10567	391	2.32
15000	0.00	5705	0.435	2480	10102	5709	6018	9857	10408	373	2.39
15000	0.00	5158	0.434	2239	9134	5464	5770	9695	10237	355	2.45
15000	0.00	4625	0.436	2015	8198	5219	5511	9515	10047	338	2.53
15000	0.00	4086	0.441	1801	7235	4959	5237	9314	9834	318	2.62
15000	0.00	3547	0.451	1601	6282	4672	4934	9108	9618	298	2.70
15000	0.00	3066	0.465	1424	5429	4389	4635	8874	9370	277	2.77
15000	0.20	9561	0.507	5615	16031	7706	8104	11165	11743	495	1.98
15000	0.20	8904	0.574	5118	15767	7489	7876	10946	11513	486	1.97
15000	0.20	8331	0.565	4705	14753	7249	7624	10791	11350	478	1.99
15000	0.20	7829	0.560	4382	13863	7062	7427	10676	11229	467	2.01
15000	0.20	7329	0.556	4071	12978	6881	7237	10570	11116	456	2.06
15000	0.20	6774	0.552	3742	11896	6659	7003	10453	10994	443	2.13
15000	0.20	6220	0.562	3435	11015	6453	6787	10333	10867	429	2.19
15000	0.20	5677	0.563	3139	10053	6245	6568	10202	10729	414	2.26
15000	0.20	5155	0.564	2854	9120	6017	6329	10060	10580	398	2.34
15000	0.20	4651	0.555	2583	8237	5777	6075	9916	10428	381	2.41
15000	0.20	4161	0.560	2330	7368	5537	5824	9754	10258	364	2.49
15000	0.20	3698	0.568	2099	6548	5297	5571	9581	10077	347	2.57
15000	0.20	3227	0.582	1878	5715	5041	5302	9385	9870	329	2.68
15000	0.20	2760	0.606	1672	4888	4763	5010	9182	9657	310	2.77
15000	0.20	2336	0.637	1487	4138	4486	4718	8960	9423	291	2.87
15000	0.40	8726	0.678	5916	15452	7738	8043	11181	11622	493	1.98
15000	0.40	8024	0.660	5361	14208	7492	7788	10970	11403	484	1.98
15000	0.40	7401	0.663	4909	13105	7244	7530	10817	11244	473	2.00
15000	0.40	6840	0.662	4526	12113	7045	7323	10693	11114	463	2.05
15000	0.40	6325	0.660	4177	11201	6841	7111	10579	10996	453	2.13
15000	0.40	5779	0.665	3840	10233	6645	6907	10463	10876	441	2.20
15000	0.40	5236	0.671	3512	9272	6436	6689	10344	10752	428	2.27
15000	0.40	4712	0.678	3194	8343	6209	6454	10205	10607	414	2.37
15000	0.40	4208	0.690	2903	7452	5995	6231	10066	10463	400	2.45
15000	0.40	3729	0.704	2627	6603	5766	5993	9922	10313	385	2.54
15000	0.40	3275	0.721	2361	5800	5517	5735	9761	10146	370	2.65
15000	0.40	2875	0.739	2125	5091	5285	5493	9590	9968	354	2.75
15000	0.40	2485	0.766	1903	4400	5043	5241	9400	9771	339	2.87
15000	0.60	8486	0.757	6420	15027	7726	7880	11217	11440	487	1.98
15000	0.60	7604	0.746	5745	13468	7434	7582	11012	11230	476	2.00
15000	0.60	6840	0.759	5191	12111	7174	7317	10851	11065	464	2.07
15000	0.60	6460	0.762	4924	11439	7052	7192	10774	10987	459	2.11
15000	0.60	5905	0.769	4541	10456	6872	7008	10659	10871	449	2.19
15000	0.60	5330	0.780	4157	9439	6682	6794	10541	10750	438	2.27
15000	0.60	4770	0.796	3796	8447	6461	6589	10421	10628	427	2.37
15000	0.60	4241	0.816	3461	7511	6269	6394	10289	10493	416	2.45
15000	0.60	3734	0.842	3144	6613	6068	6188	10153	10355	404	2.55
15000	0.60	3234	0.877	2837	5727	5834	5950	10007	10205	392	2.67
15000	0.60	2774	0.923	2560	4912	5620	5732	9862	10058	379	2.77
15000	0.80	8563	0.824	7053	15163	7619	7578	11272	11207	476	2.00
15000	0.80	7400	0.831	6152	13104	7280	7238	11052	10968	461	2.10
15000	0.80	6510	0.844	5498	11528	7024	6984	10888	10825	449	2.20
15000	0.80	5996	0.858	5145	10618	6879	6839	10794	10731	441	2.27
15000	0.80	5333	0.881	4697	9444	6676	6638	10672	10611	431	2.36
15000	0.80	4715	0.909	4287	8349	6492	6454	10552	10491	421	2.45
15000	0.80	4111	0.949	3902	7279	6304	6268	10419	10359	411	2.54
15000	0.80	3557	0.995	3538	6299	6107	6072	10282	10222	401	2.65
15000	0.80	3048	1.050	3200	5397	5911	5876	10140	10081	391	2.76

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-115 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3*2P2	T3*2T2	P4P2	T4T2	PDP2	TDT2	PTP2	T7T2	P8MP2
15000	0.00	4.43	1.65	8.23	1.91	17.73	2.57	1.75	1.24	1.80	2.94	1.73
15000	0.00	4.41	1.63	8.03	1.88	17.09	2.50	1.70	1.22	1.74	2.80	1.68
15000	0.00	4.32	1.60	7.77	1.85	16.42	2.45	1.66	1.21	1.69	2.71	1.64
15000	0.00	4.14	1.58	7.40	1.81	15.54	2.40	1.61	1.20	1.63	2.63	1.59
15000	0.00	3.95	1.55	7.03	1.78	14.74	2.36	1.58	1.19	1.58	2.57	1.55
15000	0.00	3.70	1.51	6.59	1.74	13.80	2.30	1.54	1.18	1.53	2.53	1.51
15000	0.00	3.48	1.48	6.18	1.70	12.93	2.26	1.50	1.16	1.47	2.48	1.47
15000	0.00	3.28	1.45	5.79	1.67	12.06	2.21	1.46	1.15	1.43	2.44	1.43
15000	0.00	3.05	1.42	5.37	1.63	11.16	2.15	1.42	1.14	1.38	2.40	1.39
15000	0.00	2.83	1.39	4.96	1.59	10.29	2.10	1.38	1.13	1.33	2.36	1.35
15000	0.00	2.64	1.36	4.59	1.56	9.47	2.05	1.34	1.12	1.29	2.32	1.31
15000	0.00	2.46	1.33	4.23	1.52	8.67	1.99	1.31	1.11	1.26	2.29	1.28
15000	0.00	2.28	1.30	3.87	1.48	7.86	1.94	1.27	1.10	1.22	2.26	1.24
15000	0.00	2.09	1.27	3.51	1.44	7.08	1.88	1.24	1.09	1.18	2.23	1.21
15000	0.00	1.93	1.24	3.19	1.40	6.36	1.82	1.21	1.08	1.16	2.21	1.18
15000	0.20	4.43	1.65	8.21	1.91	17.64	2.56	1.74	1.23	1.79	2.92	1.72
15000	0.20	4.42	1.63	8.01	1.88	17.00	2.50	1.69	1.22	1.73	2.78	1.67
15000	0.20	4.32	1.60	7.74	1.84	16.31	2.44	1.64	1.20	1.67	2.69	1.62
15000	0.20	4.19	1.58	7.46	1.82	15.64	2.40	1.61	1.20	1.63	2.62	1.58
15000	0.20	4.01	1.56	7.11	1.79	14.87	2.36	1.57	1.19	1.58	2.57	1.55
15000	0.20	3.75	1.52	6.66	1.75	13.93	2.31	1.53	1.17	1.52	2.52	1.50
15000	0.20	3.53	1.49	6.25	1.71	13.06	2.26	1.50	1.16	1.47	2.47	1.46
15000	0.20	3.32	1.46	5.86	1.68	12.19	2.21	1.46	1.15	1.42	2.43	1.42
15000	0.20	3.10	1.43	5.45	1.64	11.31	2.16	1.42	1.14	1.37	2.39	1.38
15000	0.20	2.88	1.40	5.04	1.60	10.44	2.11	1.38	1.13	1.33	2.35	1.34
15000	0.20	2.69	1.37	4.66	1.56	9.60	2.06	1.34	1.12	1.28	2.31	1.30
15000	0.20	2.51	1.34	4.31	1.53	8.81	2.00	1.31	1.11	1.24	2.27	1.27
15000	0.20	2.32	1.31	3.95	1.49	8.01	1.95	1.27	1.10	1.21	2.24	1.24
15000	0.20	2.14	1.28	3.59	1.45	7.23	1.89	1.24	1.09	1.17	2.21	1.20
15000	0.20	1.97	1.25	3.27	1.41	6.52	1.83	1.20	1.08	1.14	2.19	1.17
15000	0.40	4.47	1.65	8.16	1.90	17.39	2.53	1.70	1.22	1.75	2.84	1.69
15000	0.40	4.43	1.62	7.93	1.86	16.69	2.47	1.65	1.21	1.69	2.71	1.63
15000	0.40	4.30	1.60	7.62	1.83	15.92	2.42	1.60	1.20	1.63	2.62	1.58
15000	0.40	4.13	1.57	7.27	1.80	15.13	2.37	1.56	1.18	1.57	2.56	1.53
15000	0.40	3.91	1.54	6.87	1.76	14.27	2.32	1.53	1.17	1.51	2.50	1.49
15000	0.40	3.69	1.51	6.47	1.73	13.42	2.28	1.49	1.16	1.46	2.45	1.45
15000	0.40	3.46	1.48	6.06	1.69	12.55	2.23	1.45	1.15	1.40	2.40	1.41
15000	0.40	3.24	1.45	5.64	1.66	11.65	2.18	1.41	1.14	1.35	2.36	1.37
15000	0.40	3.04	1.42	5.26	1.62	10.83	2.13	1.37	1.13	1.31	2.32	1.33
15000	0.40	2.83	1.39	4.89	1.59	10.02	2.08	1.33	1.12	1.26	2.27	1.29
15000	0.40	2.63	1.36	4.51	1.55	9.20	2.03	1.30	1.11	1.22	2.24	1.25
15000	0.40	2.46	1.33	4.18	1.51	8.46	1.98	1.27	1.10	1.18	2.20	1.22
15000	0.40	2.29	1.30	3.84	1.48	7.73	1.93	1.23	1.09	1.14	2.16	1.19
15000	0.60	4.48	1.63	8.03	1.87	16.90	2.48	1.66	1.21	1.70	2.74	1.64
15000	0.60	4.36	1.60	7.69	1.84	16.02	2.42	1.59	1.19	1.62	2.61	1.57
15000	0.60	4.15	1.57	7.26	1.80	15.03	2.36	1.54	1.18	1.54	2.53	1.51
15000	0.60	4.03	1.55	7.02	1.78	14.51	2.33	1.52	1.17	1.51	2.49	1.48
15000	0.60	3.83	1.53	6.66	1.75	13.72	2.29	1.48	1.16	1.45	2.43	1.44
15000	0.60	3.60	1.50	6.25	1.71	12.85	2.24	1.44	1.15	1.39	2.38	1.40
15000	0.60	3.39	1.47	5.86	1.68	12.03	2.20	1.40	1.14	1.33	2.33	1.35
15000	0.60	3.21	1.44	5.51	1.65	11.27	2.15	1.36	1.13	1.28	2.28	1.31
15000	0.60	3.02	1.42	5.16	1.61	10.51	2.11	1.32	1.12	1.23	2.23	1.27
15000	0.60	2.82	1.39	4.79	1.58	9.71	2.06	1.29	1.11	1.19	2.19	1.23
15000	0.60	2.65	1.36	4.47	1.55	9.0	2.01	1.25	1.10	1.14	2.15	1.20
15000	0.80	4.37	1.60	7.68	1.83	15.98	2.41	1.59	1.19	1.61	2.61	1.56
15000	0.80	4.09	1.56	7.11	1.78	14.66	2.33	1.52	1.18	1.51	2.50	1.48
15000	0.80	3.82	1.53	6.61	1.74	13.58	2.28	1.46	1.16	1.43	2.42	1.42
15000	0.80	3.67	1.50	6.33	1.72	12.97	2.24	1.43	1.15	1.38	2.38	1.39
15000	0.80	3.46	1.48	5.94	1.68	12.15	2.20	1.39	1.14	1.33	2.32	1.34
15000	0.80	3.28	1.45	5.61	1.65	11.42	2.16	1.35	1.13	1.27	2.27	1.30
15000	0.80	3.11	1.43	5.28	1.62	10.70	2.11	1.31	1.13	1.22	2.22	1.25
15000	0.80	2.94	1.40	4.95	1.59	9.99	2.07	1.27	1.12	1.18	2.18	1.21
15000	0.80	2.78	1.38	4.65	1.56	9.32	2.03	1.24	1.11	1.12	2.12	1.18

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JTBD-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNIOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
6095	0.65	30115	0.0771	2323	65406	7514	7769	10986	11360	219	1.98
6095	0.65	27977	0.0771	2156	60818	7327	7576	10860	11229	215	2.00
6095	0.65	26037	0.0775	2016	56601	7154	7397	10753	11118	212	2.04
6095	0.65	23975	0.0780	1870	52120	6978	7215	10643	11005	208	2.11
6095	0.65	21981	0.0788	1725	47566	6799	7030	10529	10887	204	2.18
6095	0.65	19778	0.0801	1584	42996	6611	6836	10413	10767	200	2.26
6095	0.65	17683	0.0817	1444	38441	6397	6614	10293	10642	194	2.36
6095	0.65	15687	0.0841	1319	34103	6217	6428	10165	10510	190	2.45
6095	0.65	13812	0.0870	1201	30026	6030	6235	10036	10376	185	2.54
6095	0.65	11978	0.0907	1086	26038	5815	6012	9897	10233	179	2.66
6095	0.65	10233	0.0960	981	22246	5609	5799	9757	10089	174	2.76
6095	0.65	27517	0.0772	2124	59820	7287	7534	10834	11202	215	2.01
6095	0.65	26042	0.0775	2017	56614	7156	7399	10754	11119	212	2.04
6095	0.65	23982	0.0780	1869	52135	6976	7213	10643	11004	208	2.11
6095	0.65	21899	0.0788	1725	47606	6800	7031	10530	10888	204	2.18
6095	0.65	19773	0.0801	1584	42984	6613	6837	10414	10767	200	2.26
6095	0.65	17674	0.0817	1444	38422	6397	6615	10292	10641	194	2.36
6095	0.65	15701	0.0841	1320	34131	6221	6433	10168	10513	190	2.44
6095	0.65	13809	0.0870	1201	30020	6030	6235	10035	10376	185	2.54
6095	0.70	30148	0.0787	2374	65539	7488	7695	10999	11303	218	1.99
6095	0.70	27340	0.0791	2163	59434	7250	7450	10844	11144	213	2.03
6095	0.70	24952	0.0798	1967	53592	7025	7219	10704	10999	208	2.11
6095	0.70	22500	0.0807	1816	48913	6848	7037	10591	10883	204	2.18
6095	0.70	20483	0.0822	1687	44024	6659	6843	10474	10763	200	2.26
6095	0.70	18099	0.0841	1523	39346	6460	6638	10354	10640	195	2.36
6095	0.70	16060	0.0866	1391	34913	6278	6451	10232	10514	190	2.44
6095	0.70	14100	0.0897	1264	30651	6085	6253	10097	10376	185	2.54
6095	0.75	30189	0.0805	2428	65628	7457	7613	11012	11242	216	2.00
6095	0.75	27198	0.0809	2199	59125	7206	7357	10854	11080	211	2.06
6095	0.75	25488	0.0814	2075	55408	7072	7220	10767	10992	208	2.11
6095	0.75	23259	0.0824	1916	50563	6898	7042	10655	10877	205	2.18
6095	0.75	20968	0.0839	1759	45582	6708	6848	10538	10758	200	2.26
6095	0.75	18668	0.0861	1607	40582	6509	6645	10418	10635	195	2.36
6095	0.75	16534	0.0888	1468	35943	6331	6463	10298	10512	191	2.44
6095	0.75	14459	0.0925	1337	31432	6149	6277	10167	10379	186	2.53
6095	0.80	30224	0.0821	2482	65703	7417	7520	11025	11178	214	2.01
6095	0.80	27025	0.0828	2236	58749	7163	7263	10863	11014	209	2.09
6095	0.80	24137	0.0839	2024	52472	6937	7033	10718	10867	204	2.18
6095	0.80	21785	0.0854	1861	47350	6755	6848	10604	10751	200	2.26
6095	0.80	19408	0.0877	1701	42191	6559	6650	10485	10630	196	2.36
6095	0.80	17169	0.0905	1554	37323	6380	6468	10365	10508	191	2.44
6095	0.85	30204	0.0838	2532	65660	7367	7415	11037	11108	212	2.04
6095	0.85	26658	0.0846	2272	58387	7114	7161	10873	10943	207	2.13
6095	0.85	25230	0.0852	2150	54848	6994	7039	10793	10863	205	2.18
6095	0.85	22785	0.0867	1975	49531	6807	6851	10675	10745	200	2.26
6095	0.85	20302	0.0889	1804	44135	6609	6652	10556	10625	196	2.36
6095	0.85	17958	0.0918	1648	39039	6431	6473	10436	10504	191	2.44

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
6095	0.65	4.45	1.62	7.92	1.86	16.58	2.46	1.63	1.20	1.66	2.68	1.61
6095	0.65	4.36	1.60	7.68	1.84	15.97	2.42	1.59	1.19	1.61	2.61	1.56
6095	0.65	4.22	1.58	7.40	1.81	15.34	2.38	1.55	1.18	1.56	2.55	1.52
6095	0.65	4.05	1.56	7.06	1.78	14.59	2.34	1.52	1.17	1.51	2.49	1.48
6095	0.65	3.85	1.53	6.70	1.75	13.80	2.30	1.48	1.17	1.45	2.43	1.44
6095	0.65	3.65	1.50	6.32	1.72	12.99	2.25	1.44	1.16	1.39	2.38	1.39
6095	0.65	3.42	1.47	5.91	1.68	12.12	2.20	1.40	1.14	1.33	2.33	1.35
6095	0.65	3.25	1.45	5.67	1.68	11.63	2.19	1.38	1.13	1.29	2.29	1.31
6095	0.65	3.07	1.42	5.29	1.66	10.89	2.11	1.32	1.13	1.23	2.23	1.27
6095	0.70	4.42	1.62	7.84	1.85	16.36	2.44	1.61	1.20	1.64	2.65	1.59
6095	0.70	4.27	1.59	7.49	1.82	15.54	2.39	1.56	1.19	1.57	2.59	1.53
6095	0.70	4.08	1.56	7.07	1.79	14.60	2.34	1.51	1.17	1.50	2.49	1.48
6095	0.70	3.87	1.53	6.71	1.75	13.82	2.30	1.48	1.17	1.45	2.43	1.44
6095	0.70	3.66	1.50	6.33	1.74	13.01	2.29	1.44	1.16	1.39	2.38	1.39
6095	0.70	3.45	1.48	5.95	1.69	12.18	2.21	1.40	1.15	1.33	2.33	1.35
6095	0.70	3.27	1.45	5.60	1.65	11.44	2.16	1.36	1.14	1.28	2.27	1.30
6095	0.70	3.09	1.43	5.26	1.62	10.69	2.12	1.32	1.13	1.23	2.22	1.26
6095	0.75	4.39	1.61	7.79	1.84	16.10	2.42	1.59	1.19	1.62	2.62	1.57
6095	0.75	4.19	1.58	7.33	1.80	15.16	2.37	1.54	1.18	1.55	2.53	1.51
6095	0.75	4.06	1.56	7.07	1.79	14.60	2.34	1.51	1.17	1.50	2.49	1.48
6095	0.75	3.86	1.53	6.72	1.75	13.80	2.30	1.47	1.16	1.45	2.43	1.44
6095	0.75	3.67	1.51	6.39	1.74	13.02	2.29	1.43	1.16	1.39	2.38	1.39
6095	0.75	3.46	1.48	5.98	1.69	12.20	2.21	1.39	1.15	1.33	2.32	1.34
6095	0.75	3.28	1.45	5.62	1.66	11.48	2.16	1.35	1.14	1.27	2.27	1.30
6095	0.75	3.12	1.43	5.30	1.63	10.75	2.12	1.31	1.13	1.22	2.22	1.26
6095	0.80	4.33	1.60	7.60	1.83	15.78	2.40	1.57	1.19	1.59	2.58	1.55
6095	0.80	4.11	1.57	7.15	1.79	14.77	2.35	1.52	1.18	1.52	2.50	1.49
6095	0.80	3.87	1.55	6.70	1.75	13.79	2.29	1.47	1.16	1.45	2.43	1.43
6095	0.80	3.67	1.51	6.34	1.74	13.01	2.29	1.43	1.16	1.39	2.38	1.39
6095	0.80	3.47	1.48	5.97	1.69	12.21	2.20	1.39	1.15	1.33	2.32	1.34
6095	0.80	3.29	1.45	5.63	1.66	11.48	2.16	1.35	1.14	1.27	2.27	1.30
6095	0.85	4.25	1.59	7.43	1.81	15.39	2.38	1.55	1.18	1.56	2.55	1.53
6095	0.85	4.01	1.55	6.96	1.77	14.33	2.32	1.50	1.17	1.48	2.47	1.46
6095	0.85	3.88	1.53	6.72	1.75	13.81	2.29	1.47	1.16	1.45	2.43	1.43
6095	0.85	3.68	1.51	6.35	1.72	13.02	2.25	1.43	1.16	1.39	2.37	1.39
6095	0.85	3.47	1.48	5.97	1.69	12.21	2.20	1.39	1.15	1.33	2.32	1.34
6095	0.85	3.30	1.45	5.64	1.66	11.48	2.16	1.35	1.14	1.27	2.27	1.30

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
20000	0.65	6770	0.756	5116	14717	7514	7769	10986	11360	483	1.98
20000	0.65	6289	0.747	4758	13672	7327	7576	10850	11229	476	2.00
20000	0.65	5853	0.760	4446	12724	7154	7397	10753	11118	468	2.04
20000	0.65	5389	0.765	4122	11717	6978	7215	10643	11005	460	2.11
20000	0.65	4919	0.773	3803	10693	6799	7030	10529	10887	451	2.18
20000	0.65	4446	0.786	3493	9666	6611	6836	10413	10767	441	2.26
20000	0.65	3975	0.801	3184	8641	6397	6614	10293	10642	429	2.36
20000	0.65	3526	0.825	2908	7666	6217	6428	10165	10510	419	2.45
20000	0.65	3105	0.853	2647	6750	6030	6235	10036	10376	408	2.54
20000	0.65	2692	0.889	2395	5853	5815	6012	9897	10233	396	2.66
20000	0.65	2300	0.941	2164	5001	5609	5799	9757	10089	384	2.78
20000	0.65	6186	0.757	4684	13448	7287	7534	10834	11202	474	2.01
20000	0.65	5854	0.760	4446	12727	7156	7399	10754	11119	468	2.04
20000	0.65	5391	0.764	4121	11720	6976	7213	10643	11004	460	2.11
20000	0.65	4923	0.773	3804	10702	6800	7031	10530	10888	451	2.18
20000	0.65	4445	0.786	3492	9663	6613	6837	10414	10767	441	2.26
20000	0.65	3973	0.801	3184	8637	6397	6613	10292	10641	429	2.36
20000	0.65	3529	0.824	2910	7673	6221	6433	10168	10513	419	2.44
20000	0.65	3104	0.853	2647	6748	6030	6235	10035	10376	408	2.54
20000	0.70	6777	0.772	5234	14733	7486	7695	10999	11303	480	1.99
20000	0.70	6146	0.778	4768	13361	7250	7450	10844	11144	470	2.03
20000	0.70	5542	0.783	4337	12047	7025	7219	10704	10999	460	2.11
20000	0.70	6058	0.792	4004	10996	6848	7037	10591	10883	451	2.18
20000	0.70	4560	0.806	3675	9912	6659	6843	10474	10763	441	2.26
20000	0.70	4068	0.825	3357	8845	6460	6638	10354	10640	431	2.36
20000	0.70	3610	0.849	3066	7848	6278	6451	10232	10514	420	2.44
20000	0.70	3169	0.880	2788	6890	6085	6253	10097	10376	409	2.54
20000	0.75	6786	0.789	5354	14753	7457	7813	11012	11242	477	2.00
20000	0.75	6114	0.793	4849	13291	7206	7357	10854	11080	467	2.06
20000	0.75	5730	0.799	4575	12456	7072	7220	10767	10992	460	2.11
20000	0.75	5229	0.808	4225	11367	6898	7042	10656	10877	452	2.18
20000	0.75	4713	0.823	3879	10247	6708	6848	10538	10758	442	2.26
20000	0.75	4196	0.844	3543	9123	6509	6645	10418	10635	432	2.36
20000	0.75	3717	0.871	3237	8080	6331	6463	10298	10512	421	2.44
20000	0.75	3250	0.907	2949	7066	6149	6277	10167	10379	411	2.53
20000	0.80	6794	0.805	5472	14770	7417	7520	11025	11178	473	2.01
20000	0.80	6075	0.812	4930	13207	7163	7263	10863	11014	462	2.09
20000	0.80	5426	0.823	4463	11796	6937	7033	10718	10867	451	2.18
20000	0.80	4897	0.838	4103	10646	6755	6848	10604	10751	442	2.26
20000	0.80	4363	0.860	3750	9484	6559	6650	10485	10630	432	2.36
20000	0.80	3859	0.888	3426	8390	6380	6468	10365	10508	422	2.44
20000	0.85	6790	0.822	5582	14761	7367	7415	11037	11108	469	2.04
20000	0.85	6038	0.830	5010	13126	7114	7161	10873	10943	457	2.13
20000	0.85	5672	0.846	4741	12330	6994	7039	10793	10863	452	2.18
20000	0.85	5122	0.850	4355	11135	6807	6851	10675	10745	442	2.26
20000	0.85	4564	0.872	3979	9922	6609	6652	10556	10625	432	2.36
20000	0.85	4037	0.900	3635	8776	6431	6473	10436	10504	422	2.44

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-10C TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
20000	0.65	4.45	1.62	7.92	1.86	16.59	2.46	1.63	1.20	1.66	2.68	1.61
20000	0.65	4.36	1.60	7.68	1.84	15.99	2.42	1.59	1.19	1.61	2.61	1.56
20000	0.65	4.22	1.58	7.40	1.81	15.34	2.38	1.55	1.18	1.56	2.55	1.52
20000	0.65	4.05	1.56	7.06	1.78	14.59	2.34	1.52	1.17	1.51	2.49	1.48
20000	0.65	3.85	1.53	6.70	1.75	13.80	2.30	1.48	1.17	1.45	2.43	1.44
20000	0.65	3.65	1.50	6.32	1.72	12.99	2.25	1.44	1.16	1.39	2.38	1.39
20000	0.65	3.42	1.47	5.91	1.68	12.12	2.20	1.40	1.14	1.33	2.33	1.35
20000	0.65	3.24	1.45	5.57	1.65	11.37	2.16	1.36	1.13	1.28	2.28	1.31
20000	0.65	3.07	1.42	5.23	1.62	10.64	2.12	1.32	1.13	1.23	2.23	1.27
20000	0.65	2.88	1.39	4.87	1.59	9.87	2.07	1.29	1.12	1.18	2.18	1.23
20000	0.65	2.71	1.37	4.55	1.56	9.17	2.03	1.25	1.11	1.14	2.14	1.19
20000	0.65	4.33	1.60	7.62	1.83	15.85	2.41	1.58	1.19	1.60	2.59	1.55
20000	0.65	4.23	1.58	7.40	1.81	15.35	2.38	1.55	1.18	1.56	2.55	1.52
20000	0.65	4.05	1.56	7.06	1.78	14.59	2.34	1.52	1.17	1.51	2.49	1.48
20000	0.65	3.86	1.53	6.70	1.75	13.81	2.30	1.48	1.17	1.45	2.43	1.44
20000	0.65	3.65	1.50	6.32	1.72	12.99	2.25	1.44	1.16	1.39	2.38	1.39
20000	0.65	3.42	1.47	5.91	1.68	12.12	2.20	1.40	1.14	1.33	2.33	1.35
20000	0.65	3.25	1.45	5.57	1.65	11.39	2.16	1.36	1.13	1.28	2.28	1.31
20000	0.65	3.07	1.42	5.23	1.62	10.64	2.12	1.32	1.13	1.23	2.23	1.27
20000	0.70	4.42	1.62	7.84	1.85	16.36	2.44	1.61	1.20	1.64	2.65	1.59
20000	0.70	4.27	1.59	7.49	1.82	15.54	2.39	1.56	1.19	1.57	2.56	1.53
20000	0.70	4.08	1.56	7.07	1.78	14.60	2.34	1.51	1.17	1.50	2.49	1.48
20000	0.70	3.87	1.53	6.71	1.75	13.82	2.30	1.48	1.17	1.45	2.43	1.44
20000	0.70	3.66	1.50	6.33	1.72	13.01	2.25	1.44	1.16	1.39	2.38	1.39
20000	0.70	3.45	1.48	5.95	1.68	12.18	2.21	1.40	1.15	1.33	2.33	1.35
20000	0.70	3.27	1.45	5.60	1.65	11.44	2.16	1.36	1.14	1.28	2.27	1.30
20000	0.70	3.09	1.43	5.26	1.62	10.69	2.12	1.32	1.13	1.23	2.22	1.26
20000	0.75	4.39	1.61	7.73	1.84	16.10	2.42	1.59	1.19	1.62	2.62	1.57
20000	0.75	4.19	1.58	7.33	1.80	15.16	2.37	1.54	1.18	1.55	2.53	1.51
20000	0.75	4.06	1.56	7.07	1.78	14.60	2.34	1.51	1.17	1.50	2.49	1.48
20000	0.75	3.88	1.53	6.72	1.75	13.89	2.30	1.47	1.16	1.45	2.43	1.44
20000	0.75	3.67	1.51	6.34	1.72	13.02	2.25	1.43	1.16	1.39	2.38	1.39
20000	0.75	3.46	1.48	5.96	1.69	12.26	2.21	1.39	1.15	1.33	2.32	1.34
20000	0.75	3.28	1.45	5.62	1.66	11.46	2.16	1.35	1.14	1.27	2.27	1.30
20000	0.75	3.12	1.43	5.30	1.63	10.79	2.12	1.31	1.13	1.22	2.22	1.26
20000	0.80	4.33	1.60	7.60	1.83	15.78	2.40	1.57	1.19	1.59	2.58	1.55
20000	0.80	4.11	1.57	7.15	1.79	14.77	2.33	1.52	1.18	1.52	2.50	1.49
20000	0.80	3.87	1.53	6.70	1.75	13.79	2.29	1.47	1.16	1.45	2.43	1.43
20000	0.80	3.67	1.51	6.34	1.72	13.01	2.25	1.43	1.16	1.39	2.38	1.39
20000	0.80	3.47	1.48	5.97	1.67	12.21	2.20	1.39	1.15	1.33	2.32	1.34
20000	0.80	3.29	1.45	5.63	1.66	11.48	2.16	1.35	1.14	1.27	2.27	1.30
20000	0.85	4.25	1.59	7.43	1.81	15.39	2.36	1.55	1.18	1.56	2.55	1.53
20000	0.85	4.01	1.55	6.96	1.77	14.33	2.32	1.50	1.17	1.48	2.47	1.46
20000	0.85	3.88	1.53	6.72	1.75	13.81	2.29	1.47	1.16	1.45	2.43	1.43
20000	0.85	3.68	1.51	6.35	1.72	13.02	2.25	1.43	1.16	1.39	2.37	1.39
20000	0.85	3.47	1.48	5.97	1.69	12.21	2.20	1.39	1.15	1.33	2.32	1.34
20000	0.85	3.30	1.45	5.64	1.66	11.48	2.16	1.35	1.14	1.27	2.27	1.30

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-100 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
STANDARD DAY TAME

ALT	MN	FNTOT	TSFC	WI	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
7619	0.65	25983	0.0756	1909	64923	7353	7470	10946	11550	222	2.00
7619	0.65	24128	0.0756	1825	64932	7303	7764	10732	11388	216	2.00
7619	0.65	22224	0.0759	1685	59807	7161	7556	10657	11246	215	2.02
7619	0.65	20718	0.0760	1575	55755	6989	7375	10556	11139	211	2.06
7619	0.65	19089	0.0766	1462	51370	6821	7198	10447	11024	207	2.12
7619	0.65	17426	0.0775	1349	46895	6647	7014	10334	10905	203	2.20
7619	0.65	15746	0.0788	1240	42373	6460	6816	10217	10781	199	2.28
7619	0.65	14101	0.0804	1133	37949	6257	6603	10098	10656	194	2.37
7619	0.65	12547	0.0828	1038	33765	6090	6426	9978	10529	189	2.45
7619	0.65	11055	0.0857	947	29750	5904	6230	9849	10393	184	2.55
7619	0.70	26451	0.0773	2028	70645	7549	7916	10958	11492	221	1.99
7619	0.70	24289	0.0771	1873	65366	7346	7704	10808	11334	217	2.00
7619	0.70	23009	0.0773	1778	61921	7217	7568	10720	11242	215	2.02
7619	0.70	21429	0.0776	1663	57669	7050	7393	10617	11134	212	2.05
7619	0.70	19737	0.0782	1544	53115	6879	7214	10508	11020	208	2.11
7619	0.70	18010	0.0792	1425	48467	6704	7030	10395	10901	204	2.19
7619	0.70	16242	0.0807	1310	43711	6518	6836	10279	10779	200	2.27
7619	0.70	14515	0.0825	1198	39063	6328	6636	10160	10655	195	2.36
7619	0.70	12894	0.0850	1095	34700	6146	6446	10038	10528	190	2.48
7619	0.70	11339	0.0882	999	30515	5968	6259	9912	10395	185	2.64
7619	0.75	26582	0.0787	2091	71536	7540	7856	10971	11430	220	1.98
7619	0.75	24476	0.0787	1924	65891	7349	7656	10821	11274	216	2.00
7619	0.75	22289	0.0790	1761	59982	7157	7455	10680	11127	212	2.05
7619	0.75	20533	0.0796	1635	55256	6985	7275	10571	11013	208	2.11
7619	0.75	18728	0.0806	1509	50401	6761	7044	10459	10897	205	2.18
7619	0.75	16887	0.0821	1388	45444	6575	6850	10342	10775	200	2.26
7619	0.75	15060	0.0843	1268	40528	6383	6651	10224	10652	196	2.36
7619	0.75	13352	0.0869	1160	35833	6211	6471	10106	10529	191	2.44
7619	0.75	11700	0.0905	1058	31487	6034	6287	9979	10397	186	2.53
7619	0.80	26939	0.0801	2156	72496	7528	7789	10985	11366	219	1.98
7619	0.80	24667	0.0801	1976	66383	7305	7558	10834	11210	215	2.01
7619	0.80	23269	0.0804	1871	62619	7167	7415	10748	11121	213	2.04
7619	0.80	21450	0.0809	1736	57725	6993	7236	10639	11008	209	2.10
7619	0.80	19596	0.0819	1603	52735	6818	7054	10527	10892	205	2.17
7619	0.80	17677	0.0833	1473	47572	6635	6865	10410	10771	201	2.26
7619	0.80	15754	0.0855	1347	42396	6441	6664	10291	10648	196	2.35
7619	0.80	13947	0.0883	1231	37533	6266	6484	10173	10526	192	2.44
7619	0.80	12187	0.0921	1122	32798	6086	6297	10045	10394	187	2.52
7619	0.85	27137	0.0816	2214	73028	7493	7696	11001	11300	218	1.99
7619	0.85	24973	0.0816	2036	66399	7257	7454	10846	11141	213	2.03
7619	0.85	23539	0.0824	1940	60117	7054	7230	10707	10998	209	2.10
7619	0.85	20436	0.0832	1760	54295	6862	7032	10596	10884	205	2.18
7619	0.85	18459	0.0846	1581	49666	6681	6863	10477	10764	201	2.26
7619	0.85	16467	0.0867	1467	44319	6485	6661	10361	10643	196	2.35
7619	0.85	14577	0.0890	1358	39233	6315	6486	10242	10520	192	2.44
7619	0.85	27137	0.0816	2215	73028	7494	7698	11001	11300	218	1.99

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-11S TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3•2P2	T3•2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
7619	0.65	4.43	1.64	8.03	1.89	17.02	2.52	1.67	1.22	1.71	2.79	1.65
7619	0.65	4.40	1.62	7.85	1.87	16.49	2.47	1.62	1.20	1.65	2.69	1.60
7619	0.65	4.30	1.60	7.59	1.84	15.83	2.42	1.58	1.19	1.60	2.61	1.55
7619	0.65	4.16	1.58	7.31	1.81	15.19	2.39	1.55	1.18	1.55	2.55	1.52
7619	0.65	3.99	1.56	6.99	1.78	14.47	2.35	1.51	1.17	1.50	2.49	1.47
7619	0.65	3.80	1.53	6.62	1.75	13.68	2.30	1.47	1.16	1.44	2.44	1.43
7619	0.65	3.60	1.50	6.25	1.72	12.87	2.26	1.43	1.15	1.38	2.38	1.39
7619	0.65	3.39	1.47	5.86	1.68	12.04	2.21	1.39	1.14	1.33	2.33	1.35
7619	0.65	3.22	1.45	5.54	1.65	11.34	2.17	1.36	1.13	1.28	2.28	1.30
7619	0.65	3.05	1.42	5.21	1.62	10.61	2.12	1.32	1.13	1.23	2.23	1.26
7619	0.70	4.45	1.64	8.01	1.88	16.91	2.50	1.66	1.21	1.69	2.76	1.63
7619	0.70	4.39	1.62	7.80	1.86	16.32	2.45	1.61	1.20	1.64	2.66	1.59
7619	0.70	4.32	1.60	7.63	1.84	15.89	2.42	1.58	1.19	1.60	2.61	1.56
7619	0.70	4.19	1.56	7.36	1.81	15.27	2.39	1.55	1.18	1.55	2.55	1.52
7619	0.70	4.03	1.56	7.03	1.78	14.54	2.35	1.51	1.17	1.50	2.49	1.48
7619	0.70	3.83	1.53	6.67	1.75	13.76	2.30	1.47	1.16	1.44	2.43	1.43
7619	0.70	3.63	1.50	6.30	1.72	12.95	2.26	1.43	1.16	1.38	2.38	1.39
7619	0.70	3.43	1.48	5.92	1.69	12.15	2.21	1.39	1.14	1.33	2.33	1.34
7619	0.70	3.25	1.45	5.58	1.66	11.40	2.17	1.35	1.14	1.28	2.28	1.30
7619	0.70	3.08	1.43	5.26	1.63	10.69	2.13	1.32	1.13	1.22	2.22	1.26
7619	0.75	4.46	1.63	7.98	1.87	16.79	2.48	1.64	1.21	1.68	2.72	1.62
7619	0.75	4.38	1.61	7.74	1.85	16.14	2.44	1.60	1.20	1.62	2.61	1.57
7619	0.75	4.22	1.59	7.40	1.81	15.34	2.39	1.55	1.18	1.56	2.55	1.52
7619	0.75	4.05	1.56	7.07	1.79	14.60	2.35	1.51	1.17	1.50	2.49	1.48
12 7619	0.75	3.86	1.53	6.71	1.75	13.82	2.30	1.47	1.16	1.45	2.43	1.44
11 7619	0.75	3.66	1.51	6.33	1.72	13.01	2.26	1.43	1.16	1.39	2.38	1.39
10 7619	0.75	3.46	1.48	5.96	1.69	12.21	2.21	1.39	1.15	1.33	2.33	1.34
9 7619	0.75	3.28	1.45	5.63	1.66	11.49	2.17	1.35	1.14	1.27	2.27	1.30
8 7619	0.75	3.12	1.43	5.31	1.63	10.78	2.13	1.31	1.13	1.22	2.22	1.26
7												
7619	0.80	4.46	1.63	7.94	1.87	16.63	2.46	1.63	1.20	1.66	2.68	1.61
7619	0.80	4.35	1.60	7.66	1.84	15.91	2.42	1.58	1.19	1.60	2.59	1.56
7619	0.80	4.25	1.59	7.43	1.81	15.40	2.39	1.55	1.18	1.56	2.54	1.52
7619	0.80	4.08	1.56	7.10	1.79	14.66	2.34	1.51	1.17	1.50	2.49	1.48
7619	0.80	3.89	1.54	6.74	1.75	13.88	2.30	1.48	1.17	1.45	2.43	1.44
7619	0.80	3.69	1.51	6.37	1.72	13.08	2.26	1.44	1.16	1.39	2.38	1.39
7619	0.80	3.48	1.48	5.99	1.69	12.27	2.21	1.39	1.15	1.33	2.32	1.35
7619	0.80	3.31	1.46	5.66	1.66	11.53	2.17	1.35	1.14	1.28	2.27	1.30
7619	0.80	3.13	1.43	5.33	1.63	10.81	2.13	1.31	1.13	1.22	2.22	1.26
7619	0.85	4.43	1.62	7.84	1.85	16.36	2.44	1.61	1.20	1.64	2.65	1.59
7619	0.85	4.28	1.59	7.50	1.82	15.54	2.39	1.56	1.19	1.57	2.56	1.53
7619	0.85	4.07	1.56	7.09	1.78	14.63	2.34	1.51	1.17	1.50	2.49	1.48
7619	0.85	3.89	1.54	6.74	1.75	13.87	2.30	1.47	1.17	1.45	2.43	1.44
7619	0.85	3.69	1.51	6.37	1.72	13.06	2.25	1.43	1.16	1.39	2.37	1.39
7619	0.85	3.48	1.48	5.99	1.69	12.25	2.21	1.39	1.15	1.33	2.32	1.34
7619	0.85	3.31	1.46	5.66	1.66	11.54	2.17	1.35	1.14	1.27	2.27	1.30
7619	0.85	4.43	1.62	7.84	1.85	16.36	2.44	1.61	1.20	1.64	2.65	1.59

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
25000	0.65	5841	0.743	4342	14719	7553	7970	10946	11550	489	2.00
25000	0.65	5424	0.742	4023	14597	7363	7769	10792	11388	482	2.00
25000	0.65	4996	0.744	3716	13445	7161	7556	10657	11246	474	2.02
25000	0.65	4657	0.746	3472	12534	6989	7375	10556	11139	466	2.08
25000	0.65	4291	0.751	3224	11548	6821	7198	10447	11024	458	2.12
25000	0.65	3917	0.760	2976	10542	6647	7014	10334	10905	449	2.20
25000	0.65	3539	0.773	2735	9526	6460	6816	10217	10781	439	2.28
25000	0.65	3170	0.788	2498	8531	6257	6603	10095	10656	428	2.37
25000	0.65	2820	0.812	2289	7590	6090	6426	9978	10529	418	2.45
25000	0.65	2485	0.840	2088	6688	5904	6230	9849	10393	407	2.55
25000	0.70	5901	0.758	4472	15881	7549	7916	10958	11492	488	1.99
25000	0.70	5460	0.756	4130	14694	7346	7704	10808	11334	480	2.00
25000	0.70	5172	0.758	3920	13920	7217	7568	10720	11242	475	2.02
25000	0.70	4817	0.761	3668	12964	7050	7393	10617	11134	467	2.05
25000	0.70	4437	0.767	3404	11940	6879	7214	10508	11020	459	2.11
25000	0.70	4048	0.776	3143	10896	6704	7030	10395	10901	450	2.19
25000	0.70	3651	0.791	2888	9826	6518	6836	10279	10779	441	2.27
25000	0.70	3263	0.810	2643	8781	6328	6636	10160	10655	430	2.36
25000	0.70	2898	0.833	2415	7801	6146	6446	10039	10528	420	2.45
25000	0.70	2549	0.865	2204	6860	5968	6259	9912	10395	409	2.54
25000	0.75	5976	0.772	4610	16082	7540	7856	10971	11430	486	1.98
25000	0.75	5501	0.771	4243	14804	7329	7636	10821	11274	478	2.00
25000	0.75	5010	0.775	3883	13484	7107	7405	10680	11127	468	2.05
25000	0.75	4616	0.781	3605	12422	6935	7225	10571	11013	460	2.11
25000	0.75	4210	0.791	3328	11330	6761	7044	10459	10897	451	2.18
25000	0.75	3796	0.805	3057	10216	6575	6850	10342	10775	442	2.26
25000	0.75	3385	0.826	2797	9111	6383	6651	10224	10652	432	2.36
25000	0.75	3001	0.852	2559	8078	6211	6471	10106	10529	422	2.44
25000	0.75	2630	0.887	2333	7078	6034	6287	9979	10397	411	2.53
25000	0.80	6056	0.785	4754	16297	7528	7789	10985	11366	484	1.98
25000	0.80	5545	0.786	4358	14923	7305	7558	10834	11210	475	2.01
25000	0.80	5231	0.789	4125	14077	7167	7415	10748	11121	469	2.04
25000	0.80	4822	0.794	3828	12977	6993	7236	10639	11008	461	2.10
25000	0.80	4405	0.802	3534	11855	6818	7054	10527	10892	452	2.17
25000	0.80	3974	0.817	3248	10694	6635	6865	10410	10771	443	2.26
25000	0.80	3541	0.839	2969	9531	6441	6664	10291	10648	433	2.35
25000	0.80	3135	0.866	2715	8437	6266	6484	10173	10526	423	2.44
25000	0.80	2739	0.903	2473	7373	6086	6297	10045	10394	412	2.52
25000	0.85	6100	0.800	4862	16417	7493	7696	11001	11300	481	1.99
25000	0.85	5546	0.802	4450	14927	7257	7454	10846	11141	471	2.03
25000	0.85	5022	0.808	4056	13514	7039	7230	10707	10998	461	2.10
25000	0.85	4594	0.816	3748	12363	6865	7052	10596	10884	452	2.18
25000	0.85	4149	0.830	3442	11165	6681	6863	10479	10764	443	2.26
25000	0.85	3702	0.850	3148	9962	6485	6661	10361	10643	433	2.35
25000	0.85	3277	0.878	2879	8820	6315	6486	10242	10520	423	2.44
25000	0.85	6100	0.801	4884	16417	7494	7698	11001	11300	481	1.99

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-10 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3*2P2	T3*2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
25000	0.65	4.43	1.64	8.03	1.89	17.02	2.52	1.67	1.22	1.71	2.79	1.65
25000	0.65	4.40	1.62	7.85	1.87	16.49	2.47	1.62	1.20	1.65	2.69	1.60
25000	0.65	4.30	1.60	7.59	1.84	15.83	2.42	1.58	1.19	1.60	2.61	1.55
25000	0.65	4.16	1.58	7.31	1.81	15.19	2.39	1.55	1.18	1.55	2.55	1.52
25000	0.65	3.99	1.56	6.99	1.78	14.47	2.35	1.51	1.17	1.50	2.49	1.47
25000	0.65	3.80	1.53	6.62	1.75	13.68	2.30	1.47	1.16	1.44	2.44	1.43
25000	0.65	3.60	1.50	6.25	1.72	12.87	2.26	1.43	1.15	1.38	2.38	1.39
25000	0.65	3.39	1.47	5.86	1.68	12.04	2.21	1.39	1.14	1.33	2.33	1.35
25000	0.65	3.22	1.45	5.54	1.65	11.34	2.17	1.36	1.13	1.28	2.28	1.30
25000	0.65	3.05	1.42	5.21	1.62	10.61	2.12	1.32	1.13	1.23	2.23	1.26
25000	0.70	4.45	1.64	8.01	1.88	16.91	2.50	1.66	1.21	1.69	2.76	1.63
25000	0.70	4.39	1.62	7.80	1.86	16.32	2.45	1.61	1.20	1.64	2.66	1.59
25000	0.70	4.32	1.60	7.63	1.84	15.89	2.42	1.58	1.19	1.60	2.61	1.56
25000	0.70	4.19	1.58	7.36	1.81	15.27	2.39	1.55	1.18	1.55	2.55	1.52
25000	0.70	4.03	1.56	7.03	1.78	14.54	2.35	1.51	1.17	1.50	2.49	1.48
25000	0.70	3.83	1.53	6.67	1.75	13.76	2.30	1.47	1.16	1.44	2.43	1.43
25000	0.70	3.63	1.50	6.30	1.72	12.95	2.26	1.43	1.16	1.38	2.38	1.39
25000	0.70	3.43	1.48	5.92	1.69	12.15	2.21	1.39	1.14	1.33	2.33	1.34
25000	0.70	3.28	1.45	5.58	1.66	11.40	2.17	1.35	1.14	1.28	2.28	1.30
25000	0.70	3.08	1.43	5.26	1.63	10.69	2.13	1.32	1.13	1.22	2.22	1.26
25000	0.75	4.46	1.63	7.90	1.87	16.79	2.48	1.64	1.21	1.68	2.72	1.62
25000	0.75	4.38	1.61	7.74	1.85	16.14	2.44	1.60	1.20	1.62	2.63	1.57
25000	0.75	4.22	1.59	7.40	1.81	15.34	2.39	1.55	1.18	1.56	2.55	1.52
25000	0.75	4.05	1.56	7.07	1.79	14.60	2.35	1.51	1.17	1.50	2.49	1.48
25000	0.75	3.86	1.53	6.71	1.75	13.82	2.30	1.47	1.16	1.45	2.43	1.44
25000	0.75	3.66	1.51	6.33	1.72	13.01	2.26	1.43	1.16	1.39	2.38	1.39
25000	0.75	3.46	1.48	5.96	1.69	12.21	2.21	1.39	1.15	1.33	2.33	1.34
25000	0.75	3.28	1.45	5.63	1.66	11.49	2.17	1.35	1.14	1.27	2.27	1.30
25000	0.75	3.12	1.43	5.31	1.63	10.78	2.13	1.31	1.13	1.22	2.22	1.26
25000	0.80	4.46	1.63	7.94	1.87	16.83	2.48	1.63	1.20	1.66	2.68	1.61
25000	0.80	4.35	1.60	7.66	1.84	15.91	2.42	1.58	1.19	1.60	2.59	1.56
25000	0.80	4.25	1.59	7.43	1.81	15.40	2.39	1.55	1.18	1.56	2.54	1.52
25000	0.80	4.08	1.56	7.10	1.79	14.66	2.34	1.51	1.17	1.50	2.49	1.48
25000	0.80	3.89	1.54	6.74	1.75	13.88	2.30	1.48	1.17	1.45	2.43	1.44
25000	0.80	3.69	1.51	6.37	1.72	13.08	2.26	1.44	1.16	1.39	2.38	1.39
25000	0.80	3.48	1.48	5.99	1.69	12.27	2.21	1.39	1.15	1.33	2.32	1.35
25000	0.80	3.31	1.46	5.66	1.66	11.53	2.17	1.35	1.14	1.28	2.27	1.30
25000	0.80	3.13	1.43	5.33	1.63	10.81	2.13	1.31	1.13	1.22	2.22	1.26
25000	0.85	4.43	1.62	7.84	1.85	16.36	2.44	1.61	1.20	1.64	2.65	1.59
25000	0.85	4.28	1.59	7.50	1.82	15.54	2.39	1.56	1.19	1.57	2.56	1.53
25000	0.85	4.07	1.56	7.09	1.78	14.63	2.34	1.51	1.17	1.50	2.49	1.48
25000	0.85	3.89	1.54	6.74	1.75	13.87	2.30	1.47	1.17	1.45	2.43	1.44
25000	0.85	3.69	1.51	6.37	1.72	13.06	2.25	1.43	1.16	1.39	2.37	1.39
25000	0.85	3.48	1.48	5.99	1.69	12.25	2.21	1.39	1.15	1.33	2.32	1.34
25000	0.85	3.31	1.46	5.66	1.66	11.54	2.17	1.35	1.14	1.27	2.27	1.30
25000	0.85	4.43	1.62	7.84	1.85	16.36	2.44	1.61	1.20	1.64	2.65	1.59

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNIOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
9143	0.65	20469	0.0746	1526	68809	7371	7945	10758	11595	220	2.03
9143	0.65	19398	0.0745	1444	65208	7236	7799	10645	11473	218	2.03
9143	0.65	18417	0.0744	1370	61912	7105	7658	10556	11377	216	2.04
9143	0.65	17294	0.0747	1291	58136	6959	7504	10453	11267	213	2.06
9143	0.65	16113	0.0750	1208	54164	6800	7330	10351	11157	209	2.10
9143	0.65	14829	0.0757	1122	49848	6637	7154	10239	11036	206	2.16
9143	0.65	13546	0.0767	1038	45535	6468	6971	10129	10917	202	2.24
9143	0.65	12260	0.0781	957	41215	6292	6781	10017	10796	197	2.31
9143	0.65	11017	0.0798	879	37037	6104	6580	9903	10673	192	2.40
9143	0.65	9820	0.0823	808	33012	5944	6406	9783	10544	188	2.47
9143	0.70	22063	0.0765	1687	74167	7526	8062	10926	11704	222	2.03
9143	0.70	20872	0.0760	1571	69491	7367	7891	10768	11534	220	2.02
9143	0.70	20069	0.0759	1523	67464	7291	7810	10707	11469	218	2.02
9143	0.70	19023	0.0760	1445	63948	7160	7670	10611	11366	216	2.03
9143	0.70	17884	0.0762	1362	60118	7015	7514	10513	11262	213	2.05
9143	0.70	16653	0.0766	1274	55980	6855	7343	10411	11152	210	2.10
9143	0.70	15325	0.0772	1183	51516	6692	7168	10303	11036	206	2.16
9143	0.70	13976	0.0783	1095	46983	6522	6986	10187	10912	202	2.23
9143	0.70	12627	0.0799	1009	42447	6343	6795	10075	10792	198	2.31
9143	0.70	11321	0.0820	928	38057	6171	6611	9963	10672	194	2.39
9143	0.70	10087	0.0844	851	33911	5996	6423	9843	10544	189	2.47
9143	0.75	22406	0.0778	1742	75318	7529	8013	10934	11635	222	2.02
9143	0.75	20921	0.0774	1619	70328	7358	7830	10779	11471	219	2.02
9143	0.75	19760	0.0774	1529	66424	7217	7681	10675	11360	216	2.03
9143	0.75	18590	0.0776	1442	62492	7071	7525	10577	11256	213	2.05
9143	0.75	17305	0.0780	1349	58174	6911	7354	10474	11146	210	2.09
9143	0.75	15929	0.0787	1253	53548	6748	7181	10365	11031	207	2.15
9143	0.75	14534	0.0797	1158	48858	6579	7001	10252	10910	203	2.22
9143	0.75	13116	0.0814	1067	44092	6399	6810	10138	10789	199	2.30
9143	0.75	11736	0.0835	980	39451	6223	6622	10024	10668	194	2.38
9143	0.75	10430	0.0863	900	35062	6060	6449	9909	10545	190	2.46
9143	0.80	22797	0.0790	1801	76634	7533	7961	10944	11566	221	2.01
9143	0.80	21201	0.0788	1669	71269	7344	7761	10793	11406	218	2.02
9143	0.80	20015	0.0788	1624	69299	7276	7689	10742	11353	217	2.02
9143	0.80	19408	0.0789	1531	65243	7130	7535	10645	11250	214	2.04
9143	0.80	18090	0.0792	1432	60811	6970	7366	10544	11143	211	2.08
9143	0.80	16644	0.0799	1330	55949	6805	7192	10431	11024	207	2.14
9143	0.80	15208	0.0809	1230	51122	6635	7012	10321	10907	203	2.21
9143	0.80	13714	0.0826	1132	46101	6457	6824	10205	10785	199	2.29
9143	0.80	12263	0.0848	1039	41223	6280	6637	10090	10664	195	2.38
9143	0.80	10881	0.0876	953	36579	6113	6460	9974	10541	190	2.46
9143	0.85	23205	0.0803	1864	78007	7525	7896	10957	11496	220	2.01
9143	0.85	21476	0.0802	1721	72194	7325	7686	10806	11338	217	2.01
9143	0.85	20327	0.0802	1631	68330	7190	7544	10715	11243	214	2.03
9143	0.85	18951	0.0805	1525	63705	7028	7374	10611	11133	211	2.07
9143	0.85	17478	0.0811	1417	58755	6863	7201	10503	11020	207	2.13
9143	0.85	15966	0.0820	1309	53672	6693	7022	10391	10902	204	2.21
9143	0.85	14429	0.0835	1204	48504	6512	6832	10275	10780	199	2.29
9143	0.85	12895	0.0857	1105	43347	6334	6646	10158	10658	195	2.37
9143	0.85	11440	0.0886	1013	38457	6168	6471	10043	10537	191	2.45

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3•2P2	T3•2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
9143	0.65	4.53	1.64	7.66	1.89	16.76	2.52	1.66	1.21	1.69	2.81	1.64
9143	0.65	4.30	1.63	7.76	1.87	16.40	2.49	1.63	1.21	1.65	2.74	1.60
9143	0.65	4.25	1.61	7.61	1.86	16.01	2.46	1.60	1.20	1.62	2.67	1.57
9143	0.65	4.17	1.60	7.41	1.83	15.51	2.43	1.57	1.19	1.57	2.61	1.54
9143	0.65	4.05	1.58	7.14	1.81	14.89	2.39	1.53	1.18	1.53	2.55	1.50
9143	0.65	3.88	1.55	6.82	1.78	14.17	2.35	1.50	1.17	1.48	2.50	1.46
9143	0.65	3.70	1.52	6.48	1.75	13.41	2.30	1.46	1.16	1.42	2.44	1.42
9143	0.65	3.52	1.50	6.13	1.71	12.66	2.26	1.42	1.15	1.37	2.39	1.38
9143	0.65	3.33	1.47	5.77	1.68	11.89	2.21	1.39	1.14	1.32	2.34	1.34
9143	0.65	3.18	1.45	5.47	1.65	11.22	2.17	1.35	1.13	1.27	2.28	1.30
9143	0.70	4.35	1.65	8.00	1.91	17.12	2.55	1.69	1.22	1.72	2.88	1.66
9143	0.70	4.34	1.64	7.86	1.89	16.67	2.51	1.65	1.21	1.68	2.78	1.62
9143	0.70	4.32	1.63	7.79	1.87	16.45	2.49	1.63	1.21	1.66	2.74	1.60
9143	0.70	4.28	1.61	7.64	1.86	16.06	2.46	1.60	1.20	1.62	2.67	1.57
9143	0.70	4.20	1.60	7.45	1.83	15.57	2.43	1.57	1.19	1.58	2.61	1.54
9143	0.70	4.07	1.58	7.18	1.81	14.94	2.39	1.53	1.18	1.53	2.55	1.50
9143	0.70	3.91	1.55	6.86	1.78	14.23	2.35	1.50	1.17	1.48	2.49	1.46
9143	0.70	3.73	1.53	6.51	1.75	13.47	2.30	1.46	1.16	1.42	2.44	1.42
9143	0.70	3.54	1.50	6.16	1.72	12.71	2.26	1.42	1.15	1.37	2.39	1.38
9143	0.70	3.37	1.47	5.83	1.69	11.99	2.22	1.38	1.14	1.31	2.33	1.33
9143	0.70	3.20	1.45	5.50	1.66	11.27	2.17	1.35	1.13	1.27	2.28	1.29
9143	0.75	4.37	1.65	7.96	1.90	17.01	2.54	1.67	1.22	1.71	2.84	1.65
9143	0.75	4.35	1.63	7.83	1.88	16.53	2.49	1.63	1.21	1.66	2.74	1.61
9143	0.75	4.30	1.62	7.67	1.86	16.11	2.46	1.60	1.20	1.62	2.67	1.58
9143	0.75	4.22	1.60	7.48	1.84	15.62	2.43	1.57	1.19	1.58	2.61	1.54
9143	0.75	4.10	1.58	7.21	1.81	15.00	2.39	1.53	1.18	1.53	2.55	1.50
9143	0.75	3.94	1.56	6.90	1.78	14.29	2.35	1.50	1.17	1.48	2.49	1.46
9143	0.75	3.76	1.53	6.55	1.75	13.54	2.30	1.46	1.16	1.42	2.44	1.42
9143	0.75	3.57	1.50	6.20	1.72	12.77	2.26	1.42	1.15	1.37	2.38	1.38
9143	0.75	3.39	1.48	5.86	1.69	12.03	2.22	1.38	1.14	1.31	2.33	1.33
9143	0.75	3.23	1.45	5.56	1.66	11.35	2.17	1.35	1.13	1.26	2.28	1.29
9143	0.80	4.39	1.64	7.96	1.89	16.90	2.52	1.66	1.21	1.70	2.80	1.64
9143	0.80	4.35	1.62	7.76	1.87	16.37	2.47	1.62	1.20	1.65	2.70	1.60
9143	0.80	4.32	1.62	7.71	1.86	16.16	2.46	1.60	1.20	1.63	2.67	1.58
9143	0.80	4.25	1.60	7.51	1.84	15.69	2.42	1.57	1.19	1.58	2.61	1.54
9143	0.80	4.12	1.58	7.25	1.81	15.07	2.39	1.54	1.18	1.54	2.55	1.51
9143	0.80	3.96	1.56	6.93	1.78	14.35	2.35	1.50	1.17	1.48	2.49	1.46
9143	0.80	3.78	1.53	6.59	1.75	13.60	2.30	1.46	1.16	1.43	2.43	1.42
9143	0.80	3.59	1.50	6.23	1.72	12.83	2.25	1.42	1.15	1.37	2.38	1.38
9143	0.80	3.41	1.48	5.89	1.69	12.09	2.22	1.38	1.14	1.32	2.33	1.33
9143	0.80	3.25	1.45	5.58	1.66	11.39	2.17	1.35	1.13	1.26	2.27	1.29
9143	0.85	4.40	1.64	7.93	1.88	16.77	2.50	1.65	1.21	1.68	2.76	1.63
9143	0.85	4.34	1.62	7.72	1.86	16.18	2.45	1.60	1.20	1.63	2.66	1.58
9143	0.85	4.27	1.60	7.55	1.84	15.74	2.42	1.57	1.19	1.59	2.61	1.55
9143	0.85	4.15	1.58	7.28	1.81	15.12	2.39	1.54	1.18	1.54	2.55	1.51
9143	0.85	3.99	1.56	6.97	1.78	14.41	2.35	1.50	1.17	1.49	2.49	1.47
9143	0.85	3.80	1.53	6.62	1.75	13.66	2.30	1.46	1.16	1.43	2.43	1.42
9143	0.85	3.61	1.50	6.26	1.72	12.88	2.26	1.42	1.15	1.37	2.38	1.38
9143	0.85	3.43	1.48	5.92	1.69	12.13	2.22	1.38	1.14	1.32	2.32	1.33
9143	0.85	3.27	1.46	5.60	1.66	11.43	2.17	1.35	1.14	1.26	2.27	1.29

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
30000	0.65	4601	0.731	3365	15460	7371	7945	10758	11595	486	2.03
30000	0.65	4360	0.730	3184	14659	7236	7799	10645	11473	481	2.03
30000	0.65	4146	0.730	3021	13918	7105	7658	10536	11377	476	2.04
30000	0.65	3888	0.732	2847	13069	6959	7501	10453	11267	469	2.06
30000	0.65	3622	0.735	2663	12176	6800	7330	10391	11197	462	2.10
30000	0.65	3333	0.742	2474	11206	6637	7154	10239	11036	454	2.16
30000	0.65	3045	0.752	2289	10236	6468	6971	10129	10917	445	2.24
30000	0.65	2756	0.766	2111	9265	6292	6781	10017	10796	436	2.31
30000	0.65	2476	0.783	1938	8326	6104	6580	9903	10673	425	2.40
30000	0.65	2207	0.807	1781	7421	5944	6406	9783	10544	415	2.47
30000	0.70	4960	0.740	3719	16673	7526	8052	10926	11704	491	2.03
30000	0.70	4647	0.745	3464	15622	7367	7891	10768	11534	485	2.02
30000	0.70	4511	0.745	3359	15166	7291	7810	10707	11469	482	2.02
30000	0.70	4276	0.745	3186	14476	7160	7670	10611	11366	477	2.03
30000	0.70	4020	0.747	3004	13815	7015	7514	10513	11262	470	2.05
30000	0.70	3743	0.751	2810	12884	6855	7343	10411	11152	463	2.10
30000	0.70	3445	0.757	2609	11981	6692	7168	10303	11036	455	2.16
30000	0.70	3142	0.768	2414	10562	6522	6986	10187	10912	446	2.23
30000	0.70	2838	0.784	2224	9542	6343	6795	10075	10792	437	2.31
30000	0.70	2545	0.804	2046	8555	6171	6611	9963	10672	427	2.39
30000	0.70	2267	0.827	1876	7623	5996	6423	9843	10544	417	2.47
30000	0.75	5037	0.763	3841	16932	7529	8013	10934	11635	489	2.02
30000	0.75	4703	0.759	3570	15810	7358	7830	10779	11471	483	2.02
30000	0.75	4442	0.759	3372	14932	7217	7681	10675	11360	477	2.03
30000	0.75	4179	0.761	3179	14048	7071	7525	10577	11256	471	2.05
30000	0.75	3890	0.764	2974	13078	6911	7354	10474	11146	464	2.09
30000	0.75	3581	0.772	2763	12038	6748	7181	10365	11031	456	2.15
30000	0.75	3267	0.782	2554	10983	6579	7001	10252	10910	448	2.22
30000	0.75	2948	0.798	2353	9912	6399	6810	10138	10789	438	2.30
30000	0.75	2638	0.819	2161	8869	6223	6622	10024	10668	428	2.38
30000	0.75	2344	0.847	1985	7882	6060	6449	9909	10546	419	2.46
30000	0.80	5125	0.776	3972	17228	7533	7961	10944	11566	488	2.01
30000	0.80	4766	0.772	3681	16022	7344	7761	10793	11406	481	2.02
30000	0.80	4634	0.773	3580	15579	7276	7689	10742	11353	478	2.02
30000	0.80	4363	0.774	3376	14667	7130	7535	10645	11250	472	2.04
30000	0.80	4066	0.777	3158	13670	6970	7366	10544	11143	465	2.08
30000	0.80	3741	0.784	2933	12577	6805	7192	10431	11024	457	2.14
30000	0.80	3418	0.793	2712	11492	6635	7012	10321	10907	449	2.21
30000	0.80	3083	0.810	2496	10363	6457	6824	10205	10785	439	2.29
30000	0.80	2756	0.831	2291	9267	6280	6637	10090	10664	430	2.38
30000	0.80	2446	0.859	2102	8323	6113	6460	9974	10541	420	2.46
30000	0.85	5218	0.788	4110	17536	7525	7896	10957	11496	486	2.01
30000	0.85	4928	0.786	3795	16229	7325	7685	10806	11338	478	2.01
30000	0.85	4569	0.787	3595	15361	7190	7544	10715	11243	473	2.03
30000	0.85	4260	0.789	3363	14321	7028	7374	10611	11133	466	2.07
30000	0.85	3929	0.795	3124	13208	6863	7201	10503	11020	458	2.13
30000	0.85	3589	0.804	2886	12065	6693	7022	10391	10902	449	2.21
30000	0.85	3243	0.819	2656	10904	6512	6832	10275	10780	440	2.29
30000	0.85	2898	0.840	2436	9744	6334	6646	10158	10658	431	2.37
30000	0.85	2571	0.868	2233	8645	6168	6471	10043	10537	421	2.45

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-100 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	POP2	TDT2	P7P2	T7T2	PBMP2
30000	0.65	4.33	1.64	7.88	1.89	16.78	2.52	1.66	1.21	1.69	2.81	1.64
30000	0.65	4.30	1.63	7.76	1.87	16.40	2.49	1.63	1.21	1.65	2.74	1.60
30000	0.65	4.25	1.61	7.61	1.86	16.01	2.46	1.60	1.20	1.62	2.67	1.57
30000	0.65	4.17	1.60	7.41	1.83	15.51	2.43	1.57	1.19	1.57	2.61	1.54
30000	0.65	4.08	1.58	7.14	1.81	14.89	2.39	1.53	1.18	1.53	2.55	1.50
30000	0.65	3.88	1.55	6.82	1.78	14.17	2.35	1.50	1.17	1.48	2.50	1.46
30000	0.65	3.70	1.52	6.48	1.75	13.41	2.30	1.46	1.16	1.42	2.44	1.42
30000	0.65	3.52	1.50	6.13	1.71	12.66	2.26	1.42	1.15	1.37	2.39	1.38
30000	0.65	3.33	1.47	5.77	1.68	11.89	2.21	1.39	1.14	1.32	2.34	1.34
30000	0.65	3.18	1.45	5.47	1.65	11.22	2.17	1.35	1.13	1.27	2.28	1.30
30000	0.70	4.35	1.65	8.00	1.91	17.12	2.55	1.69	1.22	1.72	2.88	1.66
30000	0.70	4.34	1.64	7.86	1.89	16.67	2.51	1.65	1.21	1.68	2.78	1.62
30000	0.70	4.32	1.63	7.79	1.87	16.45	2.49	1.63	1.21	1.66	2.74	1.60
30000	0.70	4.28	1.61	7.64	1.86	16.06	2.46	1.60	1.20	1.62	2.67	1.57
30000	0.70	4.20	1.60	7.45	1.83	15.57	2.43	1.57	1.19	1.58	2.61	1.54
30000	0.70	4.07	1.58	7.18	1.81	14.94	2.39	1.53	1.18	1.53	2.55	1.50
30000	0.70	3.91	1.55	6.88	1.78	14.23	2.35	1.50	1.17	1.48	2.49	1.46
30000	0.70	3.73	1.53	6.51	1.75	13.47	2.30	1.46	1.16	1.42	2.44	1.42
30000	0.70	3.54	1.50	6.16	1.72	12.71	2.26	1.42	1.15	1.37	2.39	1.38
30000	0.70	3.37	1.47	5.83	1.69	11.99	2.22	1.38	1.14	1.31	2.33	1.33
30000	0.70	3.20	1.45	5.50	1.66	11.27	2.17	1.35	1.13	1.27	2.28	1.29
30000	0.75	4.37	1.65	7.98	1.90	17.01	2.54	1.67	1.22	1.71	2.84	1.65
30000	0.75	4.35	1.63	7.83	1.88	16.53	2.49	1.63	1.21	1.66	2.74	1.61
30000	0.75	4.30	1.62	7.67	1.86	16.11	2.46	1.60	1.20	1.62	2.67	1.58
30000	0.75	4.22	1.60	7.48	1.84	15.62	2.43	1.57	1.19	1.58	2.61	1.54
30000	0.75	4.10	1.58	7.21	1.81	15.00	2.39	1.53	1.18	1.53	2.55	1.50
30000	0.75	3.94	1.56	6.90	1.78	14.29	2.35	1.50	1.17	1.48	2.49	1.46
30000	0.75	3.76	1.53	6.55	1.75	13.54	2.30	1.46	1.16	1.42	2.44	1.42
30000	0.75	3.57	1.50	6.20	1.72	12.77	2.26	1.42	1.15	1.37	2.38	1.38
30000	0.75	3.39	1.48	5.86	1.69	12.03	2.22	1.38	1.14	1.31	2.33	1.33
30000	0.75	3.23	1.45	5.55	1.66	11.35	2.17	1.35	1.13	1.26	2.28	1.29
30000	0.80	4.39	1.64	7.96	1.89	16.90	2.52	1.66	1.21	1.70	2.80	1.64
30000	0.80	4.35	1.62	7.78	1.87	16.37	2.47	1.62	1.20	1.65	2.70	1.60
30000	0.80	4.32	1.62	7.71	1.86	16.16	2.46	1.60	1.20	1.63	2.67	1.58
30000	0.80	4.25	1.60	7.51	1.84	15.68	2.42	1.57	1.19	1.58	2.61	1.54
30000	0.80	4.12	1.58	7.25	1.81	15.07	2.39	1.54	1.18	1.54	2.55	1.51
30000	0.80	3.96	1.56	6.93	1.78	14.35	2.35	1.50	1.17	1.48	2.49	1.46
30000	0.80	3.78	1.53	6.59	1.75	13.60	2.30	1.46	1.16	1.43	2.43	1.42
30000	0.80	3.59	1.50	6.23	1.72	12.83	2.26	1.42	1.15	1.37	2.38	1.38
30000	0.80	3.41	1.48	5.89	1.69	12.09	2.22	1.38	1.14	1.32	2.33	1.33
30000	0.80	3.25	1.45	5.58	1.66	11.39	2.17	1.35	1.13	1.26	2.27	1.29
30000	0.85	4.40	1.64	7.93	1.88	16.77	2.50	1.65	1.21	1.68	2.76	1.63
30000	0.85	4.34	1.62	7.72	1.86	16.18	2.45	1.60	1.20	1.63	2.66	1.58
30000	0.85	4.27	1.60	7.55	1.84	15.74	2.42	1.57	1.19	1.59	2.61	1.55
30000	0.85	4.15	1.58	7.28	1.81	15.12	2.39	1.54	1.18	1.54	2.55	1.51
30000	0.85	3.99	1.56	6.97	1.78	14.41	2.35	1.50	1.17	1.49	2.49	1.47
30000	0.85	3.80	1.53	6.62	1.75	13.66	2.30	1.46	1.16	1.43	2.43	1.42
30000	0.85	3.61	1.50	6.26	1.72	12.88	2.26	1.42	1.15	1.37	2.38	1.38
30000	0.85	3.43	1.48	5.92	1.69	12.13	2.22	1.38	1.14	1.32	2.32	1.33
30000	0.85	3.27	1.46	5.60	1.66	11.43	2.17	1.35	1.14	1.26	2.27	1.29

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
10667	0.65	18123	0.0742	1345	76850	7478	8240	10904	12016	224	2.08
10667	0.65	17093	0.0737	1259	72482	7343	8091	10733	11828	222	2.07
10667	0.65	16423	0.0734	1204	69643	7257	7996	10627	11711	220	2.06
10667	0.65	15759	0.0732	1153	66824	7152	7881	10531	11605	219	2.06
10667	0.65	15016	0.0732	1099	63676	7038	7755	10435	11499	216	2.06
10667	0.65	14231	0.0733	1043	60346	6909	7614	10339	11393	214	2.07
10667	0.65	13371	0.0736	984	56700	6762	7451	10241	11285	211	2.09
10667	0.65	12436	0.0741	921	52734	6615	7290	10136	11170	208	2.14
10667	0.65	11462	0.0748	857	48607	6457	7115	10030	11053	204	2.20
10667	0.65	10455	0.0761	795	44336	6291	6932	9922	10933	200	2.27
10667	0.65	9465	0.0776	734	40136	6113	6737	9813	10813	196	2.35
10667	0.65	8514	0.0796	677	36106	5945	6551	9701	10690	191	2.42
10667	0.65	7589	0.0823	624	32182	5784	6373	9581	10558	187	2.50
10667	0.70	18381	0.0755	1388	77944	7486	8199	10907	11945	224	2.07
10667	0.70	17302	0.0750	1298	73369	7351	8050	10739	11761	221	2.06
10667	0.70	16951	0.0749	1269	71883	7306	8001	10687	11704	220	2.06
10667	0.70	16273	0.0747	1214	69004	7207	7892	10591	11599	219	2.06
10667	0.70	15526	0.0746	1158	65838	7088	7763	10495	11493	217	2.06
10667	0.70	14705	0.0748	1099	62356	6961	7624	10398	11388	214	2.06
10667	0.70	13812	0.0751	1037	58571	6819	7468	10302	11282	211	2.09
10667	0.70	12845	0.0756	971	54470	6668	7303	10197	11167	208	2.13
10667	0.70	11830	0.0764	904	50166	6513	7133	10090	11050	205	2.19
10667	0.70	10793	0.0777	838	45769	6347	6951	9980	10929	201	2.26
10667	0.70	9764	0.0793	774	41404	6174	6761	9870	10809	197	2.34
10667	0.70	8769	0.0815	714	37186	6015	6587	9761	10690	192	2.41
10667	0.70	7814	0.0841	657	33136	5842	6398	9642	10559	188	2.49
10667	0.75	18676	0.0768	1434	79197	7494	8153	10911	11871	223	2.06
10667	0.75	17554	0.0764	1340	74439	7358	8005	10746	11691	221	2.05
10667	0.75	16890	0.0761	1285	71624	7260	7899	10653	11590	219	2.05
10667	0.75	16111	0.0760	1224	68320	7144	7773	10557	11486	217	2.05
10667	0.75	15269	0.0761	1161	64749	7016	7633	10462	11382	215	2.06
10667	0.75	14353	0.0764	1095	60863	6873	7477	10364	11276	212	2.08
10667	0.75	13349	0.0769	1026	56607	6722	7314	10260	11163	209	2.12
10667	0.75	12294	0.0778	956	52132	6567	7145	10152	11045	205	2.18
10667	0.75	11210	0.0790	885	47536	6400	6963	10042	10925	201	2.26
10667	0.75	10124	0.0808	817	42933	6227	6775	9931	10805	197	2.33
10667	0.75	9084	0.0831	754	38520	6067	6601	9822	10686	193	2.41
10667	0.75	8089	0.0859	695	34301	5909	6429	9707	10561	189	2.48
10667	0.80	19018	0.0781	1485	80644	7501	8104	10916	11795	223	2.05
10667	0.80	17869	0.0776	1386	75773	7368	7950	10757	11623	220	2.05
10667	0.80	16800	0.0773	1299	71241	7200	7779	10624	11479	217	2.05
10667	0.80	15923	0.0774	1232	67523	7071	7641	10528	11375	215	2.05
10667	0.80	14970	0.0776	1162	63481	6929	7487	10430	11270	212	2.08
10667	0.80	13934	0.0781	1088	59088	6777	7322	10326	11157	209	2.12
10667	0.80	12846	0.0789	1012	54474	6621	7154	10220	11043	205	2.18
10667	0.80	11713	0.0801	938	49670	6455	6975	10107	10920	202	2.25
10667	0.80	10577	0.0819	866	44851	6281	6786	9996	10800	198	2.33
10667	0.80	9484	0.0842	798	40217	6121	6613	9886	10682	193	2.40
10667	0.80	8426	0.0872	735	35731	5961	6441	9772	10559	189	2.48
10667	0.85	19399	0.0794	1540	82262	7507	8053	10923	11717	222	2.05
10667	0.85	18189	0.0789	1434	77131	7349	7883	10765	11547	219	2.04
10667	0.85	17558	0.0788	1383	74453	7259	7787	10694	11471	218	2.04
10667	0.85	16656	0.0788	1311	70628	7129	7648	10598	11368	215	2.05
10667	0.85	15674	0.0789	1236	66465	6986	7494	10500	11263	212	2.07
10667	0.85	14604	0.0792	1157	61928	6833	7329	10396	11152	209	2.11
10667	0.85	13469	0.0799	1076	57114	6675	7161	10289	11036	206	2.17
10667	0.85	12299	0.0811	997	52156	6509	6982	10176	10916	202	2.24
10667	0.85	11120	0.0828	920	47154	6335	6796	10064	10795	198	2.32
10667	0.85	9969	0.0851	848	42272	6175	6624	9953	10676	194	2.40
10667	0.85	8856	0.0881	779	37557	6014	6451	9840	10555	190	2.47

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
10667	0.65	4.24	1.68	8.01	1.95	17.45	2.63	1.73	1.24	1.77	3.05	1.71
10667	0.65	4.24	1.66	7.89	1.92	17.03	2.58	1.69	1.23	1.72	2.94	1.67
10667	0.65	4.24	1.65	7.81	1.91	16.75	2.55	1.67	1.22	1.69	2.87	1.64
10667	0.65	4.23	1.64	7.72	1.89	16.47	2.52	1.64	1.21	1.67	2.80	1.62
10667	0.65	4.20	1.62	7.61	1.87	16.14	2.50	1.61	1.20	1.63	2.74	1.59
10667	0.65	4.15	1.61	7.46	1.85	15.73	2.46	1.58	1.20	1.60	2.68	1.56
10667	0.65	4.07	1.59	7.25	1.83	15.22	2.43	1.55	1.19	1.56	2.62	1.52
10667	0.65	3.95	1.57	6.99	1.80	14.61	2.39	1.52	1.18	1.51	2.56	1.49
10667	0.65	3.78	1.55	6.68	1.77	13.91	2.35	1.49	1.17	1.46	2.50	1.45
10667	0.65	3.61	1.52	6.34	1.74	13.18	2.30	1.45	1.16	1.40	2.45	1.41
10667	0.65	3.43	1.49	6.00	1.71	12.43	2.26	1.41	1.15	1.35	2.39	1.36
10667	0.65	3.26	1.47	5.68	1.68	11.73	2.22	1.38	1.14	1.30	2.34	1.33
10667	0.65	3.12	1.44	5.38	1.65	11.05	2.17	1.34	1.13	1.26	2.29	1.29
10667	0.70	4.25	1.67	7.99	1.94	17.35	2.61	1.72	1.23	1.76	3.01	1.69
10667	0.70	4.25	1.65	7.87	1.91	16.93	2.57	1.68	1.22	1.71	2.90	1.66
10667	0.70	4.25	1.65	7.83	1.90	16.79	2.55	1.67	1.22	1.70	2.87	1.64
10667	0.70	4.25	1.64	7.75	1.89	16.51	2.52	1.64	1.21	1.67	2.80	1.62
10667	0.70	4.22	1.62	7.64	1.87	16.17	2.49	1.61	1.20	1.64	2.74	1.59
10667	0.70	4.17	1.61	7.49	1.85	15.78	2.46	1.59	1.20	1.60	2.68	1.56
10667	0.70	4.09	1.59	7.29	1.83	15.28	2.43	1.55	1.19	1.56	2.61	1.52
10667	0.70	3.97	1.57	7.03	1.81	14.67	2.39	1.52	1.18	1.51	2.56	1.49
10667	0.70	3.81	1.55	6.72	1.78	13.98	2.35	1.49	1.17	1.46	2.50	1.45
10667	0.70	3.64	1.52	6.39	1.75	13.25	2.30	1.45	1.16	1.41	2.44	1.41
10667	0.70	3.47	1.50	6.05	1.71	12.52	2.26	1.41	1.15	1.35	2.39	1.36
10667	0.70	3.31	1.47	5.75	1.69	11.84	2.22	1.37	1.14	1.30	2.34	1.32
10667	0.70	3.15	1.45	5.43	1.66	11.14	2.18	1.34	1.13	1.26	2.29	1.29
10667	0.75	4.27	1.66	7.98	1.93	17.24	2.60	1.71	1.23	1.74	2.97	1.68
10667	0.75	4.27	1.65	7.85	1.90	16.82	2.55	1.67	1.22	1.70	2.86	1.64
10667	0.75	4.26	1.64	7.77	1.89	16.55	2.52	1.64	1.21	1.67	2.80	1.62
10667	0.75	4.24	1.63	7.66	1.87	16.22	2.49	1.62	1.20	1.64	2.74	1.59
10667	0.75	4.19	1.61	7.52	1.85	15.82	2.46	1.59	1.20	1.60	2.67	1.56
10667	0.75	4.11	1.59	7.32	1.83	15.33	2.43	1.56	1.19	1.56	2.61	1.53
10667	0.75	3.99	1.57	7.06	1.81	14.72	2.39	1.52	1.18	1.51	2.55	1.49
10667	0.75	3.84	1.55	6.75	1.78	14.04	2.35	1.49	1.17	1.46	2.50	1.45
10667	0.75	3.67	1.52	6.42	1.75	13.30	2.30	1.45	1.16	1.41	2.44	1.41
10667	0.75	3.49	1.50	6.08	1.72	12.57	2.26	1.41	1.15	1.35	2.39	1.36
10667	0.75	3.33	1.47	5.78	1.69	11.89	2.22	1.37	1.14	1.30	2.33	1.32
10667	0.75	3.19	1.45	5.48	1.66	11.23	2.18	1.34	1.13	1.25	2.28	1.28
10667	0.80	4.29	1.66	7.96	1.92	17.13	2.58	1.69	1.23	1.73	2.93	1.67
10667	0.80	4.29	1.64	7.83	1.90	16.70	2.53	1.66	1.21	1.68	2.82	1.63
10667	0.80	4.26	1.63	7.69	1.87	16.26	2.49	1.62	1.20	1.64	2.74	1.59
10667	0.80	4.21	1.61	7.54	1.85	15.87	2.46	1.59	1.20	1.60	2.67	1.56
10667	0.80	4.14	1.60	7.35	1.83	15.38	2.43	1.56	1.19	1.56	2.61	1.53
10667	0.80	4.01	1.58	7.09	1.81	14.77	2.39	1.52	1.18	1.51	2.55	1.49
10667	0.80	3.86	1.55	6.78	1.78	14.09	2.35	1.49	1.17	1.46	2.50	1.45
10667	0.80	3.69	1.53	6.45	1.75	13.35	2.30	1.45	1.16	1.41	2.44	1.41
10667	0.80	3.51	1.50	6.11	1.72	12.62	2.26	1.41	1.15	1.35	2.39	1.37
10667	0.80	3.35	1.48	5.80	1.69	11.93	2.22	1.37	1.14	1.30	2.33	1.32
10667	0.80	3.20	1.45	5.51	1.66	11.27	2.18	1.34	1.13	1.25	2.28	1.28
10667	0.85	4.31	1.65	7.94	1.91	17.01	2.56	1.68	1.22	1.72	2.89	1.66
10667	0.85	4.30	1.64	7.81	1.89	16.57	2.51	1.64	1.21	1.67	2.78	1.62
10667	0.85	4.28	1.63	7.72	1.87	16.31	2.49	1.62	1.20	1.65	2.74	1.60
10667	0.85	4.23	1.61	7.57	1.85	15.91	2.46	1.59	1.20	1.61	2.67	1.56
10667	0.85	4.16	1.60	7.37	1.83	15.42	2.43	1.56	1.19	1.57	2.61	1.53
10667	0.85	4.03	1.58	7.11	1.81	14.82	2.39	1.52	1.18	1.52	2.55	1.49
10667	0.85	3.88	1.55	6.81	1.78	14.13	2.35	1.49	1.17	1.47	2.49	1.45
10667	0.85	3.71	1.53	6.47	1.75	13.39	2.30	1.45	1.16	1.41	2.44	1.41
10667	0.85	3.53	1.50	6.14	1.72	12.66	2.26	1.41	1.15	1.36	2.38	1.37
10667	0.85	3.37	1.48	5.83	1.69	11.97	2.22	1.38	1.14	1.30	2.33	1.32
10667	0.85	3.22	1.46	5.53	1.66	11.31	2.18	1.34	1.13	1.25	2.27	1.28

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNIOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WA12	BPR
35000	0.65	4074	0.728	2965	17276	7478	8240	10904	12016	495	2.05
35000	0.65	3842	0.722	2776	16294	7343	8091	10733	11828	490	2.07
35000	0.65	3692	0.719	2656	15656	7257	7996	10627	11711	486	2.08
35000	0.65	3542	0.718	2542	15022	7152	7881	10531	11605	482	2.08
35000	0.65	3375	0.718	2423	14315	7038	7755	10435	11499	478	2.08
35000	0.65	3199	0.719	2300	13565	6909	7614	10339	11393	472	2.07
35000	0.65	3006	0.722	2169	12746	6782	7451	10241	11285	466	2.09
35000	0.65	2795	0.727	2032	11855	6615	7290	10136	11170	459	2.14
35000	0.65	2576	0.734	1891	10927	6457	7115	10030	11053	451	2.20
35000	0.65	2350	0.746	1753	9967	6291	6932	9922	10933	442	2.27
35000	0.65	2127	0.761	1619	9022	6113	6737	9813	10813	432	2.35
35000	0.68	1914	0.780	1493	8117	5945	6551	9701	10690	422	2.42
35000	0.65	1706	0.807	1376	7234	5784	6373	9581	10558	412	2.50
35000	0.70	4132	0.741	3060	17522	7486	8199	10907	11945	494	2.07
35000	0.70	3889	0.736	2862	16494	7351	8050	10739	11761	489	2.06
35000	0.70	3810	0.735	2799	16154	7306	8001	10687	11704	487	2.06
35000	0.70	3658	0.732	2678	15512	7207	7892	10591	11599	483	2.06
35000	0.70	3490	0.731	2553	14800	7088	7763	10495	11493	478	2.06
35000	0.70	3305	0.733	2423	14018	6961	7624	10398	11388	473	2.06
35000	0.70	3105	0.736	2286	13167	6819	7468	10302	11282	467	2.09
35000	0.70	2887	0.742	2141	12245	6668	7303	10197	11167	460	2.13
35000	0.70	2659	0.750	1993	11277	6513	7133	10090	11050	452	2.19
35000	0.70	2426	0.762	1848	10289	6347	6951	9980	10929	443	2.26
35000	0.70	2195	0.778	1707	9308	6174	6761	9870	10809	434	2.34
35000	0.70	1971	0.800	1576	8359	6015	6587	9761	10690	425	2.41
35000	0.70	1756	0.825	1449	7449	5842	6398	9642	10569	414	2.49
35000	0.75	4198	0.753	3163	17804	7494	8205	10911	11671	493	2.06
35000	0.75	3946	0.749	2955	16734	7358	8005	10746	11691	487	2.05
35000	0.75	3797	0.746	2832	16101	7260	7899	10653	11590	484	2.05
35000	0.75	3622	0.745	2699	15359	7144	7773	10557	11486	479	2.05
35000	0.75	3432	0.746	2561	14556	7018	7633	10462	11382	474	2.06
35000	0.75	3226	0.749	2416	13682	6873	7477	10364	11276	467	2.08
35000	0.75	3001	0.754	2263	12725	6722	7314	10260	11163	460	2.12
35000	0.75	2763	0.763	2107	11719	6567	7145	10152	11045	453	2.18
35000	0.75	2520	0.775	1952	10686	6400	6963	10042	10926	444	2.26
35000	0.75	2276	0.792	1803	9651	6227	6775	9931	10805	435	2.33
35000	0.75	2042	0.815	1663	8659	6067	6601	9822	10686	426	2.41
35000	0.75	1818	0.843	1532	7711	5909	6429	9707	10561	417	2.48
35000	0.80	4275	0.766	3276	18129	7501	8104	10916	11795	491	2.05
35000	0.80	4017	0.761	3056	17034	7358	7950	10757	11623	486	2.05
35000	0.80	3776	0.759	2864	16018	7200	7779	10624	11479	480	2.05
35000	0.80	3579	0.759	2715	15179	7071	7641	10528	11375	474	2.05
35000	0.80	3365	0.761	2562	14271	6929	7487	10430	11270	468	2.08
35000	0.80	3132	0.766	2390	13283	6777	7322	10326	11157	461	2.12
35000	0.80	2888	0.773	2233	12246	6621	7154	10220	11043	454	2.18
35000	0.80	2633	0.786	2069	11166	6455	6975	10107	10920	445	2.25
35000	0.80	2377	0.803	1910	10083	6281	6786	9996	10800	436	2.33
35000	0.80	2132	0.826	1760	9041	6121	6613	9886	10682	427	2.40
35000	0.80	1894	0.856	1620	8032	5961	6441	9772	10559	418	2.48
35000	0.85	4361	0.779	3395	18493	7507	8053	10923	11717	490	2.05
35000	0.85	4089	0.774	3163	17339	7349	7883	10765	11547	484	2.04
35000	0.85	3947	0.773	3049	16737	7259	7787	10694	11471	480	2.04
35000	0.85	3744	0.772	2892	15877	7129	7648	10598	11368	475	2.05
35000	0.85	3523	0.774	2726	14941	6985	7494	10500	11263	469	2.07
35000	0.85	3283	0.777	2551	13922	6833	7329	10396	11152	462	2.11
35000	0.85	3027	0.784	2373	12839	6675	7161	10289	11036	454	2.17
35000	0.85	2765	0.795	2198	11725	6509	6982	10176	10916	446	2.24
35000	0.85	2499	0.812	2029	10600	6335	6796	10064	10795	437	2.32
35000	0.85	2241	0.834	1869	9503	6175	6624	9953	10676	428	2.40
35000	0.85	1991	0.864	1719	8443	6014	6451	9840	10555	419	2.47

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-100 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
35000	0.65	4.24	1.68	8.01	1.95	17.45	2.63	1.73	1.24	1.77	3.05	1.71
35000	0.65	4.24	1.66	7.89	1.92	17.03	2.56	1.69	1.23	1.72	2.94	1.67
35000	0.65	4.24	1.65	7.81	1.91	16.75	2.55	1.67	1.22	1.69	2.87	1.64
35000	0.65	4.23	1.64	7.72	1.89	16.47	2.52	1.64	1.21	1.67	2.80	1.62
35000	0.65	4.20	1.62	7.61	1.87	16.14	2.50	1.61	1.20	1.63	2.74	1.59
35000	0.65	4.15	1.61	7.46	1.85	15.73	2.48	1.58	1.20	1.60	2.68	1.56
35000	0.65	4.07	1.59	7.25	1.83	15.22	2.43	1.55	1.19	1.56	2.62	1.52
35000	0.65	3.95	1.57	6.99	1.80	14.61	2.39	1.52	1.18	1.51	2.56	1.49
35000	0.65	3.78	1.55	6.68	1.77	13.91	2.35	1.49	1.17	1.46	2.50	1.45
35000	0.65	3.61	1.52	6.34	1.74	13.18	2.30	1.45	1.16	1.40	2.45	1.41
35000	0.65	3.43	1.49	6.00	1.71	12.43	2.26	1.41	1.15	1.35	2.39	1.36
35000	0.65	3.26	1.47	5.68	1.68	11.73	2.22	1.38	1.14	1.30	2.34	1.33
35000	0.65	3.12	1.44	5.38	1.65	11.05	2.17	1.34	1.13	1.26	2.29	1.29
35000	0.70	4.25	1.67	7.99	1.94	17.35	2.61	1.72	1.23	1.76	3.01	1.69
35000	0.70	4.25	1.65	7.87	1.91	16.93	2.57	1.68	1.22	1.71	2.90	1.66
35000	0.70	4.25	1.65	7.83	1.90	16.79	2.55	1.67	1.22	1.70	2.87	1.64
35000	0.70	4.25	1.64	7.78	1.89	16.61	2.52	1.64	1.21	1.67	2.80	1.62
35000	0.70	4.22	1.62	7.64	1.87	16.17	2.49	1.61	1.20	1.64	2.74	1.59
35000	0.70	4.17	1.61	7.49	1.85	15.78	2.46	1.59	1.20	1.60	2.68	1.56
35000	0.70	4.09	1.59	7.29	1.83	15.28	2.43	1.55	1.19	1.56	2.61	1.52
35000	0.70	3.97	1.57	7.03	1.81	14.67	2.39	1.52	1.18	1.51	2.56	1.49
35000	0.70	3.81	1.55	6.72	1.78	13.98	2.35	1.49	1.17	1.46	2.50	1.45
35000	0.70	3.64	1.52	6.39	1.75	13.25	2.30	1.45	1.16	1.41	2.44	1.41
35000	0.70	3.47	1.50	6.05	1.71	12.52	2.26	1.41	1.15	1.35	2.39	1.36
35000	0.70	3.31	1.47	5.75	1.69	11.84	2.22	1.37	1.14	1.30	2.34	1.32
35000	0.70	3.15	1.45	5.43	1.66	11.14	2.18	1.34	1.13	1.26	2.29	1.29
35000	0.75	4.27	1.66	7.95	1.93	17.24	2.60	1.71	1.23	1.74	2.97	1.68
35000	0.75	4.27	1.65	7.85	1.90	16.82	2.55	1.67	1.22	1.70	2.86	1.64
35000	0.75	4.26	1.64	7.77	1.89	16.55	2.52	1.64	1.21	1.67	2.80	1.62
35000	0.75	4.24	1.63	7.66	1.87	16.22	2.49	1.62	1.20	1.64	2.74	1.59
35000	0.75	4.19	1.61	7.52	1.85	15.82	2.46	1.59	1.20	1.60	2.67	1.56
35000	0.75	4.11	1.59	7.32	1.83	15.33	2.43	1.56	1.19	1.56	2.61	1.53
35000	0.75	3.99	1.57	7.06	1.81	14.72	2.39	1.52	1.18	1.51	2.55	1.49
35000	0.75	3.84	1.55	6.75	1.78	14.04	2.35	1.49	1.17	1.46	2.50	1.45
35000	0.75	3.67	1.52	6.42	1.75	13.30	2.30	1.45	1.16	1.41	2.44	1.41
35000	0.75	3.49	1.50	6.08	1.72	12.57	2.26	1.41	1.15	1.35	2.39	1.36
35000	0.75	3.33	1.47	5.78	1.69	11.89	2.22	1.37	1.14	1.30	2.33	1.32
35000	0.75	3.19	1.45	5.48	1.66	11.23	2.18	1.34	1.13	1.25	2.28	1.28
35000	0.80	4.29	1.66	7.96	1.92	17.13	2.58	1.69	1.23	1.73	2.93	1.67
35000	0.80	4.29	1.64	7.83	1.90	16.70	2.53	1.66	1.21	1.68	2.82	1.63
35000	0.80	4.26	1.63	7.69	1.87	16.26	2.49	1.62	1.20	1.64	2.74	1.59
35000	0.80	4.21	1.61	7.54	1.85	15.87	2.46	1.59	1.20	1.60	2.67	1.56
35000	0.80	4.14	1.60	7.39	1.83	15.38	2.43	1.56	1.19	1.56	2.61	1.53
35000	0.80	4.01	1.58	7.09	1.81	14.77	2.39	1.52	1.18	1.51	2.55	1.49
35000	0.80	3.86	1.55	6.78	1.78	14.09	2.35	1.49	1.17	1.46	2.50	1.45
35000	0.80	3.69	1.53	6.45	1.75	13.35	2.30	1.45	1.16	1.41	2.44	1.41
35000	0.80	3.51	1.50	6.11	1.72	12.62	2.26	1.41	1.15	1.35	2.39	1.37
35000	0.80	3.35	1.48	5.80	1.69	11.93	2.22	1.37	1.14	1.30	2.33	1.32
35000	0.80	3.20	1.45	5.51	1.66	11.27	2.18	1.34	1.13	1.25	2.28	1.28
35000	0.85	4.31	1.68	7.94	1.91	17.01	2.56	1.68	1.22	1.72	2.89	1.66
35000	0.85	4.30	1.64	7.81	1.89	16.57	2.51	1.64	1.21	1.67	2.78	1.62
35000	0.85	4.28	1.63	7.72	1.87	16.31	2.49	1.62	1.20	1.64	2.74	1.60
35000	0.85	4.23	1.61	7.57	1.85	15.91	2.46	1.59	1.20	1.61	2.67	1.56
35000	0.85	4.16	1.60	7.37	1.83	15.42	2.43	1.56	1.19	1.57	2.61	1.53
35000	0.85	4.03	1.58	7.11	1.81	14.82	2.39	1.52	1.18	1.52	2.55	1.49
35000	0.85	3.88	1.55	6.81	1.78	14.13	2.35	1.49	1.17	1.47	2.49	1.45
35000	0.85	3.71	1.53	6.47	1.75	13.39	2.30	1.45	1.16	1.41	2.44	1.41
35000	0.85	3.53	1.50	6.14	1.72	12.66	2.26	1.41	1.15	1.36	2.38	1.37
35000	0.85	3.37	1.48	5.83	1.69	11.97	2.22	1.38	1.14	1.30	2.33	1.32
35000	0.85	3.22	1.46	5.53	1.66	11.31	2.18	1.34	1.13	1.25	2.27	1.28

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-10a TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
12191	0.65	14079	0.0746	1050	76071	7405	8201	10907	12079	223	2.11
12191	0.65	13286	0.0741	984	71788	7275	8057	10734	11887	220	2.10
12191	0.65	13032	0.0740	964	70414	7235	8012	10682	11829	220	2.10
12191	0.65	12532	0.0739	925	67714	7145	7913	10584	11721	218	2.09
12191	0.65	11989	0.0738	885	64781	7038	7795	10486	11613	216	2.09
12191	0.65	11401	0.0740	843	61604	6920	7663	10390	11506	214	2.10
12191	0.65	10757	0.0743	799	58119	6785	7513	10291	11397	211	2.11
12191	0.65	10070	0.0747	752	54407	6642	7356	10191	11286	208	2.15
12191	0.65	9345	0.0754	704	50494	6496	7194	10088	11171	205	2.20
12191	0.65	8563	0.0767	656	46268	6333	7014	9977	11049	201	2.27
12191	0.65	7803	0.0782	610	42163	6172	6835	9872	10932	197	2.34
12191	0.65	7061	0.0800	565	38154	5994	6638	9762	10811	193	2.42
12191	0.65	6351	0.0826	524	34317	5848	6476	9650	10686	189	2.49
12191	0.65	5665	0.0856	484	30611	5682	6293	9527	10551	184	2.57
12191	0.70	14271	0.0759	1083	77109	7416	8162	10908	12005	222	2.10
12191	0.70	13439	0.0755	1014	72614	7285	8018	10737	11817	220	2.09
12191	0.70	12949	0.0753	974	69966	7199	7923	10642	11713	218	2.09
12191	0.70	12397	0.0752	932	66982	7091	7805	10545	11606	216	2.09
12191	0.70	11788	0.0753	887	63691	6976	7678	10448	11500	214	2.09
12191	0.70	11122	0.0757	841	60092	6844	7533	10351	11392	212	2.11
12191	0.70	10406	0.0761	792	56228	6697	7370	10251	11282	209	2.14
12191	0.70	9648	0.0769	741	52131	6549	7208	10146	11166	205	2.20
12191	0.70	8847	0.0781	690	47801	6391	7034	10038	11047	202	2.26
12191	0.70	8047	0.0798	641	43479	6225	6852	9929	10928	198	2.33
12191	0.70	7276	0.0818	595	39315	6063	6673	9822	10810	194	2.41
12191	0.70	6538	0.0844	551	35324	5909	6504	9711	10688	190	2.48
12191	0.70	5823	0.0875	509	31465	5745	6323	9589	10554	185	2.56
12191	0.75	14507	0.0771	1119	78385	7425	8119	10911	11930	222	2.10
12191	0.75	13655	0.0767	1046	73778	7293	7974	10743	11746	219	2.09
12191	0.75	12867	0.0766	985	69521	7150	7817	10608	11599	217	2.08
12191	0.75	12246	0.0766	938	66166	7030	7687	10511	11492	215	2.09
12191	0.75	11577	0.0768	888	62550	6895	7539	10412	11385	212	2.10
12191	0.75	10828	0.0773	837	58504	6754	7385	10313	11276	209	2.14
12191	0.75	10039	0.0781	783	54242	6609	7226	10209	11162	206	2.19
12191	0.75	9216	0.0792	730	49797	6461	7054	10100	11043	202	2.25
12191	0.75	8369	0.0810	677	45222	6286	6873	9992	10925	198	2.32
12191	0.75	7552	0.0831	627	40807	6119	6690	9882	10805	194	2.40
12191	0.75	6775	0.0858	581	36608	5967	6525	9773	10686	190	2.47
12191	0.75	6018	0.0894	537	32516	5812	6355	9655	10557	186	2.54
12191	0.80	14775	0.0784	1158	79831	7434	8073	10915	11852	221	2.09
12191	0.80	13884	0.0779	1081	75015	7292	7918	10751	11674	219	2.08
12191	0.80	13416	0.0778	1044	72489	7206	7825	10674	11590	217	2.08
12191	0.80	12778	0.0778	994	69039	7088	7697	10577	11485	215	2.08
12191	0.80	12078	0.0780	942	65262	6957	7554	10479	11379	212	2.10
12191	0.80	11349	0.0783	888	61321	6816	7401	10386	11278	209	2.13
12191	0.80	10506	0.0791	830	56767	6668	7240	10276	11158	206	2.18
12191	0.80	9652	0.0801	773	52152	6511	7070	10167	11040	203	2.24
12191	0.80	8771	0.0818	717	47391	6342	6886	10057	10920	199	2.31
12191	0.80	7909	0.0840	664	42734	6178	6709	9947	10801	195	2.39
12191	0.80	7088	0.0868	614	38296	6024	6541	9838	10683	191	2.46
12191	0.80	6283	0.0904	568	33947	5867	6370	9721	10555	187	2.54
12191	0.85	15082	0.0796	1200	81488	7443	8023	10920	11772	220	2.08
12191	0.85	14132	0.0792	1119	76357	7286	7854	10760	11599	218	2.08
12191	0.85	13362	0.0792	1058	72197	7149	7707	10646	11476	215	2.08
12191	0.85	12646	0.0793	1002	68330	7019	7566	10549	11372	213	2.09
12191	0.85	11865	0.0796	943	64106	6873	7410	10450	11265	210	2.12
12191	0.85	11019	0.0801	882	59537	6724	7248	10344	11151	207	2.17
12191	0.85	10144	0.0810	822	54808	6570	7083	10237	11036	203	2.23
12191	0.85	9232	0.0825	762	49883	6402	6902	10126	10916	199	2.31
12191	0.85	8332	0.0846	705	45019	6235	6721	10014	10796	195	2.38
12191	0.85	7470	0.0873	651	40360	6080	6554	9904	10676	191	2.45
12191	0.85	6621	0.0909	601	35778	5923	6385	9789	10553	187	2.53

SI UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
12191	0.65	4.15	1.68	7.89	1.95	17.24	2.65	1.72	1.24	1.76	3.08	1.70
12191	0.65	4.15	1.66	7.77	1.93	16.82	2.60	1.68	1.22	1.71	2.97	1.66
12191	0.65	4.14	1.65	7.73	1.92	16.69	2.58	1.67	1.22	1.70	2.94	1.65
12191	0.65	4.14	1.64	7.65	1.90	16.43	2.55	1.65	1.21	1.67	2.87	1.62
12191	0.65	4.12	1.63	7.55	1.89	16.12	2.52	1.62	1.21	1.64	2.81	1.60
12191	0.65	4.08	1.62	7.42	1.87	15.75	2.49	1.59	1.20	1.61	2.74	1.57
12191	0.65	4.02	1.60	7.24	1.85	15.31	2.46	1.56	1.19	1.57	2.68	1.53
12191	0.65	3.92	1.58	7.01	1.82	14.76	2.42	1.53	1.18	1.52	2.62	1.50
12191	0.65	3.78	1.56	6.74	1.80	14.13	2.38	1.50	1.17	1.48	2.57	1.46
12191	0.65	3.62	1.53	6.41	1.76	13.40	2.34	1.46	1.17	1.42	2.51	1.42
12191	0.65	3.45	1.51	6.10	1.73	12.71	2.29	1.43	1.16	1.37	2.46	1.38
12191	0.65	3.28	1.48	5.76	1.70	11.98	2.25	1.39	1.15	1.33	2.41	1.34
12191	0.65	3.14	1.46	5.49	1.67	11.36	2.21	1.36	1.14	1.28	2.35	1.31
12191	0.65	3.00	1.44	5.20	1.65	10.70	2.17	1.32	1.13	1.23	2.30	1.27
12191	0.70	4.16	1.67	7.87	1.94	17.13	2.63	1.71	1.23	1.74	3.04	1.68
12191	0.70	4.16	1.65	7.75	1.92	16.71	2.58	1.67	1.22	1.70	2.93	1.65
12191	0.70	4.16	1.64	7.67	1.90	16.46	2.55	1.65	1.21	1.67	2.87	1.62
12191	0.70	4.14	1.63	7.57	1.89	16.16	2.52	1.62	1.21	1.64	2.81	1.60
12191	0.70	4.10	1.62	7.45	1.87	15.80	2.49	1.60	1.20	1.61	2.74	1.57
12191	0.70	4.04	1.60	7.28	1.85	15.37	2.46	1.57	1.19	1.57	2.68	1.53
12191	0.70	3.94	1.58	7.05	1.82	14.81	2.42	1.53	1.18	1.53	2.62	1.50
12191	0.70	3.81	1.56	6.77	1.80	14.18	2.38	1.50	1.18	1.48	2.56	1.46
12191	0.70	3.64	1.54	6.45	1.77	13.48	2.34	1.46	1.17	1.43	2.51	1.42
12191	0.70	3.48	1.51	6.13	1.74	12.77	2.30	1.43	1.16	1.38	2.45	1.38
12191	0.70	3.32	1.49	5.83	1.71	12.09	2.25	1.39	1.15	1.33	2.40	1.34
12191	0.70	3.18	1.46	5.54	1.68	11.45	2.21	1.36	1.14	1.28	2.35	1.30
12191	0.70	3.03	1.44	5.25	1.65	10.79	2.17	1.32	1.13	1.23	2.29	1.27
12191	0.75	4.17	1.67	7.84	1.93	17.02	2.61	1.70	1.23	1.73	3.00	1.67
12191	0.75	4.17	1.65	7.72	1.91	16.60	2.56	1.66	1.22	1.69	2.90	1.64
12191	0.75	4.16	1.63	7.60	1.89	16.20	2.52	1.63	1.21	1.64	2.81	1.60
12191	0.75	4.12	1.62	7.47	1.87	15.84	2.49	1.60	1.20	1.61	2.74	1.57
12191	0.75	4.06	1.60	7.30	1.85	15.40	2.46	1.57	1.19	1.57	2.68	1.54
12191	0.75	3.97	1.59	7.08	1.83	14.88	2.42	1.54	1.18	1.53	2.62	1.50
12191	0.75	3.84	1.56	6.81	1.80	14.25	2.38	1.50	1.18	1.48	2.56	1.46
12191	0.75	3.68	1.54	6.50	1.77	13.56	2.34	1.47	1.17	1.43	2.50	1.43
12191	0.75	3.51	1.51	6.18	1.74	12.85	2.30	1.43	1.16	1.38	2.45	1.38
12191	0.75	3.35	1.49	5.86	1.71	12.16	2.25	1.39	1.15	1.33	2.40	1.34
12191	0.75	3.21	1.47	5.58	1.68	11.52	2.21	1.36	1.14	1.28	2.34	1.30
12191	0.75	3.07	1.45	5.30	1.65	10.89	2.17	1.32	1.13	1.23	2.29	1.26
12191	0.80	4.19	1.66	7.82	1.92	16.90	2.59	1.69	1.23	1.76	2.96	1.66
12191	0.80	4.18	1.64	7.70	1.90	16.46	2.54	1.65	1.21	1.67	2.86	1.62
12191	0.80	4.17	1.63	7.62	1.89	16.24	2.52	1.63	1.21	1.65	2.81	1.60
12191	0.80	4.14	1.62	7.50	1.87	15.88	2.49	1.60	1.20	1.61	2.74	1.57
12191	0.80	4.08	1.61	7.33	1.85	15.46	2.46	1.57	1.19	1.58	2.68	1.54
12191	0.80	3.99	1.59	7.13	1.83	14.96	2.42	1.54	1.19	1.53	2.62	1.51
12191	0.80	3.86	1.57	6.85	1.80	14.32	2.38	1.50	1.18	1.48	2.56	1.47
12191	0.80	3.71	1.54	6.54	1.77	13.63	2.34	1.47	1.17	1.43	2.50	1.43
12191	0.80	3.54	1.52	6.21	1.74	12.91	2.30	1.43	1.16	1.38	2.45	1.39
12191	0.80	3.38	1.49	5.91	1.71	12.22	2.25	1.39	1.15	1.33	2.39	1.34
12191	0.80	3.23	1.47	5.62	1.68	11.58	2.21	1.36	1.14	1.28	2.34	1.30
12191	0.80	3.09	1.45	5.33	1.65	10.94	2.17	1.32	1.13	1.23	2.28	1.27
12191	0.85	4.20	1.65	7.79	1.91	16.77	2.57	1.68	1.22	1.70	2.92	1.65
12191	0.85	4.19	1.64	7.66	1.89	16.33	2.52	1.64	1.21	1.66	2.82	1.61
12191	0.85	4.16	1.62	7.52	1.87	15.93	2.49	1.60	1.20	1.62	2.74	1.57
12191	0.85	4.10	1.61	7.36	1.85	15.51	2.45	1.57	1.19	1.58	2.68	1.54
12191	0.85	4.01	1.59	7.15	1.83	14.99	2.42	1.54	1.19	1.54	2.62	1.51
12191	0.85	3.88	1.57	6.88	1.80	14.37	2.38	1.51	1.18	1.49	2.56	1.47
12191	0.85	3.73	1.54	6.58	1.77	13.69	2.34	1.47	1.17	1.44	2.50	1.43
12191	0.85	3.56	1.52	6.25	1.74	12.98	2.30	1.43	1.16	1.38	2.45	1.39
12191	0.85	3.40	1.49	5.94	1.71	12.28	2.25	1.40	1.15	1.33	2.39	1.35
12191	0.85	3.26	1.47	5.65	1.68	11.63	2.21	1.36	1.14	1.28	2.34	1.31
12191	0.85	3.11	1.45	5.37	1.66	11.00	2.17	1.32	1.13	1.23	2.28	1.27

SI UNITS

PRATT AND WHITNEY AIRCRAFT
JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE
ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY
NO BLEED OR POWER EXTRACTION
STANDARD DAY TAMB.

ALT	MN	FNTOT	TSFC	WF	FNSAM	N1	N1C2	N2	N2C2	WAT2	BPR
40000	0.65	3165	0.732	2315	17101	7405	8201	10907	12079	492	2.11
40000	0.65	2987	0.727	2171	16138	7275	8057	10734	11887	486	2.10
40000	0.65	2929	0.726	2127	15829	7235	8012	10682	11829	485	2.10
40000	0.65	2817	0.724	2040	15222	7145	7913	10584	11721	481	2.09
40000	0.65	2695	0.724	1951	14563	7038	7795	10486	11613	477	2.09
40000	0.65	2563	0.725	1859	13849	6920	7663	10390	11506	472	2.10
40000	0.65	2418	0.728	1761	13065	6785	7513	10291	11397	466	2.11
40000	0.65	2263	0.733	1659	12231	6642	7356	10191	11286	460	2.15
40000	0.65	2101	0.740	1554	11351	6496	7194	10088	11171	452	2.20
40000	0.65	1925	0.752	1447	10401	6333	7014	9977	11049	444	2.27
40000	0.65	1754	0.767	1345	9478	6172	6835	9872	10932	435	2.34
40000	0.65	1587	0.785	1246	8577	5994	6638	9762	10811	425	2.42
40000	0.65	1427	0.810	1156	7714	5848	6476	9650	10686	416	2.49
40000	0.65	1273	0.839	1068	6881	5682	6293	9527	10551	407	2.57
40000	0.70	3208	0.744	2388	17334	7416	8162	10908	12005	490	2.10
40000	0.70	3021	0.740	2236	16324	7285	8018	10737	11817	485	2.09
40000	0.70	2911	0.738	2148	15729	7199	7923	10642	11713	482	2.09
40000	0.70	2787	0.737	2055	15058	7091	7805	10545	11606	478	2.09
40000	0.70	2650	0.739	1957	14318	6976	7678	10448	11500	473	2.09
40000	0.70	2500	0.742	1855	13509	6844	7533	10351	11392	467	2.11
40000	0.70	2339	0.746	1746	12640	6697	7370	10251	11282	461	2.14
40000	0.70	2169	0.754	1635	11719	6549	7208	10146	11168	453	2.20
40000	0.70	1988	0.766	1523	10746	6391	7034	10038	11047	445	2.26
40000	0.70	1809	0.782	1415	9774	6225	6852	9929	10928	437	2.33
40000	0.70	1635	0.802	1312	8838	6063	6673	9822	10810	428	2.41
40000	0.70	1469	0.828	1216	7941	5909	6504	9711	10688	419	2.48
40000	0.70	1309	0.858	1123	7073	5745	6323	9589	10554	409	2.56
40000	0.75	3261	0.756	2467	17621	7425	8119	10911	11930	489	2.10
40000	0.75	3069	0.752	2308	16586	7293	7974	10743	11746	484	2.09
40000	0.75	2892	0.751	2171	15628	7150	7817	10608	11599	479	2.08
40000	0.75	2753	0.751	2068	14874	7030	7687	10511	11492	474	2.09
40000	0.75	2602	0.753	1959	14061	6895	7539	10412	11385	468	2.10
40000	0.75	2434	0.758	1845	13152	6754	7385	10313	11276	462	2.14
40000	0.75	2256	0.766	1727	12194	6609	7226	10209	11162	455	2.19
40000	0.75	2072	0.777	1609	11194	6451	7054	10100	11043	447	2.25
40000	0.75	1881	0.794	1493	10166	6286	6873	9992	10925	438	2.32
40000	0.75	1697	0.815	1384	9173	6119	6690	9882	10805	429	2.40
40000	0.75	1523	0.842	1282	8229	5967	6525	9773	10686	420	2.47
40000	0.75	1352	0.876	1185	7310	5812	6355	9655	10557	411	2.54
40000	0.80	3321	0.769	2553	17946	7434	8073	10915	11852	488	2.09
40000	0.80	3121	0.764	2385	16864	7292	7918	10751	11674	482	2.08
40000	0.80	3016	0.763	2302	16296	7206	7825	10674	11590	479	2.08
40000	0.80	2872	0.763	2192	15520	7088	7697	10577	11485	474	2.08
40000	0.80	2715	0.765	2078	14671	6957	7554	10479	11379	469	2.10
40000	0.80	2551	0.768	1958	13785	6816	7401	10386	11278	462	2.13
40000	0.80	2362	0.775	1831	12761	6668	7240	10276	11158	455	2.18
40000	0.80	2169	0.786	1705	11724	6511	7070	10167	11040	448	2.24
40000	0.80	1971	0.802	1581	10654	6342	6886	10057	10920	439	2.31
40000	0.80	1778	0.824	1464	9607	6178	6709	9947	10801	430	2.39
40000	0.80	1593	0.851	1355	8609	6024	6541	9838	10683	421	2.46
40000	0.80	1412	0.887	1252	7631	5867	6370	9721	10555	412	2.54
40000	0.85	3388	0.781	2645	18310	7443	8024	10921	11772	486	2.08
40000	0.85	3177	0.777	2467	17165	7286	7854	10760	11599	480	2.08
40000	0.85	3004	0.776	2332	16230	7149	7707	10646	11476	475	2.08
40000	0.85	2843	0.777	2210	15361	7019	7566	10549	11372	469	2.09
40000	0.85	2667	0.780	2081	14411	6873	7410	10450	11265	463	2.12
40000	0.85	2477	0.786	1946	13384	6724	7248	10344	11151	456	2.17
40000	0.85	2280	0.795	1812	12321	6570	7083	10237	11036	449	2.23
40000	0.85	2075	0.810	1680	11214	6402	6902	10125	10915	440	2.31
40000	0.85	1873	0.830	1554	10120	6235	6721	10014	10796	431	2.38
40000	0.85	1679	0.856	1437	9073	6080	6554	9904	10676	422	2.45
40000	0.85	1488	0.892	1327	8043	5923	6385	9789	10553	413	2.53

ENGLISH UNITS

PRATT AND WHITNEY AIRCRAFT

JT8D-109 TURBOFAN ENGINE ESTIMATED PERFORMANCE

ICAO MODEL ATMOSPHERE 100 PERCENT RAM RECOVERY

NO BLEED OR POWER EXTRACTION

STANDARD DAY TAMB

ALT	MN	P3P2	T3T2	P3.2P2	T3.2T2	P4P2	T4T2	PDP2	TDT2	P7P2	T7T2	P8MP2
40000	0.65	4.15	1.68	7.89	1.95	17.24	2.65	1.72	1.24	1.76	3.08	1.70
40000	0.65	4.15	1.66	7.77	1.93	16.82	2.60	1.68	1.22	1.71	2.97	1.66
40000	0.65	4.14	1.65	7.73	1.92	16.69	2.58	1.67	1.22	1.70	2.94	1.65
40000	0.65	4.14	1.64	7.65	1.90	16.43	2.55	1.65	1.21	1.67	2.87	1.62
40000	0.65	4.12	1.63	7.55	1.89	16.12	2.52	1.62	1.21	1.64	2.81	1.60
40000	0.65	4.08	1.62	7.42	1.87	15.75	2.49	1.59	1.20	1.61	2.74	1.57
40000	0.65	4.02	1.60	7.24	1.85	15.31	2.46	1.56	1.19	1.57	2.68	1.53
40000	0.65	3.92	1.58	7.01	1.82	14.76	2.42	1.53	1.18	1.52	2.62	1.50
40000	0.65	3.78	1.56	6.74	1.80	14.13	2.38	1.50	1.17	1.48	2.57	1.46
40000	0.65	3.62	1.53	6.41	1.76	13.40	2.34	1.46	1.17	1.42	2.51	1.42
40000	0.65	3.45	1.51	6.10	1.73	12.71	2.29	1.43	1.16	1.37	2.46	1.38
40000	0.65	3.28	1.48	5.76	1.70	11.98	2.25	1.39	1.15	1.33	2.41	1.34
40000	0.65	3.14	1.46	5.49	1.67	11.36	2.21	1.36	1.14	1.28	2.35	1.31
40000	0.65	3.00	1.44	5.20	1.65	10.70	2.17	1.32	1.13	1.23	2.30	1.27
40000	0.70	4.18	1.67	7.87	1.94	17.13	2.63	1.71	1.23	1.74	3.04	1.68
40000	0.70	4.18	1.65	7.75	1.92	16.71	2.58	1.67	1.22	1.70	2.93	1.65
40000	0.70	4.16	1.64	7.67	1.90	16.46	2.55	1.65	1.21	1.67	2.87	1.62
40000	0.70	4.14	1.63	7.57	1.89	16.16	2.52	1.62	1.21	1.64	2.81	1.60
40000	0.70	4.10	1.62	7.45	1.87	15.80	2.49	1.60	1.20	1.61	2.74	1.57
40000	0.70	4.04	1.60	7.28	1.85	15.37	2.46	1.57	1.19	1.57	2.68	1.53
40000	0.70	3.94	1.58	7.05	1.82	14.81	2.42	1.53	1.18	1.53	2.62	1.50
40000	0.70	3.81	1.56	6.77	1.80	14.18	2.38	1.50	1.18	1.48	2.56	1.46
40000	0.70	3.64	1.54	6.45	1.77	13.48	2.34	1.46	1.17	1.43	2.51	1.42
40000	0.70	3.48	1.51	6.13	1.74	12.77	2.30	1.43	1.16	1.38	2.45	1.38
40000	0.70	3.32	1.49	5.83	1.71	12.09	2.25	1.39	1.15	1.33	2.40	1.34
40000	0.70	3.18	1.46	5.54	1.68	11.45	2.21	1.36	1.14	1.28	2.35	1.30
40000	0.70	3.03	1.44	5.25	1.65	10.79	2.17	1.32	1.13	1.23	2.29	1.27
40000	0.75	4.17	1.67	7.84	1.93	17.02	2.61	1.70	1.23	1.73	3.00	1.67
40000	0.75	4.17	1.65	7.72	1.91	16.60	2.56	1.66	1.22	1.69	2.90	1.64
40000	0.75	4.16	1.63	7.60	1.89	16.20	2.52	1.63	1.21	1.64	2.81	1.60
40000	0.75	4.12	1.62	7.47	1.87	15.84	2.49	1.60	1.20	1.61	2.74	1.57
40000	0.75	4.06	1.60	7.30	1.85	15.40	2.46	1.57	1.19	1.57	2.68	1.54
40000	0.75	3.97	1.59	7.08	1.83	14.88	2.42	1.54	1.18	1.53	2.62	1.50
40000	0.75	3.84	1.56	6.81	1.80	14.25	2.38	1.50	1.18	1.48	2.56	1.46
40000	0.75	3.68	1.54	6.50	1.77	13.56	2.34	1.47	1.17	1.43	2.50	1.43
40000	0.75	3.51	1.51	6.18	1.74	12.85	2.30	1.43	1.16	1.38	2.45	1.38
40000	0.75	3.35	1.49	5.86	1.71	12.16	2.25	1.39	1.15	1.33	2.40	1.34
40000	0.75	3.21	1.47	5.58	1.68	11.52	2.21	1.36	1.14	1.28	2.34	1.30
40000	0.75	3.07	1.45	5.30	1.65	10.89	2.17	1.32	1.13	1.23	2.29	1.26
40000	0.80	4.19	1.66	7.82	1.92	16.90	2.59	1.69	1.23	1.72	2.96	1.66
40000	0.80	4.18	1.64	7.70	1.90	16.48	2.54	1.65	1.21	1.67	2.86	1.62
40000	0.80	4.17	1.63	7.62	1.89	16.24	2.52	1.63	1.21	1.65	2.81	1.60
40000	0.80	4.14	1.62	7.50	1.87	15.88	2.49	1.60	1.20	1.61	2.74	1.57
40000	0.80	4.08	1.61	7.33	1.85	15.46	2.46	1.57	1.19	1.58	2.68	1.54
40000	0.80	3.99	1.59	7.13	1.83	14.96	2.42	1.54	1.19	1.53	2.62	1.51
40000	0.80	3.86	1.57	6.85	1.80	14.32	2.38	1.50	1.18	1.48	2.56	1.47
40000	0.80	3.71	1.54	6.54	1.77	13.63	2.34	1.47	1.17	1.43	2.50	1.43
40000	0.80	3.54	1.52	6.21	1.74	12.91	2.30	1.43	1.16	1.38	2.45	1.39
40000	0.80	3.38	1.49	5.91	1.71	12.22	2.25	1.39	1.15	1.33	2.39	1.34
40000	0.80	3.23	1.47	5.62	1.68	11.58	2.21	1.36	1.14	1.28	2.34	1.30
40000	0.80	3.09	1.45	5.33	1.65	10.94	2.17	1.32	1.13	1.23	2.28	1.27
40000	0.85	4.20	1.65	7.79	1.91	16.77	2.57	1.68	1.22	1.70	2.92	1.65
40000	0.85	4.19	1.64	7.66	1.89	16.33	2.52	1.64	1.21	1.66	2.82	1.61
40000	0.85	4.16	1.62	7.52	1.87	15.93	2.49	1.60	1.20	1.62	2.74	1.57
40000	0.85	4.10	1.61	7.36	1.85	15.51	2.45	1.57	1.19	1.58	2.68	1.54
40000	0.85	4.01	1.59	7.15	1.83	14.99	2.42	1.54	1.19	1.54	2.62	1.51
40000	0.85	3.88	1.57	6.88	1.80	14.37	2.38	1.51	1.18	1.49	2.56	1.47
40000	0.85	3.73	1.54	6.58	1.77	13.69	2.34	1.47	1.17	1.44	2.50	1.43
40000	0.85	3.56	1.52	6.25	1.74	12.98	2.30	1.43	1.16	1.38	2.45	1.39
40000	0.85	3.40	1.49	5.94	1.71	12.28	2.25	1.40	1.15	1.33	2.39	1.35
40000	0.85	3.26	1.47	5.65	1.68	11.63	2.21	1.36	1.14	1.28	2.34	1.31
40000	0.85	3.11	1.45	5.37	1.65	11.00	2.17	1.32	1.13	1.23	2.28	1.27

ENGLISH UNITS

TABLE XX

ESTIMATED GROUND TEST NOISE FOR
JT8D-109 (HARDWALL)

	Corrected Total Noise Page No.	Corrected Fan Noise Page No.	High Frequency Core Noise Page No.
727 - 200			
Takeoff 304.8m (1000 ft)	167	168	
Approach 112.8 m (370 ft)	178	179	183
737 - 200			
Takeoff 304.8 m (1000 ft)	167	168	
Approach 112.8 m (370 ft)	184	185	189
DC-9-32			
Takeoff 304.8 m (1000 ft)	167	168	
Approach 112.8 m (370 ft)	172	173	177

TABLE XXI

ESTIMATED GROUND TEST NOISE FOR
JT8D-109 (AS SHIPPED)

	Corrected Total Noise Page No.	Corrected Fan Noise Page No.	Non-Mixed Total Jet Noise Page No.	Primary Noise Page No.	Fan Jet Noise Page No.
727 - 200					
Takeoff 304.8 m (1000 ft)	190	191	169	170	171
Approach 112.8 m (370 ft)	194	195	180	181	182
737 - 200					
Takeoff 304.8 m (1000 ft)	190	191	169	170	171
Approach 112.8 m (370 ft)	196	197	186	187	188
DC-9-32					
Takeoff 304.8 m (1000 ft)	190	191	169	170	171
Approach 112.8 m (370 ft)	192	193	174	175	176

60.8 m (200 ft) Sideline Part-Power Operating Line

	Corrected Total Noise 60.8 m (200 ft) Page No.
Takeoff	198
Intermediate No. 1	199
Intermediate No. 2	200
Intermediate No. 3	201
Intermediate No. 4	202
Approach	203

JT8D-109 SEA LEVEL STATIC T/O

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 73778.N (16586.LB)
PRIMARY THRUST = 31151.N (7003.LB)
PRIMARY FLOW = 68.5KG/S(151.LB/SEC)
PRIMARY VJ = 454.5M/S (1491. FT/SEC)
CORRECTED N1 = 7444.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 42627.N (9583.LB)
FAN FLOW = 139.KG/S(307.LB/SEC)
FAN VJ = 306.M/S(1004.FT/SEC)
TIP SPEED = 487.1M/S(1598.FT/SEC)
FAN PRESS. RATIO = 1.672

CORRECTED TOTAL NOISE

SIDELINE DISTANCE = 304.8M(1000.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	53.6	63.8	69.2	73.2	76.3	78.9	80.3	82.2	84.0	84.7	85.6	86.5	85.6	88.3	88.8	89.2	89.4	89.1	85.9	50	
1	63	54.9	65.1	70.6	74.5	77.5	79.6	81.6	83.5	85.3	86.0	86.9	87.8	88.0	89.7	90.2	90.7	90.9	90.6	87.4	63	1
/	80	55.9	66.0	71.5	75.4	78.4	80.5	82.5	84.4	86.2	86.9	87.8	88.7	88.0	90.7	91.3	91.8	92.1	91.8	88.6	80	/
3	100	56.6	66.7	72.3	76.1	79.1	81.2	83.2	85.0	86.9	87.6	88.5	89.5	88.8	91.5	92.2	92.7	93.0	92.7	89.5	100	3
	125	57.1	67.2	72.7	76.5	79.6	81.7	83.6	85.5	87.3	88.0	88.9	89.9	89.3	92.0	92.8	93.3	93.7	93.3	90.2	125	
O	160	57.1	67.2	72.7	76.5	79.5	81.6	83.6	85.4	87.3	88.0	88.9	89.9	89.3	92.1	92.8	93.3	93.7	93.4	90.3	160	O
C	200	56.9	67.0	72.5	76.3	79.3	81.4	83.4	85.2	87.0	87.7	88.7	89.7	89.1	91.9	92.6	93.1	93.6	93.3	90.1	200	C
T	250	56.2	66.3	71.8	75.5	78.6	80.6	82.6	84.4	86.3	87.0	87.9	89.0	88.4	91.1	91.9	92.4	92.8	92.5	89.4	250	T
A	315	55.1	65.1	70.7	74.4	77.4	79.5	81.5	83.3	85.1	85.8	86.8	87.8	87.2	90.0	90.8	91.3	91.7	91.4	88.2	315	A
V	400	54.3	64.2	69.7	73.5	76.5	78.7	80.6	82.3	84.1	84.7	85.7	86.7	86.1	88.8	89.6	90.1	90.6	90.3	87.1	400	V
E	500	53.1	63.0	68.5	72.3	75.4	77.6	79.4	81.1	82.8	83.5	84.4	85.4	84.8	87.5	88.3	88.8	89.2	88.9	85.7	500	E
	630	51.7	61.6	67.1	70.9	74.1	76.3	78.1	79.8	81.3	82.0	82.8	83.8	83.3	85.8	86.6	87.1	87.5	87.2	84.0	630	
C	800	50.2	60.2	65.8	69.7	72.9	75.3	76.9	78.5	79.8	80.5	81.2	82.2	81.7	84.1	84.9	85.3	85.7	85.4	82.2	800	C
E	1000	48.6	59.0	64.6	68.6	72.0	74.5	76.1	77.5	78.6	79.3	79.9	80.7	80.3	82.5	83.2	83.5	84.0	83.6	80.4	1000	E
N	1250	46.8	57.7	63.5	67.7	71.3	74.0	75.4	76.7	77.4	78.1	78.6	79.3	78.9	80.8	81.4	81.6	82.0	81.6	78.4	1250	N
T	1600	44.5	56.3	62.6	66.3	70.5	74.8	76.2	77.1	76.6	77.0	77.3	77.8	77.4	78.8	79.1	79.1	79.4	78.9	75.8	1600	T
E	2000	41.2	54.1	60.4	64.5	68.4	71.6	72.9	73.6	74.6	76.5	76.5	76.8	76.5	77.2	77.3	76.9	77.1	76.5	73.3	2000	E
R	2500	37.7	51.2	58.5	62.6	66.3	68.8	70.1	71.0	71.9	76.1	75.9	76.0	75.8	75.9	75.6	74.7	74.6	73.7	70.6	2500	R
	3150	34.3	50.1	58.8	63.9	66.8	69.8	71.1	72.5	74.1	79.0	78.8	78.7	78.1	77.4	76.7	73.8	72.6	70.9	67.8	3150	
F	4000	30.3	46.1	55.9	61.9	65.1	68.2	70.2	71.8	80.4	85.2	85.4	85.6	83.9	83.9	82.3	77.6	75.7	70.2	67.3	4000	F
R	5000	27.5	41.5	51.5	57.5	61.6	64.8	65.5	67.0	69.1	73.7	73.7	74.1	73.7	73.2	71.5	68.3	67.7	64.8	61.5	5000	R
E	6300	22.6	36.0	47.1	54.2	58.3	61.5	63.4	65.7	68.1	72.6	73.3	73.7	73.5	72.8	71.8	66.1	63.9	60.3	56.9	6300	E
Q	8000	16.5	28.1	40.2	48.5	53.9	57.7	59.9	62.3	70.5	74.5	75.3	76.2	75.4	75.1	74.3	69.0	65.4	57.4	52.7	8000	Q
	10000	4.7	19.2	30.5	40.8	47.5	52.1	58.0	58.7	61.9	67.3	66.7	66.8	65.4	64.9	62.7	56.8	53.6	47.1	42.9	10000	
	OVERALL	66.6	76.7	82.3	86.1	89.2	91.4	93.1	95.1	96.9	97.8	98.6	99.6	98.9	101.5	102.1	102.5	102.9	102.6	99.4		
	PNDB	69.7	80.9	87.3	91.9	95.3	98.0	99.7	101.2	105.1	108.0	108.4	109.0	107.9	109.0	108.7	107.5	107.7	107.0	103.7		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 20, CENTER FREQ. 4000

JT8D-109 SEA LEVEL STATIC . T/O

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 73778.N (16586.LB)
PRIMARY THRUST = 31151.N (7003.LB)
PRIMARY FLOW = 68.5KG/S(151.LB/SEC)
PRIMARY VJ = 454.5M/S (1491. FT/SEC)
CORRECTED N1 = 7444.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 42627.N (9583.LB)
FAN FLOW = 139.KG/S(307.LB/SEC)
FAN VJ = 306.M/S(1004.FT/SEC)
TIP SPEED = 487.1M/S(1598.FT/SEC)
FAN PRESS. RATIO = 1.672

CORRECTED FAN NOISE

SIDELINE DISTANCE = 304.8M(1000.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	38.2	44.7	48.5	50.8	53.5	55.5	56.2	56.5	57.0	62.2	61.9	61.8	61.8	60.9	59.9	57.2	55.8	50.2	50.2	50	
1	63	39.2	45.7	49.5	51.8	54.5	56.5	57.2	57.5	58.0	63.2	62.9	62.8	62.8	61.9	60.9	58.2	56.8	51.2	51.2	63	1
/	80	40.2	46.7	50.5	52.8	55.5	57.5	58.2	58.5	59.0	64.2	63.9	63.8	63.8	62.9	61.9	59.2	57.8	52.2	52.2	80	7
3	100	40.6	47.4	51.3	53.7	56.4	58.4	59.1	59.4	59.9	65.1	64.8	64.7	64.7	63.8	62.8	60.0	58.6	53.0	53.0	100	3
	125	41.6	48.4	52.3	54.7	57.4	59.4	60.1	60.4	60.9	66.1	65.8	65.7	65.7	64.8	63.8	61.0	59.6	54.0	54.0	125	
0	160	42.0	49.1	53.2	55.5	58.3	60.3	61.0	61.3	61.9	67.0	66.7	66.7	66.6	65.7	64.7	61.9	60.5	54.9	54.8	160	0
C	200	43.0	50.1	54.2	56.5	59.3	61.3	62.0	62.3	62.9	68.0	67.7	67.7	67.6	66.7	65.7	62.9	61.5	55.9	55.8	200	C
T	250	43.5	50.9	55.0	57.4	60.2	62.2	62.9	63.2	63.8	69.0	68.6	68.6	68.5	67.6	66.6	63.8	62.4	56.8	56.6	250	T
A	315	43.4	51.3	55.6	58.1	61.0	63.0	63.7	64.1	64.6	69.8	69.5	69.4	69.4	68.4	67.4	64.6	63.1	57.5	57.2	315	A
V	400	45.6	53.5	58.3	62.2	65.8	68.6	69.6	70.5	69.9	70.7	70.4	70.3	70.3	69.3	68.3	65.5	64.0	58.3	58.0	400	V
E	500	45.5	53.9	58.9	62.9	66.6	69.4	70.4	71.3	70.7	71.5	71.2	71.1	71.1	70.1	69.1	66.2	64.8	59.1	58.7	500	E
	630	45.4	54.4	59.5	63.6	67.4	70.2	71.2	72.1	71.5	72.4	72.0	72.0	71.9	70.9	69.9	67.0	65.5	59.8	59.3	630	
C	800	44.7	54.6	60.0	64.2	68.0	70.9	71.9	72.9	72.3	73.1	72.8	72.7	72.6	71.6	70.6	67.7	66.1	60.4	59.8	800	C
E	1000	43.5	54.4	60.2	64.6	68.6	71.5	72.6	73.5	72.9	73.8	73.4	73.3	73.3	72.2	71.2	68.2	66.6	60.8	60.0	1000	E
N	1250	42.2	54.3	60.5	65.1	69.1	72.1	73.2	74.2	73.6	74.4	74.1	74.0	73.9	72.9	71.8	68.7	67.1	61.2	60.3	1250	N
T	1600	40.7	54.1	60.8	64.5	69.2	74.0	75.3	75.9	74.5	74.8	74.5	74.4	74.3	73.2	72.1	68.9	67.2	61.3	60.0	1600	T
E	2000	38.7	52.1	58.7	63.0	67.2	70.7	71.9	72.2	72.8	75.2	74.9	74.7	74.6	73.5	72.4	69.1	67.3	61.3	59.7	2000	E
R	2500	29.9	49.2	57.2	61.5	65.3	68.0	69.1	69.6	70.2	75.4	75.0	74.9	74.7	73.6	72.4	69.0	67.1	60.9	58.8	2500	R
	3150	26.0	49.0	58.3	63.5	66.4	69.5	70.7	72.1	73.7	78.8	78.6	78.4	77.8	76.8	75.7	71.4	68.3	62.4	59.9	3150	
F	4000	17.7	44.8	55.4	61.6	64.8	68.0	70.0	71.5	80.4	85.2	85.3	85.6	83.8	83.8	82.2	77.2	75.1	67.7	65.0	4000	F
R	5000	8.8	39.2	50.8	57.1	61.3	64.6	65.2	66.7	68.8	73.5	73.6	73.9	73.5	72.8	70.8	66.4	64.9	56.5	53.1	5000	R
E	6300	.0	33.3	46.5	53.9	58.1	61.4	63.1	65.5	68.0	72.6	73.2	73.6	73.4	72.7	71.6	65.2	61.9	51.6	49.5	6300	E
Q	8000	.0	22.7	39.5	48.3	53.7	57.6	59.8	62.2	70.5	74.4	75.3	76.2	75.4	75.1	74.3	68.8	65.1	55.3	49.6	8000	Q
	10000	.0	6.9	29.2	40.5	47.4	52.0	57.9	58.6	61.9	67.3	66.7	66.8	65.3	64.8	62.6	56.5	52.9	42.2	34.7	10000	
	OVERALL	55.1	64.6	70.4	74.5	78.3	81.6	83.7	83.5	85.1	88.7	88.6	88.8	87.9	87.3	86.0	81.8	79.8	73.3	71.7		
	PNDB	60.3	73.8	81.6	86.5	90.0	93.1	94.8	95.5	99.9	104.1	104.1	104.3	103.2	102.8	101.3	96.9	94.8	87.7	85.8		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 20, CENTER FREQ. 4000

JT8D-109 SEA LEVEL STATIC T/O

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 73778.N (16586.LB)
PRIMARY THRUST = 31151.N (7003.LB)
PRIMARY FLOW = 68.5KG/S(151.LB/SEC)
PRIMARY VJ = 454.5M/S (1491. FT/SEC)
CORRECTED N1 = 7444.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 42627.N (9583.LB)
FAN FLOW = 139.KG/S(307.LB/SEC)
FAN VJ = 306.M/S(1004.FT/SEC)
TIP SPEED = 487.1M/S(1598.FT/SEC)
FAN PRESS. RATIO = 1.672

NON-MIXED TOTAL JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE

SIDELINE DISTANCE = 304.8M(1000.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	53.5	63.7	69.2	73.2	76.2	78.3	80.3	82.2	84.0	84.7	85.6	86.5	85.6	88.3	88.8	89.2	89.4	89.1	85.9	50	
1	63	54.8	65.0	70.5	74.5	77.5	79.6	81.6	83.5	85.3	86.0	86.9	87.8	87.0	89.7	90.2	90.6	90.9	90.6	87.4	63	1
/	80	55.8	65.9	71.5	75.4	78.4	80.5	82.5	84.3	86.2	86.8	87.8	88.7	88.0	90.7	91.3	91.8	92.1	91.8	88.6	80	/
3	100	56.5	66.7	72.2	76.1	79.1	81.2	83.2	85.0	86.9	87.5	88.5	89.5	88.8	91.5	92.2	92.7	93.0	92.7	89.5	100	3
	125	57.0	67.1	72.7	76.5	79.5	81.6	83.6	85.5	87.3	88.0	88.9	89.9	89.3	92.0	92.8	93.2	93.6	93.3	90.2	125	
0	160	57.0	67.1	72.7	76.5	79.5	81.6	83.6	85.4	87.3	87.9	88.9	89.9	89.3	92.1	92.8	93.3	93.7	93.4	90.2	160	0
C	200	56.8	66.9	72.5	76.2	79.3	81.3	83.3	85.2	87.0	87.7	88.6	89.7	89.1	91.8	92.6	93.1	93.6	93.3	90.1	200	C
T	250	56.0	66.1	71.7	75.5	78.5	80.6	82.6	84.4	86.3	86.9	87.9	88.9	88.3	91.1	91.9	92.4	92.8	92.5	89.3	250	T
A	315	54.8	64.9	70.5	74.3	77.3	79.4	81.4	83.2	85.1	85.7	86.7	87.7	87.2	89.9	90.8	91.2	91.7	91.4	88.2	315	A
V	400	53.7	63.8	69.4	73.1	76.2	78.2	80.2	82.1	83.9	84.6	85.5	86.6	86.0	88.8	89.6	90.1	90.6	90.3	87.1	400	V
E	500	52.3	62.4	68.0	71.8	74.8	76.9	78.9	80.7	82.5	83.2	84.1	85.2	84.6	87.4	88.2	88.7	89.2	88.9	85.7	500	E
	630	50.6	60.7	66.3	70.0	73.0	75.1	77.1	78.9	80.8	81.4	82.4	83.5	82.9	85.7	86.5	87.0	87.5	87.2	84.0	630	
C	800	48.7	58.9	64.4	68.2	71.2	73.3	75.3	77.1	79.0	79.6	80.6	81.7	81.1	83.9	84.7	85.2	85.7	85.4	82.2	800	C
E	1000	47.0	57.1	62.7	66.4	69.4	71.5	73.5	75.3	77.2	77.8	78.8	79.9	79.3	82.1	82.9	83.4	83.9	83.6	80.4	1000	E
N	1250	44.9	55.0	60.6	64.3	67.3	69.4	71.4	73.2	75.1	75.7	76.7	77.8	77.2	80.0	80.9	81.3	81.8	81.5	78.3	1250	N
T	1600	42.2	52.3	57.9	61.7	64.7	66.8	68.8	70.6	72.4	73.1	74.0	75.1	74.6	77.3	78.2	78.7	79.1	78.8	75.6	1600	T
E	2000	39.7	49.8	55.4	59.2	62.2	64.3	66.2	68.1	69.9	70.6	71.5	72.6	72.0	74.8	75.7	76.2	76.6	76.3	73.1	2000	E
R	2500	36.9	47.0	52.6	56.3	59.3	61.4	63.4	65.2	67.1	67.7	68.7	69.8	69.2	72.0	72.8	73.3	73.8	73.5	70.3	2500	R
	3150	33.6	43.7	49.3	53.0	56.1	58.1	60.1	62.0	63.8	64.5	65.4	66.5	65.9	68.7	69.6	70.1	70.5	70.2	67.0	3150	
F	4000	30.1	40.2	45.8	49.5	52.6	54.6	56.6	58.5	60.3	61.0	61.9	63.0	62.4	65.2	66.1	66.6	67.0	66.7	63.5	4000	F
R	5000	27.4	37.6	43.1	46.9	49.9	52.0	54.0	55.8	57.7	58.3	59.3	60.4	59.8	62.6	63.4	63.9	64.4	64.1	60.9	5000	R
E	6300	22.6	32.7	38.3	42.1	45.1	47.2	49.2	51.0	52.9	53.5	54.5	55.5	55.0	57.8	58.6	59.1	59.6	59.3	56.1	6300	E
Q	8000	16.5	26.6	32.2	35.9	38.9	41.0	43.0	44.8	46.7	47.3	48.3	49.4	48.8	51.6	52.4	52.9	53.4	53.1	49.9	8000	Q
	10000	4.7	18.9	24.5	28.2	31.2	33.3	35.3	37.1	39.0	39.6	40.6	41.7	41.1	43.9	44.7	45.2	45.7	45.4	42.2	10000	
	OVERALL	66.3	76.4	82.0	85.8	88.8	90.9	92.9	94.7	96.6	97.2	98.2	99.2	98.5	101.3	102.0	102.5	102.9	102.6	99.4		
	PNDB	68.9	79.6	85.4	89.4	92.5	94.7	96.7	98.6	100.5	101.2	102.1	103.2	102.6	105.4	106.2	106.6	107.1	106.8	103.6		

JT8D-109 SEA LEVEL STATIC T/O

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 73778.N (16586.LB)
PRIMARY THRUST = 31151.N (7003.LB)
PRIMARY FLOW = 68.5KG/S(151.LB/SEC)
PRIMARY VJ = 454.5M/S (1491. FT/SEC)
CORRECTED N1 = 7444.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 42627.N (9583.LB)
FAN FLOW = 139.KG/S(307.LB/SEC)
FAN VJ = 306.M/S(1004.FT/SEC)
TIP SPEED = 487.1M/S(1598.FT/SEC)
FAN PRESS. RATIO = 1.672

PRIMARY JET NOISE

SIDELINE DISTANCE = 304.8M(1000.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	50.4	60.5	66.1	69.8	72.8	74.9	76.9	78.7	80.6	81.2	82.2	83.3	82.8	85.6	86.4	86.9	87.4	87.1	83.9	50	
I	63	52.3	62.4	68.0	71.7	74.7	76.8	78.8	80.6	82.5	83.1	84.1	85.2	84.7	87.5	88.4	88.9	89.4	89.1	85.9	63	I
/	80	54.0	64.0	69.6	73.4	76.4	78.5	80.5	82.3	84.1	84.8	85.7	86.9	86.3	89.1	90.0	90.5	91.0	90.7	87.5	80	/
3	100	55.2	65.3	70.9	74.6	77.6	79.7	81.7	83.5	85.4	86.0	87.0	88.1	87.6	90.4	91.2	91.7	92.2	91.9	88.7	100	3
	125	56.1	66.1	71.7	75.5	78.5	80.6	82.6	84.4	86.2	86.9	87.8	89.0	88.4	91.2	92.1	92.6	93.1	92.8	89.6	125	
	160	56.3	66.4	72.0	75.7	78.7	80.8	82.8	84.6	86.5	87.1	88.1	89.2	88.7	91.5	92.3	92.8	93.3	93.0	89.8	160	O
O	200	56.2	66.3	71.9	75.6	78.6	80.7	82.7	84.5	86.4	87.0	88.0	89.1	88.5	91.3	92.2	92.7	93.2	92.9	89.7	200	C
C	250	55.5	65.6	71.2	74.9	77.9	80.0	82.0	83.8	85.7	86.3	87.3	88.4	87.9	90.7	91.6	92.1	92.6	92.3	89.1	250	T
T	315	54.4	64.5	70.1	73.8	76.8	78.9	80.9	82.7	84.6	85.2	86.2	87.3	86.8	89.6	90.5	91.0	91.5	91.2	88.0	315	A
A	400	53.3	63.4	69.0	72.7	75.7	77.8	79.8	81.6	83.5	84.1	85.1	86.2	85.7	88.5	89.3	89.8	90.3	90.0	86.8	400	V
V	500	51.9	62.0	67.6	71.3	74.3	76.4	78.4	80.2	82.1	82.7	83.7	84.8	84.3	87.1	88.0	88.5	89.0	88.7	85.5	500	E
E	630	50.2	60.3	65.9	69.7	72.7	74.7	76.7	78.5	80.4	81.0	82.0	83.1	82.6	85.4	86.3	86.8	87.3	87.0	83.8	630	
	800	48.4	58.5	64.1	67.8	70.8	72.9	74.9	76.7	78.6	79.2	80.2	81.3	80.8	83.6	84.5	85.0	85.5	85.2	82.0	800	C
C	1000	46.7	56.8	62.4	66.1	69.1	71.2	73.2	75.0	76.9	77.5	78.5	79.6	79.0	81.8	82.7	83.2	83.7	83.4	80.2	1000	E
E	1250	44.6	54.7	60.3	64.0	67.0	69.1	71.1	72.9	74.8	75.4	76.4	77.5	77.0	79.8	80.7	81.2	81.7	81.4	78.2	1250	N
N	1600	41.9	52.0	57.6	61.3	64.3	66.4	68.4	70.2	72.1	72.7	73.7	74.8	74.3	77.1	78.0	78.5	79.0	78.7	75.5	1600	T
T	2000	39.4	49.5	55.1	58.8	61.8	63.9	65.9	67.7	69.6	70.2	71.2	72.3	71.8	74.6	75.4	75.9	76.4	76.1	72.9	2000	E
E	2500	36.5	46.6	52.2	55.9	58.9	61.0	63.0	64.8	66.7	67.3	68.3	69.4	68.9	71.7	72.6	73.1	73.6	73.3	70.1	2500	R
R	3150	33.3	43.4	49.0	52.7	55.7	57.8	59.8	61.6	63.5	64.1	65.1	66.2	65.7	68.5	69.4	69.9	70.4	70.1	66.9	3150	
	4000	29.8	39.9	45.5	49.2	52.2	54.3	56.3	58.1	60.0	60.6	61.6	62.7	62.2	65.0	65.9	66.4	66.9	66.6	63.4	4000	F
F	5000	27.2	37.2	42.8	46.6	49.6	51.7	53.7	55.5	57.3	58.0	58.9	60.1	59.5	62.3	63.2	63.7	64.2	63.9	60.7	5000	R
R	6300	22.4	32.4	38.0	41.8	44.8	46.9	48.9	50.7	52.5	53.2	54.1	55.3	54.7	57.5	58.4	58.9	59.4	59.1	55.9	6300	E
E	8000	16.2	26.3	33.9	35.6	38.6	40.7	42.7	44.5	46.4	47.0	48.0	49.1	48.5	51.3	52.2	52.7	53.2	52.9	49.7	8000	Q
	10000	8.5	18.6	24.2	27.9	30.9	33.0	35.0	36.8	38.7	39.3	40.3	41.4	40.9	43.7	44.5	45.0	45.5	45.2	42.0	10000	
	OVERALL	65.3	75.4	81.0	84.7	87.7	89.8	91.8	93.6	95.5	96.1	97.1	98.2	97.7	100.5	101.4	101.9	102.4	102.1	98.9		
	PNDB	68.4	79.0	84.8	88.7	91.8	94.0	96.0	97.8	99.8	100.4	101.4	102.5	102.0	104.8	105.7	106.2	106.7	106.4	103.2		

JT8D-109 SEA LEVEL STATIC T/O

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 73778.N (16586.LB)
PRIMARY THRUST = 31151.N (7003.LB)
PRIMARY FLOW = 68.5KG/S(151.LB/SEC)
PRIMARY VJ = 454.5M/S (1491. FT/SEC)
CORRECTED N1 = 7444.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 42627.N (9583.LB)
FAN FLOW = 139.KG/S(307.LB/SEC)
FAN VJ = 306.M/S(1004.FT/SEC)
TIP SPEED = 487.1M/S(1598.FT/SEC)
FAN PRESS. RATIO = 1.672

FAN JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE

SIDELINE DISTANCE = 304.8M(1000.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	50.5	60.9	66.3	70.5	73.6	75.7	77.6	79.6	81.3	82.1	82.9	83.6	82.4	84.9	84.9	85.2	84.9	84.6	81.5	50	
I	63	51.2	61.6	67.0	71.2	74.3	76.4	78.3	80.3	82.0	82.8	83.6	84.3	83.1	85.6	85.6	85.9	85.6	85.3	82.2	63	I
/	80	51.1	61.4	66.9	71.1	74.2	76.3	78.2	80.2	81.9	82.7	83.5	84.2	83.0	85.5	85.5	85.8	85.5	85.2	82.1	80	/
3	100	50.7	61.1	66.5	70.7	73.8	75.9	77.8	79.8	81.5	82.3	83.1	83.8	82.6	85.1	85.1	85.4	85.1	84.8	81.7	100	3
	125	49.9	60.3	65.7	69.9	73.0	75.1	77.0	79.0	80.7	81.5	82.3	83.0	81.8	84.3	84.3	84.6	84.3	84.0	80.9	125	
0	160	48.6	59.2	64.6	68.8	71.9	74.0	75.9	77.9	79.6	80.4	81.2	81.9	80.7	83.2	83.2	83.5	83.2	82.9	79.8	160	0
C	200	47.7	58.1	63.5	67.7	70.8	72.9	74.8	76.8	78.5	79.3	80.1	80.8	79.6	82.1	82.1	82.5	82.2	81.9	78.8	200	C
T	250	46.3	56.7	62.1	66.3	69.4	71.5	73.4	75.5	77.1	77.9	78.8	79.5	78.2	80.8	80.8	81.1	80.8	80.5	77.4	250	T
A	315	44.5	54.9	60.3	64.5	67.6	69.7	71.6	73.6	75.3	76.1	76.9	77.6	76.4	78.9	78.9	79.2	78.9	78.6	75.5	315	A
V	400	43.1	53.5	58.9	63.1	66.2	68.3	70.2	72.2	73.9	74.7	75.5	76.2	75.0	77.5	77.5	77.8	77.6	77.2	74.1	400	V
E	500	41.4	51.8	57.2	61.4	64.5	66.6	68.5	70.5	72.2	73.0	73.8	74.5	73.3	75.8	75.8	76.1	75.9	75.6	72.5	500	E
	630	39.3	49.7	55.1	59.3	62.4	64.5	66.4	68.4	70.1	70.9	71.7	72.4	71.2	73.7	73.7	74.0	73.7	73.4	70.3	630	
C	800	37.3	47.7	53.1	57.3	60.4	62.5	64.4	66.4	68.1	68.9	69.7	70.4	69.2	71.7	71.7	72.0	71.7	71.4	68.3	800	C
E	1000	35.0	45.4	50.8	55.0	58.1	60.2	62.1	64.1	65.8	66.6	67.4	68.1	66.9	69.4	69.4	69.7	69.5	69.2	66.1	1000	E
N	1250	32.8	43.2	48.6	52.8	55.9	58.0	59.9	61.9	63.6	64.4	65.2	65.9	64.7	67.2	67.2	67.5	67.3	67.0	63.9	1250	N
T	1600	30.3	40.7	46.1	50.3	53.4	55.5	57.4	59.4	61.1	61.9	62.7	63.4	62.2	64.7	64.7	65.0	64.7	64.4	61.3	1600	T
E	2000	26.1	38.5	43.9	48.1	51.2	53.3	55.2	57.2	58.9	59.7	60.5	61.2	60.0	62.5	62.5	62.8	62.6	62.2	59.1	2000	E
R	2500	25.3	35.7	41.1	45.3	48.4	50.5	52.4	54.4	56.1	56.9	57.7	58.4	57.2	59.7	59.7	60.0	59.7	59.4	56.3	2500	R
	3150	21.6	32.0	37.4	41.6	44.7	46.8	48.7	50.7	52.4	53.2	54.0	54.7	53.5	56.0	56.0	56.3	56.0	55.7	52.6	3150	
F	4000	18.2	28.6	34.0	38.2	41.3	43.4	45.3	47.4	49.0	49.8	50.7	51.4	50.1	52.7	52.7	53.0	52.7	52.4	49.3	4000	F
R	5000	15.5	25.9	31.3	35.5	38.6	40.7	42.6	44.6	46.3	47.1	47.9	48.6	47.4	49.9	49.9	50.2	49.9	49.6	46.5	5000	R
E	6300	10.5	20.9	26.3	30.5	33.6	35.7	37.6	39.6	41.3	42.1	42.9	43.6	42.4	44.9	44.9	45.2	44.9	44.6	41.5	6300	E
Q	8000	4.8	15.2	20.6	24.8	27.9	30.0	31.9	33.9	35.6	36.4	37.2	37.9	36.7	39.2	39.2	39.5	39.2	38.9	35.8	8000	Q
	10000	.0	7.2	12.7	16.9	20.0	22.1	24.0	26.0	27.7	28.5	29.3	30.0	28.8	31.3	31.3	31.6	31.3	31.0	27.9	10000	
OVERALL		59.3	69.7	75.1	79.3	82.4	84.5	86.4	88.4	90.1	90.9	91.7	92.4	91.2	93.7	93.7	94.0	93.7	93.4	90.3		
PNDB		58.1	69.5	75.3	79.9	83.3	85.6	87.6	89.7	91.5	92.3	93.1	93.9	92.6	95.2	95.2	95.5	95.2	94.9	91.7		

JT8D-109 SEA LEVEL STATIC DC-9 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4 59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32321.N(7266 LB)
PRIMARY THRUST = 10854.N(2440.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 270.M/S(887.FT/SEC)
CORRECTED N1 = 5261.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21467.N(4826.LB)
FAN FLOW = 103.KG/S(228.LB/SEC)
FAN VJ = 208.M/S(681.FT/SEC)
TIP SPEED = 344.1M/S(1129.FT/SEC)
FAN PRESS. RATIO = 1.303

CORRECTED TOTAL NOISE

SIDELINE DISTANCE = 112.8 M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K (77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
50	51.8	61.1	66.3	70.2	73.2	75.5	77.3	79.1	80.6	81.5	82.2	82.9	82.5	83.9	83.6	82.8	81.9	81.0	77.8	50	
1 63	52.6	61.9	67.0	70.9	73.9	76.2	78.0	79.8	81.3	82.2	82.9	83.6	83.2	84.6	84.3	83.7	82.8	82.0	78.8	63	1
/ 80	53.1	62.1	67.2	71.1	74.1	76.4	78.2	80.0	81.5	82.3	83.0	83.7	83.2	84.7	84.5	83.9	83.1	82.3	79.1	80	/
3 100	53.3	62.1	67.1	70.9	73.9	76.3	78.1	79.8	81.3	82.1	82.8	83.4	83.0	84.5	84.3	83.7	83.0	82.2	79.0	100	3
125	53.7	62.2	67.0	70.8	73.8	76.2	78.0	79.6	81.0	81.8	82.4	83.1	82.6	84.1	83.9	83.4	82.7	81.9	78.8	125	
0 160	53.8	61.9	66.5	70.2	73.2	75.7	77.5	78.9	80.2	81.0	81.6	82.2	81.7	83.3	83.0	82.5	81.8	81.0	77.9	160	0
C 200	54.3	61.9	66.3	69.8	72.8	75.4	77.1	78.3	79.5	80.3	80.8	81.4	80.9	82.3	82.1	81.6	80.9	80.1	77.0	200	C
T 250	54.7	62.0	66.2	69.5	72.5	75.3	76.9	77.9	78.9	79.6	80.0	80.6	80.0	81.5	81.2	80.6	79.9	79.1	76.0	250	T
A 315	55.0	62.2	66.2	69.4	72.3	75.3	76.9	77.6	78.2	78.9	79.2	79.7	79.1	80.4	80.1	79.5	78.7	77.8	74.7	315	A
V 400	55.6	62.6	66.4	69.4	72.4	75.5	77.0	77.4	77.7	78.4	78.4	78.8	78.2	79.3	78.8	78.1	77.3	76.2	73.2	400	V
E 500	56.1	63.2	66.9	69.8	72.8	76.1	77.5	77.6	77.7	78.3	78.2	78.4	77.8	78.7	78.1	77.1	76.2	75.0	72.0	500	E
630	56.7	63.3	67.5	70.3	73.3	76.7	78.1	78.1	78.0	78.5	78.1	78.2	77.6	78.2	77.5	76.3	75.2	73.6	70.8	630	
C 800	56.3	63.7	68.5	71.7	75.0	77.5	78.7	79.1	78.7	78.8	78.3	78.3	77.6	78.0	77.0	75.5	74.1	72.0	69.5	800	C
E 1000	56.5	64.2	69.2	72.5	75.7	78.3	79.5	79.9	79.4	79.4	78.8	78.7	78.0	78.2	77.1	75.2	73.6	70.8	68.5	1000	E
N 1250	56.7	64.0	69.9	73.2	76.5	79.1	80.3	80.7	80.2	80.2	79.5	79.3	78.6	78.7	77.4	75.2	73.4	69.8	67.8	1250	N
T 1600	57.1	66.0	70.8	73.3	77.7	82.3	83.1	83.2	82.0	80.9	80.2	80.0	79.3	79.2	77.8	75.5	73.4	69.1	67.4	1600	T
E 2000	56.6	66.3	70.6	73.8	77.0	80.6	82.1	81.8	81.3	81.7	81.0	80.8	80.0	79.9	78.5	76.0	73.8	68.8	67.3	2000	E
R 2500	54.0	65.2	70.6	73.5	76.5	79.2	80.3	80.4	80.2	80.8	80.8	80.7	80.6	79.9	78.6	75.7	73.4	67.7	67.3	2500	R
3150	56.8	69..	75.0	79.1	80.7	83.8	83.8	84.2	92.3	92.5	92.6	93.1	92.2	91.5	91.2	87.4	85.5	78.0	77.5	3150	
F 4000	51.4	65.5	71.6	75.6	77.2	79.5	80.0	81.3	83.3	83.5	83.5	84.0	83.0	82.4	82.1	78.7	77.1	69.5	68.9	4000	F
R 5000	48.8	63.8	70.2	74.0	76.6	78.6	78.1	78.9	80.9	81.1	81.2	81.9	81.4	80.9	79.7	74.9	73.3	65.6	65.3	5000	R
E 6300	49.1	66.8	72.3	76.9	78.6	79.5	79.8	80.6	88.1	87.8	89.0	90.4	89.9	89.6	90.7	85.0	81.4	73.2	72.7	6300	E
Q 8000	38.9	60.2	68.4	73.7	76.4	78.0	78.9	79.8	81.2	80.7	81.3	82.0	81.6	81.2	81.3	77.1	75.1	66.1	64.9	8000	Q
10000	27.3	54.0	64.7	71.3	74.7	76.8	82.1	80.5	88.0	89.1	88.1	88.1	86.9	87.3	86.0	80.6	77.6	69.1	67.8	10000	
OVERALL	60.3	77.0	83.0	86.8	89.5	92.2	93.9	93.9	97.2	97.6	97.7	98.3	97.6	97.8	97.6	95.0	93.6	91.5	88.7		
PNDB	79.8	91.5	97.1	101.0	103.3	106.8	106.8	107.3	112.1	112.3	112.4	112.8	112.1	111.9	111.9	108.2	106.5	100.9	99.5		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 10, CENTER FREQ. 3150

JT8D-109 SEA LEVEL STATIC DC-9 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32321.N(7266 LB)
PRIMARY THRUST = 10854.N(2440.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 270.M/S(887.FT/SEC)
CORRECTED N1 = 5261.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21467.N(4826.LB)
FAN FLOW = 103.KG/S(228.LB/SEC)
FAN VJ = 208.M/S(681.FT/SEC)
TIP SPEED = 344.1M/S(1129.FT/SEC)
FAN PRESS. RATIO = 1.303

CORRECTED FAN NOISE

SIDELINE DISTANCE = 112.8 M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K (77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.5	53.5	56.7	59.2	62.1	65.6	66.9	66.6	66.0	66.4	65.7	65.5	64.7	64.7	63.2	60.8	58.5	52.6	52.4	50	
1	63	48.5	54.5	57.7	60.2	63.1	66.6	67.9	67.6	67.0	67.4	66.7	66.5	65.7	65.7	64.2	61.8	59.5	53.6	53.4	63	1
/	80	49.5	55.5	58.7	61.2	64.1	67.6	68.9	68.6	68.0	68.4	67.7	67.5	66.7	66.7	65.2	62.8	60.5	54.6	54.4	80	/
3	100	50.3	56.4	59.6	62.2	65.1	68.6	69.9	69.5	69.0	69.4	68.7	68.4	67.7	67.6	66.2	63.7	61.5	55.6	55.3	100	3
	125	51.3	57.4	60.6	63.2	66.1	69.6	70.9	70.5	70.0	70.4	69.7	69.4	68.7	68.6	67.2	64.7	62.5	56.6	56.3	125	
0	160	52.1	58.3	61.6	64.1	67.1	70.5	71.8	71.5	71.0	71.4	70.6	70.4	69.7	69.6	68.2	65.7	63.5	57.5	57.2	160	0
C	200	53.1	59.3	62.6	65.1	68.1	71.5	72.8	72.5	72.0	72.4	71.6	71.4	70.7	70.6	69.2	66.7	64.5	58.5	58.2	200	C
T	250	53.9	60.2	63.5	66.1	69.0	72.5	73.8	73.5	73.0	73.4	72.6	72.4	71.7	71.6	70.1	67.7	65.4	59.5	59.2	250	T
A	315	54.5	61.0	64.4	67.0	70.0	73.5	74.8	74.5	73.9	74.3	73.6	73.3	72.6	72.5	71.1	68.6	66.3	60.4	60.1	315	A
V	400	55.3	61.9	65.3	68.0	70.9	74.4	75.7	75.4	74.9	75.3	74.5	74.3	73.6	73.5	72.0	69.6	67.3	61.4	61.0	400	V
E	500	55.9	62.8	66.2	68.9	71.9	75.4	76.7	76.4	75.8	76.3	75.5	75.3	74.5	74.5	73.0	70.5	68.2	62.3	61.9	500	E
	630	56.5	63.6	67.1	69.8	72.8	76.3	77.6	77.3	76.8	77.2	76.5	76.2	75.5	75.4	73.9	71.4	69.2	63.2	62.8	630	
C	800	56.3	63.5	68.3	71.5	74.7	77.3	78.4	78.8	78.2	78.1	77.4	77.2	76.4	76.3	74.9	72.3	70.0	64.1	63.6	800	C
E	1000	56.5	64.1	69.1	72.3	75.6	78.2	79.3	79.7	79.1	79.1	78.3	78.1	77.3	77.2	75.7	73.2	70.9	64.9	64.4	1000	E
N	1250	56.7	64.7	69.8	73.2	76.5	79.1	80.2	80.6	80.0	80.0	79.2	79.0	78.2	78.1	76.6	74.1	71.7	65.7	65.1	1250	N
T	1600	57.1	66.0	70.8	73.2	77.7	82.2	83.1	83.1	81.9	80.8	80.0	79.8	79.1	78.9	77.4	74.8	72.5	66.4	65.7	1600	T
E	2000	56.6	66.2	70.6	73.7	77.0	80.6	82.0	81.8	81.3	81.7	80.9	80.6	79.9	79.8	78.2	75.6	73.2	67.1	66.3	2000	E
R	2500	54.0	65.2	70.6	73.5	76.5	79.2	80.3	80.4	80.2	80.8	80.7	80.7	80.5	79.8	78.4	75.5	73.0	66.3	66.6	2500	R
	3150	56.8	69.1	75.0	79.1	80.7	83.8	83.8	84.2	92.3	92.5	92.6	93.1	92.2	91.5	91.2	87.4	85.5	77.9	77.5	3150	
F	4000	51.4	65.5	71.6	75.6	77.2	79.5	80.0	81.2	83.3	83.5	83.5	84.0	83.0	82.4	82.1	78.6	77.1	69.2	68.2	4000	F
R	5000	48.8	63.8	70.2	74.0	76.6	78.6	78.1	78.9	80.9	81.1	81.2	81.8	81.4	80.9	79.7	74.8	73.2	65.1	65.1	5000	R
E	6300	49.1	66.8	72.3	76.9	78.6	79.5	79.8	80.6	88.1	87.8	89.0	90.4	89.9	89.6	90.7	85.0	81.4	73.2	72.7	6300	E
Q	8000	38.8	60.2	68.4	73.7	76.4	78.0	78.9	79.8	81.2	80.7	81.3	82.0	81.6	81.2	81.3	77.1	75.1	66.0	64.9	8000	Q
	10000	27.0	54.0	64.7	71.3	74.7	76.8	82.1	80.5	88.0	89.1	88.1	88.1	86.9	87.3	86.0	80.6	77.6	69.0	67.8	10000	
	OVERALL	67.7	77.1	82.2	85.9	88.6	91.4	92.4	92.5	96.3	96.6	96.5	97.0	96.3	95.9	95.7	91.3	89.0	81.4	80.9		
	PNDB	79.5	91.0	96.6	100.4	102.7	105.6	106.2	106.5	111.3	111.4	111.4	111.7	111.0	110.5	109.9	106.2	104.1	96.7	96.2		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 19, CENTER FREQ. 3150

JT8D-109 SEA LEVEL STATIC DC-9 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32321.N(7266 LB)
PRIMARY THRUST = 10854.N(2440.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 270.M/S(887.FT/SEC)
CORRECTED N1 = 5261.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21467.N(4826.LB)
FAN FLOW = 103.KG/S(228.LB/SEC)
FAN VJ = 208.M/S(681.FT/SEC)
TIP SPEED = 344.1M/S(1129.FT/SEC)
FAN PRESS. RATIO = 1.303

NON-MIXED TOTAL JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE

SIDELINE DISTANCE = 112.8 M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K (77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	49.8	60.3	65.8	69.9	72.9	75.0	76.9	78.9	80.5	81.3	82.1	82.8	82.5	83.8	83.6	82.8	81.9	81.0	77.8	50	
1	63	50.5	61.0	66.4	70.5	73.5	75.7	77.6	79.6	81.2	82.0	82.8	83.5	83.1	84.5	84.3	83.6	82.8	82.0	78.8	63	1
/	80	50.6	61.0	66.5	70.6	73.6	75.8	77.7	79.6	81.2	82.1	82.8	83.5	83.1	84.6	84.4	83.9	83.1	82.3	79.1	80	/
3	100	50.3	60.8	66.2	70.3	73.3	75.5	77.4	79.4	81.0	81.8	82.6	83.3	82.8	84.4	84.2	83.7	82.9	82.2	79.0	100	3
	125	49.9	60.4	65.8	69.9	72.9	75.1	77.0	79.0	80.6	81.5	82.2	82.9	82.4	84.0	83.8	83.4	82.7	81.9	78.7	125	
0	160	49.0	59.4	64.9	69.0	72.0	74.2	76.1	78.1	79.7	80.5	81.3	82.0	81.5	83.1	82.9	82.4	81.8	81.0	77.9	160	0
C	200	47.9	58.4	63.9	68.0	71.0	73.1	75.0	77.0	78.6	79.5	80.2	80.9	80.4	82.0	81.9	81.5	80.8	80.1	76.9	200	C
T	250	46.9	57.3	62.8	66.9	69.9	72.1	74.0	76.0	77.6	78.4	79.2	79.9	79.3	81.0	80.8	80.4	79.7	79.0	75.9	250	T
A	315	45.6	56.0	61.5	65.6	68.6	70.7	72.7	74.6	76.2	77.1	77.8	78.5	78.0	79.7	79.5	79.1	78.4	77.7	74.6	315	A
V	400	43.9	54.3	59.8	63.9	66.9	69.1	71.0	73.0	74.6	75.4	76.2	76.9	76.3	78.0	77.8	77.4	76.8	76.1	72.9	400	V
E	500	42.5	52.9	58.4	62.5	65.5	67.7	69.6	71.6	73.2	74.0	74.8	75.5	74.9	76.6	76.4	76.1	75.4	74.7	71.6	500	E
	630	40.9	51.4	56.8	60.9	63.9	66.1	68.0	70.0	71.6	72.5	73.2	73.9	73.4	75.1	74.9	74.6	73.9	73.2	70.1	630	
C	800	39.0	49.5	54.9	59.0	62.0	64.2	66.1	68.1	69.7	70.6	71.3	72.0	71.5	73.1	73.0	72.6	72.0	71.3	68.1	800	C
E	1000	37.3	47.7	53.2	57.3	60.3	62.5	64.4	66.4	68.0	68.9	69.6	70.3	69.7	71.4	71.3	70.9	70.3	69.6	66.4	1000	E
N	1250	35.4	45.9	51.4	55.5	58.5	60.6	62.5	64.5	66.1	67.0	67.7	68.4	67.9	69.6	69.4	69.0	68.4	67.7	64.5	1250	N
T	1600	33.4	43.9	49.3	53.4	56.4	58.6	60.5	62.5	64.1	65.0	65.7	66.4	65.9	67.5	67.4	67.0	66.4	65.7	62.5	1600	T
E	2000	31.5	42.0	47.5	51.6	54.6	56.7	58.6	60.6	62.2	63.1	63.8	64.5	64.0	65.7	65.5	65.2	64.5	63.8	60.7	2000	E
R	2500	29.9	40.3	45.8	49.9	52.9	55.1	57.0	59.0	60.6	61.4	62.2	62.9	62.3	64.0	63.8	63.5	62.8	62.1	59.0	2500	R
	3150	27.9	38.3	43.8	47.9	50.9	53.1	55.0	57.0	58.6	59.5	60.2	60.9	60.3	62.0	61.9	61.5	60.9	60.2	57.0	3150	
F	4000	25.3	35.8	41.3	45.3	48.3	50.5	52.4	54.4	56.0	56.9	57.6	58.3	57.8	59.5	59.3	59.0	58.3	57.6	54.5	4000	F
R	5000	23.6	34.0	39.5	43.6	46.6	48.8	50.7	52.7	54.3	55.1	55.9	56.6	56.0	57.7	57.5	57.2	56.5	55.8	52.7	5000	R
E	6300	21.4	31.8	37.3	41.4	44.4	46.6	48.5	50.4	52.0	52.9	53.6	54.3	53.8	55.5	55.3	55.0	54.3	53.6	50.5	6300	E
Q	8000	18.4	28.8	34.3	38.4	41.4	43.5	45.5	47.4	49.0	49.9	50.6	51.3	50.8	52.5	52.3	52.0	51.3	50.6	47.5	8000	Q
	10000	15.5	25.9	31.4	35.5	38.5	40.7	42.6	44.6	46.2	47.0	47.8	48.5	47.9	49.6	49.5	49.1	48.5	47.8	44.6	10000	
	OVERALL	54.2	69.7	75.1	79.2	82.2	84.4	86.3	88.3	89.9	90.7	91.5	92.2	91.7	93.3	93.1	92.5	91.8	91.0	87.9		
	PNDB	60.0	71.3	77.1	81.5	84.7	87.1	89.1	91.2	92.8	93.7	94.5	95.2	94.7	96.3	96.2	95.7	95.0	94.3	91.0		

JT8D-109 SEA LEVEL STATIC DC-9 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32321.N(7266 LB)
PRIMARY THRUST = 10854.N(2440.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 270.M/S(887.FT/SEC)
CORRECTED N1 = 5261.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21467.N(4826.LB)
FAN FLOW = 103.KG/S(228.LB/SEC)
FAN VJ = 208.M/S(681.FT/SEC)
TIP SPEED = 344.1M/S(1129.FT/SEC)
FAN PRESS. RATIO = 1.303

PRIMARY JET NOISE

SIDELINE DISTANCE = 112.8 M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K (77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	46.4	56.8	62.3	66.4	69.4	71.6	73.5	75.5	77.1	77.9	78.7	79.4	78.7	80.5	80.4	80.3	79.7	79.1	75.9	50	
1	63	47.8	58.3	63.7	67.8	70.8	73.0	74.9	76.9	78.5	79.4	80.1	80.8	80.2	82.0	81.9	81.7	81.2	80.5	77.4	63	1
/	80	48.5	58.9	64.4	68.5	71.5	73.7	75.6	77.6	79.2	80.1	80.8	81.5	80.8	82.7	82.6	82.4	81.9	81.2	78.1	80	/
3	100	48.6	59.0	64.5	68.6	71.6	73.8	75.7	77.7	79.3	80.2	80.9	81.6	80.9	82.8	82.7	82.5	81.9	81.3	78.2	100	3
	125	48.5	58.9	64.4	68.5	71.5	73.7	75.6	77.6	79.2	80.1	80.8	81.5	80.8	82.7	82.5	82.4	81.8	81.2	78.1	125	
0	160	47.7	58.1	63.6	67.7	70.7	72.9	74.8	76.8	78.4	79.2	80.0	80.7	80.0	81.8	81.7	81.5	81.0	80.4	77.2	160	0
C	200	46.8	57.2	62.7	66.8	69.8	72.0	73.9	75.9	77.5	78.4	79.1	79.8	79.1	81.0	80.9	80.7	80.1	79.5	76.4	200	C
T	250	45.8	56.2	61.7	65.8	68.8	71.0	72.9	74.9	76.5	77.4	78.1	78.8	78.1	80.0	79.9	79.7	79.1	78.5	75.4	250	T
A	315	44.5	54.9	60.4	64.5	67.5	69.7	71.6	73.6	75.2	76.1	76.8	77.5	76.8	78.7	78.6	78.4	77.8	77.2	74.1	315	A
V	400	42.9	53.3	58.8	62.9	65.9	68.1	70.0	72.0	73.6	74.5	75.2	75.9	75.2	77.1	77.0	76.8	76.2	75.6	72.5	400	V
E	500	41.6	52.0	57.5	61.6	64.6	66.8	68.7	70.7	72.3	73.1	73.9	74.6	73.9	75.7	75.6	75.5	74.9	74.3	71.1	500	E
	630	40.1	50.5	56.0	60.1	63.1	65.3	67.2	69.2	70.8	71.7	72.4	73.1	72.4	74.3	74.2	74.0	73.4	72.8	69.7	630	
C	800	38.2	48.6	54.1	58.2	61.2	63.4	65.3	67.3	68.9	69.8	70.5	71.2	70.5	72.4	72.2	72.1	71.5	70.9	67.8	800	C
E	1000	36.5	46.9	52.3	56.4	59.4	61.6	63.5	65.5	67.1	68.0	68.7	69.4	68.8	70.6	70.5	70.3	69.8	69.2	66.0	1000	E
N	1250	34.5	44.9	50.4	54.5	57.5	59.7	61.6	63.6	65.2	66.1	66.8	67.5	66.9	68.7	68.6	68.4	67.9	67.2	64.1	1250	N
T	1600	32.5	42.9	48.4	52.5	55.5	57.7	59.6	61.6	63.2	64.1	64.8	65.5	64.8	66.7	66.6	66.4	65.8	65.2	62.1	1600	T
E	2000	30.7	41.1	46.6	50.7	53.7	55.9	57.8	59.8	61.4	62.3	63.0	63.7	63.0	64.9	64.8	64.6	64.0	63.4	60.3	2000	E
R	2500	29.0	39.4	44.9	49.0	52.0	54.2	56.1	58.1	59.7	60.6	61.3	62.0	61.4	63.2	63.1	62.9	62.4	61.7	58.6	2500	R
	3150	27.1	37.5	42.9	47.0	50.0	52.2	54.1	56.1	57.7	58.6	59.3	60.0	59.4	61.2	61.1	60.9	60.4	59.8	56.6	3150	
F	4000	24.5	34.9	40.4	44.5	47.5	49.7	51.6	53.6	55.2	56.1	56.8	57.5	56.8	58.7	58.5	58.4	57.8	57.2	54.1	4000	F
R	5000	22.7	33.1	38.6	42.7	45.7	47.9	49.8	51.8	53.4	54.3	55.0	55.7	55.0	56.9	56.8	56.6	56.0	55.4	52.3	5000	R
E	6300	20.5	30.9	36.4	40.5	43.5	45.7	47.6	49.6	51.2	52.1	52.8	53.5	52.8	54.7	54.6	54.4	53.8	53.2	50.1	6300	E
Q	8000	17.5	27.9	33.4	37.5	40.5	42.7	44.6	46.6	48.2	49.1	49.8	50.5	49.8	51.7	51.6	51.4	50.8	50.2	47.1	8000	Q
	10000	14.7	25.1	30.5	34.6	37.6	39.8	41.7	43.7	45.3	46.2	46.9	47.6	47.0	48.8	48.7	48.5	48.0	47.3	44.2	10000	
	OVERALL	57.4	67.8	73.3	77.4	80.4	82.6	84.5	86.5	88.1	89.0	89.7	90.4	89.8	91.6	91.5	91.3	90.8	90.1	87.0		
	PNDB	58.8	70.0	75.8	80.2	83.4	85.8	87.8	89.9	91.6	92.5	93.2	93.9	93.3	95.2	95.0	94.9	94.3	93.6	90.4		

JT8D-109 SEA LEVEL STATIC DC-9 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32321.N(7266 LB)
PRIMARY THRUST = 10854.N(2440.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 270.M/S(887.FT/SEC)
CORRECTED N1 = 5261.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21467.N(4826.LB)
FAN FLOW = 103.KG/S(228.LB/SEC)
FAN VJ = 208.M/S(681.FT/SEC)
TIP SPEED = 344.1M/S(1129.FT/SEC)
FAN PRESS. RATIO = 1.303

FAN JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K (77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.2	57.8	63.2	67.3	70.3	72.4	74.4	76.3	77.9	78.7	79.5	80.2	80.1	81.0	80.7	79.3	77.9	76.6	73.2	50	
1	63	47.1	57.7	63.1	67.2	70.2	72.3	74.2	76.2	77.8	78.6	79.4	80.1	80.0	80.9	80.6	79.1	77.8	76.5	73.0	63	1
/	80	46.3	56.9	62.3	66.4	69.4	71.5	73.5	75.4	77.0	77.8	78.6	79.3	79.2	80.1	79.8	78.4	77.0	75.7	72.3	80	/
3	100	45.4	56.0	61.4	65.5	68.5	70.6	72.6	74.5	76.1	76.9	77.7	78.4	78.3	79.3	78.9	77.5	76.1	74.8	71.4	100	3
	125	44.4	55.0	60.4	64.5	67.5	69.6	71.6	73.5	75.1	75.9	76.7	77.4	77.4	78.3	77.9	76.5	75.2	73.9	70.4	125	
0	160	43.1	53.7	59.1	63.2	66.2	68.3	70.3	72.2	73.8	74.6	75.4	76.1	76.0	76.9	76.6	75.2	73.8	72.5	69.1	160	0
C	200	41.6	52.2	57.6	61.7	64.7	66.8	68.8	70.7	72.3	73.1	73.9	74.6	74.5	75.4	75.1	73.7	72.3	71.0	67.6	200	C
T	250	40.3	50.9	56.3	60.4	63.4	65.5	67.4	69.4	71.0	71.8	72.6	73.3	73.2	74.1	73.8	72.4	71.0	69.7	66.2	250	T
A	315	38.8	49.4	54.8	58.9	61.9	64.0	66.0	67.9	69.5	70.3	71.1	71.8	71.8	72.7	72.3	70.9	69.5	68.2	64.8	315	A
V	400	37.0	47.6	53.0	57.1	60.1	62.2	64.1	66.1	67.7	68.5	69.3	70.0	69.9	70.8	70.5	69.0	67.7	66.4	62.9	400	V
E	500	35.3	45.9	51.3	55.4	58.4	60.5	62.4	64.4	66.0	66.8	67.6	68.3	68.2	69.1	68.8	67.4	66.0	64.7	61.2	500	E
	630	33.3	43.9	49.3	53.4	56.4	58.5	60.5	62.4	64.0	64.8	65.6	66.3	66.3	67.2	66.8	65.4	64.1	62.8	59.3	630	
C	800	31.5	42.1	47.5	51.6	54.6	56.7	58.6	60.6	62.2	63.0	63.8	64.5	64.4	65.3	65.0	63.5	62.2	60.9	57.4	800	C
E	1000	29.7	40.3	45.7	49.8	52.8	54.9	56.9	58.8	60.4	61.2	62.0	62.7	62.7	63.6	63.2	61.8	60.4	59.1	55.7	1000	E
N	1250	28.2	38.8	44.2	48.3	51.3	53.4	55.4	57.3	58.9	59.7	60.5	61.2	61.1	62.1	61.7	60.3	58.9	57.6	54.2	1250	N
T	1600	26.3	36.9	42.3	46.4	49.4	51.5	53.4	55.4	57.0	57.8	58.6	59.3	59.2	60.1	59.8	58.3	57.0	55.7	52.2	1600	T
E	2000	24.1	34.7	40.1	44.2	47.2	49.3	51.2	53.2	54.8	55.6	56.4	57.1	57.0	57.9	57.6	56.1	54.8	53.5	50.0	2000	E
R	2500	22.3	32.9	38.3	42.4	45.4	47.5	49.4	51.4	53.0	53.8	54.6	55.3	55.2	56.1	55.8	54.3	53.0	51.7	48.2	2500	R
	3150	20.4	31.0	36.4	40.5	43.5	45.6	47.5	49.5	51.1	51.9	52.7	53.4	53.3	54.2	53.9	52.4	51.1	49.8	46.3	3150	
F	4000	17.9	28.5	33.9	38.0	41.0	43.1	45.0	47.0	48.6	49.4	50.2	50.9	50.8	51.7	51.4	50.0	48.6	47.3	43.8	4000	F
R	5000	16.1	26.7	32.1	36.2	39.2	41.3	43.3	45.2	46.8	47.6	48.4	49.1	49.0	49.9	49.6	48.2	46.8	45.5	42.0	5000	R
E	6300	13.9	24.5	29.9	34.0	37.0	39.1	41.0	43.0	44.6	45.4	46.2	46.9	46.8	47.7	47.4	45.9	44.6	43.3	39.8	6300	E
Q	8000	10.8	21.4	26.8	30.9	33.9	36.0	38.0	39.9	41.5	42.3	43.1	43.8	43.8	44.7	44.3	42.9	41.6	40.3	36.8	8000	Q
	10000	7.9	18.5	23.9	28.0	31.0	33.1	35.1	37.0	38.6	39.4	40.2	40.9	40.8	41.8	41.4	40.0	38.6	37.3	33.9	10000	
	OVERALL	54.4	65.0	70.4	74.5	77.5	79.6	81.6	83.5	85.1	85.9	86.7	87.4	87.3	88.3	87.9	86.5	85.1	83.8	80.4		
	PNDB	52.0	64.4	70.2	74.6	77.9	80.2	82.3	84.4	86.1	87.0	87.9	88.6	88.6	89.5	89.2	87.7	86.2	84.8	81.0		

JT8D-109 DC-9 APPROACH

HIGH FREQUENCY CORE ENGINE NOISE – DISTANCE = 112.8M (370.FT)

		ANGLE IN DEGREES																			
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0	
	50																				50	
1	63																				63	1
/	80																				80	/
3	100																				100	3
	125																				125	
O	160																				160	O
C	200																				200	C
T	250																				250	T
A	315																				315	A
V	400																				400	V
E	500																				500	E
	630																				630	
C	800																				800	C
E	1000																				1000	E
N	1250																				1250	N
T	1600																				1600	T
E	2000								38.4	41.8	43.3	45.2	46.4	46.6	45.4	43.2	39.0	36.6	34.1		2000	E
R	2500								44.7	48.1	49.6	51.5	52.7	52.2	52.4	49.5	45.1	47.8	40.2		2500	R
	3150								50.9	54.2	55.8	57.7	58.9	58.6	57.8	55.6	51.2	48.7	46.1		3150	
F	4000								57.0	60.3	61.9	63.8	64.9	65.0	63.8	61.6	57.1	54.6	51.4		4000	F
R	5000								62.8	66.2	67.8	69.6	70.8	70.9	69.6	67.4	62.8	60.3	57.5		5000	R
E	6300								69.2	72.6	74.2	76.0	77.2	77.2	75.9	73.6	69.0	66.3	63.4		6300	E
Q	8000								71.4	74.8	76.3	78.2	79.3	79.3	78.0	75.6	70.7	67.9	64.8		8000	Q
	10000								67.1	70.6	77.1	73.9	75.0	74.9	73.5	71.1	65.9	62.8	59.4		10000	

JT8D-109 SEA LEVEL STATIC 727 APP

INPUT ENGINE

NO. OF FAN STAGES = 1
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 36942.N (8305 LB)
PRIMARY THRUST = 12833.N(2885.LB)
PRIMARY FLOW = 43.5 KG/S(96.LB/SEC)
PRIMARY VJ = 294.7M/S(967.FT/SEC)
CORRECTED N1 = 5564.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 24109.N (5420 LB)
FAN FLOW = 109.KG/S(240.LB/SEC)
FAN VJ = 221.6M/S(727.FT/SEC)
TIP SPEED = 363.9M/S(1194.FT/SEC)
FAN PRESS. RATIO = 1.345

CORRECTED TOTAL NOISE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	53.0	62.7	67.9	71.9	74.9	77.0	78.9	80.8	82.4	83.2	83.9	84.6	84.1	85.7	85.5	85.0	84.2	83.5	80.3	50	
1	63	53.7	63.3	68.5	72.4	75.5	77.6	79.5	81.3	82.9	83.7	84.5	85.2	84.6	86.3	86.1	85.7	85.0	84.4	81.2	63	1
/	80	54.2	63.7	68.9	72.8	75.8	77.9	79.8	81.7	83.2	84.0	84.8	85.5	84.8	86.6	86.5	86.2	85.5	84.9	81.8	80	/
3	100	54.5	63.8	68.9	72.8	75.8	77.9	79.8	81.6	83.2	84.0	84.7	85.4	84.7	86.5	86.4	86.2	85.6	85.0	81.9	100	3
	125	54.7	63.7	68.7	72.6	75.6	77.7	79.5	81.3	82.8	83.7	84.4	85.1	84.3	86.2	86.1	85.9	85.3	84.8	81.7	125	
0	160	54.7	63.4	68.4	72.1	75.1	77.2	79.0	80.7	82.2	83.0	83.7	84.4	83.6	85.5	85.4	85.2	84.7	84.1	81.0	160	0
C	200	55.0	63.2	68.0	71.6	74.5	76.7	78.4	80.0	81.4	82.2	82.9	83.5	82.8	84.6	84.5	84.3	83.8	83.2	80.1	200	C
T	250	55.2	63.2	67.8	71.1	74.1	76.2	77.8	79.3	80.6	81.3	82.0	82.6	81.9	83.6	83.5	83.3	82.8	82.2	79.1	250	T
A	315	55.5	63.2	67.8	70.8	73.8	75.9	77.4	78.7	79.8	80.5	81.1	81.7	81.0	82.6	82.4	82.2	81.6	81.0	78.0	315	A
V	400	55.9	63.5	67.9	70.7	73.6	75.8	77.1	78.2	78.9	79.7	80.1	80.7	80.0	81.4	81.2	80.8	80.2	79.5	76.5	400	V
E	500	56.3	63.9	68.2	70.9	73.7	76.0	77.8	78.0	78.4	79.1	79.5	79.9	79.4	80.4	80.1	79.5	78.9	78.1	75.1	500	E
	630	58.1	65.2	69.9	73.4	76.8	79.4	80.7	81.4	80.8	79.0	79.2	79.5	79.1	79.8	79.3	78.5	77.8	76.8	73.9	630	
C	800	58.4	65.7	70.6	74.1	77.5	80.2	81.4	82.1	81.3	79.1	79.1	79.4	79.1	79.3	78.6	77.5	76.5	75.2	72.5	800	C
E	1000	58.6	66.3	71.2	74.8	78.3	81.0	82.2	82.8	82.0	79.4	79.4	79.5	79.3	79.2	78.4	76.7	75.6	73.6	71.3	1000	E
N	1250	59.7	67.7	72.3	74.8	79.2	84.0	85.0	85.2	83.6	80.0	79.9	80.0	79.9	79.4	78.5	76.5	75.0	72.4	70.4	1250	N
T	1600	58.6	67.5	71.7	74.8	78.2	81.8	83.1	83.1	82.5	80.7	80.5	80.6	80.5	79.8	78.8	76.4	74.7	71.1	69.6	1600	T
E	2000	56.7	66.8	71.8	74.6	77.6	80.0	81.1	81.3	80.8	81.4	81.3	81.3	81.2	80.4	79.3	76.7	74.8	70.4	69.3	2000	E
R	2500	60.0	70.0	76.1	80.0	81.5	84.2	84.7	85.4	87.6	88.0	87.8	88.0	87.3	86.7	86.2	82.2	79.3	73.8	73.9	2500	R
	3150	57.4	69.6	75.4	79.4	81.1	83.8	84.4	85.1	93.5	93.6	93.8	94.2	93.2	92.7	92.2	88.1	86.2	79.1	78.7	3150	
F	4000	50.2	64.3	70.6	74.3	76.8	79.1	78.7	79.6	81.9	82.0	82.0	82.6	82.2	81.7	80.3	75.9	74.7	67.7	67.1	4000	F
R	5000	52.7	67.0	72.8	77.0	78.7	79.8	80.3	81.4	84.2	84.1	85.1	86.2	85.9	85.7	86.3	80.7	77.5	70.1	69.7	5000	R
E	6300	46.1	63.9	70.2	74.0	76.3	77.8	78.9	80.2	87.9	87.3	88.0	88.9	88.5	88.3	88.4	84.4	82.4	73.8	73.0	6300	E
Q	8000	37.4	58.6	66.7	71.8	74.8	76.7	82.0	80.9	84.9	86.0	85.1	85.2	84.1	84.5	83.3	78.4	75.9	67.8	67.2	8000	Q
	10000	26.6	52.2	62.7	68.2	71.9	73.9	77.8	78.1	85.9	86.6	86.5	86.2	86.2	85.5	84.4	79.6	78.0	69.6	66.5	10000	
	OVERALL	69.8	79.3	84.5	88.1	90.8	93.4	94.9	95.8	98.5	98.6	98.9	99.4	98.7	99.1	98.8	96.8	95.8	94.2	91.4		
	PNDB	81.4	92.4	98.0	101.8	104.2	106.7	107.8	108.8	113.5	113.5	113.7	114.2	113.4	113.3	112.8	109.6	107.9	103.0	101.5		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 10, CENTER FREQ. 3150

JT8D-109 SEA LEVEL STATIC 727 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 36942.N (8305 LB)
PRIMARY THRUST = 12833.N(2885.LB)
PRIMARY FLOW = 43.5 KG/S(96.LB/SEC)
PRIMARY VJ = 294.7M/S(967.FT/SEC)
CORRECTED N1 = 5564.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 24109.N (5420 LB)
FAN FLOW = 109.KG/S(240.LB/SEC)
FAN VJ = 221.6M/S(727.FT/SEC)
TIP SPEED = 363.9M/S(1194.FT/SEC)
FAN PRESS. RATIO = 1.345

CORRECTED FAN NOISE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.6	54.0	57.9	60.0	62.7	64.9	65.9	66.1	65.5	66.1	65.9	65.9	65.9	65.0	63.9	61.2	59.1	53.0	53.8	50	
1	63	48.6	55.0	58.9	61.0	63.7	65.9	66.9	67.1	66.5	67.1	66.9	66.9	66.9	66.0	64.9	62.2	60.1	54.0	54.8	63	1
/	80	49.6	56.0	59.9	62.0	64.7	66.9	67.9	68.1	67.5	68.1	67.9	67.9	67.9	67.0	65.9	63.2	61.1	55.0	55.8	80	/
3	100	50.4	56.9	60.8	63.0	65.7	67.9	68.9	69.0	68.5	69.0	68.9	68.9	68.9	68.0	66.9	64.1	62.1	56.0	56.7	100	3
	125	51.4	57.9	61.8	64.0	66.7	68.9	69.9	70.0	69.5	70.0	69.9	69.9	69.9	69.0	67.9	65.1	63.1	57.0	57.7	125	
D	160	52.2	58.8	62.7	64.9	67.7	69.9	70.9	71.0	70.5	71.0	70.9	70.9	70.8	70.0	68.9	66.1	64.0	58.0	58.7	160	D
C	200	53.2	59.8	63.7	65.9	68.7	70.9	71.9	72.0	71.5	72.0	71.9	71.9	71.8	71.0	69.9	67.1	65.0	59.0	59.7	200	C
T	250	54.0	60.7	64.7	66.9	69.6	71.8	72.8	73.0	72.4	73.0	72.8	72.8	72.8	72.0	70.8	68.1	66.0	59.9	60.6	250	T
A	315	54.6	61.6	65.6	67.8	70.6	72.8	73.8	73.9	73.4	74.0	73.8	73.8	73.8	72.9	71.8	69.0	66.9	60.8	61.5	315	A
V	400	55.4	62.5	66.5	68.7	71.5	73.8	74.8	74.9	74.4	74.9	74.8	74.8	74.7	73.9	72.7	70.0	67.9	61.8	62.4	400	V
E	500	56.0	63.3	67.4	69.7	72.5	74.7	75.7	75.9	75.3	75.9	75.7	75.7	75.7	74.8	73.7	70.9	68.8	62.7	63.3	500	E
	630	57.9	64.8	69.5	73.0	76.4	79.1	80.3	80.8	79.8	76.8	76.7	76.7	76.6	75.8	74.6	71.8	69.7	63.6	64.2	630	
C	800	58.3	65.6	70.4	73.8	77.3	80.0	81.2	81.7	80.7	77.8	77.6	77.6	77.6	76.7	75.6	72.7	70.6	64.5	65.0	800	C
E	1000	56.5	66.2	71.1	74.7	78.2	80.9	82.1	82.4	81.6	78.7	78.5	78.5	78.5	77.6	76.4	73.6	71.5	65.3	65.8	1000	E
N	1250	59.7	67.6	72.3	74.7	79.2	83.9	84.9	85.1	83.5	79.6	79.4	79.4	79.4	78.5	77.3	74.5	72.3	66.1	66.5	1250	N
T	1600	56.5	67.5	71.7	74.8	78.1	81.7	83.1	83.0	82.4	80.4	80.3	80.2	80.2	79.3	78.1	75.2	73.1	66.9	67.1	1600	T
E	2000	56.7	66.8	71.8	74.5	77.6	79.9	81.0	81.3	80.7	81.3	81.1	81.1	81.0	80.1	78.9	76.0	73.8	67.6	67.7	2000	E
R	2500	60.0	70.8	76.1	80.0	81.5	84.2	84.7	85.4	87.6	87.9	87.8	87.9	87.3	86.7	86.1	82.1	79.1	73.1	73.1	2500	R
	3150	57.4	69.6	75.4	79.4	81.1	83.8	84.4	85.1	93.5	93.6	93.8	94.2	93.2	92.7	92.2	88.1	86.2	79.0	78.6	3150	
F	4000	50.2	64.3	70.6	74.3	76.8	79.0	78.6	79.6	81.8	81.9	82.0	82.6	82.2	81.7	80.3	75.7	74.5	66.6	66.5	4000	F
R	5000	52.6	67.8	72.8	77.0	78.7	79.8	80.3	81.4	84.2	84.1	85.1	86.2	85.9	85.7	86.3	80.6	77.5	69.8	69.5	5000	R
E	6300	46.1	63.4	70.2	74.0	76.2	77.8	78.9	80.2	87.9	87.3	88.0	88.9	88.5	88.3	88.4	84.4	82.4	73.7	73.0	6300	E
Q	8000	37.3	58.6	66.7	71.8	74.8	76.7	82.0	80.9	84.9	86.0	85.1	85.2	84.1	84.5	83.3	78.4	75.8	67.6	67.1	8000	Q
	10000	26.0	52.2	62.7	68.2	71.9	73.9	77.8	78.1	85.9	86.6	86.5	86.2	86.2	85.5	84.4	79.6	78.0	69.6	66.5	10000	
OVERALL		69.1	78.5	83.6	87.1	89.7	92.4	93.5	93.9	97.5	97.3	97.4	97.8	97.2	96.7	96.2	92.1	89.9	82.7	82.3		
PNDB		81.1	91.9	97.4	101.1	103.4	106.0	106.9	107.4	112.5	112.4	112.5	112.9	112.2	111.6	111.0	107.0	105.0	97.9	97.6		

BLADE PASSING FREQ. - INPUT ENGINE OCTAVE 10, CENTER FREQ. 3150

JT8D-109 SEA LEVEL STATIC 727 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 36942.N (8305 LB)
PRIMARY THRUST = 12833.N(2885.LB)
PRIMARY FLOW = 43.5 KG/S(96.LB/SEC)
PRIMARY VJ = 294.7M/S(967.FT/SEC)
CORRECTED N1 = 5564.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 24109.N (5420 LB)
FAN FLOW = 109.KG/S(240.LB/SEC)
FAN VJ = 221.6M/S(727.FT/SEC)
TIP SPEED = 363.9M/S(1194.FT/SEC)
FAN PRESS. RATIO = 1.345

NON-MIXED TOTAL JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	51.6	62.1	67.5	71.6	74.6	76.7	78.7	80.6	82.3	83.1	83.9	84.6	84.0	85.6	85.5	85.0	84.2	83.5	80.3	50	
1	63	52.1	62.6	68.0	72.1	75.2	77.3	79.2	81.2	82.8	83.6	84.4	85.1	84.5	86.2	86.1	85.7	85.0	84.4	81.2	63	1
/	80	52.4	62.9	68.3	72.4	75.4	77.6	79.5	81.5	83.1	83.9	84.7	85.4	84.8	86.6	86.4	86.1	85.5	84.9	81.8	80	/
3	100	52.3	62.7	68.2	72.3	75.3	77.5	79.4	81.4	83.0	83.8	84.6	85.3	84.6	86.5	86.4	86.2	85.6	85.0	81.9	100	3
	125	51.9	62.4	67.8	71.9	75.0	77.1	79.0	81.0	82.6	83.5	84.2	84.9	84.2	86.1	86.0	85.9	85.3	84.8	81.6	125	
0	160	51.1	61.6	67.0	71.2	74.2	76.3	78.3	80.2	81.9	82.7	83.5	84.2	83.4	85.4	85.3	85.2	84.6	84.1	81.0	160	0
C	200	50.2	60.6	66.0	70.2	73.2	75.4	77.3	79.3	80.9	81.7	82.5	83.2	82.4	84.4	84.3	84.2	83.7	83.2	80.1	200	C
T	250	49.1	59.5	64.9	69.1	72.1	74.3	76.2	78.2	79.8	80.7	81.4	82.1	81.3	83.3	83.2	83.2	82.7	82.2	79.1	250	T
A	315	47.9	58.3	63.7	67.9	70.9	73.1	75.0	77.0	78.6	79.4	80.2	80.9	80.1	82.1	82.0	82.0	81.5	81.0	77.9	315	A
V	400	46.3	56.8	62.2	66.3	69.4	71.5	73.4	75.4	77.1	77.9	78.7	79.4	78.5	80.6	80.5	80.4	80.0	79.6	76.3	400	V
E	500	44.8	55.2	60.6	64.8	67.8	70.0	71.9	73.9	75.5	76.3	77.1	77.8	77.0	79.0	78.9	78.9	78.4	77.9	74.8	500	E
	630	43.3	53.8	59.2	63.3	66.4	68.5	70.4	72.4	74.1	74.9	75.7	76.4	75.5	77.6	77.5	77.5	77.0	76.6	73.4	630	
C	800	41.5	52.0	57.4	61.5	64.6	66.7	68.6	70.6	72.3	73.1	73.9	74.6	73.7	75.8	75.7	75.7	75.2	74.8	71.7	800	C
E	1000	39.7	50.1	55.6	59.7	62.8	64.9	66.8	68.8	70.4	71.3	72.0	72.7	71.9	74.0	73.9	73.9	73.4	72.9	69.8	1000	E
N	1250	38.0	48.4	53.8	58.0	61.0	63.1	65.1	67.0	68.7	69.5	70.3	71.0	70.1	72.2	72.1	72.1	71.7	71.2	68.1	1250	N
T	1600	35.9	46.3	51.8	55.9	59.0	61.1	63.0	65.0	66.7	67.5	68.3	69.0	68.1	70.2	70.1	70.1	69.6	69.1	66.0	1600	T
E	2000	34.0	44.4	49.9	54.0	57.1	59.2	61.1	63.1	64.7	65.6	66.3	67.0	66.2	68.3	68.2	68.2	67.7	67.2	64.1	2000	E
R	2500	32.2	42.6	48.0	52.2	55.2	57.4	59.3	61.3	62.9	63.8	64.5	65.2	64.4	66.4	66.4	66.4	65.9	65.4	62.3	2500	R
	3150	30.4	40.8	46.2	50.4	53.4	55.6	57.5	59.5	61.1	61.9	62.7	63.4	62.5	64.6	64.5	64.5	64.1	63.6	60.5	3150	
F	4000	28.0	38.4	43.8	48.0	51.0	53.2	55.1	57.1	58.7	59.5	60.3	61.0	60.1	62.2	62.2	62.1	61.7	61.2	58.1	4000	F
R	5000	25.9	36.3	41.7	45.9	48.9	51.1	53.0	55.0	56.6	57.4	58.2	58.9	58.1	60.1	60.1	60.0	59.6	59.1	56.0	5000	R
E	6300	23.8	34.2	39.6	43.8	46.9	49.0	50.9	52.9	54.5	55.4	56.1	56.8	56.0	58.1	58.0	58.0	57.5	57.0	53.9	6300	E
Q	8000	21.0	31.4	36.8	41.0	44.0	46.1	48.1	50.0	51.7	52.5	53.3	54.0	53.1	55.2	55.1	55.1	54.7	54.2	51.1	8000	Q
	10000	17.8	28.2	33.7	37.8	40.9	43.0	44.9	46.9	48.6	49.4	50.2	50.9	50.0	52.1	52.0	52.0	51.5	51.0	47.9	10000	
	OVERALL	61.2	71.6	77.1	81.2	84.2	86.4	88.3	90.3	91.9	92.7	93.5	94.2	93.5	95.4	95.3	95.1	94.5	93.9	90.8		
	PNDB	62.6	73.7	79.4	83.9	87.2	89.4	91.4	93.5	95.2	96.0	96.8	97.5	96.7	98.8	98.7	98.6	98.1	97.5	94.3		

JT8D-109 SEA LEVEL STATIC 727 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 36942.N (8305 LB)
PRIMARY THRUST = 12833.N(2885.LB)
PRIMARY FLOW = 43.5 KG/S(96.LB/SEC)
PRIMARY VJ = 294.7M/S(967.FT/SEC)
CORRECTED N1 = 5564.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 24109.N (5420 LB)
FAN FLOW = 109.KG/S(240.LB/SEC)
FAN VJ = 221.6M/S(727.FT/SEC)
TIP SPEED = 363.9M/S(1194.FT/SEC)
FAN PRESS. RATIO = 1.345

PRIMARY JET NOISE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.7	58.1	63.5	67.7	70.7	72.9	74.8	76.8	78.4	79.3	80.0	80.7	79.7	82.0	82.0	82.1	81.8	81.4	78.3	50	
1	63	49.0	59.4	64.9	69.0	72.1	74.2	76.1	78.1	79.8	80.6	81.4	82.1	81.1	83.4	83.3	83.5	83.1	82.7	79.6	63	1
/	80	50.0	60.4	65.9	70.0	73.1	75.2	77.1	79.1	80.8	81.6	82.4	83.1	82.1	84.4	84.3	84.5	84.1	83.7	80.6	80	/
3	100	50.4	60.8	66.2	70.4	73.5	75.6	77.5	79.5	81.2	82.0	82.8	83.5	82.4	84.7	84.7	84.9	84.5	84.1	81.0	100	3
	125	50.3	60.7	66.1	70.3	73.4	75.5	77.4	79.4	81.1	81.9	82.7	83.4	82.3	84.6	84.6	84.8	84.4	84.0	80.9	125	
0	160	49.7	60.1	65.6	69.7	72.8	74.9	76.8	78.8	80.5	81.3	82.1	82.8	81.8	84.1	84.0	84.2	83.8	83.4	80.3	160	0
C	200	48.9	59.3	64.7	68.9	72.0	74.1	76.0	78.0	79.7	80.5	81.3	82.0	80.9	83.2	83.2	83.4	83.0	82.6	79.5	200	C
T	250	48.0	58.4	63.8	68.0	71.0	73.2	75.1	77.1	78.7	79.6	80.3	81.0	80.0	82.3	82.3	82.4	82.1	81.7	78.6	250	T
A	315	46.8	57.2	62.6	66.8	69.8	72.0	73.9	75.9	77.5	78.4	79.1	79.8	78.8	81.1	81.1	81.2	80.9	80.5	77.4	315	A
V	400	45.3	55.7	61.1	65.3	68.3	70.5	72.4	74.4	76.0	76.9	77.6	78.3	77.3	79.6	79.6	79.7	79.4	79.0	75.9	400	V
E	500	43.8	54.2	59.6	63.8	66.9	69.0	70.9	72.9	74.6	75.4	76.2	76.9	75.8	78.1	78.1	78.3	77.9	77.5	74.4	500	E
	630	42.4	52.8	58.3	62.4	65.5	67.6	69.5	71.5	73.2	74.0	74.8	75.5	74.5	76.8	76.7	76.9	76.5	76.1	73.0	630	
C	800	40.7	51.1	56.5	60.7	63.7	65.9	67.8	69.8	71.4	72.3	73.0	73.7	72.7	75.0	75.0	75.1	74.8	74.4	71.3	800	C
E	1000	38.8	49.2	54.7	58.8	61.9	64.0	65.9	67.9	69.6	70.4	71.2	71.9	70.9	73.2	73.1	73.3	72.9	72.5	69.4	1000	E
N	1250	37.1	47.5	52.9	57.1	60.1	62.3	64.2	66.2	67.8	68.7	69.4	70.1	69.1	71.4	71.4	71.5	71.2	70.8	67.7	1250	N
T	1600	35.0	45.4	50.8	55.0	58.0	60.2	62.1	64.1	65.7	66.6	67.3	68.0	67.0	69.3	69.3	69.4	69.1	68.7	65.6	1600	T
E	2000	33.1	43.5	48.9	53.1	56.2	58.3	60.2	62.2	63.9	64.7	65.5	66.2	65.1	67.4	67.4	67.6	67.2	66.8	63.7	2000	E
R	2500	31.3	41.7	47.2	51.3	54.4	56.5	58.4	60.4	62.1	62.9	63.7	64.4	63.4	65.7	65.6	65.8	65.4	65.0	61.9	2500	R
	3150	29.5	39.9	45.3	49.5	52.6	54.7	56.6	58.6	60.3	61.1	61.9	62.6	61.5	63.8	63.8	64.0	63.6	63.2	60.1	3150	
F	4000	27.1	37.5	42.9	47.1	50.2	52.3	54.2	56.2	57.9	58.7	59.5	60.2	59.1	61.4	61.4	61.6	61.2	60.8	57.7	4000	F
R	5000	25.0	35.4	40.8	45.0	48.1	50.2	52.1	54.1	55.8	56.6	57.4	58.1	57.0	59.3	59.3	59.5	59.1	58.7	55.6	5000	R
E	6300	22.9	33.3	38.8	42.9	46.0	48.1	50.0	52.0	53.7	54.5	55.3	56.0	55.0	57.3	57.2	57.4	57.0	56.6	53.5	6300	E
Q	8000	20.1	30.5	35.9	40.1	43.2	45.3	47.2	49.2	50.9	51.7	52.5	53.2	52.1	54.4	54.4	54.6	54.2	53.8	50.7	8000	Q
	10000	16.9	27.3	32.8	36.9	40.0	42.1	44.0	46.0	47.7	48.5	49.3	50.0	49.0	51.3	51.2	51.4	51.0	50.6	47.5	10000	
OVERALL		59.3	69.7	75.1	79.3	82.3	84.5	86.4	88.4	90.0	90.9	91.6	92.3	91.3	93.6	93.6	93.7	93.4	93.0	89.9		
PNDB		61.3	72.4	78.1	82.5	85.8	88.1	90.1	92.2	93.9	94.7	95.5	96.2	95.2	97.5	97.5	97.7	97.3	96.9	93.7		

JT8D-109 SEA LEVEL STATIC 727 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
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FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 36942.N (8305 LB)
PRIMARY THRUST = 12833.N(2885.LB)
PRIMARY FLOW = 43.5 KG/S(96.LB/SEC)
PRIMARY VJ = 294.7M/S(967.FT/SEC)
CORRECTED N1 = 5564.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 24109.N (5420 LB)
FAN FLOW = 109.KG/S(240.LB/SEC)
FAN VJ = 221.6M/S(727.FT/SEC)
TIP SPEED = 363.9M/S(1194.FT/SEC)
FAN PRESS. RATIO = 1.345

FAN JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	49.3	59.8	65.2	69.3	72.3	74.4	76.4	78.3	79.9	80.7	81.5	82.2	82.1	83.2	82.9	81.8	80.6	79.5	76.1	50	
1	63	49.2	59.7	65.1	69.2	72.2	74.3	76.3	78.2	79.8	80.6	81.4	82.1	81.9	83.1	82.8	81.7	80.5	79.4	76.0	63	1
/	80	48.6	59.2	64.5	68.6	71.6	73.8	75.7	77.7	79.3	80.1	80.9	81.6	81.4	82.5	82.2	81.1	79.9	78.8	75.4	80	/
3	100	47.7	58.3	63.7	67.8	70.8	72.9	74.9	76.8	78.4	79.2	80.0	80.7	80.5	81.6	81.4	80.2	79.0	77.9	74.6	100	3
	125	46.8	57.4	62.7	66.8	69.8	72.0	73.9	75.9	77.5	78.3	79.1	79.8	79.6	80.7	80.4	79.3	78.1	77.0	73.6	125	
0	160	45.5	56.1	61.5	65.6	68.6	70.7	72.7	74.6	76.2	77.0	77.8	78.5	78.3	79.5	79.2	78.0	76.8	75.7	72.4	160	0
C	200	44.1	54.7	60.1	64.2	67.2	69.3	71.3	73.2	74.8	75.6	76.4	77.1	76.9	78.0	77.8	76.6	75.4	74.3	71.0	200	C
T	250	42.7	53.2	58.6	62.7	65.7	67.8	69.8	71.7	73.3	74.1	74.9	75.6	75.5	76.6	76.3	75.2	74.0	72.9	69.5	250	T
A	315	41.3	51.9	57.3	61.4	64.4	66.5	68.5	70.4	72.0	72.8	73.6	74.3	74.1	75.2	75.0	73.8	72.6	71.5	68.2	315	A
V	400	39.6	50.1	55.5	59.6	62.6	64.7	66.7	68.6	70.2	71.0	71.8	72.5	72.4	73.5	73.2	72.1	70.9	69.8	66.4	400	V
E	500	37.8	48.4	53.7	57.8	60.8	63.0	64.9	66.9	68.5	69.3	70.1	70.8	70.6	71.7	71.4	70.3	69.1	68.0	64.8	500	E
	630	36.0	46.5	51.9	56.0	59.0	61.1	63.1	65.0	66.6	67.4	68.2	68.9	68.8	69.9	69.6	68.5	67.3	66.2	62.8	630	
C	800	34.0	44.6	50.0	54.1	57.1	59.2	61.2	63.1	64.7	65.5	66.3	67.0	66.8	68.0	67.7	66.6	65.4	64.2	60.9	800	C
E	1000	32.3	42.8	48.2	52.3	55.3	57.4	59.4	61.3	62.9	63.7	64.5	65.2	65.0	66.2	65.9	64.8	63.6	62.5	59.1	1000	E
N	1250	30.7	41.2	46.6	50.7	53.7	55.8	57.8	59.7	61.3	62.1	62.9	63.6	63.5	64.6	64.3	63.2	62.0	60.9	57.5	1250	N
T	1600	28.8	39.4	44.8	48.9	51.9	54.0	56.0	57.9	59.5	60.3	61.1	61.8	61.6	62.8	62.5	61.3	60.1	59.0	55.7	1600	T
E	2000	26.8	37.3	42.7	46.8	49.8	51.9	53.9	55.8	57.4	58.2	59.0	59.7	59.5	60.7	60.4	59.3	58.1	57.0	53.6	2000	E
R	2500	24.7	35.3	40.6	44.7	47.7	49.9	51.8	53.8	55.4	56.2	57.0	57.7	57.5	58.6	58.4	57.2	56.0	54.9	51.6	2500	R
	3150	22.9	33.5	38.8	42.9	45.9	48.1	50.0	52.0	53.6	54.4	55.2	55.9	55.7	56.8	56.6	55.4	54.2	53.1	49.8	3150	
F	4000	20.5	31.1	36.5	40.6	43.6	45.7	47.7	49.6	51.2	52.0	52.8	53.5	53.3	54.5	54.2	53.1	51.9	50.7	47.4	4000	F
R	5000	18.5	29.1	34.5	38.6	41.6	43.7	45.7	47.6	49.2	50.0	50.8	51.6	51.3	52.5	52.2	51.0	49.9	48.7	45.4	5000	R
E	6300	16.4	27.0	32.4	36.5	39.5	41.6	43.6	45.5	47.1	47.9	48.7	49.4	49.2	50.3	50.1	48.9	47.7	46.6	43.3	6300	E
Q	8000	13.5	24.1	29.5	33.6	36.6	38.7	40.7	42.6	44.2	45.0	45.8	46.5	46.3	47.4	47.2	46.0	44.8	43.7	40.4	8000	Q
	10000	10.4	20.9	26.3	30.4	33.4	35.5	37.5	39.4	41.0	41.8	42.6	43.3	43.2	44.3	44.0	42.9	41.7	40.6	37.2	10000	
	OVERALL	56.7	67.3	72.6	76.7	79.7	81.9	83.8	85.8	87.4	88.2	89.0	89.7	89.5	90.6	90.3	89.2	88.0	86.9	83.5		
	PNDB	55.1	67.1	72.8	77.2	80.5	82.8	85.0	87.1	88.8	89.6	90.5	91.2	91.0	92.2	91.9	90.7	89.5	88.3	84.6		

JT8D-109 727 APPROACH

HIGH FREQUENCY CORE ENGINE NOISE - DISTANCE = 112.8M(370.FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50																				50	
1	63																				63	1
/	80																				80	/
3	100																				100	3
	125																				125	
O	160																				160	O
C	200																				200	C
T	250																				250	T
A	315																				315	A
V	400																				400	V
E	500																				500	E
	630																				630	
C	800																				800	C
E	1000																				1000	E
N	1250																				1250	N
T	1600																				1600	T
E	2000																				2000	E
R	2500								38.6	42.0	43.5	45.4	46.6	46.7	45.5	43.4	39.0	36.7	34.1		2500	R
	3150								44.8	48.1	49.7	51.6	52.8	52.5	51.7	49.5	45.1	42.6	40.0		3150	
F	4000								50.9	54.2	55.8	57.7	58.8	58.9	57.7	55.5	51.0	48.5	52.7		4000	F
R	5000								57.2	60.6	62.2	64.0	65.2	65.3	64.0	61.8	57.2	54.7	51.9		5000	R
E	6300								62.6	66.0	67.6	69.4	70.6	70.6	69.3	67.0	62.4	59.7	56.8		6300	E
Q	8000								68.8	72.2	73.7	75.6	76.7	76.7	75.4	73.0	68.1	65.3	62.2		8000	Q
	10000								70.5	74.0	75.5	77.3	78.4	78.3	76.8	74.5	69.3	66.2	62.8		10000	

JT8D-109 SEA LEVEL STATIC 737 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32743.N(7361.LB)
PRIMARY THRUST = 11027.N(2479.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 272.5M/S(894.FT/SEC)
CORRECTED N1 = 5290.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21716.N(4882.LB)
FAN FLOW = 103.9KG/S(229.LB/SEC)
FAN VJ = 208.8M/S(685.FT/SEC)
TIP SPEED = 346.3M/S(1136.FT/SEC)
FAN PRESS. RATIO = 1.308

CORRECTED TOTAL NOISE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	51.9	61.3	66.4	70.4	73.4	75.6	77.5	79.3	80.8	81.6	82.3	83.0	82.7	84.0	83.8	83.0	82.1	81.3	78.0	50	
1	63	52.7	62.0	67.1	71.0	74.0	76.3	78.2	80.0	81.5	82.3	83.0	83.7	83.3	84.7	84.5	83.8	83.0	82.2	79.0	63	1
/	80	53.2	62.2	67.3	71.2	74.2	76.5	78.4	80.1	81.6	82.4	83.1	83.8	83.4	84.9	84.6	84.1	83.3	82.5	79.4	80	/
3	100	53.4	62.3	67.2	71.1	74.1	76.5	78.3	80.0	81.4	82.3	82.9	83.6	83.1	84.6	84.4	83.9	83.2	82.5	79.3	100	3
	125	53.8	62.3	67.1	70.9	73.9	76.3	78.1	79.8	81.1	82.0	82.6	83.3	82.8	84.3	84.1	83.7	83.0	82.2	79.0	125	
0	160	53.9	62.0	66.7	70.4	73.4	75.9	77.6	79.1	80.4	81.2	81.8	82.4	81.9	83.4	83.2	82.8	82.1	81.3	78.2	160	0
C	200	54.4	62.0	66.4	69.9	72.9	75.6	77.3	78.5	79.7	80.5	81.0	81.6	81.0	82.5	82.3	81.9	81.2	80.4	77.3	200	C
T	250	54.8	62.1	66.3	69.7	72.6	75.5	77.1	78.1	79.0	79.8	80.2	80.8	80.2	81.6	81.4	80.9	80.2	79.4	76.3	250	T
A	315	55.1	62.3	66.3	69.5	72.5	75.5	77.0	77.7	78.4	79.1	79.4	79.9	79.3	80.6	80.3	79.7	79.0	78.1	75.0	315	A
V	400	55.7	62.7	66.5	69.5	72.5	75.7	77.1	77.5	77.9	78.5	78.6	79.0	78.3	79.5	79.0	78.3	77.5	76.5	73.5	400	V
E	500	56.2	63.2	66.9	69.9	72.9	76.2	77.6	77.8	77.8	78.4	78.3	78.5	77.9	78.8	78.2	77.4	76.4	75.3	72.3	500	E
	630	56.7	63.9	67.6	70.4	73.4	76.8	78.2	78.2	78.1	78.6	78.3	78.4	77.7	78.4	77.6	76.5	75.4	73.9	71.1	630	
C	800	56.4	63.6	68.6	71.9	75.1	77.7	78.9	79.3	78.9	78.9	78.4	78.4	77.7	78.1	77.2	75.7	74.4	72.3	69.7	800	C
E	1000	56.6	64.3	69.3	72.6	75.9	78.5	79.4	80.1	79.5	79.5	78.9	78.8	78.1	78.3	77.2	75.3	73.8	71.1	68.8	1000	E
N	1250	56.8	64.9	70.0	73.4	76.7	79.3	80.6	80.9	80.3	80.3	79.6	79.4	78.7	78.8	77.5	75.3	73.5	70.1	68.1	1250	N
T	1600	57.2	66.1	70.9	73.4	77.8	82.4	83.3	83.4	82.1	81.0	80.3	80.1	79.3	79.3	77.9	75.6	73.5	69.3	67.6	1600	T
E	2000	56.7	66.3	70.7	73.8	77.1	80.7	82.2	81.9	81.4	81.8	81.0	80.8	80.1	80.0	78.5	76.0	73.9	69.0	67.5	2000	E
R	2500	54.0	65.2	70.6	73.5	76.5	79.2	80.3	80.4	80.2	80.8	80.7	80.7	80.6	79.8	78.5	75.7	73.4	67.8	67.4	2500	R
	3150	56.8	69.2	75.0	79.1	80.8	83.8	83.9	84.2	92.4	92.6	92.7	93.2	92.3	91.6	91.2	87.4	85.5	78.1	77.6	3150	
F	4000	51.5	65.6	71.7	75.7	77.3	79.6	80.1	81.4	83.5	83.6	83.6	84.2	83.2	82.6	82.2	78.8	77.2	69.7	68.5	4000	F
R	5000	48.7	63.7	70.2	73.9	76.5	78.6	78.1	78.9	81.0	81.1	81.2	81.9	81.4	80.9	79.7	74.9	73.3	65.7	65.4	5000	R
E	6300	48.9	66.7	72.2	76.8	78.6	79.5	79.8	80.6	88.1	87.9	89.0	90.4	89.9	89.6	90.7	84.9	81.4	73.2	72.7	6300	E
Q	8000	38.8	60.2	68.3	73.6	76.4	78.0	78.9	79.8	81.3	80.7	81.3	82.1	81.7	81.3	81.4	77.2	75.2	66.2	65.0	8000	Q
	10000	27.2	54.0	64.7	71.3	74.7	76.8	82.1	80.6	88.0	89.1	88.1	88.1	87.0	87.4	86.1	80.6	77.7	69.2	67.9	10000	
	OVERALL	68.3	77.8	83.1	86.8	89.5	92.2	93.0	94.1	97.3	97.7	97.8	98.3	97.6	97.9	97.7	95.1	93.8	91.7	88.9		
	PNDB	79.8	91.5	97.1	101.0	103.4	106.2	106.0	107.4	112.2	112.4	112.5	112.9	112.2	112.0	111.5	108.3	106.6	101.1	99.6		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 10, CENTER FREQ. 3150

JT8D-109 SEA LEVEL STATIC 737 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32743.N(7361.LB)
PRIMARY THRUST = 11027.N(2479.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 272.5M/S(894.FT/SEC)
CORRECTED N1 = 5290.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21716.N(4882.LB)
FAN FLOW = 103.9KG/S(229.LB/SEC)
FAN VJ = 208.8M/S(685.FT/SEC)
TIP SPEED = 346.3M/S(1136.FT/SEC)
FAN PRESS. RATIO = 1.306

CORRECTED FAN NOISE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F)
AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.6	53.6	56.7	59.3	62.2	65.7	67.0	66.7	66.1	66.5	65.7	65.5	64.8	64.7	63.3	60.8	58.6	52.7	52.5	50	
1	63	48.6	54.6	57.7	60.3	63.2	66.7	68.0	67.7	67.1	67.5	66.7	66.5	65.8	65.7	64.3	61.8	59.6	53.7	53.5	63	1
/	80	49.6	55.6	58.7	61.3	64.2	67.7	69.0	68.7	68.1	68.5	67.7	67.5	66.8	66.7	65.3	62.8	60.6	54.7	54.5	80	/
3	100	50.4	56.5	59.7	62.3	65.2	68.7	70.0	69.7	69.1	69.5	68.7	68.5	67.8	67.7	66.2	63.8	61.6	55.7	55.4	100	3
	125	51.4	57.5	60.7	63.3	66.2	69.7	71.0	70.7	70.1	70.5	69.7	69.5	68.8	68.7	67.2	64.8	62.6	56.7	56.4	125	
0	160	52.2	58.4	61.6	64.2	67.2	70.6	71.9	71.6	71.1	71.5	70.7	70.5	69.8	69.7	68.2	65.7	63.5	57.6	57.3	160	0
C	200	53.2	59.4	62.6	65.2	68.2	71.6	72.9	72.6	72.1	72.5	71.7	71.5	70.8	70.7	69.2	66.7	64.5	58.6	58.3	200	C
T	250	54.0	60.3	63.6	66.2	69.1	72.6	73.9	73.6	73.0	73.4	72.7	72.5	71.7	71.6	70.2	67.7	65.5	59.6	59.3	250	T
A	315	54.6	61.1	64.4	67.1	70.1	73.6	74.9	74.6	74.0	74.4	73.6	73.4	72.7	72.6	71.1	68.6	66.4	60.5	60.2	315	A
V	400	55.4	62.0	65.4	68.0	71.0	74.5	75.9	75.6	75.0	75.4	74.6	74.4	73.7	73.6	72.1	69.6	67.4	61.5	61.1	400	V
E	500	56.0	62.8	66.3	69.0	72.0	75.5	76.8	76.5	75.9	76.3	75.6	75.3	74.6	74.5	73.0	70.5	68.3	62.4	62.0	500	E
	630	56.6	63.6	67.1	69.9	72.9	76.4	77.8	77.5	76.9	77.3	76.5	76.3	75.6	75.5	74.0	71.5	69.2	63.3	62.9	630	
C	800	56.4	63.6	68.4	71.6	74.9	77.5	78.4	79.0	78.3	78.2	77.4	77.2	76.5	76.4	74.9	72.4	70.1	64.2	63.7	800	C
E	1000	56.6	64.2	69.2	72.5	75.8	78.4	79.5	79.9	79.2	79.1	78.4	78.1	77.4	77.3	75.8	73.2	71.0	65.0	64.4	1000	E
N	1250	56.8	64.8	69.9	73.3	76.6	79.2	80.4	80.8	80.1	80.0	79.3	79.0	78.3	78.2	76.7	74.1	71.8	65.8	65.2	1250	N
T	1600	57.2	66.1	70.9	73.3	77.8	82.4	83.2	83.3	82.0	80.9	80.1	79.9	79.1	79.0	77.5	74.9	72.5	66.5	65.8	1600	T
E	2000	56.6	66.3	70.7	73.8	77.1	80.7	82.1	81.9	81.3	81.7	81.0	80.7	80.0	79.8	78.3	75.6	73.3	67.2	66.4	2000	E
R	2500	54.0	65.2	70.6	73.4	76.5	79.2	80.3	80.4	80.2	80.8	80.7	80.7	80.5	79.7	78.4	75.5	73.0	66.3	66.6	2500	R
	3150	56.8	69.2	75.0	79.1	80.7	83.8	83.9	84.2	92.4	92.6	92.7	93.1	92.3	91.6	91.2	87.4	85.5	78.0	77.6	3150	
F	4000	51.5	65.6	71.7	75.7	77.3	79.6	80.1	81.4	83.5	83.6	83.6	84.1	83.2	82.5	82.2	78.7	77.2	69.4	68.3	4000	F
R	5000	48.7	63.7	70.2	73.9	76.5	78.6	78.1	78.9	81.0	81.1	81.2	81.9	81.4	80.9	79.7	74.8	73.2	65.2	65.1	5000	R
E	6300	48.9	66.7	72.2	76.8	78.6	79.5	79.8	80.6	88.1	87.9	89.0	90.4	89.9	89.6	90.6	84.9	81.4	73.2	72.7	6300	E
Q	8000	38.8	60.2	68.3	73.6	76.4	78.0	78.9	79.8	81.3	80.7	81.3	82.1	81.7	81.3	81.4	77.2	75.1	66.1	64.9	8000	Q
	10000	26.9	54.0	64.6	71.3	74.7	76.8	82.1	80.6	88.0	89.1	88.1	88.1	87.0	87.4	86.1	80.6	77.7	69.1	67.9	10000	
	OVERALL	67.8	77.1	82.3	86.0	88.6	91.4	92.8	92.7	96.4	96.6	96.6	97.1	96.3	96.0	95.7	91.4	89.0	81.5	81.0		
	PNDB	79.6	91.1	96.6	100.4	102.7	105.6	106.3	106.5	111.4	111.5	111.5	111.8	111.0	110.5	110.0	106.2	104.1	96.8	96.3		

BLADE PASSING FREQ. = INPUT ENGINE OCTAVE 19, CENTER FREQ. 3150

JT8D-109 SEA LEVEL STATIC 737 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.58 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32743.N(7361.LB)
PRIMARY THRUST = 11027.N(2479.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 272.5M/S(894.FT/SEC)
CORRECTED N1 = 5290.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21716.N(4882.LB)
FAN FLOW = 103.9KG/S(229.LB/SEC)
FAN VJ = 208.8M/S(685.FT/SEC)
TIP SPEED = 346.3M/S(1136.FT/SEC)
FAN PRESS. RATIO = 1.306

NON-MIXED TOTAL JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE
SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F)
AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	50.0	60.5	65.9	70.0	73.0	75.2	77.1	79.1	80.7	81.5	82.3	83.0	82.6	84.0	83.7	83.0	82.1	81.3	78.0	50	
1	63	50.6	61.1	66.6	70.7	73.7	75.8	77.8	79.7	81.3	82.2	82.9	83.6	83.2	84.7	84.5	83.8	83.0	82.2	79.0	63	1
/	80	50.7	61.2	66.7	70.8	73.8	75.9	77.8	79.8	81.4	82.3	83.0	83.7	83.3	84.8	84.6	84.1	83.3	82.5	79.4	80	/
3	100	50.5	60.9	66.4	70.5	73.5	75.7	77.6	79.6	81.2	82.0	82.8	83.5	83.0	84.6	84.4	83.9	83.2	82.4	79.3	100	3
	125	50.1	60.6	66.0	70.1	73.1	75.3	77.2	79.2	80.8	81.7	82.4	83.1	82.6	84.2	84.0	83.6	82.9	82.2	79.0	125	
O	160	49.2	59.6	65.1	69.2	72.2	74.4	76.3	78.3	79.9	80.7	81.5	82.2	81.6	83.3	83.1	82.7	82.0	81.3	78.2	160	O
C	200	48.1	58.6	64.1	68.2	71.2	73.3	75.2	77.2	78.8	79.7	80.4	81.1	80.6	82.2	82.1	81.7	81.1	80.4	77.2	200	C
T	250	47.1	57.5	63.0	67.1	70.1	72.3	74.2	76.2	77.8	78.6	79.4	80.1	79.5	81.2	81.0	80.7	80.0	79.3	76.2	250	T
A	315	45.8	56.2	61.7	65.8	68.8	71.0	72.9	74.9	76.5	77.3	78.1	78.8	78.2	79.9	79.7	79.4	78.7	78.0	74.9	315	A
V	400	44.1	54.5	60.0	64.1	67.1	69.3	71.2	73.2	74.8	75.7	76.4	77.1	76.5	78.2	78.1	77.7	77.1	76.4	73.3	400	V
E	500	42.7	53.1	58.6	62.7	65.7	67.9	69.8	71.8	73.4	74.3	75.0	75.7	75.1	76.8	76.7	76.3	75.7	75.0	71.9	500	E
	630	41.1	51.6	57.1	61.2	64.2	66.3	68.3	70.2	71.8	72.7	73.4	74.1	73.6	75.3	75.1	74.8	74.2	73.5	70.4	630	
C	800	39.2	49.7	55.2	59.3	62.3	64.4	66.4	68.3	69.9	70.8	71.5	72.2	71.7	73.4	73.2	72.9	72.3	71.6	68.5	800	C
E	1000	37.5	47.9	53.4	57.5	60.5	62.7	64.6	66.6	68.2	69.1	69.8	70.5	69.9	71.6	71.5	71.2	70.6	69.9	66.7	1000	E
N	1250	35.7	46.1	51.6	55.7	58.7	60.9	62.8	64.8	66.4	67.2	68.0	68.7	68.1	69.8	69.6	69.3	68.7	68.0	64.9	1250	N
T	1600	33.6	44.1	49.6	53.7	56.7	58.8	60.8	62.7	64.3	65.2	65.9	66.6	66.1	67.8	67.6	67.3	66.7	66.0	62.8	1600	T
E	2000	31.8	42.2	47.7	51.8	54.8	57.0	58.9	60.9	62.5	63.3	64.1	64.8	64.2	65.9	65.7	65.4	64.8	64.1	61.0	2000	E
R	2500	30.1	40.5	46.0	50.1	53.1	55.3	57.2	59.2	60.8	61.6	62.4	63.1	62.5	64.2	64.1	63.7	63.1	62.4	59.3	2500	R
	3150	28.1	38.6	44.0	48.1	51.1	53.3	55.2	57.2	58.8	59.7	60.4	61.1	60.5	62.3	62.1	61.8	61.2	60.5	57.4	3150	
F	4000	25.6	36.0	41.5	45.6	48.6	50.8	52.7	54.7	56.3	57.1	57.9	58.6	58.0	59.7	59.6	59.2	58.6	57.9	54.8	4000	F
R	5000	23.8	34.2	39.7	43.8	46.8	49.0	50.9	52.9	54.5	55.3	56.1	56.8	56.2	57.9	57.8	57.4	56.8	56.1	53.0	5000	R
E	6300	21.6	32.0	37.5	41.6	44.6	46.8	48.7	50.7	52.3	53.1	53.9	54.6	54.0	55.7	55.6	55.2	54.6	53.9	50.8	6300	E
Q	8000	18.6	29.0	34.5	38.6	41.6	43.8	45.7	47.7	49.3	50.2	50.9	51.6	51.0	52.7	52.6	52.3	51.6	51.0	47.8	8000	Q
	10000	15.7	26.1	31.6	35.7	38.7	40.9	42.8	44.8	46.4	47.3	48.0	48.7	48.1	49.8	49.7	49.4	48.8	48.1	44.9	10000	
OVERALL		59.4	69.8	75.3	79.4	82.4	84.6	86.8	88.5	90.1	90.9	91.7	92.4	91.9	93.4	93.3	92.8	92.1	91.3	88.1		
PNOB		60.2	71.5	77.3	81.7	84.9	87.3	89.3	91.4	93.0	93.9	94.7	95.4	94.9	96.6	96.4	96.0	95.3	94.6	91.3		

JTBD-109 SEA LEVEL STATIC 737 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2 (3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32743.N(7361.LB)
PRIMARY THRUST = 11027.N(2479.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 272.5M/S(894.FT/SEC)
CORRECTED N1 = 5290.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21716.N(4882.LB)
FAN FLOW = 103.9KG/S(229.LB/SEC)
FAN VJ = 208.8M/S(685.FT/SEC)
TIP SPEED = 346.3M/S(1136.FT/SEC)
FAN PRESS. RATIO = 1.306

PRIMARY JET NOISE

SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F) AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	46.5	56.9	62.4	66.5	69.5	71.7	73.6	75.6	77.2	78.1	78.8	79.5	78.8	80.7	80.6	80.4	79.9	79.3	76.2	50	
I	63	47.9	58.3	63.8	67.9	70.9	73.1	75.0	77.0	78.6	79.5	80.2	80.9	80.2	82.1	82.0	81.9	81.4	80.7	77.6	63	I
/	80	48.6	59.1	64.5	68.6	71.6	73.8	75.7	77.7	79.3	80.2	80.9	81.6	81.0	82.8	82.7	82.6	82.1	81.4	78.3	80	/
3	100	48.8	59.2	64.6	68.7	71.7	73.9	75.8	77.8	79.4	80.3	81.0	81.7	81.1	82.9	82.8	82.7	82.2	81.6	78.4	100	3
	125	48.6	59.0	64.5	68.6	71.6	73.8	75.7	77.7	79.3	80.2	80.9	81.6	80.9	82.8	82.7	82.6	82.1	81.4	78.3	125	
0	160	47.8	58.3	63.7	67.8	70.8	73.0	74.9	76.9	78.5	79.4	80.1	80.8	80.2	82.0	81.9	81.8	81.3	80.6	77.5	160	0
C	200	47.0	57.4	62.9	67.0	70.0	72.2	74.1	76.1	77.7	78.6	79.3	80.0	79.3	81.2	81.1	80.9	80.4	79.8	76.7	200	C
T	250	46.0	56.4	61.9	66.0	69.0	71.2	73.1	75.1	76.7	77.6	78.3	79.0	78.3	80.2	80.1	79.9	79.4	78.8	75.7	250	T
A	315	44.7	55.1	60.6	64.7	67.7	69.9	71.8	73.8	75.4	76.3	77.0	77.7	77.0	78.9	78.8	78.7	78.1	77.5	74.4	315	A
V	400	43.1	53.5	59.0	63.1	66.1	68.3	70.2	72.2	73.8	74.7	75.4	76.1	75.4	77.3	77.2	77.0	76.5	75.9	72.8	400	V
E	500	41.8	52.2	57.7	61.8	64.8	67.0	68.9	70.9	72.5	73.3	74.1	74.8	74.1	75.9	75.8	75.7	75.2	74.6	71.5	500	E
	630	40.3	50.7	56.2	60.3	63.3	65.5	67.4	69.4	71.0	71.9	72.6	73.3	72.6	74.5	74.4	74.3	73.7	73.1	70.0	630	
C	800	38.4	48.8	54.3	58.4	61.4	63.6	65.5	67.5	69.1	70.0	70.7	71.4	70.7	72.6	72.5	72.4	71.8	71.2	68.1	800	C
E	1000	36.7	47.1	52.6	56.7	59.7	61.9	63.8	65.8	67.4	68.3	69.0	69.7	69.0	70.9	70.8	70.6	70.1	69.5	66.4	1000	E
N	1250	34.8	45.2	50.6	54.7	57.7	59.9	61.8	63.8	65.4	66.3	67.0	67.7	67.1	68.9	68.8	68.7	68.2	67.6	64.5	1250	N
T	1600	32.7	43.1	48.6	52.7	55.7	57.9	59.8	61.8	63.4	64.3	65.0	65.7	65.0	66.9	66.8	66.7	66.1	65.5	62.4	1600	T
E	2000	30.9	41.3	46.8	50.9	53.9	56.1	58.0	60.0	61.6	62.5	63.2	63.9	63.2	65.1	65.0	64.8	64.3	63.7	60.6	2000	E
R	2500	29.2	39.6	45.1	49.2	52.2	54.4	56.3	58.3	59.9	60.8	61.5	62.2	61.5	63.4	63.3	63.2	62.7	62.0	58.9	2500	R
	3150	27.3	37.7	43.2	47.3	50.3	52.5	54.4	56.4	58.0	58.9	59.6	60.3	59.6	61.5	61.4	61.2	60.7	60.1	57.0	3150	
F	4000	24.7	35.1	40.6	44.7	47.7	49.9	51.8	53.8	55.4	56.3	57.0	57.7	57.0	58.9	58.8	58.7	58.1	57.5	54.4	4000	F
R	5000	22.9	33.3	38.8	42.9	45.9	48.1	50.0	52.0	53.6	54.5	55.2	55.9	55.2	57.1	57.0	56.9	56.3	55.7	52.6	5000	R
E	6300	20.7	31.1	36.6	40.7	43.7	45.9	47.8	49.8	51.4	52.3	53.0	53.7	53.0	54.9	54.8	54.7	54.1	53.5	50.4	6300	E
Q	8000	17.7	28.1	33.6	37.7	40.7	42.9	44.8	46.8	48.4	49.3	50.0	50.7	50.0	51.9	51.8	51.7	51.2	50.5	47.4	8000	Q
	10000	14.9	25.3	30.7	34.8	37.8	40.0	41.9	43.9	45.5	46.4	47.1	47.8	47.2	49.0	48.9	48.8	48.3	47.7	44.5	10000	
	OVERALL	57.6	68.0	73.5	77.6	80.6	82.8	84.7	86.7	88.3	89.2	89.9	90.6	89.9	91.8	91.7	91.5	91.0	90.4	87.3		
	PNDB	59.0	70.2	76.0	80.4	83.6	86.0	88.0	90.1	91.8	92.7	93.4	94.1	93.4	95.4	95.3	95.1	94.6	93.9	90.7		

JT8D-109 SEA LEVEL STATIC 737 APP

INPUT ENGINE

NO. OF FAN STAGES = 1.
NO. OF 1ST STAGE BLADES = 34.
FAN STATOR SPACING = 100.
FAN DIAMETER = 1.25M(49.20 IN)
DUCT AREA = 0.426M2(4.59 FT2)
PRIMARY AREA = 0.321M2(3.45 FT2)

OPERATING CONDITIONS

TOTAL THRUST = 32743.N(7361.LB)
PRIMARY THRUST = 11027.N(2479.LB)
PRIMARY FLOW = 40.4KG/S(89.LB/SEC)
PRIMARY VJ = 272.5M/S(894.FT/SEC)
CORRECTED N1 = 5290.RPM
IND. AIRSPEED = 0.

ALTITUDE = 0.
FAN THRUST = 21716.N(4882.LB)
FAN FLOW = 103.9KG/S(229.LB/SEC)
FAN VJ = 208.8M/S(685.FT/SEC)
TIP SPEED = 346.3M/S(1136.FT/SEC)
FAN PRESS. RATIO = 1.306

FAN JET NOISE

THIS MATRIX REFLECTS THE V-8 JET LINE
SIDELINE DISTANCE = 112.8M(370.FT)

SPL IN DB ON THE GROUND WITH AIR ATTENUATION AT 297 DEGREES K(77 DEGREES F)
AND 70 PERCENT HUMIDITY

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.4	58.0	63.4	67.5	70.5	72.6	74.6	76.5	78.1	78.9	79.7	80.4	80.3	81.2	80.9	79.5	78.2	76.9	73.4	50	
1	63	47.3	57.9	63.3	67.4	70.4	72.5	74.4	76.4	78.0	78.8	79.6	80.3	80.2	81.1	80.8	79.4	78.0	76.8	73.3	63	1
/	80	46.5	57.1	62.5	66.6	69.6	71.7	73.7	75.6	77.2	78.0	78.8	79.5	79.4	80.4	80.0	78.6	77.3	76.0	72.6	80	/
3	100	45.6	56.2	61.6	65.7	68.7	70.8	72.8	74.7	76.3	77.1	77.9	78.6	78.5	79.5	79.1	77.7	76.4	75.1	71.7	100	3
	125	44.6	55.2	60.7	64.7	67.7	69.9	71.8	73.7	75.3	76.1	76.9	77.6	77.6	78.5	78.2	76.8	75.4	74.2	70.7	125	
0	160	43.3	53.9	59.3	63.4	66.4	68.5	70.5	72.4	74.0	74.8	75.6	76.3	76.2	77.2	76.8	75.4	74.1	72.8	69.4	160	0
C	200	41.8	52.4	57.8	61.9	64.9	67.0	69.0	70.9	72.5	73.3	74.1	74.8	74.7	75.7	75.3	74.0	72.6	71.3	67.9	200	C
T	250	40.5	51.1	56.5	60.6	63.6	65.7	67.7	69.6	71.2	72.0	72.8	73.5	73.4	74.4	74.0	72.6	71.3	70.0	66.6	250	T
A	315	39.1	49.7	55.1	59.2	62.2	64.3	66.2	68.2	69.8	70.6	71.4	72.1	72.0	72.9	72.6	71.2	69.8	68.6	65.1	315	A
V	400	37.2	47.8	53.2	57.3	60.3	62.4	64.4	66.3	67.9	68.7	69.5	70.2	70.1	71.1	70.7	69.3	68.0	66.7	63.3	400	V
E	500	35.5	46.1	51.5	55.6	58.6	60.7	62.7	64.6	66.2	67.0	67.8	68.5	68.4	69.4	69.0	67.6	66.3	65.0	61.6	500	E
	630	33.6	44.2	49.6	53.7	56.7	58.8	60.8	62.7	64.3	65.1	65.9	66.6	66.5	67.4	67.1	65.7	64.4	63.1	59.6	630	
C	800	31.7	42.3	47.7	51.8	54.8	56.9	58.9	60.8	62.4	63.2	64.0	64.7	64.6	65.6	65.2	63.8	62.5	61.2	57.8	800	C
E	1000	30.0	40.6	46.0	50.1	53.1	55.2	57.1	59.1	60.7	61.5	62.3	63.0	62.9	63.8	63.5	62.1	60.7	59.5	56.0	1000	E
N	1250	28.4	39.0	44.4	48.5	51.5	53.6	55.6	57.5	59.1	59.9	60.7	61.4	61.4	62.3	62.0	60.6	59.2	57.9	54.5	1250	N
T	1600	26.5	37.1	42.5	46.6	49.6	51.7	53.7	55.6	57.2	58.0	58.8	59.5	59.4	60.4	60.0	58.6	57.3	56.0	52.6	1600	T
E	2000	24.3	34.9	40.3	44.4	47.4	49.5	51.5	53.4	55.0	55.8	56.6	57.3	57.2	58.2	57.8	56.4	55.1	53.8	50.4	2000	E
R	2500	22.5	33.1	38.5	42.6	45.6	47.7	49.7	51.6	53.2	54.0	54.8	55.5	55.4	56.4	56.0	54.6	53.3	52.0	48.6	2500	R
	3150	20.6	31.2	36.6	40.7	43.7	45.8	47.8	49.7	51.3	52.1	52.9	53.6	53.5	54.5	54.1	52.7	51.4	50.1	46.7	3150	
F	4000	18.1	28.7	34.1	38.2	41.2	43.3	45.3	47.2	48.8	49.6	50.4	51.1	51.1	52.0	51.6	50.3	48.9	47.6	44.2	4000	F
R	5000	16.3	26.9	32.3	36.4	39.4	41.5	43.5	45.4	47.0	47.8	48.6	49.3	49.2	50.2	49.8	48.4	47.1	45.8	42.4	5000	R
E	6300	14.1	24.7	30.1	34.2	37.2	39.3	41.3	43.2	44.8	45.6	46.4	47.1	47.0	48.0	47.6	46.2	44.9	43.6	40.2	6300	E
Q	8000	11.1	21.7	27.1	31.2	34.2	36.3	38.3	40.2	41.8	42.6	43.4	44.1	44.0	44.9	44.6	43.2	41.9	40.6	37.1	8000	Q
	10000	8.1	18.7	24.2	28.2	31.2	33.4	35.3	37.2	38.8	39.6	40.4	41.1	41.1	42.0	41.7	40.3	38.9	37.7	34.2	10000	
	OVERALL	54.6	65.2	70.6	74.7	77.7	79.8	81.8	83.7	85.3	86.1	86.9	87.6	87.5	88.5	88.1	86.7	85.4	84.1	80.7		
	PNDB	52.3	64.6	70.5	74.9	78.1	80.4	82.6	84.6	86.4	87.3	88.1	88.9	88.8	89.8	89.4	88.0	86.5	85.1	81.3		

JT8D-109 737 APPROACH

HIGH FREQUENCY CORE ENGINE NOISE - DISTANCE = 112.8M(370.FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50																				50	
1	63																				63	1
/	80																				80	/
3	100																				100	3
	125																				125	
O	160																				160	O
C	200																				200	C
T	250																				250	T
A	315																				315	A
V	400																				400	V
E	500																				500	E
	630																				630	
C	800																				800	C
E	1000																				1000	E
N	1250																				1250	N
T	1600																				1600	T
E	2000								38.4	41.8	43.3	45.2	46.4	46.6	45.4	43.2	39.0	36.6	34.1		2000	E
R	2500								44.7	48.1	49.6	51.5	52.7	52.2	52.4	49.5	45.1	47.8	40.2		2500	R
	3150								50.9	54.2	55.8	57.7	58.9	58.6	57.8	55.6	51.2	48.7	46.1		3150	
F	4000								57.0	60.3	61.9	63.8	64.9	65.0	63.8	61.6	57.1	54.6	51.4		4000	F
R	5000								62.8	66.2	67.8	69.6	70.8	70.9	69.6	67.4	62.8	60.3	57.5		5000	R
E	6300								69.2	72.6	74.2	76.0	77.2	77.2	75.9	73.6	69.0	66.3	63.4		6300	E
Q	8000								71.4	74.8	76.3	78.2	79.3	79.3	78.0	75.6	70.7	67.9	64.8		8000	Q
	10000								67.1	70.6	77.1	73.9	75.0	74.9	73.5	71.1	65.9	62.8	59.4		10000	

JT8D-109 SEA LEVEL STATIC T/O

TOTAL ATTENUATED MATRIX – ALT = 304.8M(1000.FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	53.6	63.8	69.3	73.2	76.2	78.4	80.3	82.2	83.9	84.7	85.6	86.4	85.6	88.3	88.8	89.2	89.4	89.0	85.9	50	
1	63	54.9	65.1	70.5	74.5	77.5	79.6	81.6	83.5	85.2	86.0	86.9	87.8	87.0	89.7	90.2	90.7	90.9	90.6	87.4	63	1
/	80	55.9	66.3	71.5	75.4	78.4	80.5	82.5	84.3	86.1	86.8	87.8	88.7	88.0	90.7	91.3	91.8	92.1	91.7	88.6	80	/
3	100	56.6	66.7	72.3	76.1	79.1	81.2	83.2	85.0	86.9	87.5	88.4	89.5	88.8	91.5	92.2	92.7	93.1	92.7	89.5	100	3
	125	57.1	67.2	72.3	76.5	79.6	81.7	83.6	85.4	87.4	87.9	88.9	90.0	89.3	92.1	92.8	93.3	93.7	93.3	90.1	125	
0	160	57.2	67.2	72.6	76.5	79.5	81.6	83.6	85.4	87.3	88.0	88.9	90.0	89.3	92.1	92.9	93.4	93.7	93.5	90.2	160	0
C	200	56.9	67.3	72.5	76.3	79.3	81.4	83.3	85.1	87.1	87.7	88.7	89.7	89.1	91.9	92.7	93.2	93.5	93.3	90.0	200	C
T	250	56.2	66.8	71.7	75.6	78.5	80.6	82.7	84.5	86.3	87.0	87.9	89.0	88.3	91.1	91.9	92.4	92.6	92.5	89.4	250	T
A	315	55.1	65.1	70.5	74.4	77.4	79.4	81.5	83.2	85.1	85.7	86.7	87.8	87.2	89.9	90.8	91.2	91.7	91.4	88.2	315	A
V	400	54.3	64.1	69.7	73.4	76.5	78.6	80.5	82.3	84.0	84.7	85.6	86.7	86.1	88.8	89.6	90.1	90.5	90.3	87.1	400	V
E	500	53.0	62.9	68.4	72.1	75.2	77.4	79.3	81.0	82.7	83.4	84.2	85.3	84.7	87.4	88.3	88.8	89.2	88.9	85.7	500	E
	630	51.5	61.4	66.9	70.7	73.8	76.0	77.9	79.5	81.0	81.6	82.6	83.6	83.0	85.8	86.6	87.1	87.5	87.2	84.0	630	
C	800	49.9	59.9	65.4	69.2	72.3	74.6	76.4	77.9	79.2	79.8	80.7	81.8	81.2	83.9	84.7	85.2	85.7	85.3	82.1	800	C
E	1000	48.2	58.5	64.1	68.0	71.1	73.4	75.2	76.4	77.5	78.1	79.0	80.0	79.5	82.1	83.0	83.5	84.0	83.6	80.4	1000	E
N	1250	46.4	57.1	62.8	66.7	70.0	72.5	74.1	74.7	75.4	76.0	76.9	77.9	77.4	80.0	80.9	81.4	81.9	81.5	78.3	1250	N
T	1600	44.1	55.6	61.6	65.1	68.9	72.8	74.3	72.8	72.7	73.3	74.2	75.2	74.6	77.3	78.2	78.7	79.2	78.8	75.6	1600	T
E	2000	41.9	53.4	59.5	63.3	66.9	69.9	71.0	69.7	70.2	70.8	71.7	72.8	72.2	74.9	75.7	76.2	76.7	76.3	73.2	2000	E
R	2500	37.5	50.7	57.6	61.6	65.0	67.4	68.2	66.9	67.4	68.3	69.0	70.0	69.4	72.1	72.9	73.4	73.8	73.5	70.3	2500	R
	3150	34.2	49.5	58.5	62.8	65.5	68.5	69.2	67.5	66.0	68.4	68.3	68.6	68.1	69.8	70.4	70.6	70.8	70.3	67.1	3150	
F	4000	30.3	45.8	55.2	61.0	64.0	67.0	68.6	67.5	71.6	75.5	75.1	75.1	73.5	73.7	73.1	71.1	70.3	67.7	64.7	4000	F
R	5000	27.5	41.2	50.9	56.8	60.7	64.0	64.3	63.9	63.3	66.7	66.5	66.8	66.4	66.7	66.3	65.4	65.5	64.3	61.1	5000	R
E	6300	22.7	35.8	46.1	53.6	57.6	60.8	62.5	63.1	63.2	67.1	67.4	67.7	67.5	67.0	66.6	62.9	61.7	59.7	56.5	6300	E
Q	8000	16.4	28.0	39.3	48.0	53.3	57.1	59.2	60.3	66.4	70.1	70.7	71.5	70.6	70.3	69.9	65.5	62.3	55.7	51.6	8000	Q
	10000	3.9	19.2	30.3	40.4	47.1	51.6	57.4	57.2	59.0	64.1	63.4	63.4	61.9	61.5	59.5	54.4	51.7	46.5	42.6	10000	
	PNDB	69.6	80.7	87.3	91.3	94.6	97.2	98.8	99.9	101.5	103.0	103.4	104.4	103.7	106.1	106.8	107.0	107.3	106.8	103.6		

JT8D-109 SEA LEVEL STATIC T/O CORRECTED FAN NOISE
TOTAL ATTENUATED MATRIX – ALT = 304.8M(1000.FT)

		ANGLE IN DEGREES																			
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0	
	50	38.0	44.0	48.4	50.7	53.4	55.3	56.0	56.3	56.6	61.7	61.4	61.3	61.3	60.4	59.4	56.8	55.4	49.8	49.8	50
	63	39.0	45.0	49.3	51.6	54.3	56.2	56.9	57.3	57.6	62.7	62.4	62.3	62.3	61.4	60.4	57.8	56.4	50.8	50.8	63
1	80	40.0	46.0	50.3	52.6	55.3	57.2	57.9	58.2	58.4	63.6	63.2	63.1	63.1	62.2	61.2	58.7	57.3	51.7	51.7	80
/	100	40.4	47.2	51.1	53.4	56.1	58.0	58.8	59.1	59.3	64.5	64.1	64.0	64.0	63.1	62.1	59.5	58.2	52.5	52.5	100
3	125	41.4	48.2	52.1	54.4	57.1	59.0	59.7	60.0	60.2	65.3	65.0	64.9	64.8	63.9	63.0	60.4	59.1	53.4	53.4	125
	160	41.8	48.9	52.8	55.1	57.9	59.7	60.5	60.9	61.0	66.1	65.7	65.6	65.6	64.6	63.7	61.2	59.8	54.2	54.1	160
O	200	42.7	49.8	53.7	56.1	58.8	60.6	61.4	61.8	61.8	66.9	66.5	66.4	66.4	65.5	64.5	62.0	60.7	55.1	55.0	200
C	250	43.1	50.3	54.5	56.8	59.5	61.4	62.2	62.5	62.4	67.4	67.0	66.9	66.8	65.9	65.0	62.6	61.2	55.6	55.6	250
T	315	42.9	50.8	55.0	57.4	60.1	62.0	62.8	63.1	62.7	67.8	67.3	67.2	67.1	66.2	65.3	63.0	61.6	56.0	55.9	315
A	400	43.1	51.3	55.5	57.9	60.7	62.7	63.5	63.8	63.4	68.3	67.9	67.7	67.6	66.7	65.9	63.6	62.2	56.6	56.5	400
V	500	43.5	51.7	56.0	58.3	61.2	63.2	64.0	64.4	63.9	68.8	68.4	68.2	68.1	67.2	66.3	64.0	62.7	57.1	57.0	500
E	630	43.8	52.1	56.4	58.8	61.7	63.8	64.6	65.0	64.5	69.4	69.0	68.8	68.7	67.8	66.9	64.6	63.3	57.7	57.6	630
	800	44.1	52.5	57.0	59.4	62.3	64.4	65.2	65.6	65.1	70.0	69.6	69.4	69.3	68.4	67.5	65.2	63.9	58.3	58.2	800
C	1000	44.5	53.0	57.5	59.9	62.9	65.0	65.8	66.2	65.7	70.6	70.2	70.0	69.9	69.0	68.1	65.8	64.5	58.9	58.8	1000
E	1250	44.9	53.4	58.0	60.4	63.4	65.5	66.3	66.7	66.2	71.2	70.8	70.6	70.5	69.6	68.7	66.4	65.1	59.5	59.4	1250
N	1600	45.3	53.8	58.5	60.9	63.9	66.0	66.8	67.2	66.7	71.7	71.4	71.2	71.1	70.2	69.3	67.0	65.7	60.1	60.0	1600
T	2000	45.7	54.3	59.0	61.4	64.4	66.5	67.3	67.7	67.2	72.2	71.9	71.7	71.6	70.7	69.8	67.5	66.2	60.6	60.5	2000
E	2500	46.1	54.8	59.5	61.9	64.9	67.0	67.8	68.2	67.7	72.7	72.4	72.2	72.1	71.2	70.3	68.0	66.7	61.1	61.0	2500
R	3150	46.5	55.3	59.9	62.4	65.4	67.5	68.3	68.7	68.2	73.2	72.9	72.7	72.6	71.7	70.8	68.5	67.2	61.6	61.5	3150
	4000	46.9	55.8	60.4	62.9	65.9	68.0	68.8	69.2	68.7	73.7	73.4	73.2	73.1	72.2	71.3	69.0	67.7	62.1	62.0	4000
	5000	47.3	56.3	60.8	63.4	66.4	68.5	69.3	69.7	69.2	74.2	73.9	73.7	73.6	72.7	71.8	69.5	68.2	62.6	62.5	5000
	6300	47.7	56.8	61.3	63.9	66.9	69.0	69.8	70.2	69.7	74.7	74.4	74.2	74.1	73.2	72.3	70.0	68.7	63.1	63.0	6300
	8000	48.1	57.3	61.8	64.4	67.4	69.5	70.3	70.7	70.2	75.2	74.9	74.7	74.6	73.7	72.8	70.5	69.2	63.6	63.5	8000
	10000	48.5	57.8	62.3	64.9	67.9	70.0	70.8	71.2	70.7	75.7	75.4	75.2	75.1	74.2	73.3	71.0	69.7	64.1	64.0	10000
	PNDB	59.3	72.6	80.6	85.3	88.5	91.6	92.5	91.2	91.8	95.3	94.9	94.8	93.7	93.3	92.5	89.7	88.1	81.4	79.7	
	DELTA PNL	1.0	.4	1.0	1.2	1.5	1.5	1.9	4.4	8.2	8.8	9.3	9.5	9.5	9.5	8.8	7.2	6.7	6.3	5.8	

JT8D-109 SEA LEVEL STATIC DC-9 APP

TOTAL ATTENUATED MATRIX – ALT = 112.8M(370.FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	51.8	61.1	66.3	70.2	73.1	75.4	77.3	79.1	80.7	81.4	82.2	82.9	82.6	83.8	83.6	82.8	81.9	81.0	77.8	50	
1	63	52.6	61.8	66.8	70.9	73.9	76.2	78.0	79.9	81.3	82.1	82.9	83.5	83.2	84.5	84.3	83.6	82.8	82.0	78.8	63	1
/	80	53.0	62.1	67.1	71.0	74.0	76.4	78.2	79.9	81.4	82.3	82.9	83.6	83.2	84.6	84.4	83.8	83.1	82.3	79.1	80	/
3	100	53.2	62.1	67.3	70.9	73.8	76.2	78.0	79.8	81.2	82.1	82.7	83.4	83.0	84.4	84.2	83.7	83.0	82.1	79.0	100	3
	125	53.6	62.1	66.8	70.7	73.7	76.1	77.9	79.5	80.9	81.8	82.4	83.1	82.6	84.2	83.9	83.4	82.7	81.9	78.7	125	
C	160	53.7	61.8	66.4	70.1	73.0	75.5	77.3	78.9	80.1	81.0	81.5	82.2	81.7	83.2	83.0	82.5	81.8	81.0	77.9	160	0
C	200	54.1	61.7	66.1	69.7	72.5	75.2	76.9	78.2	79.3	80.1	80.7	81.2	80.8	82.3	82.0	81.6	80.9	80.1	78.9	200	C
T	250	54.4	61.8	65.9	69.2	72.2	74.9	76.6	77.7	78.5	79.3	79.8	80.4	79.8	81.3	81.0	80.6	79.9	79.1	76.0	250	T
A	315	54.7	61.3	65.6	69.0	71.8	74.7	76.3	77.2	77.6	78.3	78.8	79.2	78.7	80.1	79.9	79.4	78.6	77.8	74.7	315	A
V	400	55.1	62.1	65.8	68.8	71.6	74.7	76.2	76.7	76.8	77.4	77.6	78.0	77.4	78.8	78.4	77.8	77.1	76.2	73.1	400	V
E	500	55.5	62.5	66.1	68.9	71.6	74.8	76.3	76.5	76.0	76.5	76.6	76.9	76.3	77.6	77.3	76.6	75.8	74.9	71.9	500	E
	630	55.8	62.9	66.4	69.1	71.8	75.1	76.6	76.5	75.3	75.7	75.8	75.9	75.3	76.4	76.0	75.4	74.6	73.5	70.5	630	
C	800	55.3	62.5	67.2	70.1	73.1	75.5	76.7	76.7	74.5	74.5	74.3	74.5	73.8	74.9	74.4	73.8	72.9	71.6	68.7	800	C
E	1000	55.3	62.9	67.6	70.6	73.5	75.9	77.1	76.4	73.2	73.1	72.8	72.8	72.2	73.2	72.9	72.3	71.4	69.9	67.1	1000	E
N	1250	55.4	63.4	68.2	71.2	74.1	76.6	77.8	75.9	71.5	71.2	70.8	70.9	70.2	71.3	70.9	70.5	69.6	68.1	65.4	1250	N
T	1600	55.9	64.7	69.3	71.3	75.4	79.7	80.7	76.3	69.5	68.3	68.0	68.1	67.6	68.7	68.5	68.3	67.5	66.1	63.4	1600	T
E	2000	55.5	65.1	69.2	72.1	74.9	78.4	79.4	74.4	67.7	67.4	66.8	66.8	66.2	67.3	67.0	67.0	66.1	64.4	61.8	2000	E
R	2500	53.2	64.2	69.3	72.0	74.8	77.5	77.7	72.9	66.4	66.2	65.9	65.9	65.6	66.1	66.0	65.9	64.9	62.9	60.8	2500	R
	3150	56.0	66.3	74.1	77.9	79.4	82.3	81.8	78.3	80.6	79.8	79.2	79.3	78.4	77.7	78.4	77.1	75.9	69.5	69.4	3150	
F	4000	50.8	64.3	70.3	74.6	76.1	78.3	78.4	76.6	74.3	73.7	73.1	73.4	72.5	72.6	72.3	70.9	69.8	63.6	62.5	4000	F
R	5000	48.3	63.2	69.5	73.2	75.7	77.7	76.9	75.4	74.0	73.5	73.3	73.7	73.3	72.8	72.2	66.9	67.7	61.3	60.9	5000	R
E	6300	48.7	66.4	71.5	76.3	77.9	78.7	78.9	78.0	82.9	82.2	82.9	84.2	83.6	83.5	84.9	80.3	77.1	69.3	69.0	6300	E
Q	8000	38.6	59.9	67.1	73.2	75.8	77.4	76.2	77.7	77.1	76.2	76.6	77.3	76.8	76.5	76.8	73.5	71.8	63.1	62.1	8000	Q
	10000	27.3	53.7	64.4	70.9	74.3	76.3	81.6	79.0	85.1	86.0	84.7	84.7	83.5	83.9	82.9	78.0	75.2	66.9	65.8	10000	
	PNDS	79.3	90.7	96.2	99.9	102.1	104.8	105.2	103.2	103.9	103.7	104.0	104.7	104.1	104.5	105.0	102.4	100.7	96.8	95.1		

JT8D-109 SEA LEVEL STATIC PART POWER LINE CORRECTED FAN NOISE
DC-9 APPROACH
TOTAL ATTENUATED MATRIX – ALT = 112.8M(370.FT)

		ANGLE IN DEGREES																		
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.4	53.4	56.5	59.1	61.9	65.4	66.7	66.4	65.6	65.9	65.2	64.9	64.2	64.2	62.7	60.3	58.1	52.2	52.1	50	
1	63	48.4	54.4	57.5	60.1	62.9	66.3	67.6	67.4	66.6	66.9	66.2	65.9	65.2	65.2	63.7	61.3	59.1	53.2	53.1	63	1
/	80	49.4	55.4	58.5	61.0	63.8	67.3	68.6	68.3	67.4	67.8	67.0	66.7	66.0	66.0	64.5	62.2	60.0	54.1	54.0	80	/
3	100	50.2	56.3	59.4	61.9	64.7	68.2	69.5	69.3	68.4	68.7	68.0	67.7	66.9	66.9	65.5	63.1	61.0	55.1	54.9	100	3
	125	51.1	57.2	60.3	62.9	65.7	69.1	70.5	70.2	69.3	69.6	68.8	68.5	67.8	67.8	66.3	64.0	61.9	56.0	55.8	125	
0	160	51.9	58.1	61.2	63.8	66.5	70.0	71.3	71.1	70.1	70.4	69.7	69.3	68.6	68.6	67.2	64.9	62.7	56.8	56.6	160	0
C	200	52.8	59.0	62.2	64.7	67.4	70.9	72.2	72.0	71.0	71.2	70.5	70.2	69.4	69.4	68.0	65.7	63.6	57.7	57.5	200	C
T	250	53.6	59.8	63.0	65.5	68.3	71.7	73.1	72.8	71.5	71.8	71.0	70.7	69.9	69.9	68.5	66.4	64.2	58.4	58.2	250	T
A	315	54.1	60.5	63.8	66.3	69.0	72.5	73.9	73.5	72.1	72.3	71.5	71.1	70.4	70.3	69.0	66.9	64.8	58.9	58.8	315	A
V	400	54.6	61.3	64.6	67.1	69.8	73.2	74.6	74.4	72.7	72.9	72.1	71.7	71.0	70.9	69.6	67.6	65.5	59.6	59.5	400	V
E	500	55.2	62.0	65.3	67.8	70.5	73.9	75.3	74.9	73.8	72.9	72.0	71.6	70.9	70.8	69.6	67.7	65.7	59.9	59.7	500	E
	630	55.7	62.6	65.9	68.4	71.1	74.5	75.9	75.4	73.9	72.9	72.0	71.6	70.6	70.6	69.6	67.9	65.9	60.2	60.0	630	
C	800	55.2	62.3	66.9	69.8	72.7	75.1	76.3	76.1	73.8	73.3	71.3	70.8	70.0	70.0	68.9	67.5	65.6	59.9	59.8	800	C
E	1000	55.2	62.8	67.4	70.3	73.3	75.7	76.9	76.0	73.7	71.0	69.9	69.4	68.4	68.6	67.6	66.6	64.8	59.2	59.2	1000	E
N	1250	55.4	63.4	68.1	71.1	74.0	76.5	77.7	75.6	70.0	69.1	67.8	67.2	66.4	66.4	65.7	65.2	63.5	58.1	58.1	1250	N
T	1600	55.9	64.7	69.2	71.2	75.3	79.7	80.6	76.1	67.9	65.7	64.1	63.3	62.6	62.5	62.1	62.4	61.0	55.7	55.9	1600	T
E	2000	55.5	65.1	69.2	72.0	74.9	78.4	79.4	74.2	66.3	65.4	63.8	63.0	62.2	62.1	61.8	62.3	60.8	55.6	55.7	2000	E
R	2500	53.1	64.2	69.5	72.0	74.8	77.4	77.6	72.8	65.1	64.5	63.5	63.0	62.8	62.0	61.9	62.2	60.6	54.7	56.0	2500	R
	3150	56.0	68.3	74.1	77.9	79.4	82.3	81.8	78.2	80.6	79.6	79.2	79.2	78.3	77.6	78.3	77.0	75.7	68.9	69.1	3150	
F	4000	50.8	64.8	70.9	74.6	76.1	78.3	78.4	76.6	74.3	73.6	73.0	73.3	72.3	71.7	72.1	70.6	69.5	62.3	61.7	4000	F
R	5000	48.3	63.2	69.5	73.2	75.7	77.7	78.9	75.9	74.0	73.5	73.2	73.7	73.2	72.7	72.0	68.6	67.4	59.8	60.1	5000	R
E	6300	48.7	66.4	71.8	76.3	77.9	76.7	78.9	78.0	82.9	82.2	82.9	84.2	83.6	83.4	84.9	80.3	77.1	69.2	69.0	6300	E
Q	8000	38.5	59.9	67.9	73.2	75.8	77.4	78.2	77.7	77.1	76.2	76.6	77.3	76.8	76.5	76.8	73.5	71.7	62.9	62.0	8000	Q
	10000	26.7	53.7	64.4	70.9	74.3	76.3	81.6	79.0	85.1	86.0	84.7	84.7	83.5	83.9	82.9	78.0	75.2	66.8	65.7	10000	
	PNDB	78.8	90.3	95.7	99.3	101.3	104.1	104.4	101.9	102.2	101.7	101.6	102.2	101.6	101.4	101.9	98.5	96.3	89.4	89.5		
	DELTA PNL	.8	.8	.9	1.1	1.4	1.4	1.6	4.6	9.1	9.8	9.7	9.5	9.4	9.1	8.0	7.7	7.8	7.3	6.7		

JT8D-109 SEA LEVEL STATIC 727 APP

TOTAL ATTENUATED MATRIX – ALT = 112.8M(370.FT)

		ANGLE IN DEGREES																			
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	53.0	62.7	67.6	71.9	74.9	77.0	78.9	80.7	82.3	83.2	84.0	84.6	84.2	85.7	85.5	85.0	84.2	83.6	80.4	50	
1	63	53.6	63.2	68.5	72.4	75.4	77.6	79.4	81.4	82.9	83.7	84.5	85.2	84.6	86.3	86.1	85.7	85.0	84.4	81.2	63	1
/	80	54.2	63.6	68.3	72.7	75.7	77.9	79.8	81.7	83.2	84.0	84.8	85.5	84.9	86.6	86.4	86.1	85.5	85.0	81.8	80	/
3	100	54.4	63.7	68.6	72.8	75.8	77.9	79.7	81.6	83.1	84.0	84.7	85.4	84.7	86.5	86.4	86.2	85.6	85.0	81.9	100	3
	125	54.6	63.8	68.7	72.5	75.5	77.6	79.4	81.3	82.8	83.6	84.4	85.0	84.3	86.2	86.1	85.9	85.3	84.8	81.6	125	
0	160	54.6	63.8	68.8	72.8	75.8	77.1	78.9	80.7	82.1	82.9	83.6	84.3	83.6	85.4	85.3	85.2	84.7	84.1	81.0	160	0
C	200	54.8	63.9	67.9	71.4	74.4	76.5	78.2	79.9	81.3	82.1	82.7	83.4	82.6	84.6	84.4	84.3	83.8	83.2	80.1	200	C
T	250	55.0	63.9	67.9	70.9	73.8	76.0	77.6	79.1	80.4	81.1	81.8	82.5	81.7	83.5	83.4	83.3	82.8	82.2	79.1	250	T
A	315	55.1	62.8	67.4	70.5	73.3	75.5	77.1	78.5	79.4	80.1	80.8	81.4	80.6	82.5	82.3	82.1	81.6	81.0	78.0	315	A
V	400	55.4	63.0	67.2	70.1	72.9	75.1	76.6	77.7	78.3	79.0	79.6	80.2	79.4	81.0	80.9	80.7	80.2	79.6	76.4	400	V
E	500	55.7	63.2	67.5	70.0	72.7	74.9	76.3	77.1	77.2	77.9	78.3	78.9	78.2	79.6	79.5	79.3	78.7	78.0	75.0	500	E
	630	57.2	64.2	68.3	72.1	75.3	77.8	79.2	79.7	78.1	76.9	77.3	77.8	77.1	78.5	78.3	78.0	77.4	76.7	73.7	630	
C	800	57.3	64.6	69.2	72.4	75.6	78.1	79.5	79.6	77.1	75.6	75.9	76.2	75.6	76.9	76.7	76.3	75.7	75.0	72.0	800	C
E	1000	57.3	64.9	69.3	72.9	76.0	78.6	79.9	79.3	75.8	74.0	74.2	74.5	74.0	75.1	75.0	74.7	74.0	73.2	70.3	1000	E
N	1250	58.4	66.2	70.5	72.7	76.8	81.4	82.5	80.3	74.7	72.2	72.3	72.7	72.1	73.3	73.1	73.0	72.3	71.4	68.6	1250	N
T	1600	57.3	66.4	70.2	72.9	75.9	79.3	80.7	76.2	70.6	69.6	69.7	70.1	69.5	70.9	70.8	70.8	70.2	69.3	66.6	1600	T
E	2000	55.7	65.6	70.4	72.8	75.5	77.8	78.5	74.1	68.3	68.3	68.3	68.6	68.0	69.3	69.2	69.2	68.6	67.5	64.9	2000	E
R	2500	59.1	69.9	75.3	78.5	79.8	82.4	82.1	77.9	73.0	72.3	71.5	71.4	70.7	70.9	71.3	70.8	69.4	66.9	65.4	2500	R
	3150	56.7	68.3	74.4	78.2	79.7	82.4	82.3	79.2	81.8	80.9	80.4	80.5	79.4	79.0	79.4	77.9	76.7	70.9	70.8	3150	
F	4000	49.6	63.6	69.5	73.4	75.7	77.8	77.1	75.1	72.8	72.3	71.9	72.2	71.7	71.5	70.9	68.7	68.1	63.5	62.2	4000	F
R	5000	52.1	67.3	72.1	76.2	77.8	78.8	79.1	77.9	77.3	76.5	77.2	78.1	77.8	77.6	78.7	74.7	72.0	65.5	65.2	5000	R
E	6300	45.7	63.0	69.7	73.4	75.5	77.1	78.0	77.5	82.6	81.6	82.0	82.8	82.3	82.2	82.7	79.8	78.1	69.9	69.4	6300	E
Q	8000	37.1	58.2	66.2	71.3	74.2	76.2	81.3	78.8	80.8	81.6	80.4	80.4	79.3	79.7	78.8	74.8	72.6	64.9	64.4	8000	Q
	10000	26.3	52.0	62.4	67.8	71.4	73.4	77.3	76.5	83.1	83.5	83.2	82.8	82.8	82.1	81.3	77.0	75.5	67.4	64.5	10000	
	PNDB	80.7	91.6	97.1	100.7	102.9	105.4	106.1	104.3	105.3	104.9	104.8	105.2	104.6	105.2	105.3	103.6	102.6	99.2	97.3		

JT8D-109 SEA LEVEL STATIC PART POWER LINE CORRECTED FAN NOISE
727 APPROACH
TOTAL ATTENUATED MATRIX – ALT = 112.8M(370.FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.5	53.9	57.7	59.8	62.5	64.7	65.7	65.9	65.1	65.6	65.4	65.4	65.4	64.6	63.4	60.7	58.7	52.7	53.5	50	
1	63	48.5	54.9	58.7	60.8	63.5	65.6	66.6	66.9	66.1	66.6	66.4	66.4	66.4	65.6	64.4	61.7	59.7	53.7	54.5	63	1
/	80	49.5	55.9	59.7	61.7	64.4	66.6	67.6	67.8	66.9	67.5	67.2	67.2	67.2	66.4	65.2	62.6	60.6	54.6	55.4	80	/
3	100	50.3	56.8	60.6	62.6	65.3	67.5	68.5	68.8	67.9	68.4	68.2	68.2	68.1	67.3	66.2	63.5	61.6	55.6	56.3	100	3
	125	51.2	57.7	61.5	63.6	66.3	68.4	69.5	69.7	68.8	69.3	69.0	69.0	69.0	68.2	67.0	64.4	62.5	56.5	57.2	125	
0	160	52.0	58.6	62.4	64.5	67.1	69.3	70.3	70.6	69.6	70.1	69.9	69.8	69.8	69.0	67.9	65.3	63.3	57.3	58.0	160	0
C	200	52.9	59.5	63.4	65.4	68.0	70.2	71.2	71.5	70.5	70.9	70.7	70.7	70.6	69.8	68.7	66.1	64.2	58.2	58.9	200	C
T	250	53.7	60.3	64.2	66.2	68.9	71.0	72.1	72.3	71.0	71.5	71.2	71.2	71.1	70.3	69.2	66.8	64.8	58.9	59.6	250	T
A	315	54.2	61.0	65.0	67.0	69.6	71.8	72.9	73.0	71.6	72.0	71.7	71.6	71.6	70.7	69.7	67.3	65.4	59.4	60.2	315	A
V	400	54.9	61.8	65.8	67.8	70.4	72.5	73.6	73.9	72.2	72.6	72.3	72.2	72.2	71.3	70.3	68.0	66.1	60.1	60.9	400	V
E	500	55.3	62.5	66.5	68.5	71.1	73.2	74.3	74.4	72.3	72.6	72.2	72.1	72.1	71.2	70.3	68.1	66.3	60.4	61.1	500	E
	630	57.0	63.8	68.3	71.5	74.7	77.3	78.5	78.8	75.9	72.6	72.2	72.1	72.0	71.2	70.3	68.3	66.5	60.7	61.9	630	
C	800	57.2	64.2	68.9	72.1	75.2	77.8	79.1	79.0	76.4	72.0	71.5	71.3	71.2	70.4	69.6	67.9	66.2	60.4	61.2	800	C
E	1000	57.2	64.8	69.4	72.6	75.8	78.4	79.7	78.9	74.3	70.7	70.1	69.9	69.8	69.0	68.3	67.0	65.4	59.7	60.6	1000	E
N	1250	58.4	66.2	70.5	72.6	76.7	81.3	82.4	80.1	73.5	68.8	68.0	67.7	67.6	66.8	66.4	65.6	64.1	58.6	59.5	1250	N
T	1600	57.3	66.1	70.1	72.8	75.8	79.2	80.6	75.9	68.4	65.4	64.3	63.8	63.8	62.9	62.8	62.8	61.6	56.2	57.3	1600	T
E	2000	55.6	65.6	70.4	72.7	75.5	77.7	78.4	73.7	65.8	65.1	64.0	63.5	63.4	62.5	62.5	62.7	61.4	56.1	57.1	2000	E
R	2500	59.1	69.9	75.0	78.5	79.8	82.4	82.0	77.8	72.6	71.6	70.6	70.2	69.6	69.0	69.6	68.8	66.7	61.5	62.5	2500	R
	3150	58.7	68.8	74.4	78.2	79.7	82.4	82.3	79.1	81.8	80.9	80.4	80.4	79.3	78.8	79.3	77.7	76.4	70.0	70.3	3150	
F	4000	49.6	63.6	69.9	73.3	75.7	77.8	77.1	75.0	72.7	72.1	71.6	71.9	71.4	70.9	70.3	67.7	67.0	59.6	60.1	4000	F
R	5000	52.1	67.3	72.1	76.2	77.8	78.8	79.1	77.9	77.3	76.5	77.1	78.1	77.7	77.5	78.6	74.5	71.7	64.4	64.6	5000	R
E	6300	48.7	63.0	69.7	73.4	75.5	77.0	78.0	77.5	82.6	81.6	82.0	82.8	82.3	82.1	82.7	79.8	78.1	69.7	69.3	6300	E
Q	8000	37.0	58.2	66.2	71.3	74.2	76.2	81.3	78.8	80.8	81.6	80.4	80.4	79.3	79.7	78.8	74.8	72.5	64.5	64.2	8000	Q
	10000	25.7	51.9	62.4	67.8	71.4	73.4	77.3	76.5	83.1	83.5	83.2	82.8	82.8	82.1	81.3	77.0	75.5	67.3	64.4	10000	
	PNDB	80.3	91.1	96.4	99.9	102.0	104.5	105.0	102.7	103.1	102.3	101.9	102.1	101.7	101.3	101.4	98.7	97.1	90.5	90.8		
	DELTA PNL	.8	.9	1.0	1.2	1.4	1.5	1.8	4.7	9.4	10.1	10.7	10.8	10.5	10.4	9.6	8.3	7.8	7.3	6.8		

JT8D-109 SEA LEVEL STATIC 737 APP

TOTAL ATTENUATED MATRIX – ALT = 112.8M(370.FT)

		ANGLE IN DEGREES																			
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0	
	50	51.9	61.2	66.4	70.3	73.3	75.6	77.5	79.3	80.8	81.6	82.4	83.0	82.7	84.0	83.8	83.0	82.1	81.3	78.0	50	
1	63	52.7	62.0	67.1	71.0	74.1	76.3	78.2	80.0	81.5	82.3	83.0	83.7	83.3	84.7	84.5	83.8	83.0	82.2	79.0	63	1
/	80	53.1	62.2	67.3	71.2	74.1	76.5	78.4	80.1	81.6	82.5	83.1	83.8	83.4	84.8	84.6	84.1	83.3	82.6	79.4	80	/
3	100	53.3	62.2	67.2	71.1	74.0	76.4	78.2	80.0	81.4	82.2	82.9	83.6	83.1	84.6	84.4	83.9	83.2	82.4	79.3	100	3
	125	53.6	62.2	67.1	70.9	73.8	76.2	76.0	79.7	81.1	81.9	82.6	83.3	82.7	84.3	84.1	83.6	82.9	82.1	79.0	125	
0	160	53.7	61.9	66.8	70.3	73.2	75.7	77.5	79.0	80.3	81.1	81.7	82.4	81.9	83.4	83.2	82.8	82.1	81.3	78.2	160	0
C	200	54.1	61.8	66.5	69.8	72.7	75.3	77.0	78.4	79.5	80.3	80.9	81.4	81.0	82.4	82.3	81.9	81.1	80.4	77.3	200	C
T	250	54.4	61.8	66.1	69.4	72.3	75.1	76.7	77.8	78.7	79.5	79.9	80.5	80.0	81.5	81.2	80.9	80.1	79.4	76.3	250	T
A	315	54.7	61.9	65.5	69.0	71.9	74.8	76.5	77.3	77.8	78.5	78.9	79.4	78.9	80.3	80.1	79.6	78.9	78.1	75.0	315	A
V	400	55.1	62.2	65.9	68.9	71.7	74.8	76.3	76.9	76.9	77.5	77.7	78.2	77.6	79.0	78.7	78.1	77.4	76.5	73.4	400	V
E	500	55.5	62.5	66.2	69.0	71.8	74.9	76.5	76.7	76.1	76.7	76.8	77.1	76.5	77.8	77.5	76.9	76.1	75.2	72.2	500	E
	630	55.8	63.0	66.6	69.2	72.0	75.2	76.7	76.6	75.5	75.9	75.8	76.1	75.4	76.6	76.2	75.6	74.8	73.7	70.8	630	
C	800	55.4	62.7	67.1	70.2	73.2	75.6	76.9	76.9	74.7	74.7	74.4	74.6	74.0	75.0	74.6	74.0	73.2	71.9	69.1	800	C
E	1000	55.4	63.0	67.7	70.7	73.6	76.0	77.3	76.6	73.3	73.3	72.9	73.0	72.4	73.4	73.0	72.5	71.6	70.2	67.5	1000	E
N	1250	55.5	63.5	68.3	71.3	74.3	76.7	78.0	76.1	71.6	71.4	70.9	71.0	70.4	71.5	71.1	70.8	69.9	68.4	65.7	1250	N
T	1600	56.0	64.8	69.3	71.4	75.5	79.9	80.8	76.5	69.6	68.5	68.2	68.4	67.7	68.9	68.7	68.5	67.7	66.4	63.6	1600	T
E	2000	55.5	65.1	69.3	72.1	76.0	78.5	79.5	74.5	67.8	67.5	66.9	67.0	66.4	67.4	67.2	67.2	66.3	64.7	62.2	2000	E
R	2500	53.1	64.2	69.5	72.0	74.8	77.4	77.7	73.0	66.4	66.2	66.0	66.0	65.6	66.3	66.1	66.0	65.1	63.2	61.0	2500	R
	3150	56.1	68.3	74.1	77.9	79.4	82.3	81.8	78.3	80.7	79.9	79.3	79.4	78.5	77.8	78.5	77.1	76.0	69.6	69.5	3150	
F	4000	50.9	64.9	70.9	74.7	76.2	78.4	78.6	76.8	74.4	73.9	73.3	73.6	72.6	72.1	72.5	71.0	69.5	63.7	62.7	4000	F
R	5000	48.2	63.2	69.5	73.2	75.6	77.7	76.9	75.4	74.0	73.6	73.3	73.7	73.3	72.8	72.2	69.0	67.9	61.4	60.9	5000	R
E	6300	48.6	66.3	71.7	76.2	77.8	78.7	78.9	78.0	82.9	82.2	83.0	84.2	83.7	83.5	84.9	80.3	77.1	69.3	69.0	6300	E
Q	8000	38.6	59.8	67.3	73.1	75.8	77.4	78.2	77.7	77.2	76.3	76.7	77.3	76.9	76.6	76.9	73.6	71.9	63.2	62.2	8000	Q
	10000	27.0	53.7	64.3	70.8	74.2	76.2	81.6	79.1	85.1	86.0	84.8	84.7	83.5	83.9	82.9	78.1	75.2	67.0	65.9	10000	
	PND_B	79.1	90.7	96.2	99.9	102.1	104.8	105.3	103.2	104.0	103.8	104.1	104.8	104.2	104.6	105.1	102.5	100.9	97.0	95.3		

JT8D-109 SEA LEVEL STATIC PART POWER LINE CORRECTED FAN NOISE
737 APPROACH
TOTAL ATTENUATED MATRIX – ALT = 112.8M(370.FT)

		ANGLE IN DEGREES																		
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	47.4	53.4	56.6	59.1	62.0	65.5	66.8	66.5	65.7	66.0	65.2	65.0	64.3	64.2	62.8	60.4	58.2	52.3	52.2	50	
	63	48.4	54.4	57.6	60.1	63.0	66.4	67.7	67.5	66.7	67.0	66.2	66.0	65.3	65.2	63.8	61.4	59.2	53.3	53.2	63	1
1	80	49.4	55.4	58.6	61.0	63.9	67.4	68.7	68.4	67.5	67.9	67.0	66.8	66.1	66.0	64.6	62.3	60.1	54.2	54.1	80	/
/	100	50.2	56.3	59.5	61.9	64.8	68.3	69.6	69.4	68.5	68.8	68.0	67.8	67.0	66.9	65.6	63.2	61.1	55.2	55.0	100	3
3	125	51.1	57.2	60.4	62.9	65.8	69.2	70.6	70.3	69.4	69.7	68.8	68.6	67.9	67.8	66.4	64.1	62.0	56.1	55.9	125	
	160	51.9	58.1	61.3	63.8	66.6	70.1	71.4	71.2	70.2	70.5	69.7	69.4	68.7	68.6	67.3	65.0	62.8	56.9	56.7	160	O
O	200	52.8	59.0	62.3	64.7	67.5	71.0	72.3	72.1	71.1	71.3	70.5	70.3	69.5	69.4	68.1	65.8	63.7	57.8	57.6	200	C
C	250	53.6	59.8	63.1	65.5	68.4	71.8	73.2	72.9	71.6	71.9	71.0	70.8	70.0	69.9	68.6	66.5	64.3	58.5	58.3	250	T
T	315	54.1	60.5	63.9	66.3	69.1	72.6	74.0	73.6	72.2	72.4	71.5	71.2	70.5	70.3	69.1	67.0	64.9	59.0	58.9	315	A
A	400	54.8	61.3	64.7	67.1	69.9	73.3	74.7	74.5	72.6	73.0	72.1	71.6	71.1	70.9	69.7	67.7	65.6	59.7	59.6	400	V
V	500	55.2	62.0	65.4	67.8	70.6	74.0	75.4	75.0	72.9	73.0	72.0	71.7	71.0	70.8	69.7	67.8	65.8	60.0	59.8	500	E
E	630	55.7	62.6	66.0	68.4	71.2	74.6	76.0	75.5	73.0	73.0	72.0	71.7	70.9	70.8	69.7	68.0	66.0	60.3	60.1	630	
	800	55.3	62.4	67.0	69.9	72.8	75.2	76.5	76.3	72.9	72.9	71.3	70.9	70.1	70.0	69.0	67.6	65.7	60.0	59.9	800	C
C	1000	55.3	62.9	67.5	70.4	73.4	75.8	77.1	76.2	73.6	71.1	69.9	69.5	68.7	68.6	67.7	66.7	64.9	59.3	59.3	1000	E
E	1250	55.5	63.5	68.2	71.2	74.1	76.6	77.9	75.8	70.1	69.2	67.8	67.3	66.5	66.4	65.8	65.3	63.6	58.2	58.2	1250	N
N	1600	56.0	64.6	69.3	71.3	75.4	79.9	80.7	76.3	68.0	65.8	64.1	63.4	62.7	62.5	62.2	62.5	61.1	55.8	56.0	1600	T
T	2000	55.5	65.1	69.3	72.0	75.0	78.5	79.5	74.3	66.4	65.5	63.8	63.1	62.3	62.1	61.9	62.4	60.9	55.7	55.8	2000	E
E	2500	53.0	64.2	69.5	72.0	74.8	77.3	77.6	72.8	65.1	64.4	63.5	63.0	62.8	62.0	61.9	62.1	60.6	54.8	56.0	2500	R
	3150	56.1	66.3	74.1	77.9	79.4	82.3	81.6	78.2	80.7	79.9	79.3	79.3	78.4	77.7	78.4	77.0	75.8	69.0	69.2	3150	
F	4000	50.9	64.9	70.9	74.7	76.2	78.4	78.6	76.8	74.4	73.8	73.2	73.5	72.4	71.8	72.2	70.7	69.6	62.4	61.9	4000	F
R	5000	48.2	63.2	69.5	73.2	75.6	77.7	76.9	75.4	74.0	73.6	73.2	73.7	73.2	72.7	72.0	68.6	67.5	59.8	60.1	5000	R
E	6300	46.6	66.3	71.7	76.2	77.8	78.7	78.9	78.0	82.9	82.2	83.0	84.2	83.7	83.4	84.9	80.3	77.1	69.2	69.0	6300	E
Q	8000	38.5	59.6	67.9	73.1	75.8	77.4	78.2	77.7	77.2	76.3	76.7	77.3	76.9	76.6	76.9	73.6	71.8	63.0	62.1	8000	Q
	10000	26.7	53.6	64.3	70.8	74.2	76.2	81.6	79.1	85.1	86.0	84.8	84.7	83.5	83.9	82.9	78.1	75.2	66.9	65.8	10000	
	PNDB	78.8	90.3	95.7	99.3	101.4	104.2	104.5	101.9	102.2	101.7	101.7	102.2	101.6	101.4	101.9	98.5	96.4	89.5	69.5		
	DELTA PNL	.8	.8	.9	1.1	1.4	1.4	1.8	4.6	9.2	9.8	9.8	9.6	9.4	9.2	8.1	7.7	7.8	7.3	6.7		

JT8D-109 SEA LEVEL STATIC T/O

TOTAL ATTENUATED MATRIX – ALT = 60.8M (200. FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	67.7	77.5	83.2	87.3	90.4	92.6	94.4	96.3	98.1	98.8	99.7	100.6	99.7	102.3	102.8	103.3	103.5	103.1	100.1	50	
I	63	69.0	79.2	84.7	88.6	91.6	93.8	95.7	97.6	99.4	100.1	101.0	101.9	101.1	103.7	104.3	104.8	105.0	104.6	101.6	63	I
/	80	70.0	80.1	85.6	89.5	92.5	94.7	96.6	98.5	100.3	101.0	101.9	102.8	102.1	104.7	105.4	105.9	106.2	105.8	102.7	80	/
3	100	70.8	80.9	86.5	90.3	93.3	95.5	97.4	99.3	101.1	101.8	102.7	103.7	103.0	105.7	106.4	106.9	107.2	106.9	103.7	100	3
	125	71.3	81.4	87.0	90.6	93.8	95.9	97.9	99.7	101.5	102.2	103.2	104.1	103.5	106.2	106.9	107.5	107.8	107.5	104.3	125	
O	160	71.5	81.5	87.1	90.8	93.9	96.0	98.0	99.8	101.6	102.3	103.2	104.2	103.7	106.3	107.1	107.7	108.1	107.7	104.5	160	O
C	200	71.3	81.2	86.9	90.6	93.6	95.7	97.7	99.5	101.3	102.0	103.0	104.0	103.4	106.1	106.9	107.5	107.9	107.5	104.4	200	C
T	250	70.7	80.6	86.2	90.0	93.2	95.1	97.1	98.9	100.7	101.4	102.3	103.4	102.8	105.5	106.3	106.8	107.2	107.0	103.8	250	T
A	315	69.9	79.8	85.3	89.1	92.0	94.1	96.1	97.9	99.8	100.4	101.4	102.4	101.9	104.6	105.4	105.9	106.3	106.1	102.8	315	A
V	400	69.3	79.0	84.4	88.2	91.2	93.3	95.3	97.0	98.8	99.4	100.4	101.4	100.9	103.6	104.4	104.9	105.3	105.1	101.8	400	V
E	500	68.7	78.0	83.4	87.1	90.2	92.4	94.2	95.9	97.7	98.3	99.2	100.3	99.7	102.4	103.2	103.7	104.2	103.9	100.7	500	E
	630	67.8	76.9	82.2	86.0	89.0	91.2	92.9	94.6	96.2	96.8	97.7	98.8	98.2	100.9	101.8	102.3	102.7	102.4	99.2	630	
C	800	67.2	75.9	81.2	84.8	87.8	90.1	91.9	93.4	94.8	95.4	96.3	97.3	96.8	99.5	100.3	100.8	101.2	100.9	97.7	800	C
E	1000	66.8	75.3	80.4	84.0	87.0	89.3	91.0	92.2	93.5	94.0	94.9	96.0	95.5	98.2	98.9	99.4	99.9	99.6	96.4	1000	E
N	1250	66.6	74.7	79.7	83.3	86.3	88.7	90.3	90.9	91.8	92.4	93.3	94.4	93.8	96.5	97.3	97.8	98.3	98.0	94.7	1250	N
T	1600	67.5	75.0	79.7	82.5	85.9	88.6	91.0	89.7	89.9	90.5	91.4	92.4	91.9	94.6	95.4	95.9	96.4	96.1	92.9	1600	T
E	2000	65.9	74.4	78.6	81.6	84.7	87.4	88.4	87.4	88.2	88.8	89.7	90.8	90.2	92.9	93.7	94.2	94.6	94.4	91.2	2000	E
R	2500	64.8	73.8	78.4	81.2	83.9	85.9	86.5	85.7	86.5	87.2	88.1	89.1	88.6	91.2	92.0	92.5	93.0	92.6	88.5	2500	R
	3150	66.6	76.2	81.1	84.1	86.7	88.1	88.4	86.9	86.0	86.0	88.1	88.7	88.1	90.1	90.8	91.2	91.5	90.9	87.9	3150	
F	4000	66.3	76.1	81.1	84.4	86.0	86.1	89.2	88.0	91.9	95.7	96.4	95.6	94.1	94.8	94.5	93.2	92.9	90.4	88.4	4000	F
R	5000	62.2	73.1	78.2	81.4	83.8	86.0	85.9	85.5	85.1	88.1	88.1	88.6	88.4	89.2	89.2	89.0	89.2	88.0	85.1	5000	R
E	6300	61.4	73.0	77.9	81.3	83.2	85.2	86.1	86.4	86.5	90.2	90.7	91.2	91.2	91.2	91.3	86.9	86.2	86.4	83.8	6300	E
Q	8000	57.8	71.3	77.0	80.4	82.9	84.9	86.0	86.6	92.4	96.1	96.8	97.8	97.3	97.5	97.8	95.1	93.2	87.3	86.0	8000	Q
	10000	52.3	68.6	75.7	79.6	82.4	84.5	86.9	87.9	85.5	94.5	94.1	94.3	93.4	93.6	92.6	90.0	88.7	84.2	82.3	10000	

PNDB 92.0 101.9 107.1 110.6 113.0 115.2 116.6 116.8 118.9 121.1 121.4 122.1 121.3 123.0 123.4 123.3 123.6 123.0 119.9

JT8D-109 SLS

TOTAL ATTENUATED MATRIX – ALT = 60.8M(200.FT)

ANGLE IN DEGREES

		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	66.2	76.3	81.8	85.8	88.8	90.9	92.9	94.8	96.5	97.3	98.1	99.0	98.1	100.6	101.0	101.3	101.5	101.1	98.0	50	
1	63	67.4	77.5	83.0	87.0	90.0	92.1	94.1	95.9	97.6	98.4	99.3	100.2	99.4	101.8	102.3	102.7	102.9	102.5	99.4	63	1
/	80	68.3	78.3	83.8	87.8	90.8	92.9	94.8	96.7	98.4	99.2	100.0	101.0	100.2	102.7	103.2	103.7	103.9	103.5	100.5	80	/
3	100	69.1	79.1	84.7	88.6	91.6	93.7	95.6	97.5	99.2	100.0	100.9	101.9	101.1	103.6	104.2	104.7	105.0	104.6	101.4	100	3
	125	69.4	79.4	84.9	88.9	91.9	93.9	95.9	97.7	99.5	100.2	101.1	102.1	101.3	104.0	104.5	105.0	105.4	105.0	101.8	125	
0	160	69.4	79.3	84.8	88.8	91.8	93.8	95.8	97.6	99.3	100.1	101.0	102.1	101.3	103.9	104.5	105.0	105.4	105.0	101.9	160	0
C	200	69.1	79.0	84.6	88.5	91.5	93.5	95.5	97.3	99.1	99.8	100.7	101.8	101.0	103.6	104.3	104.8	105.2	104.8	101.7	200	C
T	250	68.5	78.3	83.8	87.7	90.7	92.7	94.7	96.5	98.2	99.0	99.9	101.0	100.2	102.8	103.5	103.9	104.3	104.1	100.9	250	T
A	315	67.7	77.5	82.9	86.7	89.8	91.7	93.7	95.5	97.2	98.0	98.9	100.0	99.2	101.9	102.5	103.0	103.4	103.2	99.9	315	A
V	400	67.5	76.7	82.1	86.0	89.0	91.2	93.0	94.7	96.3	97.0	97.8	98.9	98.1	100.8	101.5	101.9	102.4	102.1	98.9	400	V
E	500	66.9	75.8	81.2	85.0	88.0	90.1	92.0	93.7	95.1	95.8	96.7	97.7	96.9	99.6	100.2	100.7	101.2	100.8	97.7	500	E
	630	66.4	74.9	80.1	83.8	86.9	89.1	90.8	92.4	93.7	94.3	95.1	96.2	95.5	98.0	98.7	100.3	99.6	99.3	96.1	630	
C	800	66.0	74.2	79.3	83.0	86.1	88.3	89.9	91.3	92.3	92.9	93.7	94.8	94.1	96.7	97.3	99.0	98.2	97.8	94.7	800	C
E	1000	65.9	73.8	78.7	82.4	85.5	87.8	89.3	90.3	91.0	91.5	92.3	93.5	92.6	95.3	96.0	97.5	96.8	96.5	93.4	1000	E
N	1250	65.9	73.6	78.4	82.0	85.1	87.5	88.9	89.1	89.3	89.8	90.6	91.7	90.9	93.6	94.2	95.9	95.1	94.8	91.6	1250	N
T	1600	67.2	74.3	78.9	81.6	85.1	87.0	90.3	88.2	87.4	87.9	88.8	89.8	89.0	91.7	92.4	94.1	93.3	93.0	89.8	1600	T
E	2000	65.6	73.4	77.9	80.9	83.9	86.7	87.5	85.5	85.5	86.2	87.0	88.0	87.3	90.0	90.5	92.2	91.5	91.1	87.9	2000	E
R	2500	64.5	73.4	77.9	80.6	83.2	85.3	85.6	83.8	83.8	84.8	85.5	86.5	85.8	88.3	89.0	90.7	89.9	89.5	86.3	2500	R
	3150	66.5	76.1	80.9	83.9	85.5	87.8	88.1	86.1	84.2	86.2	86.1	86.6	86.0	87.6	88.1	89.4	88.4	87.9	84.9	3150	
F	4000	66.2	76.0	80.9	84.2	85.8	88.0	89.0	87.6	91.6	94.7	94.4	94.5	92.9	93.4	93.1	91.9	91.0	88.0	86.4	4000	F
R	5000	62.1	73.0	78.1	81.2	83.6	85.8	85.6	84.8	84.1	86.8	86.7	87.1	86.8	87.3	87.1	87.3	86.6	85.0	82.3	5000	R
E	6300	61.2	72.9	77.8	81.2	83.1	84.9	86.0	86.1	86.1	89.1	89.5	90.1	90.0	89.9	89.8	87.5	86.0	83.4	81.2	6300	E
Q	8000	57.6	71.3	76.9	80.4	82.8	84.7	85.9	86.4	92.4	95.1	95.8	96.8	96.3	96.6	96.7	94.1	91.9	85.6	84.6	8000	Q
	10000	51.8	68.5	75.6	79.5	82.2	84.4	86.8	87.8	89.4	93.6	93.0	93.3	92.3	92.5	91.4	88.9	87.4	81.8	80.3	10000	
	PNDB	91.3	101.1	106.2	109.7	112.1	114.3	115.6	115.5	117.5	119.4	119.7	120.4	119.4	121.0	121.2	121.2	120.9	120.1	117.1		

JT8D-109 SEA LEVEL STATIC PART POWER LIN

TOTAL ATTENUATED MATRIX – ALT = 60.8M(200.FT)

ANGLE IN DEGREES

	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	63.7	73.0	79.2	83.2	86.3	88.4	90.3	92.3	93.6	94.8	95.5	96.3	95.5	97.8	98.0	98.3	98.1	97.6	94.5	50	
I	63	64.7	74.8	80.2	84.2	87.3	89.4	91.2	93.2	94.8	95.7	96.5	97.3	96.5	98.8	99.1	99.5	99.3	98.8	95.8	63	I
/	80	65.4	75.2	80.9	84.9	88.0	90.1	92.0	93.9	95.5	96.4	97.2	98.0	97.2	99.6	99.9	100.4	100.2	99.8	96.7	80	/
3	100	66.0	75.7	81.4	85.4	88.5	90.6	92.5	94.4	96.0	96.9	97.7	98.5	97.6	100.1	100.4	101.1	101.0	100.5	97.4	100	3
	125	66.2	75.9	81.6	85.6	88.8	90.7	92.6	94.6	96.1	97.1	97.9	98.7	97.8	100.3	100.6	101.4	101.3	100.9	97.7	125	
0	160	66.0	75.8	81.5	85.4	88.5	90.4	92.3	94.2	95.8	96.7	97.6	98.4	97.5	100.0	100.4	101.1	101.0	100.6	97.5	160	0
C	200	65.8	75.1	80.8	84.8	87.9	89.9	91.9	93.7	95.2	96.2	97.0	97.9	96.9	99.6	99.9	100.6	100.6	100.2	97.0	200	C
T	250	65.3	74.6	80.3	84.0	87.1	89.1	90.9	92.9	94.4	95.4	96.1	97.0	96.0	98.7	99.0	99.8	99.6	99.3	96.1	250	T
A	315	64.8	73.7	79.2	83.1	86.2	88.2	90.0	91.9	93.4	94.4	95.1	96.1	95.0	97.7	98.0	98.7	98.6	98.4	95.1	315	A
V	400	65.4	73.6	78.8	82.8	86.0	88.1	89.9	91.5	92.5	93.3	94.0	94.8	93.9	96.5	96.9	97.5	97.5	97.2	94.0	400	V
E	500	65.3	73.1	78.2	82.1	85.3	87.5	89.1	90.6	91.3	91.9	92.7	93.5	92.6	95.2	95.6	96.2	96.2	95.8	92.7	500	E
	630	65.3	72.8	77.6	81.5	84.6	86.9	88.4	89.8	90.0	90.6	91.2	92.1	91.1	93.6	94.0	94.6	94.6	94.3	91.1	630	
C	800	65.5	72.3	77.5	81.2	84.3	86.7	88.1	89.1	88.7	89.2	89.9	90.7	89.7	92.3	92.7	93.3	93.3	93.0	89.8	800	C
E	1000	65.7	72.9	77.5	81.1	84.3	86.7	88.0	88.4	87.3	87.7	88.4	89.2	88.2	90.7	91.1	91.8	91.7	91.4	88.2	1000	E
N	1250	66.1	73.3	77.6	81.4	84.5	87.0	88.2	87.5	85.6	85.9	86.5	87.4	86.5	88.9	89.3	90.0	90.0	89.6	86.5	1250	N
T	1600	67.7	74.5	78.9	81.4	85.1	89.2	90.4	87.2	83.7	84.0	84.7	85.5	84.5	87.1	87.5	88.2	88.2	87.8	84.6	1600	T
E	2000	66.1	74.2	78.1	80.9	84.0	86.9	87.4	84.1	81.8	82.4	83.0	83.9	82.9	85.4	85.8	86.5	86.4	86.1	83.0	2000	E
R	2500	65.1	73.9	78.3	80.8	83.5	85.5	85.6	82.3	80.1	81.1	81.6	82.3	81.3	83.8	84.1	84.9	84.8	84.4	81.3	2500	R
	3150	66.4	76.1	80.7	83.7	85.3	87.6	87.8	85.4	82.4	83.7	83.4	83.5	82.8	83.8	84.2	84.4	83.9	83.1	80.3	3150	
F	4000	66.1	76.0	80.9	84.2	86.7	87.8	88.9	87.3	91.4	92.9	92.6	92.6	91.1	91.4	91.0	89.3	88.5	84.4	83.5	4000	F
R	5000	62.0	72.3	78.0	81.1	83.4	85.7	86.3	84.4	83.2	84.8	84.6	84.9	84.6	84.7	84.0	83.2	82.9	80.3	78.0	5000	R
E	6300	61.1	72.3	77.7	81.1	83.0	84.8	85.8	85.9	85.7	87.3	87.8	88.2	88.1	88.0	87.9	84.5	82.9	79.2	77.5	6300	E
Q	8000	57.4	71.2	76.9	80.3	82.7	84.7	85.8	86.3	92.3	93.4	94.2	95.1	94.7	94.9	95.0	92.2	90.1	83.1	82.4	8000	Q
	10000	51.4	68.3	75.5	79.5	82.2	84.3	85.6	87.7	89.3	91.9	94.3	94.6	90.7	90.9	89.7	86.0	85.2	78.6	77.6	10000	

PNDB 30.7 100.2 105.3 108.7 111.1 113.3 114.6 114.0 115.7 116.9 117.2 117.5 116.5 117.8 117.8 117.3 116.9 115.5 112.6

JT8D-109 SEA LEVEL STATIC PART POWER LINE

TOTAL ATTENUATED MATRIX – ALT = 60.8M(200.FT)

		ANGLE IN DEGREES																				
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
	50	62.4	72.2	77.8	81.9	85.0	87.1	89.0	91.0	92.5	93.4	94.2	94.9	94.1	96.3	96.4	96.5	96.2	95.7	92.6	50	
L	63	63.3	72.9	78.6	82.7	85.8	87.9	89.8	91.8	93.3	94.2	95.1	95.8	94.9	97.2	97.3	97.5	97.3	96.8	93.7	63	L
/	80	64.0	73.5	79.4	83.5	86.6	88.6	90.5	92.5	94.0	95.0	95.8	96.5	95.6	98.0	98.1	98.5	98.3	97.8	94.7	80	/
3	100	64.4	73.7	79.0	83.8	86.9	88.9	90.8	92.8	94.3	95.3	96.1	96.9	95.8	98.2	98.4	98.9	98.8	98.3	95.1	100	3
	125	64.5	73.8	79.7	83.8	86.9	89.0	90.8	92.8	94.3	95.3	96.1	96.9	95.8	98.3	98.5	99.0	98.9	98.5	95.3	125	
0	160	64.4	73.5	79.4	83.5	86.6	88.7	90.5	92.4	93.9	94.9	95.8	96.5	95.4	97.9	98.2	98.7	98.7	98.2	95.1	160	0
C	200	64.1	73.0	78.9	82.9	86.0	88.1	89.8	91.8	93.3	94.2	95.1	95.8	94.7	97.3	97.6	98.1	98.0	97.6	94.4	200	C
T	250	63.7	72.3	78.1	82.0	85.1	87.2	89.0	90.9	92.4	93.4	94.1	95.0	93.7	96.4	96.7	97.2	97.1	96.7	93.6	250	T
A	315	63.5	71.8	77.4	81.2	84.3	86.4	88.2	90.0	91.3	92.3	93.2	94.0	92.8	95.4	95.6	96.1	96.0	95.7	92.5	315	A
V	400	64.5	72.1	77.3	81.2	84.5	86.7	88.3	89.9	90.6	91.2	92.0	92.7	91.6	94.1	94.4	94.9	94.8	94.5	91.3	400	V
E	500	64.8	71.9	76.8	80.7	83.9	86.2	87.7	89.2	89.5	89.8	90.6	91.4	90.2	92.7	93.0	93.5	93.4	93.0	89.9	500	E
	630	64.9	71.9	76.7	80.4	83.6	85.9	87.4	88.6	88.3	88.6	89.3	90.0	88.8	91.3	91.5	92.1	92.0	91.6	88.5	630	
C	800	65.1	72.1	76.7	80.3	83.5	85.9	87.3	88.0	87.1	87.2	87.9	88.6	87.5	89.9	90.1	90.6	90.6	90.2	87.0	800	C
E	1000	65.4	72.4	76.9	80.4	83.6	86.0	87.4	87.5	85.7	85.6	86.3	87.0	85.9	88.3	88.5	89.0	89.0	88.5	85.4	1000	E
N	1250	65.9	73.0	77.4	80.9	84.1	86.5	87.6	86.8	84.0	83.9	84.5	85.3	84.1	86.5	86.8	87.3	87.2	86.9	83.7	1250	N
T	1600	67.5	74.3	78.6	81.0	84.7	89.0	90.1	86.6	81.9	81.9	82.6	83.2	82.1	84.6	84.9	85.4	85.3	84.9	81.9	1600	T
E	2000	66.0	74.0	77.8	80.6	83.7	88.7	87.2	83.4	80.1	80.3	80.9	81.6	80.5	82.9	83.3	83.8	83.7	83.2	80.1	2000	E
R	2500	64.8	73.7	78.1	80.5	83.2	85.3	85.2	81.5	78.3	79.1	79.5	80.1	79.2	81.4	81.6	82.2	82.1	81.6	78.6	2500	R
	3150	66.4	75.9	80.7	83.7	85.2	87.5	87.7	85.1	81.7	82.4	82.1	82.0	81.3	82.0	82.3	82.2	81.6	80.4	77.8	3150	
F	4000	66.0	75.9	80.7	84.1	85.6	87.8	88.8	87.2	91.3	92.0	91.7	91.7	90.1	90.4	90.0	88.1	87.2	82.6	82.1	4000	F
R	5000	61.8	72.7	77.8	81.0	83.4	85.5	85.3	84.3	87.0	83.7	83.4	83.8	83.5	83.5	82.6	81.4	81.2	77.8	75.8	5000	R
E	6300	61.1	72.7	77.7	81.1	82.9	84.8	85.8	85.9	85.6	86.3	86.8	87.2	87.2	86.9	86.8	83.2	81.5	77.2	75.9	6300	E
Q	8000	56.1	69.9	75.6	80.1	82.7	84.5	85.7	86.3	92.3	92.4	93.2	94.2	93.7	93.9	94.0	91.3	89.2	81.8	81.3	8000	Q
	10000	50.1	67.1	74.2	79.3	82.1	84.2	85.5	86.3	94.0	95.7	97.2	98.4	94.5	94.6	95.4	90.4	88.9	81.0	80.7	10000	
	PNOB	90.3	99.7	104.7	108.2	110.5	112.8	114.0	113.3	115.0	115.7	115.9	116.3	115.1	116.4	116.3	115.5	115.0	113.1	110.6		

JT8D-109 SEA LEVEL STATIC PART POWER LINE

ATTENUATED MATRIX – ALT = 60.8M(200.FT)

ANGLE IN DEGREES

	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0		
50	61.2	71.1	76.4	80.4	83.4	85.6	87.5	89.4	91.0	91.8	92.7	93.4	92.6	94.6	94.6	94.5	94.1	93.4	90.4	50	
63	61.9	71.7	76.9	81.0	84.0	86.2	88.1	90.0	91.7	92.4	93.3	93.9	93.2	95.3	95.2	95.2	94.9	94.3	91.2	63	I
80	62.6	72.4	77.7	81.7	84.8	86.9	88.8	90.8	92.4	93.1	94.0	94.6	93.8	96.0	96.0	96.1	95.9	95.3	92.2	80	/
100	62.8	72.5	77.8	81.9	84.9	87.0	88.8	90.9	92.5	93.2	94.1	94.7	93.8	96.1	96.1	96.4	96.2	95.6	92.5	100	3
125	63.0	72.4	77.7	81.6	84.7	86.8	88.7	90.7	92.2	93.0	93.9	94.5	93.5	95.9	95.9	96.2	96.1	95.5	92.4	125	
160	63.0	72.2	77.4	81.3	84.4	86.5	88.3	90.3	91.8	92.7	93.4	94.2	93.1	95.5	95.6	95.9	95.8	95.2	92.1	160	O
200	62.9	71.7	76.8	80.7	83.7	85.8	87.6	89.5	91.1	91.8	92.7	93.3	92.3	94.6	94.7	95.1	94.9	94.4	91.3	200	C
250	62.8	71.3	76.3	79.9	83.0	85.0	86.8	88.7	90.0	90.9	91.7	92.3	91.3	93.6	93.7	94.1	94.0	93.5	90.4	250	T
315	64.1	71.7	76.5	80.4	83.7	86.0	87.9	89.1	89.7	89.9	90.7	91.4	90.3	92.6	92.7	93.1	93.0	92.5	89.4	315	A
400	64.5	71.7	76.4	80.2	83.4	85.8	87.1	88.6	88.8	88.8	89.5	90.2	89.1	91.4	91.5	91.8	91.7	91.2	88.0	400	V
500	64.8	71.8	76.3	80.0	83.2	85.7	87.0	88.2	87.7	87.4	88.1	88.7	87.7	89.9	89.9	90.2	90.2	89.6	86.5	500	E
630	65.3	72.1	76.5	80.2	83.3	85.9	87.1	88.1	86.9	86.3	87.0	87.5	86.6	88.6	88.7	89.0	88.8	88.3	85.2	630	
800	65.7	72.5	76.8	80.4	83.5	86.1	87.2	87.9	85.9	85.0	85.5	86.1	85.1	87.2	87.1	87.5	87.4	86.8	83.8	800	C
1000	66.1	73.0	77.3	80.8	83.9	86.5	87.6	87.5	84.5	83.4	83.9	84.4	83.4	85.4	85.4	85.8	85.7	85.1	82.1	1000	E
1250	67.9	74.3	78.5	80.9	84.5	86.7	87.0	86.1	83.3	81.7	82.2	82.7	81.7	83.7	83.8	84.2	84.1	83.5	80.4	1250	N
1600	68.3	73.9	77.7	80.3	83.3	85.2	87.1	83.4	79.8	79.4	80.0	80.5	79.5	81.6	81.7	82.1	82.1	81.5	78.5	1600	T
2000	65.5	73.6	77.9	80.3	82.8	84.7	85.1	81.3	77.6	78.1	78.5	79.1	78.1	80.1	80.2	80.6	80.5	79.8	76.9	2000	E
2500	67.4	76.2	80.0	83.5	84.9	87.2	87.1	83.6	79.1	79.0	78.8	79.0	78.1	79.4	79.6	79.8	79.4	78.4	75.0	2500	R
3150	67.6	76.4	81.0	84.1	85.5	87.6	88.4	85.8	80.7	80.3	80.7	81.0	80.4	80.5	79.9	79.2	79.0	78.0	74.0	3150	
4000	67.7	75.1	77.9	80.9	83.2	85.4	84.9	83.2	81.0	80.7	80.5	80.7	80.4	80.5	79.9	79.2	79.0	78.0	74.0	4000	F
5000	63.4	73.7	78.1	81.2	82.9	84.8	85.6	85.1	84.0	83.8	84.1	84.4	84.5	84.3	84.3	81.2	79.6	75.4	74.3	5000	R
6300	61.0	72.6	77.6	80.7	82.8	84.8	85.7	85.8	91.2	90.4	91.1	92.0	91.6	91.8	92.1	89.7	87.7	80.5	80.4	6300	E
8000	55.4	69.3	75.5	79.0	81.4	83.3	87.6	86.6	88.3	89.0	88.4	88.7	87.8	88.0	87.0	84.4	83.0	75.9	75.8	8000	Q
10000	49.6	66.1	73.7	77.5	80.8	82.9	87.0	86.9	95.1	93.9	93.5	93.1	93.3	92.6	91.7	88.3	87.3	79.7	78.4	10000	
PND B	90.7	99.8	104.5	107.2	109.9	112.2	113.3	112.3	113.6	113.3	113.8	114.4	113.7	114.7	114.8	113.6	112.8	110.1	108.0		

JT8D-109 SEA LEVEL STATIC APP

TOTAL ATTENUATED MATRIX -- ALT = 60.8M(200.FT)

		ANGLE IN DEGREES																			
		10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	95.0	100.0	105.0	110.0	115.0	120.0	130.0	135.0	140.0	150.0	
	50	68.4	68.1	73.3	77.2	80.2	82.4	84.3	86.1	87.7	88.5	89.3	89.9	89.5	91.1	90.9	90.4	89.6	89.0	85.8	50	
I	63	59.1	68.6	73.8	77.8	80.9	82.9	84.8	86.7	88.3	89.0	89.8	90.5	89.9	91.7	91.5	91.1	90.4	89.8	86.6	63	I
/	80	59.6	69.0	74.2	78.1	81.1	83.3	85.1	87.0	88.6	89.4	90.1	90.9	90.2	92.0	91.9	91.5	90.9	90.4	87.2	80	/
3	100	59.9	69.1	74.2	78.2	81.2	83.3	85.1	87.0	88.5	89.4	90.2	90.8	90.0	91.9	91.8	91.6	91.0	90.4	87.3	100	3
	125	60.1	69.1	74.1	77.9	80.9	83.0	84.9	86.7	88.2	89.0	89.9	90.4	89.7	91.6	91.5	91.3	90.7	90.2	87.0	125	
0	160	60.2	68.8	73.7	77.5	80.4	82.5	84.3	86.1	87.5	88.4	89.0	89.7	89.0	90.9	90.8	90.6	90.1	89.5	86.4	160	0
C	200	60.3	68.6	73.3	76.9	79.8	81.9	83.6	85.3	86.7	87.5	88.2	88.8	88.1	90.0	89.8	89.7	89.2	88.6	85.5	200	C
T	250	60.6	68.5	73.1	76.3	79.2	81.4	83.1	84.6	86.0	86.9	87.2	87.9	87.1	89.0	88.9	88.7	88.2	87.6	84.5	250	T
A	315	60.9	68.5	72.9	76.0	78.8	80.9	82.5	83.9	84.8	85.6	86.3	86.8	86.1	87.9	87.7	87.6	87.1	86.5	83.4	315	A
V	400	61.4	68.7	72.9	75.7	78.4	80.5	82.0	83.2	83.8	84.5	85.0	85.6	84.9	86.6	86.4	86.1	85.7	85.0	82.0	400	V
E	500	61.9	69.0	73.1	75.6	78.3	80.4	81.8	82.7	82.7	83.4	83.8	84.4	83.7	85.2	85.0	84.8	84.2	83.6	80.5	500	E
	630	63.5	70.1	74.5	77.8	80.3	83.4	84.7	85.2	83.6	82.5	82.9	83.3	82.7	84.1	83.9	83.6	83.0	82.3	79.3	630	
C	800	64.0	70.6	75.0	78.1	81.2	83.8	85.1	85.2	82.7	81.2	81.5	81.8	81.3	82.5	82.4	82.1	81.4	80.6	77.7	800	C
E	1000	64.4	71.2	75.6	78.7	81.7	84.3	85.6	85.0	81.5	79.8	79.9	80.3	79.7	80.9	80.7	80.5	79.8	79.9	76.1	1000	E
N	1250	65.9	72.7	76.7	78.7	82.7	87.1	88.2	86.0	80.5	78.0	78.1	78.5	77.9	79.2	79.0	78.9	78.2	77.2	74.5	1250	N
I	1600	65.5	72.9	76.5	75.0	81.9	85.2	86.6	82.1	76.6	75.5	75.7	76.1	75.5	77.0	76.8	76.8	76.2	75.4	72.6	1600	I
E	2000	64.5	72.7	77.0	79.1	81.7	83.8	84.5	80.1	74.3	74.4	74.5	74.8	74.2	75.5	75.4	75.5	74.8	73.7	71.1	2000	E
R	2500	63.0	71.5	81.9	85.1	86.2	88.7	88.2	84.0	79.2	78.4	77.8	77.6	76.9	77.2	77.6	77.2	75.8	73.4	72.1	2500	R
	3150	67.9	77.1	81.8	85.1	86.4	88.5	88.7	85.5	80.2	87.3	86.8	86.9	85.8	85.4	85.9	84.5	83.4	77.8	78.1	3150	
F	4000	62.4	72.7	77.6	80.7	82.7	84.7	83.8	81.7	79.5	79.0	78.6	78.9	78.5	78.3	77.8	75.8	75.3	70.7	69.9	4000	F
R	5000	65.9	76.9	80.4	83.8	85.0	85.8	86.0	84.7	84.1	83.4	84.0	85.0	84.7	84.5	85.7	81.9	79.4	73.1	73.4	5000	R
E	6300	61.9	73.8	78.8	81.7	83.3	84.6	85.3	84.7	89.8	88.8	89.3	90.1	89.7	89.6	90.2	87.6	86.1	80.2	78.5	6300	E
Q	8000	57.0	71.0	76.7	80.6	82.8	84.4	85.3	86.7	88.7	89.5	88.3	88.4	87.4	87.6	87.1	83.5	81.5	74.1	74.7	8000	Q
	10000	51.0	67.4	74.6	78.6	81.2	82.8	84.4	85.4	91.9	92.3	92.1	91.7	91.9	91.3	90.6	88.9	85.8	78.1	76.8	10000	
	PNDB	90.4	99.7	104.3	107.6	109.6	111.8	112.5	110.7	111.6	111.2	111.3	111.9	111.4	111.9	112.1	110.4	109.3	105.7	104.2		

A/A*	Ratio of actual area to critical area (where local Mach No. is 1.0)
A_{jd}	Duct jet area
A_{je}	Primary jet area
a	Location along chord line of maximum camber (1)
BPR	Bypass ratio, formed by the ratio of duct airflow to primary engine airflow: BPR = WAF/WAE
C_1	Inlet velocity absolute
C_2	Exit velocity absolute
C.G.	Center of gravity
ΔCu	Tangential velocity change
c	Chord (1)
D, D-F	Diffusion factor,

$$\text{for rotor} = 1 - \frac{V'_2}{V'_1} + \frac{r_2 V_{\theta 2} - r_1 V_{\theta 1}}{(r_1 + r_2) V'_1 \sigma}$$

$$\text{for stator} = 1 - \frac{V_3}{V_2} + \frac{|r_2 V_{\theta 2} - r_3 V_{\theta 3}|}{(r_2 + r_3) V_2 \sigma}$$

DN	(Ref. bearings) Diam (mm) x RPM
dB	Decibels
EFF-AD	Adiabatic efficiency
F_{nd}, FND	Net duct thrust
F_{ne}, FNE	Net engine thrust

F_{nt}, FNTOT	Net total thrust
FN SAM	Net total thrust corrected to ambient conditions by division by delta ambient: FN SAM = FN/Samb
FEGV	Fan exit guide vane
ΔH_{HPT}	Work extracted from high pressure turbine
ΔH_{LPT}	Work extracted from low pressure turbine
ID	Inner diameter
IGV	Inlet guide vane
J	Joule
kg	Kilogram
LPC	Low pressure compressor
LPT	Low pressure turbine
M, Mn	Mach No.
MCA	Multi circular arc
m	Meter
N	Newton
N_1	Low rotor speed RPM
N1C2	Low rotor shaft speed in revolutions per minute corrected to engine station 2 by division by $\sqrt{\theta T2}$: N1C2 = N1/$\sqrt{\theta T2}$
N_2	High rotor speed RPM
N2C2	High rotor shaft speed in revolutions per minute corrected to engine station 2 by division by $\sqrt{\theta T2}$: N2C2 = N2/$\sqrt{\theta T2}$
OD	Outer diameter
p	Static pressure

P_o	Total or stagnation pressure
$P_{t2, 2.4, etc.}$	Total pressure at station 2, 2.4, etc.
P_s/P_t	Static pressure/total pressure
P3P2	Low compressor total pressure ratio formed by the ratio of the absolute total pressure at engine station 3 to the absolute total pressure at engine station 2: P3P2 = PT3/PT2
P3.2P2	8th stage total pressure ratio formed by the ratio of the absolute total pressure at engine station 3.2 (8th stage) to the absolute total pressure at engine station 2: P3.2P2 = PT3.2/PT2.
P4P2	Overall total pressure compression ratio formed by the ratio of the absolute total pressure at engine station 4 to the absolute total pressure at engine station 2: P4P2 = PT4/PT2
PDP2	Fan duct total pressure ratio formed by the ratio of the absolute total pressure at engine duct station 8D to the absolute total pressure at engine station 2: PDP2 = PT8D/PT2
P7P2	Engine pressure ratio formed by the ratio of the absolute total pressure at engine station 7 (low turbine exit) to the absolute total pressure at engine station 2: P7P2 = PT7/PT2
P8MP2	Mixed engine pressure ratio formed by the ratio of the absolute total mixed pressure at engine station 8 to the absolute total pressure at engine station 2 (the mixed pressure is obtained from the conservation of momentum equation and individual total pressures of duct and engine streams at the mixing station): P8MP2 = PT8M/PT2
$\Delta P/q$	Loading parameter = $(p_{exit} - p_{inlet})/(\frac{1}{2} \rho V^2)_{inlet}$
psi	Pounds per square inch
R-1.5, 2	Rotor 1.5 stage, 2 stage
R_l	Radial load
RLE	Leading edge airfoil radius(1)
RTE	Trailing edge airfoil radius(1)
S-1.5, 2	Stator 1.5 stage, 2 stage

SLS	Sea level static
SLTO	Sea level take-off
T	Total temperature
t	Blade maximum thickness(1)
TSFC	Thrust specific fuel consumption
$T_{t2,\ 2.4,\ etc.}$	Total temperature at station 2, 2.4, etc.
T3T2	Low compressor total temperature ratio formed by the ratio of the absolute total temperature at engine station 3 to the absolute total temperature at engine station 2: T3T2 = TT3/TT2
T3.2T2	8th stage total temperature ratio formed by the ratio of the absolute total temperature at engine station 3.2 (8th stage) to the absolute total temperature at engine station 2: T3.2T2 = TT3.2/TT2
T4T2	Overall total temperature ratio formed by the ratio of the absolute total temperature at engine station 4 to the total absolute temperature at engine station 2: T4T2 = TT4/TT2
TDT2	Fan duct total temperature ratio formed by the ratio of the absolute total temperature at engine duct station 8D to the absolute total temperature at engine station 2: TDT2 = TT8D/TT2
T7T2	Exhaust gas temperature ratio formed by the ratio of the absolute total temperature at engine station 7 (low turbine exit) to the absolute total temperature at engine station 2: T7T2 = TT7/TT2
U	Rotor speed
U_{tip}	Rotor tip speed
V	Air velocity
W_{ae}, W_{eng}, WAE	Engine core airflow
W_{at}, WAT	Total airflow
W_{ad}, WAD	Duct airflow
WAT2	Total airflow corrected to engine station two by multiplication by $\sqrt{\theta T2}$ and divided by ST2: WAT2 = WAT$\sqrt{\theta T2}$/ST2

WF	Engine fuel flow
x/b	Ratio of position on an airfoil to total airfoil length
Z	Total pressure loss coefficient

$$\text{Rotors} = \frac{P'_1 - P'_2 \left(T'_1/T'_2\right)^{\frac{\gamma}{\gamma-1}}}{(\gamma/2)\, p_1\, M_1'^{2}}$$

$$\text{Stators} = \frac{P_2 - P_3}{(\gamma/2)\, p_2\, M_2^2}$$

α_{ch}	Angle between airfoil chord line and tangential plane
β	Absolute air angle $[\cot^{-1}(V_m/V_\theta)]$, degrees
β^*	Metal angle between tangent to mean camber line and through flow direction, degrees(1)
β_1	Inlet relative gas angle
β_2	Exit relative gas angle
γ	Gas constant - ratio of specific heats
δ	Ambient total pressure/standard atmospheric pressure
ϵ	Design conical surface angle measured from compressor centerline, positive if apex is upstream of airfoil, degrees
η	Adiabatic efficiency
θ^*	Airfoil metal turning angle, degrees(2)
ρ	Density
σ	Solidity(1)
τ/b	Gap/chord

$\overline{\omega}$ Total pressure loss coefficient:

$$\text{Rotors} = \frac{P'_1 \left(T'_2/T'_1\right)^{\frac{\gamma}{\gamma-1}} - P'_2}{P'_1 - p_1}$$

$$\text{Stators} = \frac{P_2 - P_3}{P_2 - p_2}$$

ϕ Blade camber angle[1]

ϕ_E Blade camber angle on plane of "unwrapped" conical surface

Subscripts

f Front

m Meridional (velocity)

ss Suction surface

θ Tangential (velocity)

1 Station into rotor

2 Station out of rotor or into stator

3 Station out of stator

Superscripts

' Relative to rotor

* Blade metal (angle)

Pressure Correction Factor

ST2: Station 2 pressure correction factor DELTA-TT2

$$ST2 = \frac{PT2}{14.697}$$

PT2 = Absolute total pressure at engine station 2 in psia

Samb: Ambient pressure correction factor DELTA-Ambient

$$Samb = \frac{Pamb}{14.697}$$

Pamb = Absolute total ambient pressure in psia

NOTE: The factor 14.697 is the absolute total ambient pressure in PSIA at sea level standard day

Temperature Correction Factors

$\theta T2, \sqrt{\theta T2}$: Station 2 temperature correction factor THETA/T2 and the square root of THETA/T2

$$\theta T2 = \frac{TT2}{518.7}$$

TT2 = Absolute total temperature of engine station 2 in °R

$\theta amb, \sqrt{\theta amb}$ Ambient temperature correction factor THETA - ambient and the square root of THETA - ambient

$$\theta amb = \frac{Tamb}{518.7}$$

Tamb = Absolute total ambient temperature in °R

NOTE: The factor 518.7 is the absolute total ambient temperature at sea level standard day in °R

Notes:

(1) Rotor 1 geometry is on flow surface. Geometry of other rotors is on manufacturing plane.

(2) In general, Greek letters are used to indicate angles. Those not followed by an asterisk refer to gas angles, whereas those followed by an asterisk refer to angles of metal surfaces.